Sri Shridevi Charitable Trust (R.)
SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY
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(Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka and Affiliated to Visvesvaraya Technological University, Belagavi)

ESTD: 2002

Criteria 1.1

Curriculum Planning and Implementation

Lesson Plans (Civil Engg)

2017 - 2018

PRINCIPAL
SIET., TUMAKURU.

SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY, TUMKUR-06

(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF MATHEMATICS

Academic Year 2017-18(Odd semester)

LECTURE PLAN

Name of the Course Instructor: Lalitha K R
Class: III SEM
Course code: 15MAT31

Department: Mathematics
Course: Engg. Mathematics - III
Programme: CVE

Course objectives:

The objective of this course is to introduce students to the mostly used analytical and numerical methods in the different engineering fields by making them to learn Fourier series, Fourier transforms and Z-transforms, statistical methods, numerical methods to solve algebraic and transcendental equations, vector integration and calculus of variations.

SL No	DATE	TOPICS	REMARKS
		MODULE-3:STATISTICAL METHODS, CURVE FITTING , NUMERICAL METHODS	
1	07/08/2017	**Numerical Methods**: Numerical solutions of algebraic and transcendental equations	
2	08/08/2017	Regula-Falsi method and Problems	
3	09/08/2017	Newton-Raphson method and Problems	
4	11/08/2017	Problems Continued	
5	11/08/2017	**Curve fitting :** curve fitting by the method of least squares	
6	14/08/2017	Fitting of the curves of the form $y = ax + b, y = ax^2 + bx + c$	
7	16/08/2017	Fitting of the curves of the form $y = ax^b, y = ae^x$	
8	18/08/2017	**Statistical methods**: review of measures of central tendency and dispersion.	
9	18/08/2017	Correlation-Karl Pearson's coefficient of Correlation- Problems	
10	21/08/2017	Regression analysis	
11	22/08/2017	Problems Continued	
12	23/08/2017	Lines of Regression(without proof) -Problems	
13	28/08/2017	Problems Continued and Revision	
		MODULE-4: FINITE DIFFERENCES , NUMERICAL INTEGRATION	
14	29/08/2017	Finite differences: forward and backward Differences	
15	30/08/2017	Newton-Gregory forward difference interpolation formula and Problems	
16	01/09/2017	Newton-Gregory backward difference interpolation formula and Problems	

17	01/09/2017	Problems continued	
18	04/09/2017	Newton's divided difference interpolation formula and Problems	
19	05/09/2017	Problems continued	
20	06/09/2017	Lagrange's interpolation formula and Problems	
21	08/09/2017	Problems Continued	
22	08/09/2017	**Numerical integration** : Simpson's one third rule,	
23	11/09/2017	Problems Continued	
24	12/09/2017	Simpson's three- eighth rule and Weddle's rule(without proof)	
25	13/09/2017	Problems continued on Numerical integration method	
26	15/09/2017	Revision	
		MODULE-1 : FOURIER SERIES	
27	15/09/2017	Periodic functions	
28	22/09/2017	Dirichlet's conditions	
29	22/09/2017	Fourier series of Periodic functions with period 2π	
30	25/09/2017	Problems continued	
31	26/09/2017	Fourier series of Periodic functions with arbitrary $2c$	
32	27/09/2017	Problems continued	
33	03/10/2017	Fourier series of even and odd functions	
34	04/10/2017	Problems continued	
35	06/10/2017	Half range Fourier series expansion, Problems	
36	06/10/2017	Practical Harmonic Analysis: Problems	
37	09/10/2017	Revision	
		MODULE-2: FOURIER TRANSFORMS AND Z-TRANSFORMS	
38	10/10/2017	**Fourier transforms**: Infinite Fourier transform and problems	
39	11/10/2017	Problems continued	
40	13/10/2017	Fourier Sine and Cosine transforms	
41	13/10/2017	Problems continued	
42	16/10/2017	Inverse Fourier transforms	
43	17/10/2017	Inverse Fourier Sine and Cosine transforms	
44	23/10/2017	**Z-transforms:** Difference equations – basic definitions, Z- Transforms-definition, standard forms	
45	24/10/2017	damping rule, shifting rule,	
46	25/10/2017	Initial value and Final value theorems(without proof) and problems	
47	31/10/2017	Inverse Z-transforms and problems	
48	03/11/2017	Application of Z-transforms to solve difference equations	
49	03/11/2017	Problems continued and Revision	

MODULE-5: VECTOR INTEGRATION, CALCULUS OF VARIATIONS			
50	07/11/2017	**Vector integration**: Line integrals- definition and problems	
51	08/11/2017	Surface and volume integrals- definitions and problems	
52	10/11/2017	Green's theorem (without proof) in a plane and problems	
53	10/11/2017	Stoke's theorem (without proof) and problems	
54	13/11/2017	Gauss-divergence theorem(without proof) and problems	
55	14/11/2017	**Calculus of variations:** Variation of function and functional	
56	15/11/2017	Variational problems	
57	20/11/2017	Euler's equation and problems	
58	21/11/2017	Geodesic's and problems	
59	22/11/2017	Minimal surface of revolution and problems	
60	24/11/2017	Hanging chain problems	
61	24/11/2017	Revision	

Outcomes: The student will be able to

- Know the use of periodic signals and Fourier series to analyze circuits and system communications.
- Explain the general linear system theory for continuous-time signals and digital system processing using the Fourier transform and Z-transform.
- employ appropriate numerical methods to solve algebraic and transcendental equations .
- apply Green's theorem , Divergence theorem and Stoke's theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems.
- Determine the extremals of functional and solve the simple problem of the calculus of variations.

Reference Books:

1 Higher Engg. Mathematics by B. S. Grewal
2 Engg. Mathematics by B. V. Ramana
3 Elementary Engg Mathematics by B. S. Grewal
4 Advanced Engg. Mathematics by E. Krezig VI Edition
5 A textbook of Engg. Mathematics by N P Bali and Manish Goyal
6 Higher Engg. Mathematics by H K Dass and Er. Rajnish verma

Lalitha K R
(Mrs. Lalitha K R)
Staff in charge

(Mr. Kishorkumar M K)
HOD

(Dr. Phani Raju H B)
Principal

PRINCIPAL
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Semester: III Year: 2017-18

Subject Title: **Strength of Materials**	*Subject Code:* **15CV32**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Nagaraja C**	*Date: 07/08/17*
Checked by: **Dr. M A Nagesh**	*Date: 07/08/17*

Learning Objectives:

The course will enable the students

i. to learn to classify stresses into various types, state and apply Hooke's law. Compute stress intensities and strain intensities, deformations, thermal stresses & strains, relation between the modulus of elasticity, modulus of rigidity, bulk modulus and Poisson's ratio. Composite and compound stresses also will be learnt.
ii. to understand the concept of stress components on inclined planes in two dimensional system. Principal stresses and strains and their intensities will be computed.
iii. to revise the types of beams, loadings and supports. The concept of shear force and bending moment in beams and their relationship will be studied. The diagrams of SF and BM will be drawn for different cases of simply supported, overhanging and and other determinate beams.
iv. to understand the concept of bending and shear stress distribution across the cross section of beams. The derivation of formulae for the computation of stresses will be made. The students will understand the concepts of flexural rigidity and horizontal shear stress in I and T sections and shear centre.
v. to learn the concepts of pure torsion and power transmission. The relationship between torsion, polar modulus, twist and rigidity modulus will be established. The importance of torsional rigidity, comparison of solid and circular shafts will be learnt.
vi. to learn the concepts of pure torsion and power transmission. The relationship between torsion, polar modulus, twist and rigidity modulus will be established. The importance of torsional rigidity, comparison of solid and circular shafts will be learnt.
vii. to learn the occurance of internal pressure, hoop stress and longitudinal stresses, consequent changes in volume and the pressure distribution.
viii. to understand the concepts of failure and theories developed based on the concepts.

Learning Outcomes: The students will be able to differentiate the types of stresses, related strains, deformations. Theories related to stresses and strains, behavior of mild steel in tension will be learnt and the concept of thermal stresses and strains will be acquired by them. The relation between the elastic constants and the volume changes using these relations will be computed by them. The effect of bending moment and shear force on beams, their calculations and relationship will be learnt by them. They will be able to diagrams of SF and BM for beams. The students will be able to differentiate between the principal stresses and shear stresses and will be able calculate the intensities and location of principal planes. The students will have

knowledge about bending stresses and shear stresses and their effects on sections. They will be able to calculate the magnitude and distribution of these forces across cross sections. The Knowledge of power transmission in shafts and effect of torsion on them will be learnt by the students. The strength of shafts hollow and solid sections will be calculated by them. They will be able to calculate the deflection in various types of beams and conditions. The different types of vertical compression members will be identified by the students and the failure of columns will be studied. The students will be able to calculate the buckling load for various end conditions using Euler and Rankine's theories.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text book:**
Strength of Materials – B S Basavarajaiah and P Mahadevappa, Universities Press 2010 Edition.
Mechanics of Materials – Ferdinand P Beer, E Russel Johnston and Jr. John T DeWolf, Tata Mc Graw Hill, Third Edition.

3) **Reference Books:**
Elements of Strength of Materials – D H Young and S P Timoshenko, EastWest Press Pvt ltd., 5th Edition(Reprint 2014).
A Text book of Strength of Materials – R K Bansal, 4th Edition, Laxmi Publications, 2010.
Strength of Materials – S SRattan, McGraw Hill Education (India) Pvt. ltd. 2nd Edition (Sixth Reprint 2013).
Analysis of structures – Vazirani V N, Ratwani, M M and S K Duggal, Vol 1, 17th Edition, Khanna Publishers, New Delhi.

4) **Scheme of Examination:**
The question paper will have ten questions, each full question carrying 16 marks. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module. Each full question shall cover the topics under a module. The students shall answer five full questions selecting one full question from each module. If more than one question is answered in modules, the best answer will be considered for the award of marks limiting one full question answer in each module.

5) **Evaluation:**

Student Assessment: Through Internal Assessment Tests (15 Marks), Assignments (05 marks), University Examination (80 Marks)

Lesson Plan

15CV32 – Strength of Materials

Sl No	Date	Topics	Topics Covered	Remarks
		Module 1: Simple stresses and strains		
1	10/08/17	Introduction, Definition and concept and of stress and strain. Hooke's law		
2	10/08/17	Stress-Strain diagrams for ferrous materials		
3	11/08/17	Stress – strain diagrams for non ferrous materials,		
4	11/08/17	Elongation of tapering bars of circular and rectangular cross – sections,		
5	17/08/17	Elongation due to self weight		
6	17/08/17	Saint Venant's principle, Compound bars, Temperature stresses		
7	18/08/17	Compound section subjected to Temperature stress		
8	18/08/17	state of simple shear		
9	24/08/17	Elastic constants and their relationship		
10	24/08/17	problems		
		Module 2: Compound stresses		
11	31/08/17	Introduction, state of stress at a point,		
12	31/08/17	General two dimensional stress system,		
13	01/09/17	Principal stresses and principal planes.		
14	01/09/17	Mohr's circle of stresses		
15	07/09/17	problems		
16	07/09/17	**Thick and thin cylinders**: Introduction, Thin cylinders subjected to internal pressure		
17	08/09/17	Hoop stresses, Longitudinal stress and change in volume.		
18	08/09/17	Thick cylinders subjected to both internal and external pressure;		
19	14/09/17	Lame's equation, radial and hoop stress distribution.		
20	14/09/17	problems		
		Module 3: Shear Force and Bending Moment in Beams:		
21	15/09/17	Introduction to types of beams, supports and loadings.		
22	15/09/17	Definition of bending moment and shear orce, Sign conventions,		
23	21/09/17	relationship between load intensity, bending oment and shear force.		
24	21/09/17	Shear force and bending moment diagrams for statically determinate beams subjected to point load		
25	22/09/17	Shear force and bending moment diagrams for statically determinate beams subjected to uniformly distributed loads		
26	22/09/17	Shear force and bending moment diagrams for beams subjected to uniformly varying loads		
27	28/09/17	Shear force and bending moment diagrams for		

		statically determinate beams subjected to couple and their combinations.		
28	28/09/17	problems		
29	06/10/17	problems		
30	06/10/17	problems		
		Module 4: Bending and shear stresses in beams		
31	12/10/17	Introduction, pure bending theory, Assumptions, derivation of bending equation		
32	12/10/17	modulus of rupture, section modulus, flexural rigidity, Problems		
33	13/10/17	Expression for transverse shear stress in beams,		
34	13/10/17	Bending and shear stress distribution diagrams for circular, rectangular sections		
35	19/10/17	Bending and shear stress distribution diagrams for circular, rectangular, Problems		
36	19/10/17	Bending and shear stress distribution diagrams for 'I', and 'T' sections Problems Shear centre(only concept)		
37	26/10/17	**Columns and Struts:** Introduction, short and long columns. Euler's theory		
38	26/10/17	Assumptions, Derivation for Euler's Buckling load for different end conditions, Limitations of Euler's theory.		
39	02/11/17	Rankine-Gordon's formula for columns.		
40	02/11/17	Rankine-Gordon's formula for columns, problems		
		Module 5: Torsion in Circular Shafts		
41	03/11/17	Introduction, pure torsion, Assumptions, derivation of torsion equation for circular shafts,		
42	03/11/17	Torsional rigidity and polar modulus Power transmitted by a shaft,		
43	09/11/17	combined bending and torsion		
44	09/11/17	combined bending and torsion		
45	10/11/17	problems		
46	10/11/17	problems		
47	23/11/17	problems		
48	23/11/17	**Theories of Failure:** Introduction, maximum principal stress theory (Rankine's theory), Maximum shearing stress theory (Tresca's theory)		
49	24/11/17	Strain energy theory (Beltrami and Haigh)		
50	24/11/17	maximum strain theory (St. Venant's theory)		

C. Nagaraja
Mr. C Nagaraja
Staff Incharge

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Dr H B Phaniraju
Principal

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Shridevi Institute of Engineering and Technology-Tumkur
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DEPARTMENT OF CIVIL ENGINEERING

Semester: ***V Sem***

Year: ***2017-18***

Subject Title: **Fluid Mechanics**	*Subject Code:* **15CV33**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr.M.A. Nagesh**	*Date of commencement of semester:* **07/08/2017**
Checked by: **Dr. M. A.Nagesh**	

Course objectives: This course will enable students to

1. The Fundamental properties of fluids and its applications.
2. Hydrostatic laws and application to practical problem solving
3. Principles of Kinematics and Hydro-Dynamics for practical applications
4. Basic design of pipes and pipe networks considering flow, pressure and its losses.
5. The basic flow rate measurements

Course outcomes: After studying this course, students will be able to:

1. Possess a sound ***knowledge*** of fundamental properties of fluids and fluid continuum
2. ***Compute*** and solve problems on hydrostatics, including practical applications
3. ***Apply*** principles of mathematics to represent kinematic concepts related to fluid flow
4. ***Apply*** fundamental laws of fluid mechanics and the Bernoulli's principle for practical applications
5. ***Compute*** the discharge through pipes and over notches and weirs

Program Objectives

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. P N Modi and S M Seth, "Hydraulics and Fluid Mechanics, including Hydraulic Machines", 20th edition, 2015, Standard Book House, New Delhi
2. R.K. Bansal, "A Text book of Fluid Mechanics and Hydraulic Machines", Laxmi Publications, New Delhi
3. S K SOM and G Biswas, "Introduction to Fluid Mechanics and Fluid Machines", Tata McGraw Hill,New Delhi

Reference Books:

1. P N Modi and S M Seth, "Hydraulics and Fluid Mechanics, including Hydraulic Machines", 20th edition, 2015, Standard Book House, New Delhi
2. R.K. Bansal, "A Text book of Fluid Mechanics and Hydraulic Machines", Laxmi Publications, New Delhi
3. S K SOM and G Biswas, "Introduction to Fluid Mechanics and Fluid Machines", Tata McGraw Hill,New Delhi

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SHRIDEVI EDUCATION

LECTURE PLAN

15CV33 – FLUID MECHANICS

Sl.No	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		MODULE- 1	
1	07-08-2017	**Fluids & Their Properties**: Concept of fluid, Systems of units.	
2	07-08-2017	Properties offluid; Mass density, Specific weight, Specific gravity, Specific volume	
3	08-08-2017	Viscosity, Cohesion, Adhesion, Surface tension& Capillarity. Fluid as a continuum, Newton's law of viscosity (theory &problems)	
4	08-08-2017	Capillary rise in a vertical tube and between two plane surfaces (theory & problems). vapor pressure of liquid, compressibility and bulk modulus	
5	14-08-2017	Capillarity, surface tension, pressure inside a water droplet, pressure inside a soap bubble and liquid jet. Numerical problems	L2,L3
6	14-08-2017	**Fluid Pressure and Its Measurements:**Definition of pressure, Pressure at a point,	
7	21-08-2017	Pascal's law, Variation of pressure with depth.	
8	21-08-2017	Types of pressure. Measurement of pressure using simple,	
9	22-08-2017	Differential & inclined manometers (theory & problems).	
10	22-08-2017	Introduction to Mechanical and electronic pressure measuring devices	
		MODULE- 2	
11	28-08-2017	**Hydrostatic forces on Surfaces** : Definition, Total pressure, centre of pressure	
12	28-08-2017	Totalpressure on horizontal, vertical and inclined plane surface,	L2,L4
13	29-08-2017	Total pressure on curved surfaces, water pressure on gravity dams, Lock gates. Numerical Problems	
14	29-08-2017	**Fundamentals of fluid flow (Kinematics):** Introduction. Methods of describing fluid motion.	

15	04-09-2017	Velocity and Total acceleration of a fluid particle.	
16	04-09-2017	Types of fluid flow, Description of flow pattern.	
17	05-09-2017	Basic principles of fluid flow, three-dimensional continuity equation in Cartesian coordinate system.	
18	05-09-2017	Derivation for Rotational and irroational motion. Potential function, stream function,	
19	11-09-2017	orthogonality of streamlines and equipotential lines. Numerical problems on Stream function and velocity potential.	
20	11-09-2017	Introduction to flow net.	
		MODULE-3	
21	12-09-2017	**Fluid Dynamics:** Introduction. Forces acting on fluid in motion.	
22	12-09-2017	Euler's equation of motion along a streamline and Bernoulli's equation	
23	25-09-2017	Assumptions and limitations of Bernoulli's equation.	
24	25-09-2017	Modified Bernoulli's equation	
25	26-09-2017	Problems on applications of Bernoulli's equation (with and without losses).	**L2,L4**
26	26-09-2017	Problems	
27	03-10-2017	Vortex motion; forced vortex, free vortex, problems	
28	03-10-2017	Momentum equation problems on pipe bends.	
29	09-10-2017	**Applications:** Introduction. Venturimeter, Orificemeter,	
30	09-10-2017	Pitot tube. Numerical Problems	
		MODULE-4	
31	10-10-2017	**Orifice and Mouthpiece:** Introduction, classification, flow through orifice,	
32	10-10-2017	hydraulic coefficients, Numerical problems.	**L1, l2,L4**
33	16-10-2017	Mouthpiece, classification, Borda's Mouthpiece (No problems).	
34	16-10-2017	**Notches and Weirs:** Introduction. Classification	
35	17-10-2017	Discharge over rectangular notches	

36	27-10-2017	Triangular, trapezoidal notches	
37	23-10-2017	Cippoletti notch, broad crested weirs	
38	23-10-2017	Numerical problems.	
39	24-10-2017	Ventilation of weirs, submerged weirs	
40	24-10-2017	Problems	
		MODULE-5 :	
41	30-10-2017	**Flow through Pipes:** Introduction. Major and minor losses in pipe flow.	
42	30-10-2017	Darcy-Weisbach equation for head loss due to friction in a pipe.	
43	31-10-2017	Pipes in series, pipes in parallel, equivalent pipe-problems	
44	31-10-2017	. Minor losses in pipe flow,	
45	07-11-2017	equation for head loss due to sudden expansion. Numerical problems.	**L2,L4**
46	07-11-2017	Hydraulic gradient line, energy gradient line. Pipe Networks,	
47	13-11-2017	Hardy Cross method, Numerical problems	
48	13-11-2017	**Surge Analysis in Pipes**: Water hammer in pipes,	
49	14-11-2017	equations for pressure rise due to gradual valve closure and sudden closure for rigid and elastic pipes.	
50	14-11-2017	Problems	

(Dr. M.A. Nagesh)
Staff in Charge

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HOD

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DEPARTMENT OF CIVIL ENGINEERING

Semester: III **Year:2017-18**

Subject Title: **Basic Surveying**	*Subject Code:* **15CV34**
Total contact Hours: 51	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Prakash J**	*Date: 07/08/17*
Checked by: **Dr. M.A. Nagesh**	

Course objectives:

This course will enable students to;

1. Understand the basic principles of Surveying
2. Learn Linear and Angular measurements to arrive at solutions to basic surveying problems.
3. Employ conventional surveying data capturing techniques and process the data for computations.
4. Analyze the obtained spatial data to compute areas and volumes and draw contours to represent 3D data on plane figures.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Posses a sound knowledge of fundamental principles Geodetics
2. Measurement of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
3. Capture geodetic data to process and perform analysis for survey problems
4. Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours.

Program Objectives (as per NBA)

- Engineering Knowledge.
- Problem Analysis.
- Interpretation of data.

Question paper pattern:

- The question paper will have **Ten** questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. B.C. Punmia, "Surveying Vol.1", Laxmi Publications pvt. Ltd., New Delhi – 2009.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part I, Pune Vidyarthi Griha Prakashan, 1988

Reference Books:

1. S.K. Duggal, "Surveying Vol.1", Tata McGraw Hill Publishing Co. Ltd. New Delhi. – 2009.
2. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi. – 2010
3. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi
4. A. Bannister, S. Raymond , R. Baker, "Surveying", Pearson, 7th ed., New Delhi

LECTURE PLAN

Sl. No	Date	Topics	Remarks
		Module -1: Introduction	
01	08/08/17	Definition of surveying, Objectives and importance of surveying	
02	08/08/17	Classification of surveys. Principles of surveying	
03	08/08/17	Units of measurements, Surveying measurements and errors, types of errors,	
04	09/08/17	precision and accuracy. Classification of maps, map scale	
05	16/08/17	conventional symbols, topographic maps, map layout, Survey of India Map numbering systems	
06	22/08/17	Measurement of Horizontal Distances: Measuring tape and types.	
07	22/08/17	Measurement using tapes, Taping on level ground and sloping ground.	
08	22/08/17	Errors and corrections in tape measurements, ranging of lines, direct and indirect methods of ranging	
09	23/08/17	Electronic distance measurement, basic principle. Booking of tape survey work, Field book, entries	
10	29/08/17	Conventional symbols, Obstacles in tape survey, Numerical problems.	
		Module -2:	
11	29/08/17	Measurement of Directions and Angles: Compass survey: Basic definitions, declination.,	
12	29/08/17	meridians, bearings, magnetic and True bearings.	
13	30/08/17	Prismatic and surveyor's compasses, temporary adjustments	
14	05/09/17	Quadrantal bearings, whole circle bearings	
15	05/09/17	local attraction and related problems	
16	05/09/17	Theodolite Survey and Instrument Adjustment: Theodolite and types	
17	06/09/17	Fundamental axes and parts of Transit theodolite	
18	12/09/17	uses of theodolite, Temporary adjustments of transit theodolite	
19	12/09/17	measurement of horizontal and vertical angles	
20	12/09/17	step by step procedure for obtaining permanent adjustment of Transit theodolite	
		Module -3	
21	13/09/17	Traversing: Traverse Survey and Computations:,	
22	26/09/17	Latitudes and departures	
23	26/09/17	rectangular coordinates	
24	26/09/17	Traverse adjustments	
25	27/09/17	Bowditch rule and transit rule,	
26	03/10/17	Numerical Problems	
27	03/10/17	Tacheometry: basic principle	
28	03/10/17	types of tacheometry	
29	04/10/17	distance equation for horizontal and inclined line of sight in fixed hair method	
30	10/10/17	problems	

		Module -4	
31	10/10/17	Leveling: Basic terms	
32	10/10/17	Definitions, Curvature and refraction corrections	
33	11/10/17	Differential leveling	
34	17/10/17	profile leveling, fly leveling	
35	17/10/17	check leveling.	
36	17/10/17	reciprocal leveling	
37	24/10/17	trigonometric leveling (heights and distances-single plane and double plane methods.	
38	24/10/17	Methods of leveling, Dumpy level, auto level	
39	24/10/17	digital and laser levels.	
40	25/10/17	Booking and reduction of levels	
		Module -5	
41	31/10/17	Areas and Volumes: Measurement of area by dividing the area into geometrical figures	
42	31/10/17	area from offsets, mid ordinate rule,	
43	31/10/17	trapezoidal and Simpson's one third rule,	
44	07/11/17	area from co-ordinates, introduction to planimeter	
45	07/11/17	digital planimeter.	
46	07/11/17	Measurement of volumes-trapezoidal and prismoidal formula	
47	08/11/17	Contouring Contours,	
48	14/11/17	Methods of contouring	
49	14/11/17	Interpolation of contours	
50	14/11/17	contour gradient	
51	15/11/17	characteristics of contours and uses	

(Mr. Prakash J)
Staff in Charge

(Dr. M A Nagesh)
H.O.D

(Dr H B Phani Raju)
Principal

Sri Shridevi Charitable Trust [R]

Shridevi Institute of Engineering and Technology

(Affiliated to Visvesvaraya Technological University and Approved by AICTE)

DEPARTMENT OF CIVIL ENGINEERING

Semester: V Year: 2017-18

Subject Title: **APPLIED ENGINEERING GEOLOGY**	*Subject Code:* **15 CV35**
Total contact Hours: **52**	*Duration of Exam*: **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Nagaraja C /VinuthanV.R**	*Date of commencement of semester :* **7/08/17**
Checked by: **Dr M A Nagesh**	

Learning Objectives:

1To understand the internal structure and composition of the earth.
2. To comprehend the properties, occurrence and uses of minerals in various industries.
3. To learn about geo-morphological agents such as river, wind, sea waves, and their implications in implementing civil engineering projects.
4. To gain knowledge about the structures of the rocks and their considerations in the selection of site for dams, tunnels, bridges and highways.
5. To learn the application of Topographic maps, remote sensing and GIS in Civil engineering practices and natural resource management.

LEaring Outcomes:

1.Students will able to apply the knowledge of geology and its role in Civil Engineering
2. Students will effectively utilize earth's materials such as mineral, rocks and water in civil engineering practices.
3. Analyze the natural disasters and their mitigation.
4. Assess various structural features and geologiçal tools in ground water exploration, Natural resource estimation and solving civil engineering problems.
5. Apply and asses use of building materials in construction and asses their properties

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations
2) **Text book \ Reference Books:**
   1. P.K. Mukerjee, "A Text Book of Geology", World Press Pvt., Ltd. Kolkatta.
   2. Parbin Singh, "Text Book of Engineering and General Geology", Published by S.K. Kataria and Sons, New Dehli

Scheme of Examination:

Two full questions to be set from each unit. The students shall answer five full questions selecting one full question from each module.If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV35- Applied Engineering Geology

Sl No	Date	Topics	Topics Covered	Remarks
		Module -1 Introduction:		
1	09/08/17	Application of Earth Science in Civil Engineering Practices, Understanding the earth, internal structure and composition.		
2	09/08/17	Mineral properties, composition and their use in the manufacture of construction materials		
3	11/08/17	Mineral properties, composition and their use in the manufacture of construction materials		
4	11/08/17	Quartz Group (Glass); Feldspar Group (Ceramic wares and Flooring tiles); Kaolin (Paper, paint and textile);Asbestos (AC sheets);		
5	16/08/17	Quartz Group (Glass); Feldspar Group (Ceramic wares and Flooring tiles); Kaolin (Paper, paint and textile);Asbestos (AC sheets);		
6	16/08/17	Quartz Group (Glass); Feldspar Group (Ceramic wares and Flooring tiles); Kaolin (Paper, paint and textile);Asbestos (AC sheets);		
7	18/08/17	Carbonate Group (Cement) ;Gypsum (POP, gypsum sheets, cement); Mica Group(Electrical industries)		
8	18/08/17	Carbonate Group (Cement) ;Gypsum (POP, gypsum sheets, cement); Mica Group(Electrical industries)		
9	23/08/17	Ore minerals - Iron ores(Steel); Chromite (Alloy); Bauxite (aluminum);Chalcopyrite (copper)		
10	23/08/17	Ore minerals - Iron ores(Steel); Chromite (Alloy); Bauxite (aluminum);Chalcopyrite (copper)		
		Module -2 Petrology		
11	30/08/17	Formation, Classification and Engineering Properties.		
12	30/08/17	Rock as construction material, concrete aggregate, railway ballast, roofing, flooring, cladding and foundation		
13	1/09/17	Deformation of rocks, Development of Joints, Folds, Faults and Unconformities		
14	1/09/17	Rock Quality Determination (RQD), Rock Structure Rating (RSR),:		
15	6/09/17	Rock Quality Determination (RQD), Rock Structure Rating (RSR),:		
16	6/09/17	Igneous Rocks - Granite, Gabbro, Dolerite, Basalt;		
17	8/09/17	Sedimentary rocks - Sandstone, Shale, Limestone,Laterite;		
18	8/09/17	Metamorphic rocks - Gneiss, Quartzite, late, Charnockite: Decorative stones - Porphyries,Marble and Quartzite.		
19	13/09/17	Metamorphic rocks - Gneiss, Quartzite, late, Charnockite: Decorative stones - Porphyries, Marble and Quartzite.		
20	13/09/17	Metamorphic rocks - Gneiss, Quartzite, late, Charnockite: Decorative stones - Porphyries, Marble and Quartzite.		

		Module -3 Geomorphology and Seismology:		
21	15/09/17	Landforms – Classification, Rock weathering, type sand its effects on Civil Engineering Projects		
22	15/09/17	Landforms – Classification, Rock weathering, type sand its effects on Civil Engineering Projects		
23	22/09/17	Study of Geo-morphological aspects in the selection of sites for Dams, Reservoirs, Tunnels, Highways and Bridges.		
24	22/09/17	Watershed management, Floods and their control, River valley, Drainage pattern – parameters and development; Coastlines and their engineering considerations.		
25	22/09/17	Earthquake - Causes and Effects		
26	22/09/17	Seismic waves, Engineering problems related to Earthquakes		
27	27/9/17	Earthquake intensity, Richter Scale, Seismograph		
28	27/9/17	Seismic zones- World and India, Tsunami – causes and effects. Early warning system.		
29	4/10/17	Seismic zones- World and India, Tsunami – causes and effects. Early warning system.		
30	4/10/17	Reservoir Induced Seismicity; Landslides – causes and their control.		
31	6/10/17	Reservoir Induced Seismicity; Landslides – causes and their control.		
32	6/10/17	Reservoir Induced Seismicity; Landslides – causes and their control.		
		Module 4: Hydrogeology		
33	11/10/17	Hydrological cycle, Occurrence of Groundwater indifferent terrains - Weathered, Hard and Stratified rocks;		
34	11/10/17	Hydrological cycle, Occurrence of Groundwater indifferent terrains - Weathered, Hard and Stratified rocks;		
35	13/10/17	Determination of Quality aspects - SAR, RSC and TH of Groundwater. Groundwater Pollution, Groundwater Exploration- Electrical Resistivity and Seismic methods		
36	13/10/17	Determination of Quality aspects - SAR, RSC and TH of Groundwater. Groundwater Pollution, Groundwater Exploration- Electrical Resistivity and Seismic methods		
37	13/10/17	Resistivity curves, Water Bearing Formations, Aquifer types and parameters -Porosity, Specific yield and retention, Permeability, Transmissibility and Storage Coefficient		
38	13/10/17	Resistivity curves, Water Bearing Formations, Aquifer types and parameters -Porosity, Specific yield and retention, Permeability, Transmissibility and Storage Coefficient		
39	25/10/17	Springs and Artesian Wells, Artificial Recharging of Groundwater,Sea water intrusion and remedies.		
40	25/10/17	Springs and Artesian Wells, Artificial Recharging of Groundwater,Sea water intrusion and remedies.		
41	3/11/17	Springs and Artesian Wells, Artificial Recharging of Groundwater,Sea water intrusion and remedies.		

		Module -5: Geodesy		
42	3/11/17	Study of Topographic maps and Contour maps;		
43	3/11/17	Remote Sensing – Concept, Application and its Limitations;		
44	3/11/17	Remote Sensing – Concept, Application and its Limitations;		
45	4/11/17	Geographic Information System (GIS)		
46	4/11/17	Global Positioning System (GPS) – Concept and their use resource mapping.		
47	8/11/17	LANDSAT Imagery –Definition and its use.		
48	8/11/17	LANDSAT Imagery –Definition and its use.		
49	10/11/17	Impact of Mining, Quarrying and Reservoirs on Environment		
50	10/11/17	Impact of Mining, Quarrying and Reservoirs on Environment		
51	15//11/17	Natural Disasters and their mitigation.		
52	15/11/17	Natural Disasters and their mitigation.		

Mr. Vinuthan V R
Course Instructor

Dr. M A Nagesh
HOD

for **Dr H B Phani Raju**
Principal

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING
[As per Choice Based Credit System (CBCS) scheme]

Semester: IIISem ***Year: 2017-18***

Subject Title: **Building Materials and Construction**	*Subject Code:* **15CV36**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **07/08/2017**
Checked by: **Dr. M. A.Nagesh**	

Course objectives:
This course will develop a student;
1. In recognizing the good materials to be used for the construction work
2.In investigation of soil condition, Deciding and design of suitablefoundation for different structures
3.In supervision of different types of masonry
4.In selection of materials, design and supervision of suitable type of floorand roof.
5. To gain knowledge about doors, windows, plastering, painting, dampproofing, scaffolding, shoring, underpinning and to take suitableengineering measures.

Course outcomes:
After a successful completion of the course, the student will be able to:
1. Select suitable materials for buildings and adopt suitable constructiontechniques.
2. Adopt suitable repair and maintenance work to enhance durability ofbuildings.

Program Objectives (as per NBA)
o Engineering Knowledge.
o Problem Analysis.
o Interpretation of data.

Question paper pattern:
- The question paper will have Ten questions, each full question carrying 16marks.
- There will be two full questions (with a maximum Three sub divisions, ifnecessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question fromeach module.
- If more than one question is answered in modules, best answer will beconsidered for the award of marks limiting one full question answer in eachmodule.

Text Books:

1. Sushil Kumar "Building Materials and construction", 20th edition, reprint, 2015, Standard Publishers
2. Dr. B.C.Punmia, Ashok kumar Jain, Arun Kumar Jain, "BuildingConstruction, Laxmi Publications (P) ltd., New Delhi.
3.Rangawala S. C. "Engineering Materials", Charter Publishing House, Anand, India.

Reference Books:

1.S.K.Duggal, "Building Materials", (Fourth Edition)New Age International (P)Limited, 2016
2. National Building Code(NBC) of India
3. P C Vergese, "Buliding Materials", PHI Learning Pvt. Ltd
4. Building Materials and Components, CBRI, 1990, India
5.Jagadish K.S, "Alternative Building Materials Technology", New AgeInternational, 2007.
6. M. S. Shetty, "Concrete Technology", S. Chand & Co. New Delhi.

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LECTURE PLAN

15CV36 – Building Materials and Construction
[As per Choice Based Credit System (CBCS) scheme]

Sl.No	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1BUILDING MATERIALS	
1	10-08-2017	Stone as building material; Requirement of good building stones	
2	10-08-2017	Dressing of stones, Deteriorationand Preservation of stone work.	
3	12-08-2017	Bricks; Classification, Manufacturing of claybricks,	
4	12-08-2017	Requirement of good bricks. Field andlaboratory tests on bricks; Compressive strength,water absorption, efflorescence, dimension andwarpage.	
5	17-08-2017	Cement Concrete blocks, Stabilized Mud Blocks,Sizes, requirement of good blocks.Mortar: typesand requirements. Timber as constructionmaterial	L1,L2
6	17-08-2017	Fine aggregate: Natural and manufactured: Sieve analysis, zoning, specify gravity,	
7	19-08-2017	Bulking,moisture content, deleterious materials.	
8	19-08-2017	Coarse aggregate: Natural and manufactured: Importance of size, shape and texture. Grading of aggregates,	
9	24-08-2017	Sieve analysis, specific gravity,Flakiness and elongation index,	
10	24-08-2017	Crushing, impactand abrasion tests.	
		MODULE- 2 FOUNDATION ANDMASONRY	
11	26-08-2017	Foundation:Preliminary investigation of soil, safe bearing capacity of soil	
12	26-08-2017	Function and requirements ofgood foundation	
13	31-08-2017	Types of foundation ,introduction to spread, combined , strap, mat andpile foundation	
14	31-08-2017	Masonry:Definition and terms used in masonry. Brick masonry, characteristics and requirements of good brick masonry,	
15	07-09-2017	Bonds in brick work, Header,Stretcher,	
16	07-09-2017	English, Flemish bond,	L1,L2
17	09-09-2017	Stone masonry, Requirements of good stone masonry, Classification,	
18	09-09-2017	Characteristics of different stone masonry	
19	14-09-2017	Joints in stone masonry.	
20	14-09-2017	Types of walls; load bearing, partition walls, cavitywalls	

		MODULE-3 LINTELS, ARCHES, FLOORS AND ROOFS	
21	21-09-2017	Lintels and Arches:Definition, function and classification of lintels,	
22	21-09-2017	Balconies, chejja and canopy. Arches; Elementsand Stability of an Arch.	
23	23-09-2017	Floors:Requirement of good floor, Components of ground floor,	
24	23-09-2017	Selection of flooring material, Layingof Concrete, Mosaic, MarbleFlooring,	**L3**
25	28-09-2017	Granite, Tile flooring,Cladding of tiles.	
26	28-09-2017	Roof;-Requirement of good roof, Types of roof,	
27	07-10-2017	Elements of a pitched roof, Trussed roof,	
28	07-10-2017	Kingpost Truss, Queen Post Truss, Steel Truss,	
29	12-10-2017	Different roofing materials,	
30	12-10-2017	R.C.C.Roof.	
		MODULE-4 DOORS, WINDOWS, STAIRS, FORMWORK	
31	14-10-2017	Doors, Windows and Ventilators: Location of doors and windows, technical terms,	
32	14-10-2017	Materials for doors and windows, Paneled&Flush door,	
33	19-10-2017	Collapsible door, Rolling shutter, PVCDoor, Paneled and glazed Window,	
34	19-10-2017	Bay Window,French window. Ventilators. Sizes as per IS recommendations	**L2 L3 L5**
35	21-10-2017	Stairs: Definitions, technical terms and types ofstairs,	
36	21-10-2017	Requirements of good stairs.	
37	26-10-2017	Geometrical design of RCC doglegged	
38	26-10-2017	Open-well stairs.	
39	02-11-2017	Formwork: Introduction to form work,scaffolding,	
40	02-11-2017	Shoring, under pinning	
		MODULE-5 PLASTERING DAMP PROOFING AND PAINTING	
41	04-11-2017	Plastering and Pointing : purpose, materials and methods of plastering and pointing,	
42	04-11-2017	Defects inplastering-Stucco plastering, lathe plastering	
43	09-11-2017	Damp proofing- causes,	
44	09-11-2017	Effects and methods.	**L4,L5**
45	11-11-2017	Paints- Purpose, types,	
46	11-11-2017	Ingredients and defects	
47	25-11-2017	Preparation and applications of paints to new	
48	25-11-2017	Old plastered surfaces, wooden and steel surfaces.	

(Dr.G. Mahesh Kumar)
Staff in Charge

(Dr. M.A. Nagesh)
HOD Head
Dept of Civil Engineering
S.I.E.T TUMKUR

Principal

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Shridevi Institute of Engineering and Technology-Tumkur
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DEPARTMENT OF CIVIL ENGINEERING

Semester: III [As per Choice Based Credit System (CBCS) scheme] **Year: 2018-19**

Subject Title: **MATERIAL TESTING LABORATORY**	*Subject Code:***15CVL37**
Total contact Hours: **14**	*Duration of Exam*: **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Ms Bhavya C H**	*Date:* **07/08/17**
Checked by: **Dr. M A Nagesh**	*Credits:* **2**

Course objectives:

The objectives of this course is to make students to learn:

1. Ability to apply knowledge of mathematics and engineering in calculating the mechanical properties of structural materials.
2. Ability to function on multi-disciplinary teams in the area of materials testing.
3. Ability to use the techniques, skills and modern engineering tools necessary for engineering.
4. Understanding of professional and ethical responsibility in the areas of material testing.
5. 5. Ability to communicate effectively the mechanical properties of materials.

Course outcomes:

After successful completion of the course, the students will be able to:

1. Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.
2. Identify, formulate and solve engineering problems of structural elements subjected to flexure.
3. Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials.

SlNo	Date	Topics	Remarks
		Batch 1	
1	08/08/17	Introduction	
2	16/08/17	Tension test on Mild steel and HYSD bars.	
3	23/08/17	Compression test of Mild Steel, Cast iron and Wood.	
4	30/08/17	Torsion test on Mild Steel circular sections	
5	06/09/17	Bending Test on Wood Under two point loading	
6	13/09/17	Shear Test on Mild steel- single and double shear	
7	27/09/17	Impact test on Mild Steel (Charpy & Izod)	
8	04/10/17	Hardness tests on ferrous and non-ferrous metals – Brinell's, Rockwell and Vicker's	
9	11/10/17	Tests on Bricks and Tiles	
10	25/10/17	Tests on Fine aggregates – Moisture content, Specific gravity, Bulk density, Sieve analysis and Bulking	
11	08/11/17	Tests on Coarse aggregates – Absorption, Moisture content, specific gravity, Bulk density and Sieve analysis	
12	15/11/17	Demonstration of Strain gauges and Strain Indicators and Revision	
13	22/11/17	Revision	
14	22/11/17	Internals	

NOTE: All tests to be carried out as per relevant BIS Codes

Program Objectives (as per NBA)

1. Engineering Knowledge.
2. Evaluation of mechanical properties of structural materials.
3. Interpretation of test results.

Question paper pattern:

- Group experiments - Tension test, compression test, torsion test and bending test.
- Individual Experiments - Remaining tests.
- Two questions are to be set - One from group experiments and the other as individual experiment.

Reference Books:

1. Davis, Troxell and Hawk, "Testing of Engineering Materials", International Student Edition – McGraw Hill Book Co. New Delhi.
2. M L Gambhir and Neha Jamwal, "Building and construction materials-Testing and quality control", McGraw Hill education(India)Pvt. Ltd., 2014
3. Fenner, " Mechanical Testing of Materials", George Newnes Ltd. London.
4. Holes K A, "Experimental Strength of Materials", English Universities Press Ltd. London.

Bhavya C H
Staff-incharge

Dr. M A Nagesh
HOD

Dr. H B Phani Raju
Principal

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SIET, TUMAKURU.

SHRIDEVI

SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY, TUMKUR-06

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DEPARTMENT OF MATHEMATICS

Academic Year 2017-18(Even semester)

LECTURE PLAN

Cover Page: **Subject Overview** Branch: **ME + Civil**

Semester: **IV Semester** Year: **2017-18**

Subject Title: **ENGINEERING MATHEMATICS-IV**	Subject Code: **15MAT41**
Total contact Hours: 67	Duration of Exam: 03 Hrs.
Total exam marks: 100	Total I.A. marks: 20
Lesson plan author: **Mrs NUTHANA D**	Date: **01/02/2018**
Checked by: **Mrs. CHETANA C**	Date: **01/02/2018**

➢ **Course Objectives**:

The purpose of this course is to make students well conversant with numerical methods to solve ordinary differential equations, complex analysis, sampling theory and joint probability distribution and stochastic processes arising in science and engineering.

SL No	Date	TOPICS	REMARKS
		MODULE-I: NUMERICAL METHODS	
1	01/2/2018	Numerical solution of ordinary differential equations of first order and first degree	
2	03/2/2018	Taylor's series method & problems	
3	05/2/2018	Problems continued	
4	06/2/2018	Modified Euler's method & problems	
5	07/2/2018	Problems continued	
6	08/2/2018	Runge-kutta method of fourth order & problems	
7	10/2/2018	Problems continued	
8	12/2/2018	Milne's predictor and corrector method & problems	
9	14/2/2018	Problems continued	
10	15/2/2018	Adam's-Bashforth predictor and corrector method & problems	
11	17/2/2018	Problems continued	
12	19/2/2018	Revision	
		MODULE-II: NUMERICAL METHODS & SPECIAL FUNCTIONS	
13	20/2/2018	**Numerical Methods:** Numerical solution of second order ordinary differential equations	
14	21/2/2018	Runge-kutta method	
15	22/2/2018	Problems continued	
16	24/2/2018	Milne's method	
17	26/2/2018	Problems continued	
18	27/2/2018	**Special Functions:** Series solution-Frobenious method	
19	28/2/2018	Series solution of Bessel's differential equation leading to $J_n(x)$-Bessel's function of first kind	

20	01/3/2018	Basic properties	
21	03/3/2018	Recurrence relations	
22	05/3/2018	Orthogonality	
23	06/3/2018	Problems continued	
24	07/3/2018	Series solution of Legendre's differential equation leading to $P_n(x)$-Legendre polynomials	
25	08/3/2018	Rodrigue's formula and problems	
26	13/3/2018	Problems continued and Revision	
MODULE-III: COMPLEX VARIABLES & TRANSFORMATIONS			
27	14/3/2018	Complex Variables: Review of a function of a complex variable	
28	15/3/2018	Limits, continuity, differentiability, Analytic functions	
29	17/3/2018	Cauchy-Riemann equations in Cartesian form & Polar form	
30	19/3/2018	Properties and construction of analytic functions	
31	20/3/2018	Complex line integrals	
32	21/3/2018	Cauchy's theorem	
33	22/3/2018	Cauchy's integral formula	
34	24/3/2018	Residues and Poles	
35	26/3/2018	Cauchy's Residue theorem and problems	
36	27/3/2018	Transformations: Conformal transformations	
37	28/3/2018	Discussion of $w = z^2$	
38	31/3/2018	Discussion of $w = e^z, w = z + 1/z \ (z \neq 0)$	
39	02/4/2018	Bilinear transformations and problems	
40	03/4/2018	Revision	
MODULE-IV: PROBABILITY DISTRIBUTIONS & JOINT PROBABILITY DISTRIBUTION			
41	04/4/2018	Probability Distributions: Random variable	
42	05/4/2018	Discrete and continuous	
43	07/4/2018	Probability mass/density functions	
44	09/4/2018	Problems continued	
45	10/4/2018	Binomial distribution	
46	11/4/2018	Poisson distribution	
47	12/4/2018	Exponential distribution	
48	19/4/2018	Normal distribution and problems	
49	21/4/2018	Problems continued	
50	23/4/2018	Joint probability distribution: Joint Probability distribution for two discrete random variables	
51	24/4/2018	Expectation and covariance	
52	25/4/2018	Correlation coefficient	
53	26/4/2018	Problems continued & Revision	
MODULE-V: SAMPLING THEORY & STOCHASTIC PROCESS			
54	30/4/2018	Sampling Theory: Sampling and Sampling distributions	
55	02/5/2018	Standard error	
56	03/5/2018	Test of hypothesis for means and proportions	

57	05/5/2018	Confidence limits for means	
58	07/5/2018	Student's t-distribution	
59	08/5/2018	Chi-square distribution as a test of goodness of fit	
60	09/5/2018	Stochastic process: Stochastic processes	
61	10/5/2018	Probability vector and Stochastic matrices	
62	12/5/2018	Fixed points and Regular stochastic matrices	
63	17/5/2018	Problems continued	
64	19/5/2018	Markov chains	
65	21/5/2018	Higher transition probability-simple problems	
66	22/5/2018	Problems continued	
67	23/5/2018	Revision	

Course outcomes: On completion of this course, students are able to:

- Use appropriate single step and multi-step numerical methods to solve first and second order ordinary differential equations arising in flow data design problems.
- Explain the idea of analyticity, potential fields residues and poles of complex potentials in field theory and electromagnetic theory.
- Employ Bessel's functions and Legendre's polynomials for tackling problems arising in continuum mechanics, hydrodynamics and heat conduction.
- Describe random variables and probability distributions using rigorous statistical methods to analyze problems associated with optimization of circuits, information, coding theory and stability analysis of systems.
- Apply the knowledge of joint probability distributions and Markov chains in attempting engineering problems for feasible random events.

Reference Books: 1. Higher Engineering Mathematics by B.S.Grewal

2. Advanced Engineering Mathematics by E.Kreszig
3. Higher Engineering Mathematics by B.V.Ramana
4. Engineering Mathematics by N.P.Bali & Manish Goyal
5. Higher Engineering Mathematics by H.K.Dass & Er.Rajnish Verma
6. Engineering Mathematics-IV by Dr. K.S.C
7. Engineering Mathematics-IV by Dr. D.S.C

Nuthana D
(Mrs. NUTHANA D)
Staff in charge

Chetana.C
(Mrs. CHETHANA.C)
HOD

(Dr. H B PHANIRAJU)
PRINCIPAL

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Semester: IV **Year: 2017-18**

Subject Title : **Analysis of Determinate structures**	*Subject Code:* **15CV42**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date: 05/02/18*
Checked by: **Dr. M A Nagesh**	*Date: 05/02/18*

Learning Objectives:

1. Apply knowledge of mathematics and engineering in calculating slope and deflections
2. Identify, formulate and solve engineering problems
3. Analyze structural systems and interpret data
4. Engage in lifelong learning with the advances in Structural Engineering

.Learning Outcomes:

1.Evaluate the forces in determinate trusses by method of joints and sections.
2. Evaluate the deflection of cantilever, simply supported and overhanging beams by different Methods
3. Understand the energy principles and energy theorems and its applications to determine the deflections of trusses and bent frames.
4. Determine the stress resultants in arches and cables.
5. Understand the concept of influence lines and construct the ILD diagram for the moving Loads

.Materials and resources required:

1.Reddy C S, Basic Structural Analysis, Tata McGraw Hill, New Delhi.
2. Muthu K U. etal, Basic Structural Analysis, 2nd edition, IK International Pvt. Ltd., New Delhi,2015.
3. Bhavikatti, Structural Analysis, Vikas Publishing House Pvt. Ltd, New Delhi, 2002.

Scheme of Examination

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV42- Analysis of determinate Structures

Sl No	Date	Topics	Topics Covered	Remarks
		MODULE-1		
		Introduction and Analysis of Plane Trusses		
1	05/02/18	Structural forms, Conditions of equilibrium, Compatibility conditions.		
2	05/02/18	Structural forms, Conditions of equilibrium, Compatibility conditions		
3	08/02/18	Degree of freedom, Linear and non linear analysis		
4	08/02/18	Degree of freedom, Linear and non linear analysis		
5	10/02/18	Static and kinematic indeterminacies		
6	12/02/18	Static and kinematic indeterminacies		
7	12/02/18	Types of trusses, Assumptions in analysis		
8	15/02/18	Analysis of determinate trusses by method of joints and method of sections.		
9	15/02/18	Analysis of determinate trusses by method of joints and method of sections.		
10	19/02/18	Analysis of determinate trusses by method of joints and method of sections.		
		MODULE-2		
		Deflection of Beams		
11	19/02/18	Definition of slope, Deflection and curvature, Sign conventions		
12	22/02/18	Derivation of moment-curvature equation		
13	22/02/18	Double integration method and Macaulay's method		
14	24/02/18	Slope and deflection for standard loading cases		
15	26/02/18	Slope and deflection for standard loading cases		
16	26/02/18	Slope and deflection for standard loading cases		
17	01/03/18	Moment area method: Derivation, Mohr's theorems, Sign conventions		
18	01/03/18	Application of moment area method for determinate prismatic beams, Beams of varying section		
19	03/03/18	Conjugate beam method: Real beam and conjugate beam, conjugate beam theorems		
20	5/03/18	Application of conjugate beam method of determinate beams of variable cross sections.		
		MODULE 3		
		Energy Principles and Energy Theorems		
21	5/03/18	Principle of virtual displacements, Principle of virtual forces, Strain energy and complimentary energy		
22	8/03/18	Strain energy due to axial force, bending, shear and torsion		
23	8/03/18	Deflection of determinate beams and trusses using total strain energy		
24	15/03/18	Deflection of determinate beams and trusses using total strain energy		

25	15/03/18	Deflection at the point of application of single load		
26	17/03/18	Deflection at the point of application of single load		
27	19/03/18	Castigliano's theorems and its applications		
28	19/03/18	Castigliano's theorems and its applications		
29	22/03/18	Special applications-Dummy unit load method		
30	22/03/18	Special applications-Dummy unit load method		
		MODULE-4		
		Arches and Cable Structures		
31	24/03/18	Three hinged parabolic arches with supports at the same and different levels		
32	26/03/18	Three hinged parabolic arches with supports at the same and different levels		
33	26/03/18	Three hinged parabolic arches with supports at the same and different levels		
34	31/03/18	Determination of normal thrust, radial shear and bending moment		
35	2/04/18	Determination of normal thrust, radial shear and bending moment		
36	2/04/18	Determination of normal thrust, radial shear and bending moment		
37	5/04/18	Analysis of cables under point loads		
38	5/04/18	Analysis of cables under point loads		
39	7/04/18	Analysis of cables under UDL		
40	9/04/18	Analysis of cables under UDL		
41	9/04/18	UDL. Length of cables for supports at same and at different level		
42	12/04/18	UDL. Length of cables for supports at same and at different level		
43	12/04/18	Stiffening trusses for suspension cables		
44	19/04/18	Stiffening trusses for suspension cables		
		MODULE 5		
		Influence Lines and Moving Loads		
45	19/04/18	Concepts of influence lines-ILD for reactions		
46	21/04/18	Concepts of influence lines-ILD for reactions		
47	23/04/18	Concepts of influence lines-ILD for reactions		
48	23/04/18	Concepts of influence lines-ILD for reactions		
49	26/04/18	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
50	26/04/18	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
51	30/04/18	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
52	30/04/18	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
53	3/05/18	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
54	3/05/18	BM and SF in determinate beams using rolling loads concepts.		
55	5/05/18	BM and SF in determinate beams using rolling loads concepts.		
56	10/05/18	BM and SF in determinate beams using rolling loads concepts.		

57	10/05/18	BM and SF in determinate beams using rolling loads concepts.		
58	12/05/18	BM and SF in determinate beams using rolling loads concepts.		

Mr. Vinuthan V R
Course Instructor

Dr. M A Nagesh
HOD

Dr H B Phani Raju
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: IV **Year: 2017-18**

Subject Title: **Applied Hydraulics**	*Subject Code:* **15CV43**
Total contact Hours Planned: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr. M.A. Nagesh**	*Date of commencement of semester:* **5/02/18**
Checked by: **Dr M A Nagesh**	

Course Objectives:

The objectives of this course are to make students to learn:

1. Principles of dimensional analysis to design hydraulic models and Design of various models.
2. Design the open channels of various cross sections including design of economical sections.
3. Energy concepts of fluid in open channel, Energy dissipation, Water surface profiles at different conditions.

The working principles of the hydraulic machines for the given data and analyzing the performance of Turbines for various design data.

Course Outcomes:

After a successful completion of the course, the student will be able to:

1. Apply dimensional analysis to develop mathematical modeling and compute the parametric values In prototype by analyzing the corresponding model parameters
2. Design the open channels of various cross sections including economical channel sections.
3. Apply Energy concepts to flow in open channel sections, Calculate Energy dissipation, Compute water surface profiles at different conditions.

Design turbines for the given data, and to know their operation characteristics under different operating conditions

Program Objectives

PO1: Engineering Knowledge
PO2: Problem analysis
PO3: Analyze and development of Solutions

Question Paper Pattern:

- Total number of Questions to be set is10. Two full questions are to be set from each module.
- Not more than 3 sub questions are to be set under any main question.
- Questions are to be set such that the entire module is covered and further should be answerable for the set marks.
- Each question should be set for16marks.

Students should answer 5 full questions selecting at least 1 from each module.

Text Books:

1. PN Modi and SM Seth,"Hydraulics and Fluid Mechanics, including Hydraulic Machines", 20th edition, 2015, Standard Book House, NewDelhi
2. R.K. Bansal, "A Text book of Fluid Mechanics and Hydraulic Machines" Laxmi Publications, New Delhi
3. SK SOM and G Biswas, "Introduction to Fluid Mechanics and Fluid Machines", Tata McGrawHill, NewDelhi.

Reference Books:

1. K Subramanya, "Fluid Mechanics and Hydraulic Machines", Tata McGraw Hill Publishing Co. Ltd.
2. Mohd. Kaleem Khan, "Fluid Mechanics and Machinery", Oxford University Press
3. C.S.P.Ojha, R.Berndtsson, and P.N.Chandramouli, *"Fluid Mechanics and Machinery"*, Oxford University Publication–2010
4. J.B.Evett, and C.Liu, *"Fluid Mechanicsand Hydraulics"*, McGraw-Hill Book Company - 2009.

Materials and resources required:

Presentation: Black board, Teaching charts, Models. / OHP/ LCD presentations

Evaluation:

Student Assessment: Through Internal Assessment Tests and assignment(15+5=20 Marks),

University Examinations (80 Marks)

LESSON PLA N

SL NO	Date	Topics	Topics Covered	Remarks
		Unit 1: Dimensional Analysis And Model Studies		
1	7/2/2018	Introduction, systems of units, Dimensional Homogeneity of an equation		
2	7/2/2018	Analysis- Raleigh's method and problems		
3	9/2/2018	Buckingham's ∏ theorem, Problems on above method		
4	9/2/2018	Model Studies and Similitude		
5	14/2/2018	Non dimensional numbers- Froude Models		
6	14/2/2018	Undistorted and Distorted Models		
7	16/2/2018	Reynolds's Models - Problems		
8	16/2/2018	**Buoyancy and Flotation:** Buoyancy, Force and Centre of Buoyancy, Metacentre and Metacentric height		
9	21/2/2018	Stability of submerged and floating bodies, Determination of Metacentric height		
10	21/2/2018	Experimental and theoretical method, Numerical problems		
		Module 2 : Open Channel Flow Hydraulics		
11	23/2/2018	Uniform Flow: Classification of flow through channels		
12	23/2/2018	Triangular , Trapezoidal channel and problems		
13	28/2/2018	Circular channel and problems		
14	28/2/2018	Chezy's equation, Manning's equation and problems		
15	2/3/2018	Most economical open channels- Rectangular		
16	2/3/2018	Triangular, Trapezoidal and Circular channels problems		
17	7/3/2018	Introduction, Specific Energy, Specific Energy Diagram		
18	7/3/2018	Critical Depth, conditions for Critical Flow Metering flumes,		
19	14/3/2018	Problems		
20	14/3/2018	problems		
		Module 3: Non uniform flow		
21	16/3/2018	Non-uniform flow in an open channel		
22	16/3/2018	Hydraulic jump		
23	21/3/2018	Expression for conjugate depth		
24	21/3/2018	Energy loss and problems		
25	23/3/2018	Gradually varied flow equation		
26	23/3/2018	Back water curve, afflux		
27	28/3/2018	Description of water curve profiles- Mild, steep, critical		
28	28/3/2018	Horizontal and adverse slope profiles		
29	4/4/2018	Numerical problems		

Question Paper Pattern:

- Total number of Questions to be set is10. Two full questions are to be set from each module.
- Not more than 3 sub questions are to be set under any main question.
- Questions are to be set such that the entire module is covered and further should be answerable for the set marks.
- Each question should be set for16marks.

Students should answer 5 full questions selecting at least 1 from each module.

Text Books:

1. PN Modi and SM Seth,"Hydraulics and Fluid Mechanics, including Hydraulic Machines", 20th edition, 2015, Standard Book House, NewDelhi
2. R.K. Bansal, "A Text book of Fluid Mechanics and Hydraulic Machines" Laxmi Publications, New Delhi
3. SK SOM and G Biswas, "Introduction to Fluid Mechanics and Fluid Machines", Tata McGrawHill, NewDelhi.

Reference Books:

1. K Subramanya, "Fluid Mechanics and Hydraulic Machines", Tata McGraw Hill Publishing Co. Ltd.
2. Mohd. Kaleem Khan, "Fluid Mechanics and Machinery", Oxford University Press
3. C.S.P.Ojha, R.Berndtsson, and P.N.Chandramouli, *"Fluid Mechanics and Machinery"*, Oxford University Publication–2010
4. J.B.Evett, and C.Liu, *"Fluid Mechanicsand Hydraulics"*, McGraw-Hill Book Company - 2009.

Materials and resources required:

Presentation: Black board, Teaching charts, Models. / OHP/ LCD presentations

Evaluation:

Student Assessment: Through Internal Assessment Tests and assignment(15+5=20 Marks),

University Examinations (80 Marks)

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DEPARTMENT OF CIVIL ENGINEERING

Semester: 1V **Year: 2017-18**

Subject Title: **Concrete Technology**	*Subject Code:* **15CV44**
Total contact Hours: **64**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Ms. Bhavya C H**	*Date: 05/02/2018*
Checked by: **Dr. M A Nagesh**	*Date: 05/02/2018*

Learning Objectives:

1. Relate material characteristics and their influence on microstructure of concrete.
2. Distinguish concrete behaviour based on its fresh and hardened properties.
3. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.

Learning Outcomes:

Course Outcomes: After studying this course, students will be able to: Relate material characteristics and their influence on microstructure of concrete. Distinguish concrete behaviour based on its fresh and hardened properties. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.

Reference Books

1. M L Gambir, "Concrete Technology", McGraw Hill Education, 2014.
2. N. V. Nayak, A. K. Jain Handbook on Advanced Concrete Technology
3. Job Thomas, "Concrete Technology", CENGAGE Learning, 2015
4. IS 4926 (2003): Code of Practice Ready-Mixed Concrete

Scheme of Examination:

The question paper will have ten questions. • Each full question consists of 16 marks. • There will be 2 full questions (with a maximum of four sub questions) from each module. • Each full question will have sub questions covering all the topics under a module. • The students will have to answer 5 full questions, selecting one full question from each module.

Sl No	Date	Topics	Topics Covered	Remarks
		Module-1: Concrete Ingredient		
1	06/02/18	Cement – Cement manufacturing process, steps to reduce carbon footprint		
2	06/02/18	chemical composition and their importance, hydration of cement, types of cement. Testing of cement.		
3	07/02/18	Fine aggregate: Functions, requirement, Alternatives to River sand, M-sand introduction and manufacturing.		
4	08/02/18	Coarse aggregate: Importance of size, shape and texture. Grading and blending of aggregate.		
5	08/02/18	Testing on aggregate, requirement. Recycled aggregates		
6	14/02/18	Grading and blending of aggregate. Testing on aggregate, requirement. Recycled aggregates		
7	15/02/18	Water – qualities of water.		
8	15/02/18	Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents.		
9	20/02/18	Mineral admixtures – Pozzolanic and cementitious materials, Fly ash, GGBS, silica fumes, Metakaolin and rice husk ash.		
10	20/02/18	Grading and blending of aggregate. Testing on aggregate, requirement. Recycled aggregates		
11	21/02/18	Testing on aggregate		
12	22/02/18	Testing on aggregate		
		Module -2: Fresh Concrete		
13	22/02/18	Workability-factors affecting workability.		
14	27/02/18	Measurement of workability–slump, Compaction factor and Vee-Bee Consistometer tests, flow tests.		
15	27/02/18	Segregation and bleeding.		
16	28/02/18	Process of manufacturing of concrete		
17	01/03/18	Batching, Mixing, Transporting.		
18	01/03/18	Placing and Compaction		
19	06/03/18	Batching, Mixing, Transporting.		
20	06/03/18	Placing and Compaction		
21	07/03/18	Curing – Methods of curing Water curing		
22	08/03/18	Curing – Methods of curing Water curing		
23	08/03/18	Good and Bad practices of making and using fresh concrete and		
24	13/03/18	Effect of heat of hydration during mass concreting at project sites.		
		Module -3: Hardened Concrete		
25	13/03/18	Factors influencing strength, W/C ratio, gel/space ratio, Maturity cpt		
26	14/03/18	Factors influencing strength, W/C ratio, gel/space ratio, Maturity cpt		
27	15/03/18	Testing of hardened concrete		
28	15/03/18	Creep –factors affecting creep		
29	20/03/18	Shrinkage of concrete -plastic shrinking and drying shrinkag		
30	20/03/18	Factors affecting shrinkage		

31	21/03/18	Definition and significance of durability. Internal and external factors influencing durability		
32	22/03/18	Mechanisms- Sulphate attack – chloride attack, carbonation, freezing and thawing. Corrosion,		
33	22/03/18	Durability requirements as per IS-456, Insitu testing of concrete- Penetration and pull out test,.		
34	27/03/18	Rebound hammer test,		
35	27/03/18	ultrasonic pulse velocity, core extraction – Principal, applications and limitations		
36	28/03/18	ultrasonic pulse velocity, core extraction – Principal, applications and limitations		
		Module -4: Concrete Mix Proportioning		
37	03/04/18	Concept of Mix Design with and without admixtures		
38	03/04/18	variables in proportioning and Exposure conditions,		
39	04/04/18	Selection criteria of ingredients used for mix design,		
40	05/04/18	Procedure of mix proportioning.		
41	05/04/18	Numerical Examples of Mix Proportioning using IS-10262		
42	10/04/18	Numerical Examples of Mix Proportioning using IS-10262		
43	11/04/18	Numerical Examples of Mix Proportioning using IS-10262		
44	12/04/18	Numerical Examples of Mix Proportioning using IS-10262		
45	12/04/18	Numerical Examples of Mix Proportioning using IS-10262		
46	19/04/18	Numerical Examples of Mix Proportioning using IS-10262		
47	19/04/18	Numerical Examples of Mix Proportioning using IS-10262		
48	24/04/18	Numerical Examples of Mix Proportioning using IS-10262		
49	24/04/18	Numerical Examples of Mix Proportioning using IS-10262		
		Module -5: Special Concrete		
50	25/04/18	RMC- manufacture and requirement as per QCI-RMCPCS,		
51	26/04/18	Properties, advantages and disadvantages		
52	26/04/18	Properties, advantages and disadvantages		
53	01/05/18	Self-Compacting concrete- concept, materials, tests		
54	01/05/18	Self-Compacting concrete- concept, materials, tests		
55	02/05/18	Properties, application and typical mix		
56	03/05/18	Self-Compacting concrete- concept, materials, tests		
57	03/05/18	Fiber reinforced concrete Fibers types, properties, application of FRC.		
58	08/05/18	Fiber reinforced concrete Fibers types, properties, application of FRC.		
59	08/05/18	Fiber reinforced concrete Fibers types, properties, application of FRC.		
60	09/05/18	Fiber reinforced concrete - Fibers types, properties, application		
61	10/05/18	Light weight concrete-material properties and types.		
62	10/05/18	Light weight concrete-material properties and types.		
63	24/05/18	Question Paper Revision		
64	24/05/18	Question Paper Revision		

Ms. Bhavya C H
Staff in charge

Dr. M A Nagesh
HOD

Dr. H.B. Phani raju
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: **IV** *Year:* **2017-18**

Subject Title: **Basic Geotechnical Engineering**	*Subject Code:* **15CV45**
Total Contact Hours: **54**	*Duration of Exam:* **03Hrs**
Total exam marks: **80**	*Total I.A.marks:* **20**
Lesson Plan Author: **Dr. G. Mahesh Kumar**	*Date of Commencement of Semester:* **01.02.2018**
Checked by: **Dr. M. A. Nagesh**	

Program Objectives (as per NBA):
- Engineering Knowledge.
- Problem Analysis.
- Design / development of solutions (partly).
- Interpretation of data.

Course objectives:
This course will enable students
- To appreciate basic concepts of soil mechanics as an integral part in the knowledge of civil engineering. Also to become familiar broadly with geotechnical engineering problems such as, foundation engineering, flow of water through soil medium and terminologies associated with geotechnical engineering.
- To know the basic engineering properties and the mechanical behavior of different types of soil. This includes strength-deformation characteristics under shearing stresses, also consolidation properties of clayey soils.
- To determine the improvement in mechanical behaviour by densification of soil deposits using compaction.
- To know how the properties of soils that can be measured in the lab

Course outcomes:
On the completion of this course students are expected to attain the following outcomes;
1. Will acquire an understanding of the procedures to determine index properties of any type of soil, classify the soil based on its index properties
2. Will be able to determine compaction characteristics of soil and apply that knowledge to assess field compaction procedures
3. Will be able to determine permeability property of soils and acquires conceptual knowledge about stresses due to seepage and effective stress; Also acquire ability to estimate seepage losses across hydraulic structure
4. Will be able to estimate shear strength parameters of different types of soils using the data of different shear tests and comprehend Mohr-Coulomb failure theory.
5. Ability to solve practical problems related to estimation of consolidation settlement of soil deposits also time required for the same.

Question paper pattern:

- The question paper will have ten questions.
- Each full question consists of 16 marks.
- There will be 2 full questions (with a maximum of 4 sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Materials and resources required

Text Books:

1. Gopal Ranjan and Rao A.S.R., **Basic and Applied Soil Mechanics- (2000)**, New Age International (P) Ltd., Newe Delhi.
2. Punmia B C, **Soil Mechanics and Foundation Engineering- (2012)** , Laxmi Pulications.
3. Murthy V.N.S., **Principles of Soil Mechanics and Foundation Engineering- (1996)**, 4th Edition, UBS Publishers and Distributors, New Delhi.
4. Braja, M. Das, **Geotechnical Engineering-**(2002), Fifth Edition, Thomson Business Information India (P) Ltd., India

Reference Books:

1. T.W. Lambe and R.V. Whitman, **Soil Mechanics**, John Wiley & Sons, 1969.
2. Donold P Coduto, **Geotechnical Engineering-** Phi Learning Private Limited, New Delhi
3. Shashi K. Gulathi & Manoj Datta, **Geotechnical Engineering-**. (2009), "Tata Mc Graw Hill.
4. Narasimha Rao A. V. & Venkatrahmaiah C, **Numerical Problems, Examples and objective questions in Geotechnical Engineering-**. (2000), Universities Press., Hyderabad.
5. Muni Budhu ,**Soil Mechanics and Foundation Engg.**- (2010), 3rd Edition, John Wiely & Sons

LECTURE PLAN

15CV45 – BASIC GEOTECHNICAL ENGINEERING

Sl. No.	DATE	TOPICS	Topics Covered	Remarks
		MODULE-1 INTRODUCTION		
1	01.02.18	Introduction, origin and formation of soil,.		
2	05.02.18	Phase Diagram, phase relationships,		
3	05.02.18	definitions and their inter relationships		
4	06.02.18	definitions and their inter relationships- continued		
5	08.02.18	Problems on inter relationships		
6	12.02.18	Determination of Index properties-Specific gravity, water content,		
7	12.02.18	in-situ density and particle size analysis (sieve and sedimentation analysis)		
8	13.02.18	particle size analysis (sieve and sedimentation analysis)-continued		
9	15.02.18	Atterberg's Limits, consistency indices,		
10	19.02.18	relative density, problems on Atterberg limits		
11	19.02.18	Activity of clay, Plasticity chart,		
12	20.02.18	unified and BIS soil classification		
13	22.02.18	Problems soil classification		
		MODULE-2 SOIL STRUCTURE AND CLAY MINERALOGY COMPACTION OF SOIL		
14	26.02.18	Single grained, honey combed, flocculent and dispersed structures,		
15	26.02.18	Valence bonds, Soil-Water system,		
16	27.02.18	Electrical diffuse double layer, adsorbed water, base-exchange capacity, Isomorphous substitution.		
17	01.03.18	Common clay minerals in soil and their structures- Kaolinite and their application in Engineering		
18	05.03.18	Illite and their application in Engineering		
19	05.03.18	Montmorillonite and their application in Engineering		
20	06.03.18	Compaction of Soils: Definition, Principle of compaction,		
21	08.03.18	Standard and Modified proctor's compaction tests		
22	15.03.18	factors affecting compaction, effect of		

		compaction on soil properties,		
23	19.03.18	Field compaction control - compactive effort & method of compaction, lift thickness and number of passes,		
24	19.03.18	Proctor's needle, Compacting equipments and their suitability.		
25	20.03.18	Problems on compaction		
26	22.03.18	Problems on compaction		
		MODULE-3 FLOW THROUGH SOILS		
27	26.03.18	Darcy's law- assumption and validity, coefficient of permeability and its determination (laboratory and field),		
28	26.03.18	factors affecting permeability, permeability of stratified soils,		
29	27.03.18	Seepage velocity, superficial velocity		
30	02.04.18	coefficient of percolation, Capillary Phenomena		
31	02.04.18	Seepage Analysis: Laplace equation, assumptions, limitations and its derivation. Flow nets- characteristics and applications.		
32	03.04.18	Flow nets for sheet piles and below the dam section.		
33	05.04.18	Unconfined flow, phreatic line (Casagrande's method –with and without toe filter), flow through dams, design of dam filters.		
34	09.04.18	Problems on flow through soil		
35	09.04.18	Effective Stress Analysis: Geostatic stresses,		
36	10.04.18	Effective stress concept-total stress, effective stress and		
37	12.04.18	Neutral stress and impact of the effective stress in construction of structures,		
38	19.04.18	quick sand phenomena		
39	23.04.18	Problems on effective stress, total stress and neutral stress		
		MODULE-4 CONSOLIDATION OF SOIL		
40	23.04.18	Definition, Mass-spring analogy		
41	24.04.18	Terzaghi's one dimensional consolidation theory - assumption and limitations.		
42	26.04.18	Derivation of Governing differential Equation Pre-consolidation pressure and its determination by Casagrande's method.		
43	30.04.18	Over consolidation ratio, normally consolidated, under consolidated and over consolidated soils. Problems		
44	30.04.18	Consolidation characteristics of soil (Cc, av, mv and Cv.		

45	03.05.18	Laboratory one dimensional consolidation test, characteristics of e-log(σ') curve,		
46	07.05.18	Determination of consolidation characteristics of soils, compression index and coefficient of consolidation (square root of time fitting method,.		
47	07.05.18	logarithmic time fitting method). Primary and secondary consolidation. Problems		
		MODULE-5 SHEAR STRENGTH OF SOIL		
48	08.05.18	Concept of shear strength, Mohr–Coulomb Failure Criterion, Modified Mohr–Coulomb Criterion Concept of pore pressure,		
49	10.05.18	Total and effective shear strength parameters, factors affecting shear strength of soils.		
50	14.05.18	Thixotrophy and sensitivity, Problems		
51	14.05.18	Measurement of shear strength parameters - Direct shear test, unconfined compression test		
52	15.05.18	triaxial compression test and field Vane shear test		
53	17.05.18	Test under different drainage conditions. Total and effective stress paths.		
54	24.05.18	Problems		

(Dr. G. Mahesh Kumar)
Faculty

(Dr. M.A. Nagesh)
HOD

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Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: IV *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2017-18**

Course Title: **ADVANCED SURVEYING**	*Subject Code:* **15CV46**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mrs. Supriya C B**	*Date:* **05/02/18**
Checked by: **Dr. M A Nagesh**	*Credits:* ***04***

Course objectives:

This course will enable students to:

1. Apply geometric principles to arrive at solutions to surveying problems.
2. Analyze spatial data using appropriate computational and analytical techniques.
3. Design proper types of curves for deviating type of alignments.
4. Use the concepts of advanced data capturing methods necessary for engineering practice

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Apply the knowledge of geometric principles to arrive at surveying problems
2. Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.
3. Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments;
4. Design and implement the different types of curves for deviating type of alignments.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.

• Each full question shall cover the topics under a module.

• The students shall answer Five full questions selecting one full question from each module.

• If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. B.C. Punmia, "Surveying Vol.2", Laxmi Publications pvt. Ltd., New Delhi.

2. Kanetkar T P and S V Kulkarni , Surveying and Levelling Part 2, Pune Vidyarthi Griha Prakashan,

3. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi.

4. Sateesh Gopi, Global Positioning System, Tata McGraw Hill Publishing Co. Ltd. New Delhi

Reference Books:

1. S.K. Duggal, "Surveying Vol.I & II", Tata McGraw Hill Publishing Co. Ltd. New Delhi.

2. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, NewDelhi.

3. David Clerk, Plane and Geodetic Surveying Vol1 and Vol2, CBS publishers

4. B Bhatia, Remote Sensing and GIS , Oxford University Press, New Delhi.

5. T.M Lillesand,. R.W Kiefer,. and J.W Chipman, Remote sensing and Image interpretation ,5th edition, John Wiley and Sons India

Lesson Plan

Sl No	Date	Topics	Remarks
		Module -1: Curve Surveying	
1	09/02/18	Introduction: Curves – Necessity – Types, Simple curves	
2	09/02/18	Elements, Designation of curves, Setting out simple curves by linear methods	
3	10/02/18	numerical problems on offsets from long chord & chord produced method	
4	10/02/18	Setting out curves by Rankines deflection angle method	
5	16/02/18	Compound curves, Elements, Design of compound curves	
6	16/02/18	Setting out of compound curves	
7	17/02/18	numerical problems Setting out of compound curves, Reverse curve between two parallel	
8	17/02/18	numerical problems on Equal radius and unequal radius	
9	23/02/18	Transition curves Characteristics, numerical problems on Length of Transition curve	
10	23/02/18	Vertical curves –Types – (theory).	
		Module -2: Geodetic Surveying and Theory of Errors	
11	24/02/18	Geodetic Surveying: Principle and Classification of triangulation system	
12	24/02/18	Selection of base line and stations	
13	02/03/18	Orders of triangulation,	
		Triangulation figures	
14	02/03/18	Reduction to Centre	
15	03/03/18	Selection and marking of stations	
16	03/03/18	Theory of Errors: Introduction, types of errors	
17	16/03/18	Definitions of Errors, laws of accidental errors, laws of weights,	
18	16/03/18	theory of least squares	
19	17/03/18	rules for giving weights and distribution of errors to the field observations	
20	17/03/18	determination of the most probable values of quantities	
		Module -3: Introduction to Field Astronomy	
21	23/03/18	Earth	
22	23/03/18	celestial sphere	
23	24/03/18	earth and celestial coordinate systems	
24	24/03/18	celestial coordinate systems continued	
25	31/03/18	spherical triangle	
26	31/03/18	spherical triangle continued	
27	06/04/18	astronomical triangle	
28	06/04/18	astronomical triangle	
29	07/04/18	Napier's rule	
30	07/04/18	Napier's rule	

		Module -4: Aerial Photogrammetry	
31	20/04/18	Introduction, Uses	
32	20/04/18	Aerial photographs, Definitions,	
33	21/04/18	Scale of vertical and tilted photograph	
34	21/04/18	Problems on Scale of vertical and tilted photograph	
35	04/05/18	Ground Co-ordinates	
36	04/05/18	Simple problems on Ground Co-ordinates	
37	05/05/18	Relief Displacements- Theory	
38	05/05/18	Ground control, Procedure of aerial survey, overlaps and mosaics	
39	11/05/18	Stereoscopes	
40	11/05/18	Derivation Parallax(Derivation)	
		Module -5: Modern Surveying Instruments	
41	12/05/18	Introduction, Electromagnetic spectrum ,Electromagnetic distance measurement, Total station	
42	12/05/18	Lidar scanners for topographical survey	
43	14/05/18	Remote Sensing: Introduction	
44	14/05/18	Principles of energy interaction in atmosphere and earth surface features	
45	15/05/18	Image interpretation techniques, visual interpretation	
46	15/05/18	Digital image processing	
47	16/05/18	Global Positioning system Geographical Information System: Definition of GIS,	
48	16/05/18	Key Components of GIS, Functions of GIS, Spatial data	
49	17/05/18	spatial information system Geospatial analysis	
50	17/05/18	Integration of Remote sensing and GIS and Applications in Civil Engineering (transportation, town planning).	

Mrs Supriya C B
Course Instructors

Dr. M A Nagesh
HOD

Dr. H B Phani Raju
Principal

PRINCIPAL
SIET, TUMAKURU

SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(AN ISO 9001:2008 CERTIFIED INSTITUTION)
SIRA ROAD, TUMKUR - 572106
DEPARTMENT OF CIVIL ENGINEERING
LESSON PLAN

STAFF IN CHARGE: Mrs. Grace Hemalatha
SUBJECT: MANAGEMENT AND ENTREPRENEURSHIP

SUB CODE: 10AL51
SEMESTER: 5th SEMESTER

Sl. No	Date	Topic	Remarks
		MODULE-1 MANAGEMENT	
1	21/08/17	Introduction - Meaning - Nature and Characteristics of Management	
2	21/08/17	Scope and Functional Areas of Management	
3	22/08/17	Management as a Science, Art or Profession Management & Administration	
4	22/08/17	Roles of Management, Levels of Management	
5	28/08/17	Development of Management Thought	
6	28/08/17	Early Management Approaches	
7	29/08/17	Modern Management Approaches.	
		Module - 2 PLANNING	
8	29/08/17	Nature, Importance and Purpose of Planning Process	
9	04/09/17	Objectives – Types of Plans (Meaning Only)	
10	04/09/17	Decision Making	
12	05/09/17	Importance of Planning.	
12	05/09/17	Steps in Planning & Planning Premises	
13	06/09/17	Hierarchy of Plans	
		Module – 3 ORGANISING AND STAFFING	
14	08/09/17	Nature and Purpose of Organization	
15	11/09/17	Principles of Organization – Types of Organization	
16	11/09/17	Departmentation - Committees – Centralization Vs Decentralization of Authority and Responsibility	
17	12/09/17	Span of Control – MB0 and MBE (Meaning Only)	
18	12/09/17	Nature and Importance of Staffing	
19	13/09/17	Process of Selection & Recruitment (In Brief)	
		Module – 4 DIRECTING AND CONTROLLING	
20	21/09/17	Meaning and Nature of Directing	
21	25/09/17	Leadership Styles, Motivation Theories	
22	25/09/17	Communication - Meaning and Importance	
23	26/09/17	Coordination, Meaning and Importance and Techniques of Co – Ordination	
24	26/09/17	Meaning and Steps in Controlling	
25	27/09/17	Essentials of a Sound Control System	
26	09/10/17	Methods of Establishing Control (In Brief)	
		Module – 5 ENTREPRENEUR	

27	09/10/17	Meaning of Entrepreneur; Evolution of The Concept	
28	10/10/17	Functions of an Entrepreneur, Types of Entrepreneur	
29	10/10/17	Intrapreneur - an Emerging Class. Concept of Entrepreneurship	
30	11/10/17	Evolution of Entrepreneurship, Development of Entrepreneurship	
31	16/10/17	Stages In Entrepreneurial Process; Role of Entrepreneurs in Economic Development	
32	17/10/17	Entrepreneurship in India; Entrepreneurship – Its Barriers.	
		Module – 6 SMALL SCALE INDUSTRY	
33	17/10/17	Definition; Characteristics; Need and Rationale	
34	23/10/17	Objectives; Scope; Role of SSI in Economic Development	
35	23/10/17	Advantages of SSI Steps To Start an SSI - Government Policy Towards SSI	
36	24/10/17	Different Policies of S.S.I.; Government Support For S.S.I. During 5 Year Plans,	
37	24/10/17	Impact of Liberalization, Privatization, Globalization on SSI., Effect of WTO/GATT Supporting Agencies of Government for SSI	
38	25/10/17	Meaning; Nature of Support; Objectives; Functions; Types of Help	
39	30/10/17	Ancillary Industry and Tiny Industry	
		Module – 7 INSTITUTIONAL SUPPORT	
40	30/10/17	Different Schemes; TECKSOK; KIADB	
41	31/10/17	KSSIDC; KSIMC	
42	31/10/17	DIC Single Window Agency	
43	02/11/17	SISI; NSIC	
44	07/11/17	SIDBI	
45	07/11/17	KSFC	
		Module – 8 PREPARATION OF PROJECT	
46	08/11/17	Meaning of Project; Project Identification	
47	08/11/17	Project Selection; Project Report; Need and Significance of Report	
48	13/10/17	Contents; Formulation; Guidelines by Planning Commission for Project Report	
49	13/10/17	Network Analysis	
50	14/11/17	Errors of Project Report; Project Appraisal. Identification of Business opportunities	
51	14/11/17	Market Feasibility Study; Technical Feasibility Study	
52	15/11/17	Financial Feasibility Study & Social Feasibility Study	

RECOMMENDED BOOKS:

- P.C. Tripathi, P.N. Reddy: Principles of Management, Tata McGrawHill, 2007.
- Vasant Desai: Dynamics of Entrepreneurial Development & Management, Himalaya Publishing House, 2007.
- Poornima M Charantimath: Entrepreneurship Developmental Business Enterprises, Pearson Education, 2006.
- Stephen Robbins: Management, 17th Edition, Pearson Education / Phi, 2003.

Grace Hlotha
STAFF IN CHARGE

M-A
HEAD OF THE DEPARTMENT

PRINCIPAL

SIET, TUMAKURU

Shridevi Institute of Engineering and Technology-Tumkur
(An ISO 9001-2008 Certified Institution)
DEPARTMENT OF CIVIL ENGINEERING

Semester: V **Year: 2017-18**

Subject Title : **Design of RC Structural Elements**	*Subject Code:* **10CV52**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. VinuthanV R**	*Date: 07/08/17*
Checked by: **Dr. M A Nagesh**	*Date: 07/08/17*

Learning Objectives:

1. Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
2. Follow a procedural knowledge in designing various structural RC elements.
3. Impart the culture of following the codes for strength, serviceability and durability as an ethics.
4. Provide knowledge in analysis and design of RC elements for the success in competitive examinations

Learning Outcomes:

1. Understand the design philosophy and principles
2. Solve engineering problems of RC elements subjected to flexure, shear and torsion
3. Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings
4. Owns professional and ethical responsibility

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**
   1. **Reinforced Concrete Design**- Unnikrishnan Pillai and Devdas menon., McGraw Hill.
   2. **Design of Concrete Structures**- Subramanian, Oxford university press.
   3. **Reinforce concrete Vol 1**:- H J Shah, Charotor publishing House..
   5. IS : 456 :2000
   6. SP-16

Scheme of Examination:

One full question to be set from each unit from part A and part B . The students shall answer five questions, selecting two question from one part and three question from another part.. If more than five question is answered, best answer will be considered for the award of marks limiting one full question answer in each module

Shridevi Institute of Engineering and Technology-Tumkur

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DEPARTMENT OF CIVIL ENGINEERING

10CV52- Design of RC Structural Elements

Sl No	Date	Topics	Topics Covered	Remarks
		UNIT 1: GENERAL FEATURES OF REINFORCED CONCRETE:		
1	07/08/17	Introduction, Design Loads, Materials for Reinforced Concrete		
2	10/08/17	Design Philosophy – Limit State Design principles		
3	11/08/17	Design Philosophy – Limit State Design principles		
4	12/08/17	Design Philosophy – Limit State Design principles		
5	14/08/17	Factor of Safety, Characteristic and design loads, Characteristic and design strength.		
6	17/08/17	Factor of Safety, Characteristic and design loads, Characteristic and design strength.		
		UNIT - 2 PRINCIPLES OF LIMIT STATE DESIGN AND ULTIMATE STRENGTH OF R.C. SECTION		
7	18/08/17	General aspects of Ultimate strength		
8	19/08/17	Stress block parameters for limit state of collapse		
9	21/08/17	Stress block parameters for limit state of collapse		
10	23/08/17	Ultimate flexural strength of singly reinforced rectangular sections		
11	24/08/17	Ultimate flexural strength of doubly reinforced rectangular sections and flanged sections		
12	26/08/17	Analysis examples of singly reinforced		
13	28/08/17	Analysis examples doubly reinforced, flanged sections, shear strength and development length.		
		UNIT - 3 FLEXURE AND SERVICEABILITY LIMIT STATES		
14	31/08/17	General Specification for flexure design of beams-practical requirements		
15	01/09/17	Calculation size of beam, cover to reinforcement-spacing of bars.		
16	04/09/17	Calculation of deflections and crack width.		
17	07/09/17	Calculation of deflections and crack width.		
18	08/09/17	Calculation of deflections and crack width.		
19	09/09/17	Calculation of deflections and crack width.		
		UNIT - 4 DESIGN OF BEAMS		
20	11/09/17	Design procedures for critical sections for moment and shears		
21	14/09/17	Design procedures for critical sections for moment and shears		
22	15/09/17	Check for development length, Reinforcement requirements, Slenderness limits for beams to ensure lateral stability		
23	21/09/17	Check for development length, Reinforcement requirements, Slenderness limits for beams to ensure lateral stability		
24	22/09/17	Design examples for Simply supported and Cantilever beams for rectangular and flanged section		
25	23/09/17	Design examples for Simply supported and Cantilever beams for		

		rectangular and flanged section		
26	25/09/17	Design examples for Simply supported and Cantilever beams for rectangular and flanged section		
27	28/10/17	Design examples for Simply supported and Cantilever beams for rectangular and flanged section		
		PART - B		
		UNIT – 5 DESIGN OF SLABS		
28	6/10/17	General consideration of design of slabs		
29	7/10/17	Rectangular slabs spanning one direction		
30	9/10/17	Rectangular slabs spanning one direction		
31	10/10/17	Rectangular slabs spanning in two directions for various boundary conditions		
32	10/10/17	Rectangular slabs spanning in two directions for various boundary conditions		
33	12/10/17	Design of simply supported, cantilever and continuous slabs as per IS: 456 – 2000.		
34	13/10/17	Design of simply supported, cantilever and continuous slabs as per IS: 456 – 2000.		
35	13/10/17	Design of simply supported, cantilever and continuous slabs as per IS: 456 – 2000.		
		UNIT - 6 DESIGN OF COLUMNS		
36	14/10/17	General aspects, effective length of column, loads on columns		
37	16/10/17	slenderness ratio for columns, minimum eccentricity, design of short axially loaded columns		
38	17/10/17	Design of column subject to combined axial load and uniaxial moment and biaxial moment using SP – 16		
39	17/10/17	Design of column subject to combined axial load and uniaxial moment and biaxial moment using SP – 16		
40	19/10/17	Design of column subject to combined axial load and uniaxial moment and biaxial moment using SP – 16		
		UNIT – 7 DESIGN OF FOOTINGS		
41	21/10/17	Introduction.		
42	21/10/17	Design basis for limit state method		
43	23/10/17	Design of isolated rectangular footing for axial load and uniaxial moment, design of pedestal		
44	24/10/17	Design of isolated rectangular footing for axial load and uniaxial moment, design of pedestal		
45	26/10/17	Design of isolated rectangular footing for axial load and uniaxial moment, design of pedestal		
46	2/11/17	Design of isolated rectangular footing for axial load and uniaxial moment, design of pedestal		
		UNIT – 8 DESIGN OF STAIR CASES		
47	3/11/17	General features, types of stair case, loads on stair cases		

48	4/11/17	IS code provisions distribution of loading on stairs		
49	9/11/17	Design of stair cases. With waistslabs		
50	10/11/17	Design of stair cases. With waistslabs		
51	11/11/17	Design of stair cases. With waistslabs		
52	13/11/17	Design of stair cases. With waistslabs		

Mr. Vinuthan V R
Course Instructor

Dr. M A Nagesh
HOD

25/10/17
Dr H B Phani Raju
Principal

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Shridevi Institute of Engineering and Technology-Tumkur
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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: **V** *Year: 2017-18*

Subject Title: **STRUCTURAL ANALYSIS – II**	*Subject Code:* **10CV53**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **07/08/17**
Checked by: **Dr. M A Nagesh**	

Learning Objectives:

The students will be able to know about

1. Analysis of frames and continuous beam and drawing SFD & BMD using slope deflection equation, Moment distribution method and Kani's method.
2. Sway analysis for frames by slope deflection equation, Moment distribution method to draw SFD &BMD.
3. Analysis of frames and plane trusses by flexibility matrix method and stiffness matrix method.
4. Analyzing the Basic principles of Dynamics on Structures.

Learning Outcomes:

Students will come to know about how to analyze the beam, frames and drawing the final bending moment and shear force diagram by various methods. They will learn about the sway analysis and behavior of frames under sway loads. They will understand the calculation of stiffness of the frame through stiffness matrix method. And finally they will understand the basic concepts of vibrations, calculation of natural frequency &period of a structure and understanding the equations of single degree of freedom system.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. **Basic Structural Analysis**- Reddy C.S. - Second Edition, TataMcGraw Hill Publication Company Ltd.
2. **Theory of Structures Vol. 2** - S.P. Gupta, G.S. Pandit and R.Gupta, Tata McGraw Hill Publication Company Ltd.
3. **Structural Dynamies**-by M.Mukhopadhyay.
4. **Structural Analysis-II** -S. S. Bhavikatti – Vikas Publishers, NewDelhi.

5. **Basics of Structural Dynamics and Aseismic Design** ByDamodharSwamy and Kavita PHI Learning Private Limited.
6. **Structural Analysis**- D.S. PrakashRao,, A Unified Approach, University Press
7. **Structural Analysis**-4th SI Edition by AmitPrasanth & AslamKassimali, Thomson Learning.

3) **Scheme of Examination:**
One full questions to be set from each unit. Students have to answer any five full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B**.

4) **Evaluation:**
Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks).

Shridevi Institute of Engineering and Technology – Tumkur
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SHRIDEVI EDUCATION

LECTURE PLAN

Sl No	Date	Topics	Remark
		Part A	
		Unit – 1 : Rolling Load And Influence Lines	
1	07-08-2017	Rolling load analysis for simply supported beams for several point loads	
2	09-08-2017	Rolling load analysis for simply supported beams for several point UDL	
3	10-08-2017	Influence line diagram for reaction	
4	12-08-2017	SF and BM at a given section forbeams- problems	
5	14-08-2017	SF and BM at a given section for beams- problems	
6	16-08-2017	SF and BM at a given section for beams- problems	
		Unit – 2 : Slope Deflection Method	
7	17-08-2017	Introduction, Sign convention,	
8	19-08-2017	Development of slope-deflection equations	
9	21-08-2017	Analysis of Beams- problems	
10	23-08-2017	Analysis of Beams- problems	
11	24-08-2017	Analysis ofOrthogonal Rigid jointed plane frames- problems	
12	26-08-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Unit – 3 : Moment Distribution Method	
13	28-08-2017	Introduction, Definition of terms-Distribution factor, Carry over factor	
14	30-08-2017	Development of method	
15	31-08-2017	Analysis of Beams- problems	
16	04-09-2017	Analysis of Beams- problems	
17	06-09-2017	Analysis of Beams- problems	
18	07-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
19	09-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Unit – 4 : Sway Analysis	
20	11-09-2017	Analysis of rigid jointed plane frames by slope-deflection equations	
21	13-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
22	14-09-2017		
23	21-09-2017	Analysis of rigid jointed plane frames byMoment Distribution Method	
24	23-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Part B	
		Unit – 5 : Kanis Methods	
25	25-09-2017	Introduction, Definition of terms	
26	27-09-2017	Analysis of Beams- problems	
27	28-09-2017	Analysis of Beams- problems	
28	04-10-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
29	07-10-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Unit – 6 : Flexibility Matrix Method of Analysis	
30	09-10-2017	Introduction,Development of flexibility matrix for plane truss element	

31	11-10-2017	Development of flexibility matrix for axially rigid plane framed structural elements	
32	12-10-2017	Analysis of plane truss	
33	14-10-2017	Analysis of plane truss	
34	16-10-2017	Analysis of axially rigid plane frames	
Unit – 7 : Stiffness Matrix Method of Analysis			
35	19-10-2017	Introduction, Development of flexibility matrix for plane truss element	
36	21-10-2017	Development of flexibility matrix for axially rigid plane framed structural elements	
37	23-10-2017	Analysis of plane truss	
38	25-10-2017	Analysis of plane truss	
39	26-10-2017	Analysis of axially rigid plane frames	
Unit – 8: Basic Principles of Dynamics			
40	02-11-2017	Basic principles of Vibrations	
41	04-11-2017	causesof Vibrations	
42	07-11-2017	periodic and aperiodic motion	
43	08-11-2017	harmonic and non-harmonicmotion	
44	09-11-2017	Period and frequency.	
45	11-11-2017	Forced and Free Vibration,	
46	11-11-2017	Damping	
47	13-11-2017	Equations of Single Degree of Freedom System with Damping	
48	13-11-2017	Equations of Single Degree of Freedom System without Damping	
49	13-11-2017	Problems	
50	15-11-2017	Equations of Single Degree of Freedom System without Damping	
51	15-11-2017	Problems	
52	15-11-2017	Problems	

(Manogna H N)
Course Instructor

(Dr. M.A. Nagesh)
HOD

(Dr H B Phani Raju)
Principal

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Shridevi Institute of Engineering and Technology, Tumkur-06
(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF CIVIL ENGINEERING

Semester: V

Year: 2017-18

Subject Title: Geotechnical Engineering-I	*Subject Code:* 10CV54
Total Contact Hours: 45	*Duration of Exam:* 03Hrs
Total exam marks: 100	*Total I.A.marks:* 25
Lesson Plan Author: Dr. G. Mahesh Kumar	*Date of Commencement of Semester:* 07.08.2017
Checked by: Dr. M. A. Nagesh	

Learning Objectives:

The objectives of this course is

- To understand the physical and mechanical properties of soils
- To determine parameters from soil testing to characterize soil properties, soil strength, and soil deformations.

Learning out come

In this course student should be able to

- Describe soils and determine their physical characteristics such as, grain size, water content and void ratio
- Classify soils
- Determine compaction of soils
- Understand the concept of effective stress
- Determine total stress, effective stress and porewater pressure
- Determine soil permeability
- Determine how surface stresses are distributed within a soil mass
- Specify, conduct and interpret soil tests to characterize soils
- Determine soil strength and deformation parameters from soil tests
- Discriminate between drained and undrained conditions.

Materials and resources required

Text books:

1. **Soil Mechanics and Foundation Engineering -Punmia B.C, Laxmi Publications Co. New Delhi**
2. **Principals of Soil Mechanics and Foundation Engineering-Murthy V N S, UBS Publishers and distributors, New Delhi**
3. **Geotechnical Engineering- Braja, M. Das, Thomson Business Information India (P) Ltd,India**

Reference books:

1. **Foundation Analysis and Design- Bowles J.E, McGraw Hill Pub.Co. New York.**
2. **Soil Engineering in Theory and Practice- Alam Singh and Chowdhary GR, CBS Publishers and distributors, New Delhi**
3. **Basic and Applied Soil Mechanics- Gopal Ranjan and Rao A.S.R, New Age International (P) Ltd., New Delhi**

LECTURE PLAN

10CV54 - GEOTECHNICAL ENGINEERING-1

Sl. No.	DATE	TOPICS	Topics Covered	Remarks
		PART-A		
		UNIT-1 INTRODUCTION		
1	08-08-17	History of soil mechanics, Definition, Origin & formation of soil		
2	09-08-17	Phase diagram: Voids ratio, Porosity, Percentage air voids, Air content		
3	11-08-17	Degree of saturation, water content, Specific gravity of solids and soil mass, Dencities and unit weights-Bulk density, Dry density, Saturated Density.		
4	11-08-17	Submerged density -Inter relationships.		
5	15-08-17	Inter relationships-Continued		
6	16-08-17	Problems solving		
		UNIT-2 INDEX PROPERTIES OF SOILS AND THEIR DETERMINATION		
7	18-08-17	Specific gravity, Water content		
8	18-08-17	Particle Size distribution, Consistency limits and indices, In-situ density& density index, Activity of clay		
9	22-08-17	Laboratory method of index properties of soil:Determination of water content by oven drying and rapid moisture method, Determination of specific gravity by Pycnometer /Density bottle method		
10	23-08-17	Laboratory determination of Particle size distribution : Sieve analysis & Sedimentation analysis.		
11	29-08-17	Liquid limit(Casagrande & Cone penetration method),		
12	30-08-17	Plastic limit & Shrinkage limit determination		
		Problems solving		
		UNIT-3 CLASSIFICATION OF SOILS:		
13	01-09-17	Purpose of soil Classification, Particle size Classification Field identification of soils		
14	01-09-17	MIT Classification and IS classification.		
15	05-09-17	Plasticity chart & its importance , problems		

		solving. Textural classification of soil		
		CLAY MINERALOGY AND SOIL STRUCTURE		
16	**06-09-17**	Single grained, Honey combed, Flocculent and		
17	**08-09-17**	Dispersed structure, Valence bonds, Soil-water system: Electrical diffuse double layer, Adsorbed water		
18	**08-09-17**	Base exchange capacity, Isomorphus sustitition.		
19	**12-09-17**	Common clay minerals in Soils & their structure, Kaolinite, Illite mineral, Montmorillonite mineral		
		UNIT-4 FLOW OF WATER THROUGH SOILS		
20	**13-09-17**	Darcy's law-Assumptions & Validity, Co-efficient of Permeability &its determination(Laboratory Field)		
21	**15-09-17**	Factors effecting Permeability, Permeability of Stratified soils		
22	**15-09-17**	Seepage velocity, Superficial velocity & Co-efficient of percolation, Effective stress concept-total pressure and effective stress		
23	**22-09-17**	Quick sand phenomenon, Capillary phenomenon. Problems on chapter: Flow of water through soils		
		PART-B		
		UNIT-5 SHEAR STRENGTH OF SOIL		
24	**22-09-17**	Concept of Shear strength, Mohr's Strength theory, Mohr-Coulomb theory		
25	**26-09-17**	Convential and modified failure envelope, Total and effective shear strength parameters,		
26	**27-09-17**	Factors affecting Shear strength of Soils sensitivity and Thixotropy of clay		
27	**03-10-17**	Problems on shear strength of soils		
		UNIT-6 COMPACTION OF SOIL		
28	**04-10-17**	Definition: Standard Proctor's compaction test, Modified Proctor's compaction test		
29	**06-10-17**	Factors affecting Compaction; Effect of compaction on Soil Properties		
30	**06-10-17**	Field Compaction methods-Rollers & Vibrators; Field compaction control-Proctor's needle		
31	**10-10-17**	Problems on chapter: Compaction of soils		

		UNIT-7 CONSOLIDATION OF SOIL		
32	**11-10-17**	Definition, Mass-Spring analogy		
33	**13-10-17**	Terzaghi's one dimensional consolidation theory assumptions & limitations(no derivation)		
34	**13-10-17**	Normally consolidated, Under consolidated and over consolidated soils.		
35	**17-10-17**	Pre-consolidated pressure & it's determination by Casagrande;s method		
36	**24-10-17**	Consolidation characteristics of soil (Cc,av, miv,Cv), Time rate of consolidation		
		UNIT-8 DETERMINATION OF SHEAR STRENGTH AND CONSOLIDATION OF SOIL		
37	**25-10-17**	Measurement of shear parameters by Direct shear test under different drainage conditions		
38	**31-10-17**	Measurement of shear parameters by Triaxial compression test under different drainage conditions		
39	**03-11-17**	Measurement of shear parameters by Unconfined compression test		
40	**03-11-17**	Measurement of shear parameters by Vane shear test		
41	**08-11-17**	Determination of co-efficient of consolidation by Logarithmic time fitting method		
42	**10-11-17**	Co-efficient of consolidation by Square root of time fitting method		
43	**10-11-17**	Problems on chapter: Shear strength of soil		
44	**14-11-17**	Problems on chapter :consolidation of soil		
45	**15-11-17**	Solving previous question papers		

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SHRIDEVI
DEPARTMENT OF CIVIL ENGINEERING

Semester: V Year: 2017-18

Subject Title: **HYDROLOGY AND IRRIGATION ENGINEERING**	*Subject Code:* **10CV55**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Dr. MA Nagesh**	*Date of commencement of Semester:* **7/8/17**
Checked by: **Dr. MA Nagesh**	

Learning Objectives:

The students are taught to know about,

i. Hydrologic cycle, Precipitation process, types of precipitation, estimation of precipitation.

ii. Losses from precipitation.

iii. Hydrographs, estimation of flood and flood routing

iv. Need of irrigation and soil-water-plant relationship.

v. Water requirement of crops and conveyance of irrigation water by canals.

Learning Outcomes:

The students will be able to understand,

i. Precipitation process, types of precipitation, estimation of precipitation..

ii. Losses such as infiltration and Evapotranspiration from precipitation and methods of estimation.

iii. Hydrograph, applications of hydrograph, estimation of flood and process of flood routing.

iv. Necessity of irrigation and relationship between plant-water-soil.

v. Water requirement of crops, application of irrigation water and conveyance of water to fields by canals.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text book:**

Engineering Hydrology – Subramanya.K; Tata Mcgraw Hill NewDelhi-2008 (Ed)

Hydrology- Madan Mohan Das, Mim Mohan Das-PHI Learning private Ltd. New Delhi-2009 (Ed)

A Text Book Of Hydrology- Jayarami Reddy, Laksmi Publications, New Delhi-2007 (Ed)

Irrigation, water Resources and water power Engineering- P.N.Modi- standard book house, New Delhi.

Irrigation and Water Power Engineering-Madan Mohan Das & Mimi Das Saikia; PHILearning pvy. Ltd. New Delhi 2009 (Ed).

3) **Reference Books:**

Hydrology & Soil Conservation Engineering-Ghanshyam Das- PHI Learning Private Ltd., New Delhi-2009 (Ed)

Hydrology & Water Resources Engineering- Patra K.C. Narosa Book Distributors Pvt. Ltd. New Delhi-2008 (Ed)

Hydrology & Water Resources Engineering- R.K.Sharma & Sharma, Oxford and Ibh, New Delhi

Irrigation Engineering and Hydraulic structures- S. K. garg- Khanna Publication, New Delhi

4) **Scheme of Examination:**

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B.**

5) **Evaluation:**

Student Assessment: Through Internal Assessment Tests (25 Marks)

University Examinations (100 Marks)

27	26-09-2017	Unit-5 introduction, need for irrigation, advantages		
28	03-10-2017	disadvantages of irrigation, environmental impacts of irrigation		
29	04-10-2017	Systems of irrigation: Gravity irrigation		
30	04-10-2017	lift irrigation, well irrigation		
31	07-10-2017	Tubewell irrigation, infiltration galleries		
32	10-10-2017	Sewage irrigation, supplemental irrigation		
33	11-10-2017	Unit-6 Introduction, soil profile, physical properties of soil,		
34	11-10-2017	soil classification, Indian soils,		
35	14-10-2017	functions of irrigation soils.Maintaining soil fertility		
36	17-10-2017	soil-water-plant relationship		
37	21-10-2017	Soil moisture. Irrigation relationship		
38	24-10-2017	frequency of irrigation		
39	25-10-2017	Unit-7 Introduction, definitions, crop seasons of India		
40	25-10-2017	Water requirement of a crop		
41	31-10-2017	duty, delta		
42	04-11-2017	base period, consumptive use		
43	07-11-2017	Irrigation efficiencies		
44	08-11-2017	Assessment of irrigation water		
45	11-11-2017	Unit-8 Definition, Types of canals		
46	14-11-2017	Alignment of canals, Problems		
47	15-11-2017	Design of canals by Kenedy's Method , Lacey's method, problems		
48-52	15-11-2017	Problems		

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Staff Incharge

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Lesson Plan

10CV55 – Hydrology and Irrigation Engineering

Sl No	Date	Topics	Topics Covered	Remarks
1	08-08-2017	Unit-1 Introduction, Hydrologic cycle (Horton's representation). Water budget equation		
2	09-08-2017	Unit- 2 Precipitation: introduction, forms of precipitation,		
3	09-08-2017	types of precipitation,measurement of precipitation :Simon's gauge (Syphon gauge only)		
4	12-08-2017	selection of rain gauge station. Adequacy of raingauges		
5	16-08-2017	methods of computing average rainfall, interpolation of missing data		
6	16-08-2017	Adjustment of missing data by double mass curve method.		
7	19-08-2017	Hyetograph and mass curve of rainfall		
8	22-09-2017	Evaporation: Definition, factors affecting, measurement (Class A pan).		
9	23-08-2017	Evapo-transpiration: Definition, factors affecting, measurement		
10	23-08-2017	Estimation using empirical methods (Meyer's and Rohwer's equation), evaporation control.		
11	26-08-2017	Estimation (Blaney criddle method) Infiltration: Definition		
12	29-08-2017	Factors affecting, measurement (double ring infiltrometer)		
13	30-08-2017	Infiltration indices		
14	30-08-2017	Horton's equation of infiltration		
15	05-09-2017	Unit-3 Definition, components of hydrographs		
16	06-09-2017	Unit hydrograph and its derivation from simple storm hydrograph		
17	06-09-2017	Base flow separation		
18	01-09-2017	Prepositions of unit hydrograph- problems		
19	09-09-2017	Prepositions of unit hydrograph- problems		
20	12-09-2017	Problems continuing		
21	13-09-2017	Unit-4 Definition of flood, factors affecting flood		
22	13-09-2017	Methods of estimation –envelope curves		
23	to 23-09-2017	Methods of estimation empirical formulae and rational method		
24	26-09-2017	Flood routing: Introduction to hydrological routing, relationship of out flow and storage		
25	27-09-2017	General storage equation		
26	27-09-2017	Muskingum routing method		

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DEPARTMENT OF CIVIL ENGINEERING

Semester: V **Year: 2017-18**

Subject Title: **Transportation Engineering-I**	*Subject Code:***10CV56**
Total contact Hours: ***52***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Prakash J**	*Date:* ***07/08/17***
*Checked by:***Dr.M A Nagesh**	

Learning Objectives:

1. The evaluation of reinforced concrete as a structural material for domestic, industrial, highway, marine, environmental and storage structures is highlighted and prominent landmarks in the development of materials and also comprehensive description of the various properties of concrete and types of reinforcement used in structural concrete along with relevant Indian standard code specification.
2. Ultimate strength of structural concrete members in flexure, shear, compression and torsion and their combination in chapter 2.
3. Limit state method of designing, beams, slabs, columns, footings and staircase in a logical sequence from chapter 3 to 8.

Learning Outcomes:

Students will come to know about designing of beams, slabs, columns, footings and staircase in limit state method.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Text book: Highway Engineering** – S K Khanna and C E G Justo,

Reference Books:

1. **Highway Engineering** - L R Kadiyali, Khanna Publishers, New Delhi
2. **Transportation Engineering** – K P Subramanium, Scitech Publications, Chennai
3. **Transportation Engineering – James** H Banks, Mc. Graw. Hill Pub. New Delhi,
4. **Highway Engineeering** – R. Sreenivasa Kumar, University Press. Pvt. Ltd. Hyderabad

Scheme of Examination:

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part-A** and two questions from **Part-B.**

Evaluation:

Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks)

Sl No	Date	Topics	Remarks
		PART-A	
		UNIT 1: INTRODUCTION	
1	10/08/17	Principles Of Transportation Engineering	
2	10/08/17	Importance of transportation, Different modes of transportation and comparison	
3	11/08/17	Characteristics of road transport Jayakar committee recommendations, and implementation –	
4	12/08/17	Central Road Fund, Indian Roads Congress, Central Road Research Institute	
		UNIT 2 :HIGHWAY DEVELOPMENT AND PLANNING	
5	17/08/17	Road types and classification, road patterns, planning surveys,	
6	17/08/17	master plan – saturation system of road planning,	
7	18/08/17	phasing road development in India, problems on best alignment among alternate proposals	
8	19/08/17	Salient Features of 3rd and 4th twenty year road development plans and Policies, (KSHIP & KRDCL) Road development plan - vision 2021.	
9	24/08/17	Present scenario of road development in India (NHDP & PMGSY) and in Karnataka	
10	24/08/17	Road development plan - vision 2021.	
		UNIT – 3: HIGHWAY ALIGNMENT AND SURVEYS	
11	26/08/17	Ideal Alignment, Factors affecting the alignment,	
12	31/08/17	Engineering surveys-Map study, Reconnaissance	
13	31/08/17	Preliminary and Final location & detailed survey	
14	01/09/17	Reports and drawings for new and re-aligned projects	
15	07/09/17	Highway Geometric Design – I: Importance, Terrain classification, Design speed	
17	07/09/17	Factors affecting geometric design	
17	08/09/17	Cross sectional elements-Camber- width of pavement- Shoulders-, Width of formation- Right of way, Typical cross sections	
18	09/09/17	Cross sectional elements-Camber- width of pavement-Shoulders-, Width of formation- Right of way, Typical cross sections	
19	14/09/17	Cross sectional elements-Camber- width of pavement- Shoulders-, Width of formation- Right of way, Typical cross sections	
		UNIT – 4 HIGHWAY GEOMETRIC DESIGN – II:	
20	14/09/17	Sight Distance- Restrictions to sight distance- Stopping sight distance- Overtaking sight distance- overtaking zones	
21	15/09/17	Sight Distance- Restrictions to sight distance- Stopping sight distance- Overtaking sight distance- overtaking zones	
22	21/09/17	Examples on SSD and OSD- Sight distance at intersections	
23	21/09/17	Examples on SSD and OSD- Sight distance at intersections	
24	22/09/17	Horizontal alignment-Radius of Curve- Superelevation – Extra widening, Transition curve and its length, setback distance – Examples	
25	23/09/17	Horizontal alignment-Radius of Curve- Superelevation – Extra widening, Transition curve and its length, setback distance – Examples	
26	28/09/17	Vertical alignment-Gradient-summit and valley curves with examples.	

		UNIT – 5: PAVEMENT MATERIALS	
27	28/09/17	Subgrade soil – desirable properties-HRB soil classification-determination of CBR and modulus of subgrade reaction	
28	06/10/17	Examples on CBR and Modulus of subgrade reaction	
29	07/10/17	Examples on CBR and Modulus of subgrade reaction	
30	12/10/17	Aggregates- Desirable properties and list of tests	
31	12/10/17	Bituminous materials-Explanation on Tar, bitumen, cutback and emulsion-List of tests on bituminous materials	
32	13/10/17	Bituminous materials-Explanation on Tar, bitumen, cutback and emulsion-List of tests on bituminous materials	
		UNIT – 6 :PAVEMENT DESIGN	
33	14/10/17	Pavement types, component parts of flexible and rigid pavements and their functions,design factors, ESWL and its determination	
34	19/10/17	Pavement types, component parts of flexible and rigid pavements and their functions,design factors, ESWL and its determination-Examples	
35	19/10/17	Flexible pavement- Design of flexible pavements as per IRC;37-2001-Examples,	
36	21/10/17	Rigid pavement- Westergaard's equations for load and temperature stresses	
37	26/10/17	Examples- Design of slab thickness only as per IRC:58-2002	
38	26/10/17	Examples- Design of slab thickness only as per IRC:58-2002	
		UNIT – 7 PAVEMENT CONSTRUCTION:	
39	02/11/17	Earthwork –cutting-Filling, Preparation of subgrade,	
40	02/11/17	Specification and construction of i) Granular Subbase, ii) WBM Base	
41	03/11/17	iii) WMM base, iv) Bituminous Macadam,	
42	04/11/17	v) Dense Bituminous Macadam vi) Bituminous Concrete, vii) Dry Lean Concrete sub base and PQC	
43	09/11/17	vii) Dry Lean Concrete sub base and PQC	
44	09/11/17	Highway Drainage: Significance and requirements,	
45	10/11/17	Surface drainage system and design-Examples, sub surface drainage system, design of filter materials	
46	10/11/17	Surface drainage system and design-Examples, sub surface drainage system, design of filter materials	
		UNIT – 8 HIGHWAY ECONOMICS:	
47	11/11/17	Highway user benefits, VOC using charts only-Examples	
48	11/11/17	Economic analysis - annual cost method	
49	13/11/17	Benefit Cost Ratio method	
50	14/11/17	NPV-IRR methods Examples	
51	15/11/17	NPV-IRR methods Examples	
52	15/11/17	Highway financing-BOT-BOOT concepts	

Mr Prakash J
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DEPARTMENT OF CIVIL ENGINEERING

Semester: V **Year: 2017-18**

Subject Title : **Design of RC Structural Elements**	*Subject Code:* **15CV51**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date: 07/08/17*
Checked by: **Dr. M A Nagesh**	*Date: 07/08/17*

Learning Objectives:

1. Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
2. Follow a procedural knowledge in designing various structural RC elements.
3. Impart the culture of following the codes for strength, serviceability and durability as an ethics.
4. Provide knowledge in analysis and design of RC elements for the success in competitive examinations

Learning Outcomes:

1. Understand the design philosophy and principles
2. Solve engineering problems of RC elements subjected to flexure, shear and torsion
3. Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings
4. Owns professional and ethical responsibility

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**

1. **Reinforced Concrete Design**- Unnikrishnan Pillai and Devdas menon., McGraw Hill.
2. **Design of Concrete Structures**- Subramanian, Oxford university press.
3. **Reinforce concrete Vol 1**:- H J Shah, Charotor publishing House..
5. IS : 456 :2000
6. SP-16

Scheme of Examination:

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV52- Design of RC Structural Elements

Sl No	Date	Topics	Topics Covered	Remarks
		UNIT 1: INTRODUCTION TO LIMIT STATE & SERVICEABILITY		
1	07/08/17	Introduction to working stress method,.		
2	10/08/17	Difference between Working stress and Limit State Method of design, Modular Ratio and Factor of Safety.		
3	11/08/17	Philosophy and principle of limit state design with assumptions		
4	12/08/17	Partial Safety factors, Characteristic load and strength. Stress block parameters,		
5	14/08/17	Concept of balanced section, under reinforced and over reinforced section.		
6	17/08/17	Limiting deflection, short term deflection, long term deflection		
7	18/08/17	Calculation of deflection of singly reinforced beam only.		
8	19/08/17	Calculation of deflection of singly reinforced beam only		
9	21/08/17	Cracking in reinforced concrete members,		
10	23/08/17	Calculation of crack width of singly reinforced beam.		
11	24/08/17	Calculation of crack width of singly reinforced beam.		
12	26/08/17	Side face reinforcement, slender limits of beams for stability.		
		UNIT – 2: LIMIT STATE ANALYSIS OF BEAM		
13	28/08/17	Analysis of singly reinforced beams for flexure and shear		
14	31/08/17	Analysis of singly reinforced beams for flexure and shear		
15	01/09/17	Analysis of doubly reinforced beams for flexure and shear		
16	04/09/17	Analysis of doubly reinforced beams for flexure and shear		
17	07/09/17	Analysis of doubly reinforced beams for flexure and shear		
18	08/09/17	Analysis of flanged beams for flexure and shear		
19	09/09/17	Analysis of flanged beams for flexure and shear		
20	11/09/17	Analysis of flanged beams for flexure and shear		
		UNIT – 3: LIMIT STATE DESIGN OF BEAMS		
21	14/09/17	Design of singly and doubly reinforced beams		
22	15/09/17	Design of singly and doubly reinforced beams		
23	21/09/17	Design of singly and doubly reinforced beams		
24	22/09/17	Design of singly and doubly reinforced beams		
25	23/09/17	Design of flanged beams for shear,		
26	25/09/17	Design of flanged beams for shear,		
27	28/10/17	Design of flanged beams for shear,		
28	6/10/17	Design for combined bending and torsion		
29	7/10/17	Design for combined bending and torsion		
30	9/10/17	Design for combined bending and torsion		

		UNIT – 4: LIMIT STATE DESIGN OF SLAB AND STAIR		
31	10/10/17	Introduction to one way and two way slabs		
32	10/10/17	Design of cantilever slab.		
33	12/10/17	Design of simply supported slab		
34	13/10/17	Design of one way continuous slab.		
35	13/10/17	Design of one way continuous slab.		
36	14/10/17	Design of two way slabs for different boundary conditions.		
37	16/10/17	Design of two way slabs for different boundary conditions		
38	17/10/17	Design of dog legged staircase		
39	17/10/17	Design of open well staircase		
40	19/10/17	Importance of bond, anchorage length and lap length		
		UNIT - 5 LIMIT STATE OF COLUMN		
41	21/10/17	Analysis and design of short axially loaded RC column		
42	21/10/17	Analysis and design of short axially loaded RC column		
43	23/10/17	Analysis and design of short axially loaded RC column		
44	24/10/17	Design of columns with uniaxial and biaxial moments		
45	26/10/17	Design of columns with uniaxial and biaxial moments		
46	2/11/17	Design of columns with uniaxial and biaxial moments		
47	3/11/17	Design of columns with uniaxial and biaxial moments		
48	4/11/17	Design concepts of the footings		
49	9/11/17	Design concepts of the footings		
50	10/11/17	Design of Rectangular and square column footings with axial load and also for axial load & moment		
51	11/11/17	Design of Rectangular and square column footings with axial load and also for axial load & moment		
52	13/11/17	Design of Rectangular and square column footings with axial load and also for axial load & moment		

Mr. Vinuthan V R
Course Instructor

Dr. M A Nagesh
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25/10/17
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DEPARTMENT OF CIVIL ENGINEERING

Semester: **V**

Year: 2017-18

[As per Choice Based Credit System (CBCS) scheme]

Subject Title: **Analysis of Indeterminate Structures**	*Subject Code:* **15CV52**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **07/08/17**
Checked by: **Dr. M A Nagesh**	

Course objectives:

This course will enable students to:

1. Ability to apply knowledge of mathematics and engineering in calculating slope, deflection, bending moment and shear force using slope deflection, moment distribution method and Kani's method.
2. Ability to identify, formulate and solve problems in structural analysis.
3. Ability to analyze structural system and interpret data.
4. Ability to use the techniques, such as stiffness and flexibility methods to solve engineering problems
5. Ability to communicate effectively in design of structural elements

Course outcomes:

After studying this course, students will be able to:

1. Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method
2. Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
3. Construct the bending moment diagram for beams and frames by Kani's method.
4. Construct the bending moment diagram for beams and frames using flexibility method
5. Analyze the beams and indeterminate frames by system stiffness method.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. **Basic Structural Analysis**- Reddy C.S. - Second Edition, TataMcGraw Hill Publication Company Ltd.
2. **Theory of Structures Vol. 2** - S.P. Gupta, G.S. Pandit and R.Gupta, Tata McGraw Hill Publication Company Ltd.
3. **Structural Dynamics**-by M.Mukhopadhyay.
4. **Structural Analysis-II** -S. S. Bhavikatti – Vikas Publishers, NewDelhi.
5. **Basics of Structural Dynamics and Aseismic Design** ByDamodharSwamy and Kavita PHI Learning Private Limited.

6. **Structural Analysis**- D.S. PrakashRao,, A Unified Approach, University Press
7. **Structural Analysis-4**th SI Edition by AmitPrasanth & AslamKassimali, Thomson Learning.

3) Text Books:

1. Hibbeler R C, " Structural Analysis", Pearson Publication
2. L S Negi and R S Jangid, "Structural Analysis", Tata McGraw-Hill Publishing Company Ltd.
3. D S Prakash Rao, "Structural Analysis: A Unified Approach", Universities Press
4. K.U. Muthu, H.Narendra etal, "Indeterminate Structural Analysis", IK International Publishing Pvt. Ltd.

4) Scheme of Examination:

Question paper pattern:

- The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
- There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
- Each full question shall cover the topics as a module
- The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

Evaluation:

Student Assessment: Through Internal Assessment Tests (20 Marks), Assignments. University Examinations (80 Marks).

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SHRIDEVI EDUCATION

LECTURE PLAN

Sl No	Date	Topics	Remark
		Module -01: Slope Deflection Method	
1	07-08-2017	Introduction, Sign convention,	
2	09-08-2017	Development of slope-deflection equations	
3	10-08-2017	Analysis of Beams- problems	
4	12-08-2017	Analysis of Beams- problems	
5	14-08-2017	Analysis ofOrthogonal Rigid jointed plane frames- problems	
6	16-08-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
7	17-08-2017	Analysis of rigid jointed plane frames by slope-deflection equations	
8	19-08-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
9	21-08-2017	Analysis of rigid jointed plane frames by slope-deflection equations	
10	23-08-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Module -02 : Moment Distribution Method	
11	24-08-2017	Introduction, Definition of terms-Distribution factor, Carry over factor	
12	26-08-2017	Development of method	
13	28-08-2017	Analysis of Beams- problems	
14	30-08-2017	Analysis of Beams- problems	
15	31-08-2017	Analysis of Beams- problems	
16	04-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
17	06-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
18	07-09-2017	Analysis of rigid jointed plane frames byMoment Distribution Method	
19	09-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
20	11-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Module -03 : Kanis Methods	
21	13-09-2017	Introduction, Definition of terms	
22	14-09-2017	Analysis of Beams- problems	
23	21-09-2017	Analysis of Beams- problems	
24	23-09-2017	Analysis of Beams- problems	
25	25-09-2017	Analysis of Beams- problems	
26	27-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
27	28-09-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
28	04-10-2017	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Module -04 : Matrix Method of Analysis (Flexibility Method)	
29	07-10-2017	Introduction,	
30	09-10-2017	Development of flexibility matrix for plane truss element	
31	11-10-2017	Development of flexibility matrix for plane truss element	
32	12-10-2017	flexibility matrix for axially rigid plane framed structural elements	
33	14-10-2017	flexibility matrix for axially rigid plane framed structural elements	
34	16-10-2017	flexibility matrix for axially rigid plane framed structural elements	
35	19-10-2017	Analysis of plane truss	
36	21-10-2017	Analysis of plane truss	

37	23-10-2017	Analysis of plane truss	
38	25-10-2017	Analysis of axially rigid plane frames	
39	26-10-2017	Analysis of axially rigid plane frames	
Module -05: Matrix Method of Analysis (Stiffness)			
40	02-11-2017	Introduction, Development of flexibility matrix for plane truss element	
41	04-11-2017	flexibility matrix for axially rigid plane framed structural elements	
42	07-11-2017	flexibility matrix for axially rigid plane framed structural elements	
43	08-11-2017	flexibility matrix for axially rigid plane framed structural elements	
44	09-11-2017	Analysis of plane truss	
45	11-11-2017	Analysis of plane truss	
46	11-11-2017	Analysis of plane truss	
47	13-11-2017	Analysis of plane truss	
48	13-11-2017	Analysis of axially rigid plane frames	
49	13-11-2017	Analysis of axially rigid plane frames	
50	15-11-2017	Analysis of axially rigid plane frames	

(Manogna H N)
Course Instructor

(Dr. M.A. Nagesh)
HOD

(Dr H B Phani Raju)
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DEPARTMENT OF CIVIL ENGINEERING

Semester: V Sem *Year: 2017-18*

Subject Title: **AppliedGeotechnical Engineering**	*Subject Code:* **15CV53**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **07/08/2017**
Checked by: **Dr. M. A.Nagesh**	

Course objectives: This course will enable students to

1. Appreciate basic concepts of soil mechanics as an integral part in the knowledge of Civil Engineering. Also to become familiar with foundation engineering terminology and understand how the principles of Geotechnology are applied in the design of foundations

2. Learn introductory concepts of Geotechnical investigations required for civil engineering projects emphasizing in-situ investigations

3. Conceptually learn various theories related to bearing capacity of soil and their application in the design of shallow foundations and estimation of load carrying capacity of pile foundation

4. Estimate internal stresses in the soil mass and application of this knowledge in proportioning of shallow and deep foundation fulfilling settlement criteria

5. Study about assessing stability of slopes and earth pressure on rigid retaining structures.

Course outcomes: On the completion of this course students are expected to attain the following outcomes:

1. Ability to plan and execute geotechnical site investigation program for different civil engineering projects

2. Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils

3. Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures

4. Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure

5. Capable of estimating load carrying capacity of single and group of piles

Program Objectives

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question paper pattern:

- The question paper will have ten questions.
- Each full question consists of 16 marks.
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.
- Use of IS: 6403 shall be permitted.

Text Books:

1. Gopal Ranjan and Rao A.S.R., Basic and Applied Soil Mechanics, New Age International (P) Ltd., New Delhi.

2.Punmia B C, Soil Mechanics and Foundation Engineering, Laxmi Publications co., New Delhi.

3. Murthy V.N.S., Principles of Soil Mechanics and Foundation Engineering, UBS Publishers and Distributors, New Delhi.

4.Braja, M. Das, Geotechnical Engineering: Thomson Business Information India (P) Ltd., India

Reference Books:

1. T.W. Lambe and R.V. Whitman, Soil Mechanics-, John Wiley & Sons

2. Donald P Coduto, Geotechnical Engineering- Phi Learning Private Limited, New Delhi

3. Gopi K. Gulathi&ManojDatta, Geotechnical Engineering-. , Tata McGraw Hill Publications

4.BrijMohanMoitra, "Geotechnical Engineering" , Universities Press.,

5. Malcolm D Bolton, " A Guide to soil mechanics", Universities Press., 6. Bowles J E , Foundation analysis and design, McGraw- Hill Publications

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LECTURE PLAN

15CV53 – Applied Geotechnical Engineering

Sl.No	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1 SOIL EXPLORATION	**L1,L2,L3**
1	07-08-2017	Introduction, Objectives and Importance,	
2	09-08-2017	Stages and Methods of exploration- Test pits, Borings,	
3	10-08-2017	Geophysical exploration and Geophysical methods,	
4	11-08-2017	Stabilization of boreholes, Sampling techniques,	
5	14-08-2017	Undisturbed, disturbed and representative samples,	
6	16-08-2017	Bore hole log,	
7	17-08-2017	Drainage and Dewatering methods,	
8	18-08-2017	Estimation of depth of GWT (Hvorslev's method).	
9	21-08-2017	Problems in Module-1	
10	23-08-2017	Problems in Module-1	
		MODULE- 2 STRESS IN SOILS	**L2,L3,L4**
1	24-08-2017	Introduction, Boussinesq's and Westergaard's theory	
2	28-08-2017	Concentrated load	
3	30-08-2017	Circular and rectangular load	
4	31-08-2017	Equivalent point load method	
5	01-09-2017	Pressure distribution diagrams and contact pressure,	
6	04-09-2017	Newmark's chart	
7	06-09-2017	Foundation Settlement - Approximate method for stress distribution on a horizontal plane,	
8	07-09-2017	Types of settlements and importance	
9	08-09-2017	Computation of immediate and consolidation settlement	
10	11-09-2017	Problems in Module-2	
		MODULE-3 LATERIAL EARTH PRESSURE AND STABILITY OF SLOPES	**L2,L4,L5**
1	13-09-2017	Active, Passive and earth pressure at rest,	
2	14-09-2017	Rankine's theory for cohesionless and cohesive soils,	
3	15-09-2017	Coulomb's theory,	
4	21-09-2017	Rebhann's and Culmann's graphical construction.	
5	22-09-2017	Stability of Slopes : Assumptions, infinite and finite slopes,	
6	25-09-2017	Factor of safety, use of Taylor's stability charts,	
7	27-09-2017	Swedish slip circle method for C and C-ϕ (Method of slices) soils,	
8	28-09-2017	Fellineons method for critical slip circle	
9	29-09-2017	Problems in Module-3	
10	09-10-2017	Problems in Module-3	
		MODULE-4 BEARING CAPACITY AND SHALLOW FOUNDATION	**L2,L4,L5,L6**
1	11-10-2017	Types of foundations,	
2	12-10-2017	Determination of bearing capacity by Terzaghi's and BIS method (IS: 6403).	

13	13-10-2017	Effect of water table and eccentricity,	
14	16-10-2017	Field methods - plate load test	
15	19-10-2017	SPT test	
16	23-10-2017	Proportioning of shallow foundations- isolated	
17	25-10-2017	Proportioning of shallow foundations combined footings (only two columns)	
18	26-10-2017	Problems in Module-4	
19	02-11-2017	Problems in Module-4	
20	03-11-2017	Problems in Module-4	
		MODULE-5	**L2,L3,L4**
21	08-11-2017	Types and classification of piles,	
22	09-11-2017	Single loaded pile capacity in cohesion less and cohesive soilby static formula	
23	10-11-2017	Efficiency of file group, Group capacity of piles in cohesionless and in cohesive soils	
24	13-11-2017	Negative skin friction, Pile load tests, Settlement of piles,	
25	15-11-2017	Under reamed piles (only introductory concepts – no derivation) Problems in Module-5	

(Mr. Mahesh Kumar)
Staff in Charge

(Dr. M.A. Nagesh)
HOD Head
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Principal

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Sri Shridevi Charitable Trust [R]

Shridevi Institute of Engineering and Technology

(Affiliated to Visvesvaraya Technological University and Approved by AICTE)

DEPARTMENT OF CIVIL ENGINEERING

Semester: V

Year: 2017-18

Subject Title: **COMPUTER AIDED BUILDING PLANNING & DRAWING**	*Subject Code:* **15 CV54**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Nagaraja C /VinuthanV.R**	*Date of commencement of semester :* ***7/08/17***
Checked by: **Dr M A Nagesh**	

Learning Objectives:

The students will learn & draw

- Achieve skill sets to prepare computer aided engineering drawings
- Understand the details of construction of different building elements.
- Visualize the completed form of the building and the intricacies of construction based on the engineeringdrawings.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations
2) **Text book \ Reference Books:**
   i. Building drawing with an integrated approach to Built Environment Drawing:-MG Shah
   ii. Building Construction- Gurucharan Singh, Standard publishers.
   iii. Civil Engineering Drawing:-Malik R S and Meo G S, Asian publishers.
   iv. National Building code
3) **Scheme of Examination:**
   i. In **Part A**, Two questions to be set, out of which one question to be answered (30% weightage).
   ii. In **Part B**, Two questions to be set, out of which one question to be answered (70% weightage).
4) **Evaluation:**
   Student Assessment: Through Internal Assessment Tests (20 Marks), Assignments. University Examinations (80 Marks).

DEPARTMENT OF CIVIL ENGINEERING
15CV 54 – COMPUTER AIDED BUILDING &DRAWING
BATCH -1

Sl.No.	Class	Date	Hrs	Topics	Remarks
				Unit 1:	
1	Theory	8-08-17	1	Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations	
2	Practice	10-08-17	3		
3	Practice	17-08-17	3	Simple engineering drawings with CAD drawing tools : Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline, Ellipse, Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customizing toolbars, Working with multiple drawings	
4	Theory	22-08-17	1		
5	Practice	24-08-17	3		
				Unit 2:	
7	Theory	29-08-17	1	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings, Different types of bonds in brick masonry	
8	Practice	31-08-17	3		
9	Theory	05-9-17	1	Different types of staircases – Dog legged, Open well, Lintel and chajja RCC slabs and beams, Cross section of a pavement	
10	Practice	07-9-17	3		
11	Theory	12-9-17	1	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system Cross sectional details of a road for a Residential area with provision for all services Steel truss	
12	Practice	14-9-17	3		
				Unit 3:	
13	Practice	21-09-17	3	Principles of planning, Planning regulations and building bye-laws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings.	
14	Theory	26-09-17	1		
15	Practice	28-09-17	3	Single and Double story residential building	
17	Theory	3-10-17	1		
18	Theory	10-10-17	1	Hostel building	
19	Practice	12-10-17	3		
20	Theory	17-10-17	1	Hospital building	
21	Practice	19-10-17	3		
22	Theory	24-10-17	1	School building	
23	Practice	26-10-17	3		
24	Theory	31-10-17	1		
25	Practice	2-11-17	3		
25	Theory	7-11-17	1	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
26	Practice	9-11-17	3		
27	Theory	14-11-17	1		

(Mr. Nagraja C/Vinuthan VR)
Staff in Charge

(Dr M A Nagesh)
H.O.D

(Dr. HB Phani Raju)
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DEPARTMENT OF CIVIL ENGINEERING
15CV 54 – COMPUTER AIDED BUILDING &DRAWING
BATCH -2

Sl.No.	Class	Date	Hrs	Topics	Remarks
Unit 1:					
1	Practice	7-08-17	3	Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations	
2	Theory	8-08-17	1		
3	Practice	14-08-17	3	Simple engineering drawings with CAD drawing tools : Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline, Ellipse, Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customizing toolbars, Working with multiple drawings	
4	Practice	21-08-17	3		
5	Theory	22-08-17	1		
Unit 2:					
7	Practice	28-08-17	3	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings, Different types of bonds in brick masonry	
8	Theory	29-08-17	1		
9	Practice	04-9-17	3	Different types of staircases – Dog legged, Open well, Lintel and chajja RCC slabs and beams, Cross section of a pavement	
10	Theory	05-9-17	1		
11	Practice	11-9-17	3	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system Cross sectional details of a road for a Residential area with provision for all services Steel truss	
12	Theory	12-9-17	1		
Unit 3:					
13	Practice	25-09-17	3	Principles of planning, Planning regulations and building bye-laws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings.	Special class
14	Theory	26-09-17	1		
15	Theory	3-10-17	1	Single and Double story residential building	
17	Practice	9-10-17	3		
18	Theory	10-10-17	1	Hostel building	
19	Practice	16-10-17	3		
20	Theory	17-10-17	1	Hospital building	
21	Practice	23-10-17	3		
22	Theory	24-10-17	1	School building	
23	Theory	31-10-17	1		
24	Practice	3-11-17	4		
25	Theory	7-11-17	1	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
26	Practice	13-11-17	3		
27	Theory	14-11-17	1		

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DEPARTMENT OF CIVIL ENGINEERING
15CV 54 – COMPUTER AIDED BUILDING &DRAWING
BATCH -3

Sl.No.	Class	Date	Hrs	Topics	Remarks
				Unit 1:	
1	Theory	8-08-17	1	Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations	
2	Practice	8-08-17	3		
3	Theory	22-08-17	1	Simple engineering drawings with CAD drawing tools : Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline, Ellipse, Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customizing toolbars, Working with multiple drawings	
4	Practice	22-08-17	3		
5	Theory	29-08-17	1		
	Practice	29-08-17	3		
				Unit 2:	
9	Theory	05-9-17	1	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings, Different types of bonds in brick masonry Different types of staircases – Dog legged, Open well, Lintel and chajja RCC slabs and beams, Cross section of a pavement	
10	Practice	05-9-17	3		
11	Practice	12-9-17	3	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system Cross sectional details of a road for a Residential area with provision for all services Steel truss	
12	Theory	12-9-17	1		
				Unit 3:	
13	Theory	26-09-17	1	Principles of planning, Planning regulations and building bye-laws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings.	
14	Practice	26-09-17	3		
15	Theory	3-10-17	1	Single and Double story residential building	
17	Practice	3-10-17	3		
18	Theory	10-10-17	1	Hostel building	
19	Practice	10-10-17	3		
20	Theory	17-10-17	1	Hospital building	
21	Practice	17-10-17	3		
22	Theory	24-10-17	1	School building	
23	Practice	24-10-17	3		
24	Theory	31-10-17	1		
	Practice	31-10-17	3		
25	Theory	7-11-17	1	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
26	Practice	7-11-17	3		
27	Theory	14-11-17	1		
28	Practice	14-11-17	3		

(Mr. Nagraja C/Vinuthan VR)
Staff in Charge

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DEPARTMENT OF CIVIL ENGINEERING

Semester: V *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2017-18**

Course Title: **Railways, Harbour, Tunneling and Airports**	*Subject Code:* **15CV552**
Total contact Hours: **44**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Prakash J**	*Date:* **07/08/2017**
Checked by: **Dr. M A Nagesh**	*Credits:* ***02***

Course objectives:

This course will enable students to:

1. Understand the history and development, role of railways, railway planning and development based on essential criteria's.
2. Learn different types of structural components, engineering properties of the materials, to calculate the material quantities required for construction
3. Understand various aspects of geometric elements, points and crossings, significance of maintenance of tracks.
4. Design and plan airport layout, design facilities required for runway, taxiway and impart knowledge about visual aids
5. Apply design features of tunnels, harbours, dock and necessary navigational aids; also expose them to various methods of tunneling and tunnel accessories.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Acquires capability of choosing alignment and also design geometric aspects of railway system, runway, taxiway.
2. Suggest and estimate the material quantity required for laying a railway track and also will be able to determine the hauling capacity of a locomotive.
3. Develop layout plan of airport, harbor, dock and will be able relate the gained knowledge to identify required type of visual and/or navigational aids for the same.
4. Apply the knowledge gained to conduct surveying, understand the tunnelling activities.

Question paper pattern:

• The question paper will have Ten questions, each full question carrying 16 marks.

• There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.

• Each full question shall cover the topics under a module.

• The students shall answer Five full questions selecting one full question from each module.

• If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

• Engineering knowledge

• Problem analysis

• Interpretation of data

Text Books:

1. Saxena Subhash C and Satyapal Arora, "A Course in Railway Engineering", Dhanpat Rai and Sons, Delhi,

2. Satish Chandra and Agarwal M.M, "Railway Engineering", 2nd Edition, Oxford University Press, New Delhi,

3. Khanna S K, Arora M G and Jain S S, "Airport Planning and Design", Nemchand and Brothers, Roorkee,

4. C Venkatramaiah, " Transportation Engineering", Volume II: Railways, Airports, Docks and Harbours, Bridges and Tunnels, Universities Press

5. Bindra S P, "A Course in Docks and Harbour Engineering", Dhanpat Rai and Sons, New Delhi,

Reference Books:

1. Oza.H.P. and Oza.G.H., "A course in Docks & Harbour Engineering". Charotar Publishing Co.,

2. Mundrey J.S. "A course in Railway Track Engineering". Tata McGraw Hill,

3. Srinivasan R. Harbour, "Dock and Tunnel Engineering", 26th Edition 2013

Lesson Plan

Sl No	Date	Topics	Remarks
		Module -1: Railway Planning	
1	07/08/17	Significance of Road, Rail, Air and Water transports, creep in rails, defects in rails,	
2	09/08/17	Coordination of all modes to achieve sustainability	
3	11/08/17	Elements of permanent way – Rails, Sleepers, Ballast, rail fixtures and fastenings	
4	12/08/17	Track Stress, coning of wheels	
5	14/08/17	Route alignment surveys, conventional and modern methods	
6	16/08/17	Soil suitability analysis, Geometric design of railways	
7	18/08/17	gradient, super elevation	
8	19/08/17	widening of gauge on curves, Points and Crossings	
		Module -2: Railway Construction and Maintenance	
9	21/08/17	Earthwork	
10	23/08/17	Stabilization of track on poor soil	
11	26/08/17	Calculation of Materials required for track laying	
12	28/08/17	Construction and maintenance of tracks-	
13	30/08/17	Modern methods of construction & maintenance	
14	01/09/17	Railway stations and yards and passenger amenities	
15	04/09/17	Urban rail – Infrastructure for Metro,	
16	06/09/17	Mono and underground railways.	
		Module -3: Harbour and Tunnel Engineering	
17	08/09/17	Definition of Basic Terms	
18	09/09/17	Planning and Design of Harbours	
19	11/09/17	Requirements, Classification	
20	13/09/17	Location and Design Principles – Harbour Layout and Terminal Facilities	
21	15/09/17	Coastal Structures, Inland Water Transport,	
22	22/09/17	Wave action on Coastal Structures and Coastal Protection Works.	
23	23/09/17	Tunneling: Introduction, size and shape of the tunnel	
24	25/09/17	tunneling methods in soils	
25	27/09/17	tunnel lining, tunnel drainage and ventilation	

		Module -4: Airport Planning	
26	**04/10/17**	Air transport characteristics,	
27	**06/10/17**	airport classification	
28	**06/10/17**	air port planning: objectives, components	
29	**07/10/17**	layout characteristics,	
30	**09/10/17**	socio-economic characteristics of the catchment area,	
31	**11/10/17**	criteria for airport site selection and ICAO stipulations	
32	**13/10/17**	typical airport layouts,	
33	**14/10/17**	Parking and circulation area.	
		Module -5: Airport Design	
34	**16/10/17**	Runway Design: Orientation, Wind Rose Diagram,	
35	**21/10/17**	Wind Rose Diagram continued,	
36	**23/10/17**	Runway length,	
37	**25/10/17**	Problems on basic and Actual Length	
38	**03/11/17**	Geometric design of runways	
39	**04/11/17**	Pavement Design Principles	
40	**08/11/17**	Configuration and, Elements of Taxiway Design,	
41	**10/11/17**	Airport Zones, Passenger Facilities and Services	
42	**11/11/17**	Runway and Taxiway Markings	
43	**13/11/17**	Runway and Taxiway lighting	
44	**15/11/17**	Revision	

Mr Prakash J
Course Instructors

Dr. M A Nagesh
HOD

Dr. H B Phani Raju
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Year: 2017-18

Semester: *V Sem*

Subject Title: **Remote Sensing and GIS**	*Subject Code:* **15CV563**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr.M.A. Nagesh**	*Date of commencement of semester:* **07/08/2017**
Checked by: **Dr. M. A.Nagesh**	

Course objectives: This course will enable students to

1. Understand the basic concepts of remote sensing
2. Analyze satellite imagery and extract the required units.
3. Extract the GIS data and prepare the thematic maps
4. Use the thematic maps for various applications

Course outcomes: After studying this course, students will be able to:

1. Collect data and delineate various elements from the satellite imagery using their spectral signature.
2. Analyze different features of ground information to create raster or vector data.
3. Perform digital classification and create different thematic maps for solving specific problems
4. Make decision based on the GIS analysis on thematic maps

Program Objectives

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question paper pattern:

· The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks

· There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.

· Each full question shall cover the topics as a module

· The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. Narayan Panigrahi, **"Geographical Information Science"**, ISBN 10: 8173716285 / ISBN 13: 9788173716287,University Press 2008.

2. Basudeb Bhatta, **"Remote sensing and GIS"**, ISBN:9780198072393, Oxford University Press 2011

3. Kang – Tsurg Chang, **"Introduction to Geographic Information System".** Tata McGraw Hill Eduction Private
Limited 2015.

4. Lillesand, Kiefer, Chipman, "Remote Sensing and Image Interpretation", Wiley 2011.

Reference Books:

1. Chor Pang Lo and Albert K.W Yeung, "Concepts & Techniques of GIS", PHI, 2006

2. John R. Jensen, "Remote sensing of the environment", An earth resources perspective – 2nd edition – by Pearson
Education 2007.

3. Anji Reddy M., "Remote sensing and Geograperhical information system", B.S. Publications 2008.

4. Peter A. Burrough, Rachael A. McDonnell, and Christopher D. Lloyd, "Principals of Geo physical Information system", Oxford Publications 2004.

5. S Kumar, "Basics of remote sensing & GIS", Laxmi publications 2005

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LECTURE PLAN

15CV563 – REMOTE SENSING AND GIS

Sl.No	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		MODULE- 1 Remote Sensing	L1,L2,L3
1	09-08-2017	**Remote Sensing**: Basic concept of Remote sensing	
2	10-08-2017	RS Data and Information, Remote sensing data collection,	
3	11-08-2017	Remote sensing advantages & Limitations	
4	12-08-2017	Remote Sensing process	
5	16-08-2017	Electromagnetic Spectrum	
6	17-08-2017	,Energy interactions with atmosphere and with earth surface features (soil, water, and vegetation),	
7	18-08-2017	Resolution of sensor	
8	19-08-2017	Image registration	
9	23-08-2017	Image and False colour composite	
10	24-08-2017	Elements of visual interpretation techniques	
		MODULE- 2 Remote Sensing Platforms and Sensors	L2,L3,L4
11	26-08-2017	**Remote Sensing Platforms and Sensors:** Indian Satellites and Sensors characteristics	
12	30-08-2017	Remote Sensing Platforms	
13	31-08-2017	Sensors and Properties of Digital Data	
14	1-09-2017	Data Formats: Introduction	
15	06-09-2017	Platforms- IRS, Landsat, SPOT	
16	07-09-2017	Cartosat,Ikonos, Envisat etc	
17	08-09-2017	Sensors, sensor resolutions (spatial, spectral, radiometric and temporal)	
18	09-09-2017	Basics of digital image processing- introduction to digital data, systematic errors(Scan Skew, Mirror-Scan Velocity, Panoramic Distortion	
19	08-09-2017	Platform Velocity , Earth Rotation) and non-systematic [random] errors(Altitude,Attitude),	
20	13-09-2017	Image enhancements(Gray Level Thresholding, level slicing, contrast stretching),image filtering	
		MODULE-3 Geographic Information System	L2,L3,L4
21	14-09-2017	**Geographic Information System:** Introduction to GIS	
22	15-09-2017	components of a GIS	
23	21-09-2017	Geognphically Referenced Data	

24	22-09-2017	Spatial Data- Attribute data-	
25	23-09-2017	Joining Spatial and attribute data	
26	27-09-2017	GIS Operations: Spatial Data Input – Attribute data Management,	
27	28-09-2017	Geographic coordinate System, Datum	
28	04-10-2017	Map Projections: Types of Map Projections	
29	06-10-2017	Projected coordinate Systems.	
30	07-10-2017	UTM Zones	
		MODULE-4 Data Models	
31	11-10-2017	**Data Models:** Vector data model	
32	12-10-2017	Representation of simple features – Topology and its importance	
33	13-10-2017	coverage and its data structure of Vector data	
34	14-10-2017	Shape file	
35	19-10-2017	Relational Data base	**L3,L4,L5**
36	21-10-2017	Raster Data Model	
37	25-10-2017	Elements of the Raster data model,	
38	26-10-2017	Types of Raster Data	
39	02-11-2017	Field based Raster model	
40	03-11-2017	Object based raster model	
		MODULE-5 Integrated Applications of Remote sensing and GIS:	
41	04-11-2017	RS & GIS Applications in land useland cover analysis	
42	08-11-2017	RS & GIS Applications in Change detection,	
43	09-11-2017	RS & GIS Applications in water resources	**L3,L4,L5,L6**
44	10-11-2017	RS & GIS Applications in urban planning.	
45	11-11-2017	RS & GIS Applications in environmental planning.	
46	08-11-2017	RS & GIS Applications in Natural resource management Traffic management RS & GIS Applications in Location Based Services And Its Applications	

(Dr. M.A. Nagesh)
Staff in Charge

(Dr. M.A. Nagesh)
HOD

Principal

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Semester: VI **Year: 2017-18**

Subject Title : **Environmental Engineering I**	*Subject Code:* **10CV61**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. VinuthanV R**	*Date: 05/02/18*
Checked by: **Dr. M A Nagesh**	*Date: 05/02/18*

Learning Objectives:

1 Analyze the variation of water demand and to estimate water requirement for a community.

2. Evaluate the sources and conveyance systems for raw and treated water.

3. Study drinking water quality standards and to illustrate qualitative analysis of water.

4. Design physical, chemical and biological treatment methods to ensure safe and potable water Supply

Learning Outcomes:

Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.

3. Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.

4. Design a comprehensive water treatment and distribution system to purify and distribute water to the required

quality standards.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.

2) **Reference Books**

1. **S.K.Garg, Environmental Engineering vol-I, Water supply Engineering – M/s Khanna Publishers, New Delhi 2010**

2. Mark.J Hammer, Water & Waste Water Technology, John Wiley & Sons Inc., New York, 2008.

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DEPARTMENT OF CIVIL ENGINEERING

10CV61-Environmental Engineering-1

Sl No	Date	Topics	Topics Covered	Remarks
		UNIT-1		
1	07/02/18	Introduction: Need for protected water supply. Demand of Water		
2	09/02/18	Types of water demands -domestic demand, industrial, institutional and commercial, public use, fire demand		
3	09/02/18	Types of water demands -domestic demand, industrial, institutional and commercial, public use, fire demand		
4	10/02/18	Types of water demands -domestic demand, industrial, institutional and commercial, public use, fire demand		
5	14/02/18	Factors affecting per capita demand,		
6	16/02/18	Factors affecting per capita demand,		
7	16/02/18	Variations in demand of water,Peak factor		
	16/02/18	Design period and factors governing design period.		
9	21/02/18	Different methods of population forecasting -with merits and demerits. & Problems		
10	23/02/18	Different methods of population forecasting -with merits and demerits. & Problems		
		UNIT -2		
11	23/02/18	SOURCES: Surface and subsurface sources – suitability with regard to quality and quantity.		
12	23/02/18	SOURCES: Surface and subsurface sources – suitability with regard to quality and quantity		
13	24/02/18	SOURCES: Surface and subsurface sources – suitability with regard to quality and quantity		
14	28/02/18	COLLECTION AND CONVEYANCE OF WATER: Intake structures –different types of intakes; factor of selection and location of intakes.		
15	02/03/18	factor of selection and location of intakes. Pumps- Necessity, types – power of pumps; factors for the selection of a pump		
16	02/03/18	Pipes – Design of the economical diameter for the rising main; Nomograms – use; Pipe appurtenances		
		UNITS-3		
17	02/03/18	QUALITY OF WATER: Objectives of water quality management		
18	03/03/18	wholesomeness & palatability, water borne diseases		
19	07/03/18	Water quality parameters – Physical, chemical and Microbiological		
20	14/03/18	Sampling of water for examination		
21	16/03/18	Water quality analysis (IS: 3025 and IS: 1622) using analytical and instrumental techniques		
22	16/03/18	Drinking water standards BIS & WHO guidelines		

		UNITS 4		
23	16/03/18	Objectives – Treatment flow-chart. Aeration-Principles, types of Aerators.		
24	17/03/18	Objectives – Treatment flow-chart. Aeration-Principles, types of Aerators.		
25	21/03/18	SEDIMENTATION: Theory, settling tanks, types, design		
26	23/03/18	Coagulant aided sedimentation		
27	23/03/18	Jar test, chemical feeding, flash mixing, and clariflocculator		
28	23/03/18	Jar test, chemical feeding, flash mixing, and clariflocculator		
		UNIT 5		
29	24/03/18	Mechanism – theory of filtration, types of filters, slow sand, rapid sand and pressure filters including construction, operation		
30	28/03/18	Mechanism – theory of filtration, types of filters, slow sand, rapid sand and pressure filters including construction, operation		
31	04/04/18	cleaning and their design – excluding under drainage system – back washing of filters. Operational problems in filters		
32	06/04/18	cleaning and their design – excluding under drainage system – back washing of filters. Operational problems in filters		
		UNIT 6		
33	06/04/18	DISINFECTION: Theory of disinfection, types of disinfection		
34	06/04/18	Chlorination, chlorine demand, residual chlorine		
35	07/04/18	use of bleaching powder. UV irradiation treatment – treatment of swimming pool water		
36	11/04/18	SOFTENING – definition, methods of removal of hardness by lime soda process and zeolite process RO & Membrane technique		
37	18/04/18	SOFTENING – definition, methods of removal of hardness by lime soda process and zeolite process RO & Membrane technique		
		UNIT 7		
38	20/04/18	MISCELLANEOUS TREATMENT: Removal of color, odor		
39	20/04/18	Adsorption technique, fluoridation and defluoridation		
40	21/04/18	DISTRIBUTION SYSTEMS: System of supply, service reservoirs and their capacity determination, methods of layout of distribution systems		
41	25/04/18	DISTRIBUTION SYSTEMS: System of supply, service reservoirs and their capacity determination, methods of layout of distribution systems		
42	02/05/18	DISTRIBUTION SYSTEMS: System of supply, service reservoirs and their capacity determination, methods of layout of distribution systems		
43	04/05/18	DISTRIBUTION SYSTEMS: System of supply, service reservoirs and their capacity determination, methods of layout of distribution systems		
44	04/05/18	DISTRIBUTION SYSTEMS: System of supply, service reservoirs and their capacity determination, methods of layout of distribution systems		
		UNIT-8		
45	05/05/18	MISCELLANEOUS: Pipe appurtenances		

46	09/05/18	MISCELLANEOUS: Pipe appurtenances		
47	11/05/18	various valves, type of fire hydrants		
48	11/05/18	various valves, type of fire hydrants		
49	11/05/18	pipefitting, Layout of water supply pipes in buildings.		
50	12/05/18	pipefitting, Layout of water supply pipes in buildings.		
51	12/05/18	pipefitting, Layout of water supply pipes in buildings.		
52	12/05/18	pipefitting, Layout of water supply pipes in buildings.		

Mr. Vinuthan V R
Course Instructor

Dr. M A Nagesh
HOD

Dr H B Phani Raju
Principal

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Shridevi Institute of Engineering and Technology

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DEPARTMENT OF CIVIL ENGINEERING

Semester: V I Year: 2017-18

Subject Title: **DESIGN AND DRAWING OF RC STRUCTURES**	*Subject Code:* **10 CV62**
Total contact Hours: **26 (T) + 39 (D)**	*Duration of Exam:* **04 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Ms Bhavya C H / Mr.C. Nagaraja**	*Date of commencement of semester :* ***05/02/18***
Checked by: **Dr M A Nagesh**	

Learning Objectives:

The students will learn & draw

1. About Layout Drawing: General layout of building showing, position of columns, footings, beams and slabs with standard notations.
2. About detailing of Beam and Slab floor system, continuous beams., detailing of Staircases: Dog legged and Open well and detailing of Column footings: Column and footing (Square and Rectangle).
3. Design and detailing of Rectangular Combined footing slab and beam type..
4. Design and detailing of Retaining walls (Cantilever and counter fort type
5. Design and detailing of Portal Frame

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations

2) **Text book \ Reference Books:**
   i. Structural Design & Drawing Reinforced Concrete & Steel- N. Krishnaraju, University Press.
   ii. Structural Design and Drawing- Krishnamurthy -, (Concrete Structures), CBS publishers, New Delhi. Tata Mc-Graw publishers.
   iii. Reinforced Concrete Structures - B.C. Punmia – Laxmi Publishing Co.

   Scheme of Examination:
   i. Part A : Three questions each carrying 20 marks is to be set. Student has to answer two questions out of three.
   ii. Part B: Two questions each carrying 60 marks is to be set. Student has to answer one question out of two.

3) **Evaluation:**
   Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments.
   University Examinations (100 Marks).

Sl.No.	Class	Date	Hrs	Topics	Remarks
Part- A				**Unit 1**	
1	Theory	06-02-18	1	Layout Drawing: General layout of building showing, position of columns, footings, beams and slabs with standard notations.	
2		06-02-18	1		
3	Practice	06-02-18	3		
4	Theory	20-02-18	1		
5		20-02-18	1		
6	Practice	20-02-18	3		
				Unit 2	
7	Theory	27-02-18	1	Detailing of Beam and Slab floor system, continuous beams.	
8		27-02-18	1		
9	Practice	27-02-18	3		
				Unit 3	
10	Theory	06-03-18	1	Detailing of Staircases: Dog legged and Open well. Detailing of Column footings: Column and footing (Square and Rectangle).	
11		06-03-18	1		
12	Practice	06-03-18	3		
				Unit 4	
13	Theory	13-03-18	1	Design and detailing of Rectangular Combined footing slab and beam type.	
14		13-03-18	1		
15	Practice	13-03-18	3		
16	Theory	20-03-18	1		
17		20-03-18	1		
18	Practice	20-03-18	3		
19	Theory	27-03-18	1		
				Unit 5	
20	Theory	27-03-18	1	Design and detailing of Retaining walls (Cantilever and counter fort type).	
21	Practice	27-03-18	3		
22	Theory	03-04-18	1		
23		03-04-18	1		
24	Practice	03-04-18	3		
25	Theory	10-04-18	1		
26		10-04-18	1		
				Unit 6	
27	Practice	10-04-18	3	Design and detailing of Circular and Rectangular water tanks resting on ground and free at top(Flexible base and Rigid base), using IS: 3370 (Part IV) only.	
28	Theory	24-04-18	1		
29		24-04-18	1		
30	Practice	24-04-18	3		
31	Theory	08-05-18	1		
32		08-05-18	1		
33	Practice	08-05-18	3		
				Unit 7	
34	Theory	15-05-18	1	Design and detailing of Simple Portal Frames subjected to gravity loads.(Single bay & Single storey)	
35		15-05-18	1		
36	Practice	15-05-18	3		
37	Practice	25-05-18	3		
38	Theory	25-05-18	1		
39		25-05-18	1		

(Bhavya C H)
Staff in Charge

(Dr M A Nagesh)
H.O.D

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Principal

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: VI **Transportation Engineering -*II*** *Year: 2017-18*

Subject Title: **Transportation Engineering -*II***	*Subject Code:* **10CV63**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Prakash J**	*Date of commencement of semester:* **05/02/18**
Checked by: Dr. M. A. Nagesh	

Learning Objectives:

The students will

i. Learn about the Role of railways in transportation, terminologies, failures of track components and Typical cross sections-single and double line B G track in cutting, embankment and electrified tracks

ii. Learn about Functions, requirements of sleepers and Ballast. **Tractive resistances** and hauling capacity with examples

iii. understand about geometric design of curves, cant deficiency and grade compensation of railways and problems

iv. Learns about Details of Points and Crossing. Design of turnouts, types of switches, crossings, track junctions Stations, Types of yards, Signaling and station maintenance.

v. Learn about an airport with component parts and functions. Aircraft characteristics affecting the design and planning of airport.

vi. Understand about concepts of Runways, Taxiways and Visual aids.

vii. Learn about construction method of Tunnels and their types. Facilities that should be provided for tunnels.

viii. Learn about Harbor classifications, Layout with components, Breakwater-Types, Slipways, Navigational aids, warehouse and transit-shed.

Materials and resources required:

1. **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2. **Text books**
   1. Railway Engineering - Saxena and Arora, Dhanpat Rai & Sons, New Delhi
   2. Indian Railway Track – M M Agarwal, Jaico Publications, Bombay
   3. Airport Planning and Design – Khanna Arora and Jain, Nem Chand Bros, Roorkee
   4. Doks and Tunnel Engineering – R Srinivasan, Charaotar Publishing House
   5. Docks and Harbour Engineering –H P Oza and G H Oza Charaotar Publishing House
   6. Surveying – B C Punmia, Laxmi Publications

3. **Reference book**
   1. Railway Engineering – Mundrey, McGraw Hill Publications

4. **Scheme of Examination:**

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B.**

5. **Evaluation:**

Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks)

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DEPARTMENT OF CIVIL ENGINEERING

10CV63: Transportation Engineering -*II*

Sl. No.	Date	Topics to be covered	Remarks
		PART A: Railway Engineering **Unit 1**	
1.	05/02/18	**Introduction:** Role of Railways in the development of the country	
2.	05/02/18	Indian railways ,Selection of routes	
3.	07/02/18	**Permanent way:** Introduction, requirements of ideal permanent way, Typical Cross sections of single and double line BG tracks	
4.	08/02/18	Different gauges in India- Broad gauge, Meter gauge, Narrow gauge Coning of wheels. Necessity of coning of wheels	
5.	12/02/18	Types of rails- Double headed rail, Bull headed rail, Flat footed rails, comparison of rails	
6.	12/02/18	Rail joints, welding of rails, creep of rails	
		Unit 2	
7.	14/02/18	**Sleepers & Ballast**: Functions, Requirement of sleepers, Types of Sleepers- Wooden, Steel, Concrete	
8.	15/02/18	Ballast- Different types of ballast materials, their uses	
9.	19/02/18	Rail fixtures, different types and their applicability	
10.	19/02/18	Calculation of materials needed for laying of Broad gauge track, meter gauge track and narrow gauge tracks	
11.	21/02/18	Tractive resistance and examples	
12.	22/02/18	Hauling capacity and problems	
		Unit 3	
13.	26/02/18	**Geometric design of Track**: Necessity of geometric design, Design of railway track	
14.	26/02/18	Necessity of grades, Different types of grades	
15.	28/02/18	Track design elements – Speed of train , curves, transition curve	
16.	01/03/18	Necessity of super elevation	
17.	05/03/18	Cant deficiency ,Negative cant , speed calculation for high speed tracks	
18.	05/03/18	Problems on above	
		Unit 4	
19.	07/03/18	**Points & Crossing**: Necessity of points and Crossing, turnout	
20.	08/03/18	Components of a turnout, Details of Points and Crossing,	
21.	14/03/18	Design of turnouts with examples (No derivations)	
22.	15/03/18	Types of switches, crossings, track junctions Stations and Types	
23.	19/03/18	Types of yards, Signalling-Objects and types of signals	
24.	19/03/18	Station and yard Equipment-Turn table	
25.	21/03/18	Fouling mark, buffer stop, level crossing	
26.	22/03/18	Track defects, and maintenance	

		PART-B:- Airport Engineering **Unit 5**	
27.	26/03/18	Introduction, Necessity of air transportation, recent development	
28.	26/03/18	Layout of an airport with component parts and functions	
29.	28/03/18	Aircraft characteristics which are to be considered for the design of airport	
30.	02/04/18	Airport classification, site selection	
31.	02/04/18	Regional planning	
32.	04/04/18	Runway orientation using wind rose with example	
		Unit 6	
33.	05/04/18	**Runway Design**: Basic runway length-Corrections and examples	
34.	09/04/18	Runway geometrics	
35.	09/04/18	**Taxiway Design**: Factors affecting the layout of taxiway	
36.	11/04/18	Design of exit taxiway with examples	
37.	12/04/18	**Visual Aids:** Airport marking	
38.	19/04/18	lighting-Instrumental Landing System	
		Tunnel Engineering **Unit 7**	
39.	23/04/18	**Tunnels**: Advantages and disadvantages, Size and shape of tunnels	
40.	23/04/18	Surveying-Transferring centre line, and gradient from surface to inside the tunnel working face	
41.	25/04/18	Weisbach triangle-Examples, Tunnelling in rocks-methods	
42.	26/04/18	Tunnelling methods in soils-Needle beam, Liner plate	
43.	30/04/18	Tunnel lining, Tunnel ventilation, vertical shafts, Pilot tunneling	
44.	30/04/18	Mucking and methods, drilling and drilling pattern	
		Unit 8	
45.	02/05/18	**Harbours**: Introduction, classification of harbours	
46.	03/05/18	Factors affecting the design of harbour- wind, tide and currents	
47.	07/05/18	Harbour layout with component parts	
48.	07/05/18	Break waters-Types, wharfs and quays	
49.	09/05/18	Jetties and piers	
50.	10/05/18	Dry dock and wet dock	
51.	14/05/18	Slipways, Navigational aids	
52.	14/05/18	Warehouse and Transit-shed	

(Mr. Prakash J)
Course Instructor

(Dr. M.A. Nagesh)
H.O.D

(Dr. H B Phani Raju)
Principal

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: VI Sem *Year: 2017-18*

Subject Title: **Geotechnical Engineering – II**	*Subject Code:* **10CV64**
Total contact Hours: 53	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **01/02/18**
Checked by: **Dr. M. A.Nagesh**	

Learning Objectives:

The objectives of this course is to make students to learn about importance of subsurface exploration program and methods of exploration including drainage and dewatering methods. The knowledge of Stresses in Soil helps to find out pressure distribution in soils and contact pressure. To understand the concept of flownet in earthen dams with and without drainage conditions. To know the knowledge of lateral earth pressure using various techniques like Rankine's and Coulomb's Earth pressure theories. Causes of failures in stability of slopes by the methods of slices and Friction Circle method, Taylor's stability number and Fellineous method. To know the bearing capacity of the soil underneath the structure. To have an idea about BIS specifications for total and differential settlements of footings and rafts. The various types of shallow and pile foundations.

Learning Outcomes:

Students will be able to,

i) Learn about importance of subsurface exploration program and methods of exploration including drainage and dewatering methods.
ii) Understand the concept of flownet in earthen dams with and without drainage conditions.
iii) Know the bearing capacity of the soil underneath the structure.
iv) Have an idea about BIS specifications for total and differential settlements of footings and rafts.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models/ OHP/ LCD presentation
2) **Text books:**
   a) **Soil Engineering in Theory and Practice** - Alam Singh and Chowdhary G.R. (1994), CBS Publishers and Distributors Ltd., New Delhi.

b) **Soil Mechanics and Foundation Engg.** - Punmia B.C. (2005), 16th Edition Laxmi Publications Co., New Delhi.

3) **Reference Books:**

1. **Foundation Analysis and Design** - Bowles J.E. (1996), 5th Edition, McGraw Hill Pub. Co. New York.
2. **Soil Mechanics and Foundation Engineering** - Murthy V.N.S. (1996), 4th Edition, UBS Publishers and Distributors, New Delhi.
3. **Basic and Applied Soil Mechanics** - Gopal Ranjan and Rao A.S.R. (2000), New Age International (P) Ltd., New Delhi.
4. **Geotechnical Engineering** - Venkatrahmaiah C. (2006), 3rd Edition New Age International (P) Ltd., New Delhi.
5. **Soil Mechanics** - Craig R.F. (1987), Van Nostrand Reinhold Co. Ltd.
6. **Principles of Geotechnical Engineering** - Braja M. Das (2002), 5th Edition, Thomson Business Information India (P) Ltd., India.
7. **Text Book of Geotechnical Engineering** - Iqbal H. Khan (2005), 2nd Edition, PHI, India.

4) **Scheme of Examination:**

One full question to be set from each unit. Students have to answer any five full questions out of eight questions, choosing at least two questions from part A and two questions from part B.

5) **Evaluation:**

Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks).

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LECTURE PLAN

10CV64 – Geotechnical Engineering II

Sl. No.	Date	Topics	Remarks
		PART – A	
		UNIT - 1 SUBSURFACE EXPLORATION	
1	02.02.18	Importance of exploration program, Methods of exploration: Boring, Seismic refraction method of geophysical exploration	
2	03.02.18	Types of samples - undisturbed, disturbed and representative samples	
3	06.02.18	Samplers, sample disturbance, area ratio, Recovery ratio, clearance	
4	07.02.18	Stabilization of boreholes - Typical bore log. Number and depth of borings for various civil engineering structures, soil exploration report	
5	09.02.18	**DRAINAGE AND DEWATERING**: Determination of ground water level by Hvorselev's method	
6	10.02.18	Control of ground water during excavation	
7	14.02.18	Dewatering - Ditches and sumps	
8	16.02.18	well point system, Vacuum method, Electro- Osmosis method	
		UNIT -2 STRESSES IN SOILS	
9	17.02.18	Boussinesq's theory for concentrated, circular and rectangular loads	
10	20.02.18	Problems on above	
11	21.02.18	Westergaard's theory for concentrated, circular and rectangular loads ,Problems on above	
12	23.02.18	Comparison of Boussinesq's and westergaard's analysis	
13	24.02.18	Pressure distribution diagrams	
14	27.02.18	Concept of Contact pressure ,Newmark's chart	
		UNIT – 3 FLOWNETS	
15	28.02.18	Introduction to Flownets, Laplace equation without derivation , Assumptions and limitations for Laplace equation	
16	02.03.18	Characteristics and uses of flownets	
17	03.03.18	Methods of drawing flownets for Dams and sheet piles	
18	06.03.18	Estimating quantity of seepage and Exit gradient	
19	07.03.18	Determination of phreatic line in earth dams with and without filter, Piping and protective filter, Problems on the above	
		UNIT - 4 LATERAL EARTH PRESSURE	
20	13.03.18	Introduction to Lateral earth pressure, Active and Passive earth pressures	
21	14.03.18	Lateral Earth pressure at rest	
22	16.03.18	Rankine's Earth pressure theories—assumptions and limitations	
23	17.03.18	Coulomb's Earth pressure theories—assumptions and limitations	
24	20.03.18	Graphical solutions for active earth pressure (cohesionless soil only) – Rebhann's method	
25	21.03.18	Graphical solutions for active earth pressure (cohesionless soil	

		only) – Culmann's method	
26	23.03.18	Lateral earth pressure in cohesive and cohesionless soils	
27	24.03.18	Earth pressure distribution and problems ,Problems on the above	
		UNIT - 5 STABILITY OF EARTH SLOPES	
28	27.03.18	Introduction to Stability of Earth Slopes	
29	28.03.18	Types of slopes, causes and type of failure of slopes	
30	31.03.18	Definition of factor of safety, Stability of infinite slopes	
31	03.04.18	To find Stability of finite slopes by Method of slices	
32	04.04.18	To find Stability of finite slopes by Method of Friction Circle	
33	06.04.18	To find Stability of finite slopes by Method of Taylor's stability number ,To find Stability of finite slopes by Method of Fellineous , Problems on the above	
		UNIT - 6 BEARING CAPACITY	
34	07.04.18	Definitions of ultimate, net and safe bearing capacities, Allowable bearing pressure	
35	10.04.18	Terzaghi's bearing capacity equations - assumptions and limitations	
36	11.04.18	Brinch Hansen's bearing capacity equations - assumptions and limitations	
37	20.04.18	Bearing capacity of footing subjected to eccentric loading ,Effect of ground water table on bearing capacity	
38	21.04.18	Field methods of evaluation of bearing capacity - Plate load test , Standard penetration test and cone penetration test, Problems on the above	
		UNIT - 7 FOUNDATION SETTLEMENT	
39	24.04.18	Importance and Concept of Settlement Analysis	
40	25.04.18	Immediate settlements (no derivations, but, computation using relevant formula for Normally Consolidated soils)	
41	02.05.18	Consolidation settlements (no derivations, but, computation using relevant formula for Normally Consolidated soils)	
42	04.05.18	Secondary settlements (no derivations, but, computation using relevant formula for Normally Consolidated soils)	
43	05.05.18	Tolerance. BIS specifications for total and differential settlements of footings and rafts ,	
44	08.05.18	Problems on above	
		UNIT – 8 PROPORTIONING SHALLOW AND PILE FOUNDATIONS	
45	09.05.18	Allowable Bearing Pressure ,	
46	11.05.18	Factors influencing the selection of depth of foundation,	
47	12.05.18	Factors influencing Allowable Bearing Pressure	
48	15.05.18	Factors influencing the choice of foundation,	
49	16.05.18	Proportioning isolated,	
50	18.05.18	combined, strip and mat foundations	
51	19.05.18	Classification of pile foundation,	
52	25.05.18	Pile load capacity, Proportioning pile foundation,	
53	26.05.18	Problems on above	

(Dr. G. Mahesh Kumar)
Faculty

(Dr. M.A. Nagesh)
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PRINCIPAL
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Shridevi Institute of Engineering and Technology-Tumkur
(Affiliated to Visvesvaraya Technological University and Approved by AICTE)
DEPARTMENT OF CIVIL ENGINEERING

Semester: VI Year: 2017-18

Subject Title: **HYDRAULIC STRUCTURES & IRRIGATION DESIGN AND DRAWING**	*Subject Code:* **10CV65**
Total contact Hours: **22+33=55**	*Duration of Exam:* **02+03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Dr. MA Nagesh**	*Date of commencement of Semester: 5/2/18*
Checked by: **Dr. MA Nagesh**	

Learning Objectives:

The students are taught to know about,

i. Planning of reservoir needed for the construction of dams

ii. Different types of dams like gravity dam, earthen dams and analysis of these types of dams.

iii. Design and drawings of some of the elements of storage tanks like surplus weir, plug sluice.

iv. Design and drawings of hydraulic structures of conveyance through canals like canal gate sluice, notch type of canal drop, canal cross regulator and design of cross drainage work like aqueduct.

Learning Outcomes:

The students will be able to understand,

i. Storage zones of réservoir, yield calculation, sedimentation problems and life of reservoir.

ii. Forces acting on the dam, it' analysis for the design of gravity dam and earthen dam.

iii. Design details and drawings of surplus weir and tank plug sluice.

iv. Design details and drawings of hydraulic structures constructed along the canal conveyance like canal gate sluice, notch type of canal drop, canal cross regulator and design of aqueduct.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text book:**

Text Book of Irrigation engineering and Hydraulic structures – **R.K. Sharma**, Oxford and IBH publishing company, New Delhi(2002)

Design of minor irrigation and canal structures- **C. Satyanaryana Murthy**, New Age International Publishers, New Delhi

Irrigation, Water resources and Water power engineering- Modi PN, Standard book house, New Delhi

Irrigation and Water resources engineering- G.L. Asawa, New Age International Publishers, New Delhi(2005)

3) **Reference Books:**

Irrigation Engineering and Hydraulic structures- Garg SK, Khanna Publishers, New Delhi

Irrigation and Water power engineering- Madan Mohan Das and Mimi Das Saikia, PHI learning Pvt. Ltd., New Delhi

4) **Scheme of Examination:**

Three full questions are set from Part A selecting one question from each unit. The student has to **answer two full questions for 30 marks**.

Two questions are set from Part B. The student has to **answer one full question for 70 marks. Out of 70 marks, the design is for 25 marks, Plan for 20 marks, elevation for 15 marks and cross section for 10 marks.**

5) **Evaluation:**

Student Assessment: Through Internal Assessment Tests (25 Marks). Assignments.

University Examinations (100 Marks)

Lesson Plan

10CV65 – Hydraulic Structures and Irrigation Design-Drawing

Sl No	Date	Topics	Topics Covered	Remarks
1	8-02-2018	**Unit 1:** Introduction, classification of Reservoir.		
2	8-02-2018	Storage Zones of a reservoir and mass curve.		
3	8-02-2018	Design and Drawing of Surplus weir with stepped apron.**(Part-B)**		
4	8-02-2018	Design and Drawing of Surplus weir with stepped apron.**(Part-B)**		
5	8-02-2018	Design and Drawing of Surplus weir with stepped apron.**(Part-B)**		
6	15-02-2018	Fixing the capacity of a reservoir and safe yield		
7	15-02-2018	Problems on above		
8	15-2-2018	Design and Drawing of Surplus weir with stepped apron. **(Part-B)**		
9	15-2-2018	Design and Drawing of Surplus weir with stepped apron. **(Part-B)**		
10	15-2-2018	Design and Drawing of Surplus weir with stepped apron.**(Part-B)**		
11	22-02-2018	Density currents trap efficiency and Reservoir Sedimentation.		
12	22-02-2018	Life of a reservoir and economic height of dam, Environmental effects of reservoir		
13	22-02-2018	Design and Drawing of Tank Plug sluice with tower head.**(Part B)**		
14	22-02-2018	Design and Drawing of Tank Plug sluice with tower head.**(Part B)**		
15	22-02-2018	Design and Drawing of Tank Plug sluice with tower head.**(Part-B)**		
16	1-03-2018	**Unit 2:** Introduction and forces on a gravity dam.		
17	1-03-2018	Stress analysis in gravity dam,problems		
18	1-03-2018	Design and Drawing of Tank Plug sluice with tower head.**(Part-B)**		
19	1-03-2018	Design and Drawing of Tank Plug sluice with tower head.**(Part-B)**		
20	1-03-2018	Design and Drawing of Tank Plug sluice with tower head.**(Part-B)**		
21	8-03-2018	Combination of forces for design.		
22	8-03-2018	Elementary and practical profiles of a gravity dam.		
23	8-03-2018	Design and Drawing of Notch type canal drop. **(Part-B)**		
24	8-03-2018	Design and Drawing of Notch type canal drop. **(Part-B)**		
25	8-03-2018	Design and Drawing of Notch type canal drop. **(Part-B)**		

26	15-03-2018	Stability analysis without earthquake force.		
27	15-03-2018	Galleries in gravity dams		
28	15-03-2018	Design and Drawing of Notch type canal drop. **(Part-B)**		
29	15-03-2018	Design and Drawing of Notch type canal drop. **(Part-B)**		
30	15-03-2018	Design and Drawing of Notch type canal drop. **(Part-B)**		
31	22-03-2018	Problems of gravity dams		
32	22-03-2018	Problems of gravity dams		
33	22-03-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
34	22-03-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
35	22-03-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
36	5-04-2018	**Unit 3**: Earthen dam Introduction.		
37	5-04-2018	Types of earth dams		
38	5-04-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
39	5-04-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
40	5-04-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
41	12-04-2018	Construction methods of earth dams		
42	12-04-2018	Causes of failures and section of earth dam		
43	12-04-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
44	12-04-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
45	12-04-2018	Design and Drawing of Canal cross regulator. **(Part-B)**		
46	19-04-2018	Design criteria for earth dams.		
47	19-04-2018	Preliminary design criteria.		
48	19-04-2018	Design of Aqueduct **(Part-B)**		
49	19-04-2018	Design of Aqueduct **(Part B)**		
50	19-04-2018	Design of Aqueduct **(Part B)**		
51	26-04-2018	Control of seepage through earth dams.		
52	26-04-2018	Problems, safety measures		
53	26-04-2018	Design of Aqueduct **(Part B)**		
54	26-04-2018	Design of Aqueduct **(Part B)**		
55	26-04-2018	Design of Aqueduct **(Part B)**		

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: **VI** *Year:* **2017-18**

Subject Title: **Ground Improvement Techniques**	*Subject Code:* **10CV663**
Total Contact Hours: **56**	*Duration of Exam:* **03Hrs**
Total exam marks: **100**	*Total I.A.marks:* **25**
Lesson Plan Author: **Dr. G. Mahesh Kumar**	*Date of Commencement of Semester:* **01.02.2018**
Checked by: **Dr. M. A. Nagesh**	

Course Objectives: This course will enable students to

1. Understand the fundamental concepts of ground improvement techniques
2. Apply knowledge of mathematics, Science and Geotechnical Engineering to solve problems in the field of modification of ground required for construction of civil engineering structures.
3. Understand the concepts of chemical compaction, grouting and other miscellaneous methods.
4. Impart the knowledge of geo-synthetics, vibration, grouting and Injection

Course Outcomes: After studying this course, students will be able to:

1. Give solutions to solve various problems associated with soil formations having less strength.
2. Use effectively the various methods of ground improvement techniques depending upon the requirements.
3. utilize properly the locally available materials and techniques for ground improvement so that economy in the design of foundations of various civil engineering structures

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question Paper Pattern:

- The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
- There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
- Each full question shall cover the topics as a module
- The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Materials and resources required

Text books:

1. Purushothama Raj P, "Ground Improvement Techniques", Laxmi Publications, New Delhi.
2. Koerner R.M, "Construction and Geotechnical Method in Foundation Engineering", Mc Graw Hill Pub. Co.

Reference books:

1. Manfred Hausmann , "Engineering principles of ground modification", Mc Graw Hill Pub. Co.,
2. Bell, F.G., "Methods of treatment of unstable ground", Butterworths, London.
3. Nelson J.D. and Miller D.J, "Expansive soils", John Wiley and Sons.
4. Ingles. C.G. and Metcalf J.B , "Soil Stabilization; Principles and Practice", Butterworths

LECTURE PLAN

10CV663– GROUND IMPROVEMENT TECHNIQUES

Sl. No.	DATE	TOPICS	Topics Covered	Remarks
		Module-1 Formation and Development of Ground and Compaction		
1	01.02.18	Introduction, Formation of Rock, soil and soil profile		
2	02.02.18	Soil distribution in India, Alterations of ground after formation		
3	03.02.18	Reclaimed soils, Natural offshore deposits;.		
4	05.02.18	Ground Improvement Potential – Hazardous ground conditions		
5	08.02.18	Poor ground conditions ,favorable ground conditions		
6	09.02.18	Alternative Approaches, Geotechnical processes		
7	10.02.18	**Compaction:** Introduction, compaction mechanics		
8	12.02.18	Field procedure, surface compaction.		
9	15.02.18	Dynamic Compaction		
10	16.02.18	selection of field compaction procedures		
11	17.02.18	compaction quality control		
		Module-2 Drainage Methods and Pre-compression and Vertical Drains		
12	19.02.18	**Drainage Methods:** Introduction, Seepage		
13	22.02.18	filter requirements, ground water and seepage control		
14	23.02.18	methods of dewatering systems		
15	24.02.18	Design of dewatering system including pipe line effects of dewatering.		
16	26.02.18	Drains, different types of drains.		
17	01.03.18	**Pre-compression and Vertical Drains:** Importance		
18	02.03.18	Vertical drains		
19	03.03.18	Sand drains,		
20	05.03.18	Drainage of slopes,		
21	08.03.18	Electro kinetic dewatering,		
22	15.03.18	Preloading		

		Module-3 Chemical Modification-I and Chemical Modification-2		
23	16.03.18	**Chemical Modification-I:** Definition, cement stabilization, sandwich technique, admixtures.		
24	17.03.18	Hydration – effect of cement stabilization on permeability		
25	19.03.18	Swelling and shrinkage and strength and deformation characteristics.		
26	22.03.18	Criteria for cement stabilization.		
27	23.03.18	Stabilization using Fly ash.		
28	24.03.18	**Chemical Modification-II:** Lime stabilization – suitability, process		
29	26.03.18	criteria for lime stabilization.		
30	31.03.18	Other chemicals like chlorides, hydroxides, lignin		
31	02.04.18	hydrofluoric acid.		
32	05.04.18	Properties of chemical components		
33	06.04.18	reactions and effects. Bitumen, tar or asphalt in stabilization.		
		Module-4 Vibration Methods and Grouting and Injection		
34	07.04.18	**Vibration Methods:** Introduction,		
35	09.04.18	Vibro compaction – blasting, vibratory probe		
36	12.04.18	Vibro displacement compaction – displacement piles		
37	19.04.18	vibroflotation, sand compaction piles		
38	20.04.18	stone columns, heavy tamping		
39	21.04.18	**Grouting and Injection** Introduction, Effect of grouting. Chemicals and materials used.		
40	21.04.18	Types of grouting.		
41	23.04.18	Grouting procedure, Applications of grouting		
		Module-5 Geosynthetics and Miscellaneous Methods (Only Concepts & Uses		
42	26.04.18	**Geosynthetics:** Introduction,		
43	30.04.18	Geosynthetic types, properties		
44	03.05.18	materials and fibre properties,.		
45	04.05.18	Geometrical aspects, mechanical properties, Hydraulic properties		
46	07.05.18	Durability, Applications of Geosynthetics -		
47	10.05.18	Separation, Filtration and Fluid Transmission, Reinforcement,		
48	11.05.18	**Miscellaneous Methods (Only Concepts & Uses):** Soil reinforcement,		

49	12.05.18	Thermal methods,		
50	14.05.18	Ground improvement by confinement –		
51	17.05.18	Crib walls,		
52	18.05.18	Gabions and Mattresses		
53	19.05.18	Anchors, Rock bolts		
54	24.05.18	soil nailing.		
55	25.05.18	Stone Column,		
56	26.05.18	Micro piles		

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LECTURE PLAN

10CVL67 – Geotechnical Engineering Laboratory

Exp. No.	Date/Batch	Topics	
		BATCH-1	
1	05-02-2018	Visual soil classification. Water content determination by Oven drying method and Pycnometer method.	
2	12-02-2018	Specific gravity test By pycnometer and density bottle method.	
3	19-02-2018	Grain size analysis i. Sieve analysis ii. Hydrometer analysis	
4	26-02-2018	In-situ density tests i. Core-cutter method ii. Sand replacement method	
5	05-03-2018	Consistency limits i. Liquid limit test (by Casagrande's and cone penetration method) ii. Plastic limit test iii. Shrinkage limit test	
6	19-03-2018	Standard compaction test (light and heavy compaction)	
7	26-03-2018	Co-efficient of permeability test i. Constant head test ii. Variable head test	
8	02-04-2018	Shear strength test Unconfined compression test	
9	09-04-2018	Shear strength test Direct shear test	
10	23-04-2018	Shear strength test Triaxial Shear strength tests	
11	30-04-2018	Consolidation test : Determination of compression index and coefficient of consolidation	
12	07-05-2018	Laboratory vane shear test Demonstration of Swell pressure test, Standard penetration test and boring equipment	
13	14-05-2018	Lab Internals	

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: VI Sem *Year: 2017-18*

Subject Title: **Geotechnical Engineering Laboratory**	*Subject Code:* **10CVL67**
Total contact Hours: **13**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **01/02/2018**
Checked by: **Dr. M. A.Nagesh**	

Course Objectives: Provide students with a basic understanding
- To carry out laboratory tests and to identify soil as per IS codal procedures
- To perform laboratory tests to determine index properties of soil
- To perform tests to determine shear strength and consolidation characteristics of soils

Course Outcomes: Students will be able to conduct appropriate laboratory/field experiments and interpret the results to determine
1. Physical and index properties of the soil
2. Classify based on index properties and field identification
3. To determine OMC and MDD, plan and assess field compaction program
4. Shear strength and consolidation parameters to assess strength and deformation characteristics
5. In-situ shear strength characteristics (SPT- Demonstration)

Reference Books:
1. Punmia B C, Soil Mechanics and Foundation Engineering- (2017), 16th Edition, Laxmi Publications co., New Delhi.
2. Lambe T.W., "Soil Testing for Engineers", Wiley Eastern Ltd., New Delhi.
3. Head K.H., "Manual of Soil Laboratory Testing" Vol. I, II, III, Princeton Press
4. Bowles J.E., "Engineering Properties of Soil and Their Measurements",- McGraw Hill Book Co. New York.
5. Relevant BIS Codes of Practice: 2720(Part-3/Sec. 1) – 1987; IS 2720 (Part – 2)- 1973; IS 2720 (Part – 4) – 1985; IS 2720 (Part – 5) – 1985; IS 2720 (Part – 6) – 1972; IS 2720 (Part – 7) – 1980; IS 2720 (Part – 8) – 1983; IS 2720 (Part – 17) – 1986; IS 2720 (Part - 10) – 1973; IS 2720 (Part – 13) – 1986; IS2720 (Part 11) – 1971; IS2720 (Part 15) – 1986; IS 2720 (Part 30) – 1987; IS 2720 (Part 14) – 1977; IS 2720 (Part – 14) – 1983; IS 2720 (Part – 28) – 1974; IS 2720 (Part – 29) – 1966, IS 2720 (Part-60) 1965.4.DebashisMoitra, "Geotechnical Engineering" , Universities Press.,
5. Malcolm D Bolton, " A Guide to soil mechanics", Universities Press., 6. Bowles J E , Foundation analysis and design, McGraw- Hill Publications

SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY
LESSON PLAN

STAFF IN CHARGE: MRS. GRACE HEMALATHA
DEPARTMENT: Civil
SUBJECT: CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP
SEMESTER: 6th
SUB CODE : 16CV61
15CV61

COURSE OBJECTIVES: THIS COURSE WILL ENABLE STUDENTS TO

1. UNDERSTAND THE CONCEPT OF PLANNING, SCHEDULING, COST AND QUALITY CONTROL, SAFETY DURING CONSTRUCTION, ORGANIZATION AND USE OF PROJECT INFORMATION NECESSARY FOR CONSTRUCTION PROJECT.
2. INCULCATE HUMAN VALUES TO GROW AS RESPONSIBLE HUMAN BEINGS WITH PROPER PERSONALITY.
3. KEEP UP ETHICAL CONDUCT AND DISCHARGE PROFESSIONAL DUTIES.

Sl.No	Date	Topic	Remarks
		MODULE-1	
1	05/02/18	**MANAGEMENT**: CHARACTERISTICS OF MANAGEMENT, FUNCTIONS OF MANAGEMENT,	10 HOURS
2	06/02/18	IMPORTANCE AND PURPOSE OF PLANNING PROCESS, TYPES OF PLANS **CONSTRUCTION PROJECT FORMULATION:**	
3	07/02/18	INTRODUCTION TO CONSTRUCTION MANAGEMENT,	
4	09/02/18	PROJECT ORGANIZATION,	
5	12/02/18	MANAGEMENT FUNCTIONS, MANAGEMENT STYLES	
6	13/02/18	**CONSTRUCTION PLANNING AND SCHEDULING**: INTRODUCTION, TYPES OF PROJECT PLANS,	
7	14/02/18	WORK BREAKDOWN STRUCTURE, GRANT CHART,	
8	16/02/18	PREPARATION OF NETWORK DIAGRAM- EVENT AND ACTIVITY BASED AND ITS CRITICAL PATH-,	
9	19/02/18	CRITICAL PATH METHOD	
10	20/02/18	CONCEPT OF ACTIVITY ON ARROW AND ACTIVITY ON NODE.	
		MODULE-2	
11	21/02/18	**RESOURCE MANAGEMENT**: BASIC CONCEPTS OF RESOURCE MANAGEMENT,	10 HOURS
12	23/02/18	CLASS OF LABOUR, WAGES & STATUTORY REQUIREMENT,	
13	26/02/18	LABOUR PRODUCTION RATE OR PRODUCTIVITY,	
14	27/02/18	FACTORS AFFECTING LABOUR OUTPUT OR PRODUCTIVITY	
15	28/02/18	**CONSTRUCTION, EQUIPMENTS:** CLASSIFICATION OF CONSTRUCTION EQUIPMENT	
16	02/03/18	ESTIMATION OF PRODUCTIVITY FOR: EXCAVATOR, DOZER, COMPACTORS, GRADERS AND DUMPERS.	
17	05/03/18	ESTIMATION OF OWNERSHIP COST, OPERATIONAL AND MAINTENANCE COST OF CONSTRUCTION EQUIPMENTS.	
18	06/03/18	SELECTION OF CONSTRUCTION EQUIPMENT AND	
19	07/03/18	BASIC CONCEPT ON EQUIPMENT MAINTENANCE MATERIALS:	
20	13/03/18	MATERIAL MANAGEMENT FUNCTIONS, INVENTORY MANAGEMENT.	
		MODULE-3	
21	14/03/18	**CONSTRUCTION QUALITY , SAFETY AND HUMAN VALUES:** CONSTRUCTION QUALITY PROCESS, INSPECTION, QUALITY CONTROL AND QUALITY ASSURANCE,	

22	16/03/18	COST OF QUALITY, ISO STANDARDS. INTRODUCTION TO CONCEPT OF TOTAL QUALITY MANAGEMENT	
23	19/03/18	**HSE:** INTRODUCTION TO CONCEPTS OF HSE AS APPLICABLE TO CONSTRUCTION.	
24	20/03/18	IMPORTANCE OF SAFETY IN CONSTRUCTION , SAFETY MEASURES TO BE TAKEN DURING EXCAVATION , EXPLOSIVES ,	
25	21/03/18	DRILLING AND BLASTING , HOT BITUMINOUS WORKS , SCAFFOLDS / PLATFORMS / LADDER , FORM WORK AND EQUIPMENT OPERATION.	
26	23/03/18	STORAGE OF MATERIALS. SAFETY THROUGH LEGISLATION, SAFETY CAMPAIGN. INSURANCES.	
27	26/03/18	**ETHICS** : MORALS, VALUES AND ETHICS, INTEGRITY, TRUSTWORTHINESS ,	
28	27/03/18	WORK ETHICS, NEED OF ENGINEERING ETHICS, PROFESSIONAL DUTIES, ,	
29	28/03/18	PROFESSIONAL AND INDIVIDUAL RIGHTS, CONFIDENTIAL AND PROPRIETARY INFORMATION,	
30	31/03/18	CONFLICT OF INTEREST CONFIDENTIALITY GIFTS AND BRIBES, PRICE FIXING, WHISTLE BLOWING.	
		MODULE-4	
31	02/04/18	**INTRODUCTION TO ENGINEERING ECONOMY** :	
32	03/04/18	PRINCIPLES OF ENGINEERING ECONOMICS,	
33	04/04/18	CONCEPT ON MICRO AND MACRO ANALYSIS, PROBLEM SOLVING AND DECISION MAKING.	
34	06/04/18	**INTEREST AND TIME VALUE OF MONEY:** CONCEPT OF SIMPLE AND COMPOUND INTEREST,	
35	09/04/18	INTEREST FORMULA FOR: SINGLE PAYMENT,EQUAL PAYMENT	
36	10/04/18	AND UNIFORM GRADIENT SERIES. NOMINAL AND	
37	11/04/18	EFFECTIVE INTEREST RATES,DEFERRED ANNUITIES, CAPITALIZED COST.	
38	20/04/18	**COMPARISON OF ALTERNATIVES** : PRESENT WORTH, ANNUAL EQUIVALENT ,	
39	23/04/18	CAPITALIZED AND RATE OF RETURN METHODS ,	
40	24/04/18	MINIMUM COST ANALYSIS AND BREAK EVEN ANALYSIS	
		MODULE-5	
41	25/04/18	ENTREPRENEURSHIP: EVOLUTION OF THE CONCEPT, FUNCTIONS OF AN ENTREPRENEUR,	
42	30/04/18	CONCEPTS OF ENTREPRENEURSHIP, STAGES IN ENTREPRENEURIAL PROCESS,	
43	02/05/18	DIFFERENT SOURCES OF FINANCE FOR ENTREPRENEUR, CENTRAL AND STATE LEVEL FINANCIAL INSTITUTIONS.	
44	04/05/18	**MICRO, SMALL & MEDIUM ENTERPRISES (MSME):** DEFINITION, CHARACTERISTICS, OBJECTIVES, SCOPE,	
45	09/05/18	ROLE OF MSME IN ECONOMIC DEVELOPMENT, ADVANTAGES OF MSME,	
46	11/05/18	INTRODUCTION TO DIFFERENT SCHEMES: TECKSOK, KIADB, KSSIDC, DIC, SINGLE WINDOW AGENCY: SISI, NSIC, SIDBI, KSFC	
47	18/05/18	**BUSINESS PLANNING PROCESS:** BUSINESS PLANNING PROCESS, MARKETING PLAN, FINANCIAL PLAN, PROJECT REPORT AND FEASIBILITY STUDY,	
48	24/05/18	GUIDELINES FOR PREPARATION OF MODEL PROJECT REPORT FOR STARTING A NEW VENTURE.	
49	25/05/18	INTRODUCTION TO INTERNATIONAL ENTREPRENEURSHIP OPPORTUNITIES ,	
50	26/05/18	ENTRY INTO INTERNATIONAL BUSINESS , EXPORTING , DIRECT FOREIGN INVESTMENT , VENTURE CAPITAL	

RECOMMENDED BOOKS:

TEXT BOOKS:

1. P C TRIPATHI AND P N REDDY, "PRINCIPLES OF MANAGEMENT", TATA MCGRAW-HILL EDUCATION
2. CHITKARA, K.K, "CONSTRUCTION PROJECT MANAGEMENT: PLANNING SCHEDULING AND CONTROL", TATA MCGRAW-HILL PUBLISHING COMPANY, NEW DELHI.
3. POORNIMA M. CHARANTIMATH , "ENTREPRENEURSHIP DEVELOPMENT AND SMALL BUSINESS ENTERPRISE", DORLING KINDERSLEY (INDIA) PVT. LTD., LICENSEES OF PEARSON EDUCATION
4. DR. U.K. SHRIVASTAVA "CONSTRUCTION PLANNING AND MANAGEMENT", GALGOTIA PUBLICATIONS PVT. LTD. NEW DELHI.
5. BUREAU OF INDIAN STANDARDS – IS 7272 (PART-1)- 1974 : RECOMMENDATIONS FOR LABOUR OUTPUT CONSTANT FOR BUILDING WORKS :

REFERENCE BOOKS:

1. ROBERT L PEURIFOY, CLIFFORD J. SCHEXNAYDER, AVIAD SHAPIRA, ROBERT SCHMITT, "CONSTRUCTION PLANNING, EQUIPMENT, AND METHODS (CIVIL ENGINEERING), MCGRAW-HILL EDUCATION
2. HAROLD KOONTZ, HEINZ WEIHRICH, "ESSENTIALS OF MANAGEMENT: AN INTERNATIONAL, INNOVATION, AND LEADERSHIP PERSPECTIVE", T.M.H. EDITION, NEW DELHI
3. FRANK HARRIS, RONALD MCCAFFER WITH FRANCIS EDUM-FOTWE, " MODERN CONSTRUCTION MANAGEMENT", WILEYBLACKWELL
4. MIKE MARTIN, ROLAND SCHINZINGER, "ETHICS IN ENGINEERING", MCGRAW-HILL EDUCATION
5. CHRIS HENDRICKSON AND TUNG AU, "PROJECT MANAGEMENT FOR CONSTRUCTION - FUNDAMENTALS CONCEPTS FOR OWNERS, ENGINEERS, ARCHITECTS AND BUILDERS", PRENTICE HALL, PITSBURGH
6. JAMES L.RIGGS , DAVID D. BEDWORTH , SABAH U. RANDHAWA " ENGINEERNG ECONOMICS" 4 ED TATA MC GRAW HILL. 7. S.C SHARMA –"CONSTRUCTION EQUIPMENTS AND ITS MANAGEMENT" – KHANNA PUBLISHERS

STAFF INCHARGE | HOD, Civil | PRINCIPAL

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Shridevi Institute of Engineering and Technology-Tumkur
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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester:* VI** ***Year: 2017-18

[As per Choice Based Credit System (CBCS) scheme]

Subject Title: **Design of Steel Structural Elements**	*Subject Code:***15CV62**
Total contact Hours: ***59***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **05/02/18**
Checked by: **Dr. M A Nagesh**	

Learning Objectives:

Study of this course is based on **IS: 800-2007**
The students will be able to know about

i. Learn about the Connections: Bolted and welded, Beam-Beam, Beam-Column, Seated, and Stiffened and un-stiffened.
ii. Plastic Behaviour of Structural Steel
iii. Design of tension and compression members in Bolted and welded Connections
iv. Learn about Column Bases: Slab base and gusseted Base
v. Design of Beams in Bolted and welded Connections

Learning Outcomes:

i. Possess a knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel
ii. Understand the Concept of Bolted and Welded connections.
iii. Understand the Concept of Design of compression members, built-up columns and columns splices.
iv. Understand the Concept of Design of tension members, simple slab base and gusseted base.
v. Understand the Concept of Design of laterally supported and un-supported steel beams.

Materials and resources required:

I. **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

II. **TEXTBOOKS AND REFERENCE BOOKS:**

1. **Design of Steel Structures,** N.Subramanian, Oxford, 2008
2. **Limit State Design of Steel Structures,** Duggal, TATA Megra Hill 2010
3. **Structural Dynamics**-by M.Mukhopadhyay.
4. **Design of Steel Structures** –Negi – Tata Mc Graw Hill Publishers
5. **Design of Steel Structures** – Raghupathi
6. **Bureau of Indian Standards, IS:800-2007, IS:875-1987**
7. **Steel Tables**

III. **Question Paper Pattern:**

1. The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
2. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
3. Each full question shall cover the topics as a module
4. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

IV. Evaluation:

Student Assessment: Through Internal Assessment Tests (15 Marks), Assignments (05 Marks), University Examinations (80 Marks).

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SHRIDEVI EDUCATION

LECTURE PLAN

Sl No	Date	Topics	Remark
		Module -1:	
Introduction:			
1	06-02-2018	Advantages and Disadvantages of Steel structures,	
2	06-02-2018	Limit State Method (LSM) of design Limit state method Limit State of Strength	
3	07-02-2018	Structural Stability, Serviceability Limit states	
4	08-02-2018	Design considerations, Loads and Load combinations,	
5	08-02-2018	Failure criteria for steel	
6	14-02-2018	Codes, Specifications, Section classification.	
Plastic Behaviour of Structural Steel:			
7	15-02-2018	Introduction, Plastic theory, Plastic hinge concept,	
8	15-02-2018	Plastic collapse load, conditions of plastic analysis	
9	20-02-2018	Theorem of Plastic collapse	
10	20-02-2018	Concept Plastic analysis	
11	21-02-2018	Methods of Plastic analysis	
12	22-02-2018	Plastic analysis of continuous beams.	
		Module -2:	
Bolted Connections:			
13	22-02-2018	Introduction, Types of bolts, Behaviour of Bolted joints,	
14	27-02-2018	Design strength of ordinary Black Bolts	
15	27-02-2018	Design strength of High Strength Friction Grip bolts (HSFG)	
16	28-02-2018	Simple Connections (Lap and Butt joints)	
17	01-03-2018	Simple Connections (Lap and Butt joints)	
Welded Connections:			
18	01-03-2018	Introduction, Welding process, Welding electrodes,	
19	06-03-2018	Types and Properties of Welds, Types of joints	
20	06-03-2018	Weld symbols, Weld specifications,	
21	07-03-2018	Effective areas of welds, Design of welds, Simple joints	
22	08-03-2018	Weld Defects,	
23	08-03-2018	Advantages of Bolted and Welded connections	
24	13-03-2018	Disadvantages of Bolted and Welded connections	
		Module -3:	

Design of Compression Members:			
25	13-03-2018	Introduction, Failure modes,	
26	14-03-2018	Behaviour of compression members	
27	15-03-2018	Elastic buckling of slender compression members	
28	15-03-2018	Sections used for compression members	
29	20-03-2018	Effective length of compression members	
30	20-03-2018	Design of compression members	
31	21-03-2018	Design of compression members	
32	22-03-2018	Built up compression members	
33	22-03-2018	Built up compression members	
34	27-03-2018	Design of Laced and Battened Systems.	
35	27-03-2018	Design of Laced and Battened Systems.	
Module -4:			
Design of Tension Members:			
36	28-03-2018	Introduction, Types of tension members, Design of strands, Slenderness ratio,	
37	03-04-2018	Behaviour of tension members	
38	03-04-2018	Modes of failure, Factors affecting the strength of tension members	
39	04-04-2018	Design of tension member	
40	05-04-2018	Design of tension member	
41	05-04-2018	Lug angles, Splices, Gussets	
Design of Column Bases:			
42	10-04-2018	Design of simple slab base - problems	
43	10-04-2018	Design of simple slab base - problems	
44	11-04-2018	Design of gusseted base - problems	
45	12-04-2018	Design of gusseted base - problems	
46	12-04-2018	Design of gusseted base - problems	
Module -5:			
Design of Beams:			
47	19-04-2018	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability	
48	19-04-2018	Behaviour of simple and built-up beams in bending(without vertical stiffeners)	
49	24-04-2018	Design strength of laterally supported beams in Bending-problems	
50	24-04-2018	Design strength of laterally supported beams in Bending-problems	
51	25-04-2018	Design strength of laterally unsupported beams- problems	
52	26-04-2018	Design strength of laterally unsupported beams	
53	26-04-2018	Shear strength of steel beams, Maximum deflection	
54	02-05-2018	Beam to Beam Connections,	
55	03-05-2018	Beam to Beam Connections,	
56	03-05-2018	Beam to Column Connection	
57	09-05-2018	Beam to Column Connection	
58	10-05-2018	Column Splices	
59	10-05-2018	Column Splices	

(Manogna H.N)
Course Instructor

(Dr. M.A. Nagesh)
HOD

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(Dr H B Phani Raju)
Principal

Shridevi Institute of Engineering and Technology-Tumkur
(An ISO 9001-2008 Certified Institution)
DEPARTMENT OF CIVIL ENGINEERING

Semester: VI **Year: 2017-18**

Subject Title : **Water Supply & Treatement Engineering**	*Subject Code:* **15CV64**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date: 05/02/18*
Checked by: **Dr. M A Nagesh**	*Date: 05/02/18*

Learning Objectives:

1 Analyze the variation of water demand and to estimate water requirement for a community.
2. Evaluate the sources and conveyance systems for raw and treated water.
3. Study drinking water quality standards and to illustrate qualitative analysis of water.
4. Design physical, chemical and biological treatment methods to ensure safe and potable water Supply

.Learning Outcomes:

Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.
3. Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.
4. Design a comprehensive water treatment and distribution system to purify and distribute water to the required
quality standards.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**

1. **S.K.Garg, Environmental Engineering vol-I, Water supply Engineering – M/s Khanna Publishers, New Delhi 2010**
2. **Mark.J Hammer, Water & Waste Water Technology, John Wiley & Sons Inc., New York, 2008.**

Scheme of Examination:

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV64- Water Supply & Treatement Engineering

Sl No	Date	Topics	Topics Covered	Remarks
		MODULE-1		
1	07/02/18	Introduction: Need for protected water supply. Demand of Water		
2	09/02/18	Types of water demands -domestic demand, industrial, institutional and commercial, public use, fire demand		
3	09/02/18	Types of water demands -domestic demand, industrial, institutional and commercial, public use, fire demand		
4	10/02/18	Types of water demands -domestic demand, industrial, institutional and commercial, public use, fire demand		
5	14/02/18	Factors affecting per capita demand,		
6	16/02/18	Factors affecting per capita demand,		
7	16/02/18	Variations in demand of water,Peak factor		
8	16/02/18	Design period and factors governing design period.		
9	21/02/18	Different methods of population forecasting -with merits and demerits. & Problems		
10	23/02/18	Different methods of population forecasting -with merits and demerits. & Problems		
		MODULE-2		
11	23/02/18	Water Treatment: Objectives		
12	23/02/18	Treatment flow chart – significance of each unit Sources and Characteristics		
13	24/02/18	Treatment flow chart – significance of each unit Sources and Characteristics		
14	28/02/18	surface and subsurface sources -suitability with regard to quality and quantity.		
15	02/03/18	surface and subsurface sources -suitability with regard to quality and quantity.		
16	02/03/18	surface and subsurface sources -suitability with regard to quality		
17	02/03/18	Quantity sampling - Objectives, methods, Preservation techniques.		
18	03/03/18	Quantity sampling - Objectives, methods, Preservation techniques.		
19	07/03/18	Water quality characteristics: Physical, Chemical and Microbiological		
20	14/03/18	Water quality characteristics: Physical, Chemical and Microbiological		
		MODULE 3		
21	16/03/18	Sedimentation -theory, settling tanks, types, design.		
22	16/03/18	Concept of Plate and Tube settlers.		
23	16/03/18	Coagulation aided sedimentation-types of coagulants		
24	17/03/18	chemical feeding, flash mixing, Clarriflocculators		
25	21/03/18	Filtration: mechanism -theory of filtration, types of filters.		
26	23/03/18	slow sand, rapid sand and pressure filters including construction, operation, cleaning. Operational problems in filters.		

27	23/03/18	Design of slow and rapid sand filter without under drainage system.		
28	23/03/18	Ultra and micro filtration		
29	24/03/18	Basic principles, membrane materials, pore size, flux, normalizing permeability		
30	28/03/18	fouling mechanism, Overview of ultra and micro filtration elements and systems, Fouling in MF/UF systems, fouling control and pre treatment.		
		MODULE-4		
31	04/04/18	Softening: Overview of Lime soda, Zeolite process		
32	06/04/18	RO and Nano filtration: Basic principles, Flux, Salt passage, rejection and concentration polarization.		
33	06/04/18	RO and Nano filtration: Basic principles, Flux, Salt passage, rejection and concentration polarization		
34	06/04/18	Overview of RO and nano filtration membranes and elements. Conventional pretreatment techniques for RO and nano filtration.		
35	07/04/18	Overview of RO and nano filtration membranes and elements, Conventional pretreatment techniques for RO and nano filtration		
36	11/04/18	Overview of RO and nano filtration membranes and elements, Conventional pretreatment techniques for RO and nano filtration		
37	18/04/18	Disinfection: Methods of disinfection with merits and demerits		
38	20/04/18	Disinfection: Methods of disinfection with merits and demerits		
39	20/04/18	Theory of disinfection, emphasis on treatment of water for community bathing		
40	21/04/18	Fluoridation and De-fluoridation		
		MODULE 5		
41	25/04/18	Collection and Conveyance of water		
42	02/05/18	Intake structures - types of intakes –Factors to be considered in selection of intake structures.		
43	04/05/18	Pumps: Types of pumps with working principles. Numerical Problems.		
44	04/05/18	Pipes: Design of the economical diameter for the rising main; Numerical Problems.		
45	05/05/18	Pipe appurtenances, Valves, Fire hydrants Pipe materials:		
46	09/05/18	Different materials with advantages and disadvantages. Factors affecting selection of pipe material.		
47	11/05/18	Distribution system: Methods- Gravity, Pumping, Combined gravity and pumping system, Service reservoirs and their capacity determination		
48	11/05/18	Water treatment plant and report working of each unit		
49	11/05/18	Design of water treatment plant units and distribution system with population forecasting for the given city		
50	12/05/18	Design of water treatment plant units and distribution system with population forecasting for the given city		

Mr. Vinuthan V R
Course Instructor

Dr. M A Nagesh
HOD

Dr H B Phani Raju
Principal

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Shridevi Institute of Engineering and Technology, Tumkur-06

(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF CIVIL ENGINEERING

Semester: VI *Year:* 2017-18

Subject Title: **Ground Improvement Techniques**	*Subject Code:* **15CV654**
Total Contact Hours: 56	*Duration of Exam:* **03Hrs**
Total exam marks: **80**	*Total I.A.marks:* **20**
Lesson Plan Author: **Dr. G. Mahesh Kumar**	*Date of Commencement of Semester:* **01.02.2018**
Checked by: **Dr. M. A. Nagesh**	

Course Objectives: This course will enable students to

1. Understand the fundamental concepts of ground improvement techniques
2. Apply knowledge of mathematics, Science and Geotechnical Engineering to solve problems in the field of modification of ground required for construction of civil engineering structures.
3. Understand the concepts of chemical compaction, grouting and other miscellaneous methods.
4. Impart the knowledge of geo-synthetics, vibration, grouting and Injection

Course Outcomes: After studying this course, students will be able to:

1. Give solutions to solve various problems associated with soil formations having less strength.
2. Use effectively the various methods of ground improvement techniques depending upon the requirements.
3. utilize properly the locally available materials and techniques for ground improvement so that economy in the design of foundations of various civil engineering structures

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question Paper Pattern:

- The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
- There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
- Each full question shall cover the topics as a module
- The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Materials and resources required

Text books:

1. Purushothama Raj P, "Ground Improvement Techniques", Laxmi Publications, New Delhi.
2. Koerner R.M, "Construction and Geotechnical Method in Foundation Engineering", Mc Graw Hill Pub. Co.

Reference books:

1. Manfred Hausmann , "Engineering principles of ground modification", Mc Graw Hill Pub. Co.,
2. Bell, F.G., "Methods of treatment of unstable ground", Butterworths, London.
3. Nelson J.D. and Miller D.J, "Expansive soils", John Wiley and Sons.
4. Ingles. C.G. and Metcalf J.B , "Soil Stabilization; Principles and Practice", Butterworths

LECTURE PLAN

15CV654 – GROUND IMPROVEMENT TECHNIQUES

Sl. No.	DATE	TOPICS	Topics Covered	Remarks
		Module-1 Formation and Development of Ground and Compaction		
1	01.02.18	Introduction, Formation of Rock, soil and soil profile		
2	02.02.18	Soil distribution in India, Alterations of ground after formation		
3	03.02.18	Reclaimed soils, Natural offshore deposits;.		
4	05.02.18	Ground Improvement Potential – Hazardous ground conditions		
5	08.02.18	Poor ground conditions ,favorable ground conditions		
6	09.02.18	Alternative Approaches, Geotechnical processes		
7	10.02.18	**Compaction:** Introduction, compaction mechanics		
8	12.02.18	Field procedure, surface compaction.		
9	15.02.18	Dynamic Compaction		
10	16.02.18	selection of field compaction procedures		
11	17.02.18	compaction quality control		
		Module-2 Drainage Methods and Pre-compression and Vertical Drains		
12	19.02.18	**Drainage Methods:** Introduction, Seepage		
13	22.02.18	filter requirements, ground water and seepage control		
14	23.02.18	methods of dewatering systems		
15	24.02.18	Design of dewatering system including pipe line effects of dewatering.		
16	26.02.18	Drains, different types of drains.		
17	01.03.18	**Pre-compression and Vertical Drains:** Importance		
18	02.03.18	Vertical drains		
19	03.03.18	Sand drains,		
20	05.03.18	Drainage of slopes,		
21	08.03.18	Electro kinetic dewatering,		
22	15.03.18	Preloading		

		Module-3 Chemical Modification-I and Chemical Modification-2		
23	16.03.18	**Chemical Modification-I:** Definition, cement stabilization, sandwich technique, admixtures.		
24	17.03.18	Hydration – effect of cement stabilization on permeability		
25	19.03.18	Swelling and shrinkage and strength and deformation characteristics.		
26	22.03.18	Criteria for cement stabilization.		
27	23.03.18	Stabilization using Fly ash.		
28	24.03.18	**Chemical Modification-II:** Lime stabilization – suitability, process		
29	26.03.18	criteria for lime stabilization.		
30	31.03.18	Other chemicals like chlorides, hydroxides, lignin		
31	02.04.18	hydrofluoric acid.		
32	05.04.18	Properties of chemical components		
33	06.04.18	reactions and effects. Bitumen, tar or asphalt in stabilization.		
		Module-4 Vibration Methods and Grouting and Injection		
34	07.04.18	**Vibration Methods:** Introduction,		
35	09.04.18	Vibro compaction – blasting, vibratory probe		
36	12.04.18	Vibro displacement compaction – displacement piles		
37	19.04.18	vibroflotation, sand compaction piles		
38	20.04.18	stone columns, heavy tamping		
39	21.04.18	**Grouting and Injection** Introduction, Effect of grouting. Chemicals and materials used.		
40	21.04.18	Types of grouting.		
41	23.04.18	Grouting procedure, Applications of grouting		
		Module-5 Geosynthetics and Miscellaneous Methods (Only Concepts & Uses		
42	26.04.18	**Geosynthetics:** Introduction,		
43	30.04.18	Geosynthetic types, properties		
44	03.05.18	materials and fibre properties,.		
45	04.05.18	Geometrical aspects, mechanical properties, Hydraulic properties		
46	07.05.18	Durability, Applications of Geosynthetics -		
47	10.05.18	Separation, Filtration and Fluid Transmission, Reinforcement,		
48	11.05.18	**Miscellaneous Methods (Only Concepts & Uses):** Soil reinforcement,		

49	12.05.18	Thermal methods,		
50	14.05.18	Ground improvement by confinement –		
51	17.05.18	Crib walls,		
52	18.05.18	Gabions and Mattresses		
53	19.05.18	Anchors, Rock bolts		
54	24.05.18	soil nailing.		
55	25.05.18	Stone Column,		
56	26.05.18	Micro piles		

(Dr. G. Mahesh Kumar)
Faculty

(Dr. M.A. Nagesh)
HOD

(Dr. H.B.Phaniraju)
Principal

PRINCIPAL
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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VI** **Year: 2017-18**

Subject Title: **Water Resources Management**	*Subject Code:* **15CV661**
Total contact Hours Planned: **55**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr. M.A. Nagesh**	*Date of commencement of semester:* **5/02/18**
Checked by: **Dr M A Nagesh**	

Course Objectives:

The objectives of this course are to make students to learn:

1. Judge surface and ground water resources.
2. Address the issues of water resources management.
3. Learn the principles of integrated water resources management.
4. Understand the legal framework of water policy.
5. Know the different methods of water harvesting.

Course Outcomes:

After studying this course, students will be able to:

1. Assess the potential of groundwater and surface water resources.
2. Address the issues related to planning and management of water resources.
3. Know how to implement IWRM in different regions.
4. Understand the legal issues of water policy.
5. Select the method for water harvesting based on the area.

Program Objectives

PO1: Engineering Knowledge
PO2: Problem analysis
PO3: Interpretation of data

Question Paper Pattern:

1. The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
2. There will be two full questions (with a maximum of two subdivisions) from each module.
3. Each full question shall cover the topics as a module
4. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. K. Subramanya, "Engineering Hydrology", Tata McGraw Hill Publishers, New Delhi.
2. H.M. Raghunath, "Ground Water", Wiley Eastern Publi cation, New Delhi.
3. Daniel P. Loucks and Eelco van Beek, "Water Resourc es Systems. Planning and Management", UNESCO Publication.
4. Mollinga, P. et al, "Integrated Water Resources Man agement", Water in South Asia Volume I, Sage Public ations, 2006.
5. Singh, Chhatrapati "Water Rights in India," Ed: Chh atrapati Singh. Water Law in India: The Indian Law Institute, New Delhi,1992.
6. Dhruva Narayana, G. Sastry, V. S. Patnaik, "Watershed Management", CSWCTRI, Dehradun, ICAR Publications, 1997.

Reference Books:

1. Lal, Ruttan. " Integrated Watershed Management in t he Global Ecosystem". CRC Press, New York.
2. Heathcote, I. W. Integrated Watershed Management: Principles and Practice. 1988. John Wiley and Sons, Inc., New York.

Materials and resources required:

Presentation: Black board, Teaching charts, Models. / OHP/ LCD presentations

Evaluation:

Student Assessment: Through Internal Assessment Tests and assignment(15+5=20 Marks),

University Examinations (80 Marks)

LESSON PLA N

SL NO	Date	Topics	Topics Covered	Remarks
		Module -1 Surface and Ground water Resources		
1	5/2/2018	Hydrologic Cycle, Global water resources		
2	7/2/2018	Indian Water resources, Surface Water Resources,		
3,4	10/2/2018	Water Balance, Available Renewable Water Resources		
5	12/2/2018	Water Scarcity and related issues		
6	14/2/2018	The Water Balance as a Result of Human Interference,		
7,8	17/2/2018	Groundwater Resources		
9	19/2/2018	Types of Aquifers		
10	21/2/2018	Groundwater as a Storage Medium		
		Module 2 : Water Resources Planning and Management		
11,12	24/2/2018	Necessity of water resources planning and management		
13	26/2/2018	System components		
14	28/2/2018	planning scales		
15,16	3/3/2018	Approaches to planning		
17	5/3/2018	planning and management aspects Analysis		
18	7/3/2018	Models for impact prediction and evaluation		
19	14/3/2018	Adaptive Integrated Policies		
20,21	17/3/2018	Post Planning and management Issues.		
		Module 3: Integrated Water Resources Management		
22	19/3/2018	Introduction to Integrated Water Resource Management(IWRM)		
23	21/3/2018	Principles of Water resource management		
24,25	24/3/2018	Implementation of IWRM		
26	21/3/2018	Legislative and Organizational Framework		
27,28	24/3/2018	Types of Private Sector Involvement.		
29	26/3/2018	Forms of Private Sector Involvement		
		Module 4 : Water Governance and Water Policy		
30	28/3/2018	Legal Framework of Water		
31	6/4/2018	Substance of National Water Laws		
32,33	31/4/2018	Other key issues of water laws		
34	2/4/2018	Changing incentives through Regulation		
35	4/4/2018	National Water Policy		
36,37	7/4/2018	National-Level Commissions		
38	9/4/2018	Transfer Policies and Activities		
39	11/4/2018	Legal Registration of WUAs		
40,41	21/4/2018	Legal Changes in Water Allocation		
42	23/4/2018	Role of Local Institutions		
43	25/4/2018	Community Based Organizations		
44	30/4/2018	Water Policy Reforms: India		

		Unit 5 : Water Harvesting and Conservation		
45	2/5/2018	Water Harvesting Techniques		
46,47	5/5/2018	Water harvesting in Micro-catchments		
48	7/5/2018	Design of Small Water Harvesting Structures		
49	9/5/2018	Far m Ponds		
50,51	12/5/2018	Percolation Tanks		
52	14/5/2018	Yield from a Catchment		
53	16/5/2018	Rain water Harvesting		
54	19/5/2018	various techniques related to Rural water harvesting		
55	26/5/2018	various techniques related to Urban water harvesting.		

(Dr.M.A.Nagesh)
Staff in charge

(Dr.M.A.Nagesh)
H.O.D.

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Principal

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Sri Shridevi Charitable Trust [R]

Shridevi Institute of Engineering and Technology

(Affiliated to Visvesvaraya Technological University and Approved by AICTE)

DEPARTMENT OF CIVIL ENGINEERING

Semester: V I

Year: 2017-18

Subject Title: Software Application Lab	*Subject Code:* **15 CVL67**
Total contact Hours: 40	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: Mr.VinuthanV.R	*Date of commencement of semester :* **7/08/17**
Checked by: Dr M A Rugesh	

Learning Objectives:

1Use industry standard software in a professional set up.
2. Understand the elements of finite element modeling, specification of loads and boundary condition, performing
analysis and interpretation of results for final design
3. Develop customized automation tools

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations

Scheme of Examination

- The question paper will have 3 modules comprising of 6 questions.
- There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
- Each full question shall cover the topics as a module
- Module-1: 40 Marks, Module-2: 20 Marks, Module-3: 20 Marks
- The students shall answer three full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

DEPARTMENT OF CIVIL ENGINEERING
15CVL 67 – SOFTWARE APPLICATION LAB

Sl.No.	Date	Topics	Remarks
		MODULE 1	
1	5/2/18	Introduction to civil engineering software	
2	12/2/18	Analysis of plane trusses	
3	19/2/18	Analysis of continuous beams	
4	26/2/18	Analysis of portal frames	
5	5/3/18	3D analysis of multistoried frame structures	
6	19/3/18	3D analysis of multistoried frame structures	
		MODULE 2	
7	26/3/18	Project Management- Exercise on Project planning and scheduling of a building project using any project management software	
8	2/4/18	Project Management- Exercise on Project planning and scheduling of a building project using any project management software	
9	9/4/18	Project Management- Exercise on Project planning and scheduling of a building project using any project management software	
10	9/4/18	GIS applications using open source software	
		MODULE 3	
11	23/4/18	Use of EXCEL spread sheets: Design of singly reinforced and doubly reinforced rectangular beams	
12	30/4/18	Design of one way and two way slabs	
13	7/5/18	Computation of earthwork, Design of horizontal curve by offset method, Design of super elevation	

(Mr. Vinuthan VR)
Staff in Charge

(Dr M A Nagesh)
H.O.D

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(Dr. H B Phani Raju)
Principal

SHRIDEVI INSTITUTE OF ENGINEERING AND TECHNOLOGY, TUMKUR-06

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Cover Page: Subject Over view

Semester: VII Year: 2017-18

Subject Title: Environmental Engineering-II	Subject Code: 10CV71
Total contact hours: 52	Duration of Exam: 03 Hrs
Total Exam marks: 100	Total I.A. marks: 25
Lesson plan Author: Ms. Vedavathi. R	Date: 07-08-2017
Checked by: Dr. M. A. Nagesh	Date: 07-08-2017

Objectives:

The students will:

1. Learn about the necessity for sanitation, methods of domestic waste water disposal, types of sewerage systems and their suitability
2. Learn about the hydraulic formulae for velocity, effect of flow variations on velocity, self cleaning and non secure velocities. Design of hydraulic elements for circular sewers flowing full and flowing partially full Shapes and materials of sewers.
3. Learn about the sewer appartenuances and waste water characterization.
4. To study about the disposal of effluents and waste water treatment.

Outcomes:

Learn about the necessity for sanitation, methods of domestic waste water disposal, types of sewerage systems and their suitability. Learn about the hydraulic formulae for velocity, effect of flow variations on velocity, self cleaning and non secure velocities. Design of hydraulic elements for circular sewers flowing full and flowing partially full shapes and materials of sewers. Learn about the sewer appartenuances and waste water characterization. To study about the disposal of effluents and waste water treatment.

Text Books:

1. Manual of waste water treatment : CPHEEO, ministry of urban development, New Delhi
2. Water and waste water engineering volume-2: Fair, Geyer and Okun, John willey publishers, New Delhi
3. Waste water treatment, disposal and reuse: Metcalf and Eddyink, Tata McGraw hill publishers.
4. Water technology: Hammer & Hammer.

Sl. No	DATE	TOPIC	Date of Execution
		Part A	
		Unit – 1 Introduction	06 Hours
1	7-8-17	Necessity of sanitation, methods of domestic waste water disposal	
2	8-8-17	types of sewerage systems and their suitability	
3	9-8-17	Dry weather flow, factor affecting dry weather flow	
4	12-8-17	Flow variation and their effect on design of sewerage system: Computation of design flow.	
5	14-8-17	Estimation of storm water flow	
6	16-8-17	Rational method and empirical formulae of design of storm water drain and time of concentrations.	
		Unit – 2, Design of sewers	06 Hours
7	19-8-17	Hydraulic formulae for velocity, effect of flow variation on velocity	
8	21-8-17	Self cleaning and non soaring velocities	
9	22-8-17	Design of hydraulic elements for circular sewers flowing full	
10	23-8-17	Design of hydraulic elements for circular sewers flowing partially full	
11	26-8-17	Sewer material shape, laying of sewers and joints	
12	28-8-17	Testing of sewers, ventilation and cleaning	
		Unit – 3, Sewer appurtenances	06 Hours
13	29-8-17	Catch basins, man holes, flushing tanks	
14	30-8-17	Catch basins, man holes, flushing tanks	
15	4-9-17	Oil and grease traps, drainage traps	
16	5-9-17	Basic principle of house drainage	
17	6-9-17	Typical layout plan showing house drainage connections	
18	9-9-17	Maintenance of house drainage	
		Unit – 4, Waste water Characterization	06 Hours
19	11-9-17	Sampling, significance, techniques and frequency	
20	12-9-17	Sampling, significance, techniques and frequency	
21	13-9-17	Physical chemical and biological characteristics	
22	23-9-17	Aerobic and anaerobic activity, CNS cycles	
23	25-9-17	BOD and COD, their significance	
24	26-9-17	Problems	
		Part B	
		Unit – 5, Disposal of effluents	06 Hours
25	27-9-17	Disposal of effluents by dilution	
26	3-10-17	Self purification phenomenon, oxygen sag curve	
27	4-10-17	Zones of purification, sewage farming, sewage sickness	
28	7-10-17	Effluent disposal standards for land surface water and ocean	
29	9-10-17	Numerical problems on disposal of effluents. Streeter Phelps equation	
30	10-10-17	Numerical problems on disposal of effluents. Streeter Phelps equation	
		Unit – 6, Treatment of waste water	06 Hours
31	11-10-17	Flow diagram of municipal waste water treatment plant	
32	14-10-17	Preliminary and primary treatment: screening grit chambers & skimming tanks	
33	16-10-17	Preliminary and primary treatment: screening grit chambers & skimming tanks	
34	17-10-17	Preliminary and primary treatment: screening grit chambers & skimming tanks	
35	21-10-17	Primary sedimentation tanks: Design criteria and design examples	
36	23-10-17	Primary sedimentation tanks: Design criteria and design examples	

		Unit – 7; Secondary treatment	08 Hours
37	24-10-17	Suspended growth and fixed film bioprocess	
38	25-10-17	Trickling filter: Theory and operation, types and designs	
39	31-10-17	Trickling filter: Theory and operation, types and designs	
40	4-11-17	Activated sludge process, principle and slow diagram	
41	7-11-17	Activated sludge process, principle and slow diagram	
42	8-11-17	Modifications of ASP	
43	11-11-17	F/M ratio	
44	13-11-17	Design of ASP	
		Unit – 8	08 Hours
45	14-11-17	Anaerobic sludge digestion, sludge digestion tanks	
46	20-11-17	Anaerobic sludge digestion, sludge digestion tanks	
47	20-11-17	Design of sludge drying beds	
48	20-11-17	Low cost waste treatment method	
49	21-11-17	Septic tank, oxidation pond design	
50	22-11-17	Oxidation ditches design	
51	22-11-17	Oxidation ditches design continuation	
52	22-11-17	Reuse and recycle of waste water	

(Ms. Vedavathi. R)
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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: **VII** *Year: 2017-18*

Subject Title: **DESIGN OF STEEL STRUCTURES**	*Subject Code:* **10CV72**
Total contact Hours: **59**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **07/08/17**
Checked by: **Dr. M A Nagesh**	

Learning Objectives:

Study of this course should be based on **IS: 800-2007**

The students will be able to know about

i. Learn about the Connections: Bolted and welded, Beam-Beam, Beam-Column, Seated, and Stiffened and un-stiffened.
ii. Plastic Behaviour of Structural Steel
iii. Design of tension and compression members in Bolted and welded Connections
iv. Learn about Column Bases: Slab base and gusseted Base
v. Design of Beams in Bolted and welded Connections

Learning Outcomes:

Students will come to know about how to design of steel structures using **IS: 800-2007.** They will learn about the Connections in steel structures & Design strength of High Strength Friction Grip bolts (HSFG). They will learn about Moment resistant connections, Continuous Beam to Column connections. . They will learn about Plastic theory, Plastic hinge concept, Design of Tension Members, Design of Compression Members, Design of Column Bases and Design of Beams.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. **Design of Steel Structures,** N.Subramanian, Oxford, 2008
2. **Limit State Design of Steel Structures,** Duggal, TATA Megra Hill 2010
3. **Structural Dynamics**-by M.Mukhopadhyay.
4. **Design of Steel Structures** –Negi – Tata Mc Graw Hill Publishers
5. **Design of Steel Structures** – Raghupathi
6. **Bureau of Indian Standards, IS:800-2007, IS:875-1987**
7. **Steel Tables**

3) **Scheme of Examination:**
One full questions to be set from each unit. Students have to answer any five full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B**.

4) **Evaluation:**
Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks).

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SHRIDEVI EDUCATION

LECTURE PLAN

Sl No	Date	Topics	Remark
		Part A	
		Unit – 1 : INTRODUCTION	
1	07-08-2017	Advantages and Disadvantages of Steel structures,	
2	08-08-2017	Loads and Load combinations, Design considerations	
3	09-08-2017	Limit State Method (LSM) of design	
4	10-08-2017	Failure criteria for steel,	
5	12-08-2017	Codes, Specifications	
6	14-08-2017	Section classification.	
		Unit – 2 : BOLTED CONNECTIONS	
7	16-08-2017	Introduction, Behaviour of Bolted joints,	
8	17-08-2017	Design strength of ordinary Black Bolts	
9	19-08-2017	Design strength of High Strength Friction Grip bolts (HSFG)	
10	21-08-2017	Pin Connections, Simple Connections	
11	22-08-2017	Moment resistant connections, Beam to Beam connections,	
12	23-08-2017	Beam and Column splices, Semi rigid connections	
		Unit – 3 : WELDED CONNECTIONS	
13	24-08-2017	Introduction, Welding process, Welding electrodes, Advantages of Welding	
14	26-08-2017	Types and Properties of Welds, Types of joints	
15	28-08-2017	Weld symbols, Weld specifications, Effective areas of welds, Design of welds, Simple joints	
16	29-08-2017	Moment resistant connections, Continuous Beam to Column connections	
17	30-08-2017	Continuous Beam to Beam connections	
18	31-08-2017	Beam Column splices, Tubular connections	
		Unit – 4 : Plastic Behaviour of Structural Steel	
19	04-09-2017	Introduction, Plastic theory, Plastic hinge concept,	
20	05-09-2017	Plastic collapse load, conditions of plastic analysis	
21	06-09-2017	Theorem of Plastic collapse	
22	07-09-2017	Methods of Plastic analysis	
23	09-09-2017	Methods of Plastic analysis	
24	11-09-2017	Plastic analysis of continuous beams.	
25	12-09-2017	Plastic analysis of continuous beams.	
		Part B	
		Unit – 5 : Design of Tension Members	

26	13-09-2017	Introduction, Types of tension members, Design of strands, Slenderness ratio,	
27	14-09-2017	Behaviour of tension members	
28	21-09-2017	Modes of failure, Factors affecting the strength of tension members	
29	23-09-2017	Angles under tension, Other sections,	
30	25-09-2017	Design of tension member	
31	26-09-2017	Lug angles, Splices, Gussets	
		Unit – 6 : Design of Compression Members	
32	27-09-2017	Introduction, Failure modes, Behaviour of compression members	
33	28-09-2017	Elastic buckling of slender compression members	
34	03-10-2017	Sections used for compression members	
35	04-10-2017	Effective length of compression members	
36	07-10-2017	Design of compression members	
37	09-10-2017	Design of compression members	
38	10-10-2017	Built up compression members	
39	11-10-2017	Built up compression members	
		Unit – 7 : Design of Column Bases	
40	12-10-2017	Design of simple slab base - problems	
41	14-10-2017	Design of simple slab base - problems	
42	16-10-2017	Design of simple slab base - problems	
43	17-10-2017	Design of simple slab base - problems	
44	19-10-2017	Design of simple slab base - problems	
45	21-10-2017	Design of gusseted base - problems	
46	23-10-2017	Design of gusseted base - problems	
47	24-10-2017	Design of gusseted base - problems	
48	25-10-2017	Design of gusseted base - problems	
		Unit – 8: Design of Beams	
49	26-10-2017	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability	
50	31-10-2017	Behaviour of simple and built-up beams in bending(without vertical stiffeners)	
51	02-11-2017	Design strength of laterally supported beams in Bending-problems	
52	04-10-2017	Design strength of laterally supported beams in Bending-problems	
53	07-11-2017	Design strength of laterally unsupported beams- problems	
54	08-11-2017	Design strength of laterally unsupported beams	
55	09-11-2017	Shear strength of steel beams, Maximum deflection	
56	11-11-2017	Design of beams and purlins - problems	
57	13-11-2017	Design of beams and purlins - problems	
58	14-11-2017	Design of beams and purlins - problems	
59	15-11-2017	Design of beams and purlins - problems	

(Manogna H N)
Course Instructor

(Dr. M.A. Nagesh)
HOD

(Dr H B Phani Raju)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VII **Year: 2017-18**

Subject Title: **ESTIMATION AND VALUATION**	*Subject Code:* **10CV73**
Total contact Hours: **56**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mrs Supriya.C.B**	*Date:* 7/8/17
Checked by: **Dr. M A Nagesh**	

Learning Objectives:

The students will

i. Learn about the important terms of estimation, units of measurement, abstract method of taking out quantities and cost by using center line method, long wall and short wall method and learn the preparation of detailed and abstract estimates for buildings.

ii. To learn about different types of estimates, Estimation of wooden joineries such as doors, windows and ventilators

iii. Learn about the estimation of steel truss, manhole, septic tanks and RCC Culverts.

iv. To learn about the definition of specifications, objective of writing specifications, essentials in specification, general and detail specifications of common item of works in buildings.

v. To study of the definition and purpose of Rate Analysis, Working out quantities and rates for the following standard items of works – earth work in different types of soils, cement concrete of different mixes, bricks and stone masonry, flooring, plastering, RCC works, centering and form work for different RCC items, Wood and steel works for doors, windows and ventilators .

vi. Study of measurement of earthwork for roads, Methods- cross sections- mid section formula or average end area or mean sectional area, trapezoidal & prismoidal formula with and without cross slopes.

vii. To learn about the types of contract – essentials of contract agreement, Legal aspects, penal provisions on breach of contract, Definition of the terms – Tender, earnest money deposit, security deposit, tender forms, documents and types, Acceptance of contract documents, termination of contract, completion certificate, quality control, right of contractor, refund of deposit, Administrative approval – Technical sanction. Nominal muster roll, measurement books – procedure for recording and checking measurements – preparation of bills. Valuation- Definitions of various terms, method of valuation, Freehold & Leasehold properties, Sinking fund, depreciation and method of estimating depreciation, Outgoings

Learning Outcomes: Students will be able to understand the building drawings, important terms of estimation, units of measurement, abstract method of taking out quantities and cost by using center line method, long wall and short wall method. To learn about different types of estimates, Estimation of wooden joineries such as doors, windows and ventilators. Learn about the estimation of steel truss, manhole, septic tanks and RCC Culverts. To learn about the definition of specifications, objective of writing specifications, essentials in specification, general and detail specifications of common item of works in buildings. To study the definition and purpose of Rate Analysis, Working out quantities and rates for the following standard items of works – earth work in different types of soils, cement concrete of different mixes, bricks and stone masonry, flooring, plastering, RCC works, centering and form work for different RCC items, Wood and steel works for doors, windows and ventilators. To learn about the measurement of earthwork for roads, Methods- cross sections- mid section formula or average end area or mean sectional area, trapezoidal & prismoidal formula with and without cross slopes. To study about types of contract – essentials of contract agreement, Legal aspects, penal provisions on breach of contract, Definition of the terms – Tender, earnest money deposit, security deposit, tender forms, documents and types, Acceptance of contract documents, termination of contract, completion certificate, quality control, right of contractor, refund of deposit, Administrative approval – Technical sanction. Nominal muster roll, measurement books – procedure for recording and checking measurements – preparation of bills. Valuation- Definitions of various terms, method of valuation, Freehold & Leasehold properties, Sinking fund, depreciation and method of estimating depreciation, Outgoings.

Materials and resources required:

Presentation: Black board, Teaching charts, Models. / OHP/ LCD presentations

Text book:

1. **Estimating & Costing**, B. N. Dutta, Chand Publisher
2. **Quantity Surveying- P.L. Basin S. Chand : New Delhi.**
3. **Estimating & Specification** - S.C. Rangwala :: Charotar publishing House, Anand.

Reference Books:

1. **Estimating & Costing**, B. N. Dutta, Chand Publisher
2. **Quantity Surveying-** P.L. Basin S. Chand : New Delhi.
3. **Estimating & Specification** - S.C. Rangwala :: Charotar publishing House, Anand.
4. **Text book of Estimating & Costing-** G.S. Birde, Dhanpath Rai and Sons: New Delhi.
5. **A text book on Estimating, Costing and Accounts-** D.D. Kohli

And R.C. Kohli S. Chand : New Delhi.
6. **Contracts and Estimates,** B. S. Patil, University Press, 2006.

Scheme of Examination:

One full question is set from part A which is compulsory for 40 marks. 4 questions are set from part B and part C which is carrying 15 marks each. Students has to answer 4 questions by selecting atleast one from part B and part C.

Evaluation:

Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks)

Lesson Plan

Sl. No	Date	Topics	Remarks
		PART-A	
		ESTIMATION	**18hrs**
1	7-8-2017	Introduction	
2	9-8-2017	Study of various drawings with estimates	
3	10-8-2017	Study of various drawings with estimates	
4	11-8-2017	Important terms,	
5	12-8-2017	Important terms,	
6	14-8-2017	Units of measurement, abstract Methods of taking out quantities and cost	
7	16-8-2017	Units of measurement, abstract Methods of taking out quantities and cost	
8	17-8-2017	Center line method, long and short wall method or crossing method	
9	18-8-2017	Center line method, long and short wall method or crossing method	
10	19-8-2017	Preparation of detailed and abstract estimates for the following Civil Engineering works – Buildings	
11	21-8-2017	Preparation of detailed and abstract estimates for the following Civil Engineering works – Buildings	
12	23-8-2017	RCC framed structures with flat	
13	24-8-2017	RCC framed structures with flat	
14	26-8-2017	RCC framed structures with flat	
15	28-8-2017	Sloped RCC roofs with all building components.	
16	30-8-2017	Sloped RCC roofs with all building components.	
17	31-8-2017	Sloped RCC roofs with all building components	
18	1-9-2017	Sloped RCC roofs with all building components	

PART-B

		ESTIMATE	**7hrs**
19	4-9-2017	Different type of estimates	
20	6-9-2017	Approximate methods of estimating buildings, cost of materials	
21	7-9-2017	Estimation of wooden joineries such as doors, windows & ventilators.	
		ESTIMATES	**8hrs**
22	8-9-2017	Steel truss (Fink and Howe truss),	
23	9-9-2017	Steel truss (Fink and Howe truss),	
24	11-9-2017	Manhole	
25	13-9-2017	Manhole	
26	14-9-2017	Septic tanks	
27	15-9-2017	Septic tanks	
28	21-9-2017	RCC culverts.	
29	22-9-2017	RCC culverts.	
		SPECIFICATIONS	**5hrs**
30	23-9-2017	Definition of specifications	
31	25-9-2017	Objective of writing specifications	
32	27-9-2017	Essentials in specifications	
33	28-9-2017	General and detail specifications of common item of works in buildings.	
		PART-C	
		RATE ANALYSIS	**8hrs**
34	4-10-2017	Definition and purpose.	
35	6-10-2017	Working out quantities and rates for the following standard items of works – earth work in different types of soils	
36	7-10-2017	Cement concrete of different mixes	
37	9-10-2017	Bricks and stone masonry, flooring, plastering	
38	11-10-2017	RCC works, centering and form work for different RCC items,	
39	12-10-2017	RCC works, centering and form work for different RCC items	
40	13-10-2017	Wood and steel works for doors, windows and ventilators.	
41	14-10-2017	Wood and steel works for doors, windows and ventilators.	
		MEASUREMENT OF EARTHWORK FOR ROADS	**6hrs**
42	16-10-2017	Methods for computation of earthwork, cross sections	
43	19-10-2017	Mid section formula or average end area or mean sectional area	

44	21-10-2017	Mid section formula or average end area or mean sectional area	
45	23-10-2017	Trapezoidal & prismoidal formula with and without cross slopes.	
		CONTRACTS	**8hrs**
46	25-10-2017	Types of contract – essentials of contract agreement, Legal aspects, penal provisions on breach of contract	
47	26-10-2017	Definition of the terms – Tender, earnest money deposit	
48	2-11-2017	security deposit, tender forms, documents and types	
49	3-11-2017	Acceptance of contract documents. Termination of contract, completion certificate, quality control, right of contractor, refund of deposit	
50	4-11-2017	Administrative approval – Technical sanction. Nominal muster roll, Measurement books – procedure for recording and checking measurements – preparation of bills.	
51	8-11-2017	Valuation- Definitions of various terms, method of valuation, Freehold & Leasehold properties	
52	9-11-2017	Sinking fund, depreciation and method of estimating depreciation, Outgoings.	
53	10-11-2017	Question Paper Revision	
54	11-11-2017	Question Paper Revision	
55	13-11-2017	Question Paper Revision	
56	15-11-2017	Question Paper Revision	

Mrs Supriya C B
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Shridevi Institute of Engineering and Technology-Tumkur
(An ISO 9001-2008 Certified Institution)
DEPARTMENT OF CIVIL ENGINEERING

Semester: VII **Year: 2016-17**

Subject Title : **Design of Prestressed Concrete Structures**	*Subject Code:* **10CV74**
Total contact Hours: **52**	*Duration of Exam*: **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Ms. Bhavya C H**	*Date: 07/08/17*
Checked by: **Dr. M A Nagesh**	*Date: 07/08/17*

Learning Objectives:

1. Learn about the materials High strength concrete and steel, Stress-Strain characteristics and properties, basic Principles of Pre stressing.
2. To learn about the Stresses in concrete due to pre-stress and loads.
3. Learn about the various losses encountered in pre-tensioning and post tensioning methods.
4. To learn about deflection of a pre-stressed member – Short term and long term deflections
5. To study the Flexure and Shear-IS Code recommendations.
6. To learn about design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.

Learning Outcomes:

Students will able to understand the materials High strength concrete and steel and their stress strain characteristics and properties. To learn about stresses in concrete due to pre-stress and loads. To study deflections and various types of losses and also to know the limit state of collapse- for flexure and shear sections.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**
   1. **Pre-stressed Concrete**- N. Krishna Raju - Tata Mc. Graw Publishers.
   2. **Pre-stressed Concrete**- P. Dayarathnam : Oxford and IBH Publishing Co.
   3. **Design of pre-stressed concrete structures**- T.Y. Lin and Ned H. Burns - John Wiley & Sons, New York.
   4. **Fundamental of pre-stressed concrete**- N.C. Sinha & S.K. Roy
   5. IS : 1343 : 1980
   6. **Pre-stressed Concrete**- N. Rajgopalan

Scheme of Examination:

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part A**andtwo questions from **Part B.**

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DEPARTMENT OF CIVIL ENGINEERING

10CV74- Design of Pre stressed Concrete Structures

Sl No	Date	Topics	Topics Covered	Remarks
		UNIT 1: INTRODUCTION		
1	08/08/17	Materials: High strength concrete and steel, Stress-Strain characteristics and properties.		
2	10/08/17	Materials: High strength concrete and steel, Stress-Strain characteristics and properties.		
3	11/08/17	**Basic Principles Of Prestressing:** Fundamentals, Load balancing concept		
4	12/08/17	Stress concept, centre of Thrust		
5	17/08/17	Pre-tensioning and post tensioning systems, tensioning methods and end anchorages.		
6	18/08/17	Pre-tensioning and post tensioning systems, tensioning methods and end anchorages.		
		UNIT – 2: ANALYSIS OF SECTIONS FOR FLEXURE:		
7	19/08/17	Stresses in concrete due to pre-stress and loads,		
8	22/08/17	Stresses in concrete due to pre-stress and loads		
9	24/08/17	Stresses in concrete due to pre-stress and loads		
10	26/08/17	Stresses in concrete due to pre-stress and loads		
11	29/08/17	stresses in steel due to loads		
12	31/08/17	stresses in steel due to loads		
13	01/09/17	stresses in steel due to loads		
14	05/09/17	Cable profiles		
		UNIT – 3: LOSSES OF PRE-STRESS		
15	07/09/17	Various losses encountered in pre-tensioning and post tensioning methods		
16	08/09/17	Various losses encountered in pre-tensioning and post tensioning methods		
17	09/09/17	Various losses encountered in pre-tensioning and post tensioning methods		
18	12/09/17	Determination of jacking force		
19	14/09/17	Determination of jacking force		
20	15/09/17	Determination of jacking force		
		UNIT – 4: DEFLECTIONS		
21	21/09/17	Deflection of a pre-stressed member – Short term and long term deflections		
22	22/09/17	Deflection of a pre-stressed member – Short term and long term		
23	23/09/17	Deflection of a pre-stressed member – Short term and long term deflections		
24	26/09/17	Elastic deflections under transfer loads and due to different cable		

		profiles, Deflection limits as per IS 1343.		
25	28/09/17	Effect of creep on deflection, load verses deflection curve, methods of reducing deflection		
26	03/10/17	Effect of creep on deflection, load verses deflection curve, methods of reducing deflection		
		UNIT - 5 LIMIT STATE OF COLLAPSE		
27	06/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
28	07/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
29	10/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
30	11/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
31	12/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
		UNIT – 6 LIMIT STATE OF COLLAPSE (cont)		
32	13/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
33	14/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
34	17/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
35	19/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
36	24/10/17	Limit state of serviceability – control of deflections and cracking.		
37	26/10/17	Limit state of serviceability – control of deflections and cracking.		
38	31/10/17	Limit state of serviceability – control of deflections and cracking.		
		UNIT – 7 DESIGN OF END BLOCKS:		
39	02/11/17	Transmission of prestress in pretensioned members, transmission length, Anchorage stress in post-tensioned members.		
40	03/11/17	Transmission length, Anchorage stress in post-tensioned members.		
41	04/11/17	Transmission length, Anchorage stress in post-tensioned members.		
42	07/11/17	Bearing stress and bursting tensile force-stresses in end blocks Methods, I.S. Code		
43	09/11/17	Bearing stress and bursting tensile force-stresses in end blocks- Methods, I.S. Code		
44	10/11/17	Provision for the design of end block reinforcement		
		UNIT – 8 DESIGN OF BEAMS		
45	11/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		
46	14/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		
47	21/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		
48	23/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		

		profiles, Deflection limits as per IS 1343.		
25	28/09/17	Effect of creep on deflection, load verses deflection curve, methods of reducing deflection		
26	03/10/17	Effect of creep on deflection, load verses deflection curve, methods of reducing deflection		
		UNIT - 5 LIMIT STATE OF COLLAPSE		
27	06/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
28	07/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
29	10/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
30	11/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
31	12/10/17	Flexure -IS Code recommendations – Ultimate flexural strength of sections.		
		UNIT – 6 LIMIT STATE OF COLLAPSE (cont)		
32	13/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
33	14/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
34	17/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
35	19/10/17	Shear - IS Coderecommendations, shear resistance of sections, shear reinforcement		
36	24/10/17	Limit state of serviceability – control of deflections and cracking.		
37	26/10/17	Limit state of serviceability – control of deflections and cracking.		
38	31/10/17	Limit state of serviceability – control of deflections and cracking.		
		UNIT – 7 DESIGN OF END BLOCKS:		
39	02/11/17	Transmission of prestress in pretensioned members, transmission length, Anchorage stress in post-tensioned members.		
40	03/11/17	Transmission length, Anchorage stress in post-tensioned members.		
41	04/11/17	Transmission length, Anchorage stress in post-tensioned members.		
42	07/11/17	Bearing stress and bursting tensile force-stresses in end blocks Methods, I.S. Code		
43	09/11/17	Bearing stress and bursting tensile force-stresses in end blocks- Methods, I.S. Code		
44	10/11/17	Provision for the design of end block reinforcement		
		UNIT – 8 DESIGN OF BEAMS		
45	11/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		
46	14/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		
47	21/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		
48	23/11/17	Design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.		

49	23/11/17	Permissible stress, design of prestressing force and eccentricity		
50	24/11/17	Limiting zone of pre-stressing force cable profile.		
51	24/11/17	Limiting zone of pre-stressing force cable profile.		
52	25/11/17	Limiting zone of pre-stressing force cable profile.		

Ms. Bhavya C H
Course Instructor

Dr. M A Nagesh
HOD

Dr H B Phani Raju
Principal

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: VII ***Year: 2017-18***

Subject Title: **Highway Geometric Design**	*Subject Code:* **10CV755**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mrs. Supriya C B**	*Date of commencement of semester:* **07/08/17**
Checked by: **Dr. M A Nagesh**	

Learning Objectives:

The students will

i. Learn about the importance of railways in transportation, selecting the routes, permanentway & its requirements, gauges & its types, functions & requirements of rails and its types.

ii. Learn about the functions, requirements & types of sleepers and ballast, track fitting and fasteners, calculation of quantity materials required for a track and they also learn about the tractive resistances and hauling capacities with examples.

iii. understand about the necessity, safe speed on curves, cant deficiency, negative cant, safe speed based on various criteria, transition curve, gradient and types, grade compensation.

iv. Learn about the components of turnouts, details of points and crossings, design of turnouts, types of switches, crossings, track junctions, types of yards, signaling, objects and types of signals, station and yard equipment, turn table, fouling mark, buffer stop, level crossing, track defects, maintenance.

v. Learn about the layout of an airport with component parts and functions, site selection for airport, aircraft characteristics affecting the design and planning of airport, airport classification and runway orientation.

vi. Learn about the basic runway length, corrections, runway geometrics, taxiways- factors affecting the layout, geometrics of taxiway, design of exit taxiway, visual aids like airport marking, lighting.

vii. Learn about the tunnel advantages and disadvantages, size and shape of tunnels, surveying, tunneling in rocks, tunneling methods in soil.

viii. Learn about harbour classification, layout with components, natural phenomenon affecting the design of harbours.

Learning Outcomes: Students will be able to understand the importance and necessity of Railways, Airports, Tunnels and Harbour engineering for the effective transportation.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text Books:**
   i) **Principle and Practice of Highway Engineering- L R Kadiyali & N B Lal khanna**
   ii) **Indian Railway Track-** M M Agarwal, Jaico Publications, Bombay.
   iii) **Airport Planning and design-** Khanna Arora and Jain, Nem Chand Bros, Roorkee.
   iv) **Doks and Tunnel Engineering-**R Srinivasan, Charaotar publishing house.
   v) **Docks and Harbour Engineering-** H P Oza and G H Oza Charaotar publishing house.
   vi) **Surveying-** B C Punmia, Laxmi publications.

3) **Reference Books:**
   i) **Railway Engineering-** Mundrey, McGraw Hill Publications.

4) **Scheme of Examination:**

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B.**

5) **Evaluation:**

Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks).

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LECTURE PLAN

Sl. No	Date	Topics	Remarks
		PART A: Unit 1- Introduction	
1	7-8-2017	Geometric Control factors like Topography -	
2	9-8-2017	design speed, design vehicle – Traffic –	
3	10-8-2017	Capacity – volume	
4	11-8-2017	environment and other factors as per IRC and AASHTO standards and specifications	
5	14-8-2017	PCU concept	
6	16-8-2017	factors controlling PCU for different design purpose	
		Unit 2 – CROSS SECTIONAL ELEMENTS	
7	17-8-2017	Pavement surface characteristics – friction – skid resistance	
8	18-8-2017	pavement unevenness - light reflecting characteristics	
9	21-8-2017	camber – objectives – types of camber – methods of providing cambers in the field	
10	23-8-2017	problems	
11	24-8-2017	problems	
12	28-8-2017	carriage way – kerb – median – shoulder	
13	28-8-2017	foot path – parking lanes – service roads	
14	30-8-2017	cycle tracks – Driveways – Right of way	
15	31-8-2017	Factors influencing right of way	
16	1-9-2017	Design of Road humps as per latest I RC provisions.	
		Unit 3 SIGHT DISTANCE:	
17	4-9-2017	Importants, types,	
18	4-9-2017	Side distance at uncontrolled intersection	
19	6-9-2017	derivation	
20	7-9-2017	factors affecting side distance,	
21	8-9-2017	IRC, AASHTO standards,	
22	11-9-2017	problems on above.	
		Unit 4 HORIZONTAL ALIGNMENT:	
23	11-9-2017	Definition, Checking the stability of vehicle while moving on horizontal curve while moving on horizontal curve	
24	13-9-2017	Super elevation, Ruling minimum and maximum radius,	
25	14-9-2017	Assumptions – problems	
26	15-9-2017	method of providing super elevation for different curves	

27	21-9-2017	Extra widening of pavement on curves – objectives – Mechanical widening – psychological widening	
28	22-9-2017	Transition curve – objectives – Ideal requirements – Types of transition curve	
29	25-9-2017	Method of evaluating length of transition curve – Setting the transition curve in the field	
30	25-9-2017	set back distance on horizontal curve and problems on above.	
		PART B: **Unit 5 VERTICAL ALIGNMENT:**	
31	27-9-2017	Gradient – Types of gradient	
32	28-9-2017	Design criteria of summit and valley curve	
33	4-10-2017	Design of vertical curves based on SSD – OSD	
34	6-10-2017	Night visibility considerations	
35	9-10-2017	Design standards for hilly roads – problems on the above.	
		Unit 6 INTERSECTION DESIGN:	
36	9-10-2017	Principle – At grade and Grade separated junctions	
37	11-10-2017	Types – channelization	
38	12-10-2017	Features of channelising Island	
39	13-10-2017	median opening	
40	16-10-2017	Gap in median at junction.	
41	16-10-2017	continuation of Gap in median at junction	
		Unit 7 ROTARY INTERSECTION	
42	19-10-2017	Elements – Advantages – Disadvantages –	
43	23-10-2017	Design guide lines – problem on the above	
44	25-10-2017	Grade separated intersection	
45	26-10-2017	Three legged inter section	
46	2-11-2017	Diamond inter change – Half clover leaf –	
47	3-11-2017	clover leaf- Advantages- Disadvantages only 6	
		Unit 8	
48	8-11-2017	Importance – sub surface drainage –surface drainage	
49	9-11-2017	Design of road side drives	
50	10-11-2017	Hydrological – Hydraulical considerations and design of filter media,	
51	13-11-2017	problems on above.	
52	15-11-2017	problems on above	

(Supriya C B)
Course Instructor

(Dr. M A Nagesh)
H.O.D

(Dr.M N Eshwarappa)
Principal

Shridevi Institute of Engineering and Technology-Tumkur

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VII **Year:2017-18**

Subject Title: **PAVEMENT MATERIALS AND CONSTRUCTION**	*Subject Code:* **10CV763**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Prakash J**	*Date: 07/08/17*
Checked by: **Dr. M.A. Nagesh**	

Course Objectives:

The students will

i. Learn about the Aggregates, their origin and classification. Properties and Requirements of Road aggregates. Gradation and different methods of aggregate blending to meet specified Gradation.

ii. To learn about Bitumen and Tar, their origin and preparation. Properties and requirements and their chemical composition.

iii. Learn about the Bituminous Emulsions and Cutbacks. Preparation, characteristics, uses and tests. Adhesion of Bituminous Binders to Road Aggregates: Adhesion failure, mechanism of stripping, tests and methods of improving adhesion.

iv. To learn about bituminous mixes: Mechanical properties, dense and open textured mixes, flexibility and brittleness, (no Hveem Stabilometer & Hubbar – Field Tests) bituminous mix, design methods using Rothfuch's Method only and specification, Marshal mixed design criteria- voids in mineral aggregates, voids in total mix, density, flow, stability, percentage voids filled with bitumen..

v. Study of subgrade: Earthwork grading and construction of embankments and cuts for roads. Preparation of subgrade, quality control tests.

Course Outcomes: Students will be able to understand Aggregates, their origin and classification. Properties and Requirements of Road aggregates. Gradation and different methods of aggregate blending to meet specified Gradation. To learn about Bitumen and Tar, their origin and preparation. Properties and requirements and their chemical composition. Learn about the Bituminous Emulsions and Cutbacks. Preparation, characteristics, uses and tests. Adhesion of Bituminous Binders to Road Aggregates: Adhesion failure, mechanism of stripping, tests and methods of improving adhesion. To learn about bituminous mixes: Mechanical properties, dense and open textured mixes, flexibility and brittleness, (no Hveem Stabilometer & Hubbar – Field

Tests) bituminous mix, design methods using Rothfuch's Method only and specification, Marshal mixed design criteria- voids in mineral aggregates, voids in total mix, density, flow, stability, percentage voids filled with bitumen. To study of the equipments in highway construction: Various types of equipment for excavation, grading and compaction – their working principle, advantages and limitations. Special equipment for bituminous and cement concrete pavement and stabilized soil road construction, Study of subgrade: Earthwork grading and construction of embankments and cuts for roads. Preparation of subgrade, quality control tests .Study of flexible pavements: Specifications of materials, construction method and field control checks for various types of flexible pavement layers. To learn about cement concrete pavements: Specifications and method of cement concrete pavement construction (PQC Importance of providing DLC as sub-base and polythene thin layer between PQC and sub-base); Quality control tests; Construction of various types of joints.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations
2) **Text book:**
   - Highway Engineering- Khanna, S.K., and Justo, C.E.G.: Nem Chand and Bros. Roorkee.
   - Construction Equipment and its Management- Sharma, S.C. : Khanna Publishers.
   - Hot Mix Asphalt Materials, Mixture Design and Construction- Freddy L. Roberts, Kandhal, P.S. : University of Texas Austin, Texas. NAPA Education Foundation Lanham, Maryland.
3) **Reference Books:**
   1. RRL, DSIR, 'Bituminous Materials in Road Construction', HMSO Publication.
   2. RRL, DSIR, 'Soil Mechanics for Road Engineers', HMSO Publication.
   3. Relevant IRC codes and MoRT & H specifications.

Scheme of Examination:

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B.**

Evaluation:

Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments.

University Examinations (100 Marks)

Lesson Plan

10CV763 - Subject Name: PAVEMENT MATERIALS AND CONSTRUCTION

Sl No	Date	Topics	Remarks
		UNIT 1: AGGREGATES	
1	07/08/2017	Introduction, Origin and Classification.	
2	08/08/2017	Requirements and Properties	
3	10/08/2017	Tests on aggregates	
4	11/08/2017	Concepts of Size and Gradation. Design Gradation.	
5	14/08/2017	Different methods of Aggregate Blending - Problems	
6	17/08/2017	Problems – Continued….	
		UNIT 2: BITUMEN AND TAR	
7	18/08/2017	Origin and Preparation	
8	21/08/2017	General Properties	
9	22/08/2017	Requirements of good bitumen.	
10	24/08/2017	Chemical Constituents of Bitumen and Tar.	
		UNIT 3: BITUMINOUS EMULSIONS AND CUTBACKS	
11	28/08/2017	Preparation	
12	29/08/2017	Characteristics	
13	31/08/2017	Uses and Tests	
14	01/09/2017	Tests continued……	
15	04/09/2017	Adhesion of Bituminous Binders to Road Aggregates	
16	05/09/2017	Adhesion Failure - Causes	
17	07/09/2017	Mechanism of Stripping	
18	08/09/2017	Tests and Methods of improving Adhesion	
		UNIT 4: BITUMINOUS MIXES	
19	11/09/2017	Mechanical Properties, Dense and Open textured mixes.	
20	12/09/2017	Flexibility and Brittleness	
21	14/09/2017	Design of Gradation by Rothfuch's method.	
22	15/09/2017	Marshall Mix Design Criteria - Introduction	
23	21/09/2017	Voids in Mineral Aggregates, Voids in total Mix, Density, Flow	
24	22/09/2017	Stability, Percentage voids filled with bitumen, Problems.	
		UNIT 5: EQUIPMENTS IN HIGHWAY CONSTRUCTION	
25	25/09/2017	Various types of equipments for Excavation – working Principle	
26	26/09/2017	Various types of equipments for Grading and Compaction.	
27	28/09/2017	Advantages and Limitations	
28	03/10/2017	Special equipment for bituminous and cement concrete pavement	
29	06/10/2017	Special equipment for stabilized soil road construction.	
30	09/10/2017	Problems	
		UNIT 6: SUBGRADE	
31	10/10/2017	Introduction	
32	12/10/2017	Earthwork Grading and Compaction	
33	13/10/2017	Construction of Embankments and Cuts for Roads	
34	16/10/2017	Preparation of subgrade	
35	17/10/2017	Quality control Tests	
36	19/10/2017	Quality control Tests-Continued…..	

		UNIT 7: FLEXIBLE PAVEMENTS	
37	**23/10/2017**	Introduction	
38	**24/10/2017**	Specification of Materials	
39	**26/10/2017**	Construction Equipments	
40	**31/10/2017**	Methods of Construction for Subgrade and Field Control Tests	
41	**26/10/2017**	Methods of Construction for Sub Base Course and Field Control Tests	
42	**27/10/2017**	Methods of Construction for Base Course and Field Control Tests	
43	**28/10/2017**	Methods of Construction for DBM (Surface) and Field Control Tests	
44	**02/11/2017**	Methods of Construction for BC (Surface) and Field Control Tests	
		UNIT 8: CEMENT CONCRETE PAVEMENTS	
45	**03/11/2017**	Introduction and Specifications of Materials to be used.	
46	**07/11/2017**	Method of Construction of CC Pavements – PQC Layer, DLC Layer	
47	**09/11/2017**	Importance of Providing DLC as Sub Base	
48	**10/11/2017**	Importance of Providing polythene thin Layer between PQC & Sub-base	
49	**13/11/2017**	Quality Control Tests for Various Layers	
50	**14/11/2017**	Joints and their types	
51	**15/11/2017**	Extra classes will be taken	
52	**15/11/2017**	Extra classes will be taken	

(Mr. Prakash J)
Course Instructor

(Dr. M A Nagesh)
H.O.D

(Dr H B Phani Raju)
Principal

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Shridevi Institute of Engineering and Technology-Tumkur
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DEPARTMENT OF CIVIL ENGINEERING

Semester: VIII **Year: 2017-18**

Subject Title: ***Advanced Concrete Technology***	*Subject Code:* **10CV81**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Nagaraja C**	*Date: 01/02/18*
Checked by: **Dr. M A Nagesh**	*Date: 01/02/18*

Learning Objectives:

The course will enable the students

i. Recognize the importance of process of hydration leading to development of strength with correlated properties and relevant technological process in modern days
ii. Proportion ingredients of Concrete to arrive at most desirable mechanical properties of Concrete
iii. carry out mix design necessary for their project works and else where
iv. Ascertain and measure engineering properties of concrete in fresh and hardened state which meet the requirement of real time structures
v. to understand the advancements in concrete such as Ready mix concrete, Fiber reinforced concrete, light weight concrete, etc.
vi. to obtain the knowledge of Nondestructive testing of concrete structures by various methods and their processes.

Learning Outcomes:

The students will understand the importance of Bouge's Compounds, microstructure of hydrated cement paste, consequent volume of hydrated cement, transition zone, strength and correlated properties with the rheology of concrete in terms of Bingham parameters. The chemical admixtures, plasticizers, superplasticizers, Air entraining agents and their effects on fresh and hardened concrete will be studied. The mineral admixtures, their types and their effects will be studied. The mix design of concrete under IS code, ACI and BS codes will be discussed and studied. The concept of durability with emphasis on permeability, chemical attack, acid attack, thermal diffusivity, alkali-aggregate reaction will be discussed and studied. The importance and relevance of RMC, its manufacture and use, fly ash concrete concept and typical mix, SCC concept, its tests and typical mix will be studied. The types of FRC, properties, behavior under types of loadings, cracking, post cracking stages, Ferrocement properties will be studied. The will learn the concepts of light weight concrete, high density concrete, properties, mix, applications, etc will be studied. Tests on hardened concrete, effects and state of specimen dimensions and shapes, moisture and NDT tests and types will be discussed.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text / Reference Books:**

1. Properties of Concrete – Neville A M, ELBS Edition, Longman Ltd, London.
2. Concrete Technology – M S Shetty, Seventh Revised Edition, S Chand & Company Pvt Ltd, New Delhi.
3. Concrete Technology – A R Santhakumar, Oxford University Press.
4. Concrete – P K Mehta and P J M Monteiro, Prentice Hall, New Jersey (Special student edition by Indian Concrete Institute, Chennai).
5. ACI Code for Mix Design.
6. IS 10262 – 2004.
7. Concrete Mix Design – N Krishna Raju, Sehgal Publishers.
8. Concrete Manual – Gambhir M L, Dhanpat Rai & Sons, New Delhi.
9. Advanced Concrete Technology Processes – John Newman, Ban Seng Choo, London.
10. Advanced Concrete Technology Constituent Materials – John Newman, Ban Seng Choo, London.
11. Non-Destructive Test and Evaluation of Materials – J Prasad, C G K Nair, Mc Graw Hill.
12. High Performance Concrete – Prof Aitcin P C, E and FN Spon, London.
13. Properties of Fresh concrete – Power T C, E and FN Spon, London.

3) **Scheme of Examination:**
The question paper will have eight questions, each full question carrying 20 marks with four full questions each in Part A and Part B. There will be one full question (with a maximum of three subdivisions, if necessary) from each Unit. Each full question shall cover the topics under a Unit. The students shall answer five full questions selecting at least two full questions from each part. If more than five questions are answered, the best answer will be considered for the award of marks limiting five full question answers.

4) **Evaluation:**

Student Assessment: Through Internal Assessment Tests (25 Marks), University Examination (100 Marks)

Lesson Plan

10CV81 – Advanced Concrete Technology

Sl No	Date	Topics	Topics Covered	Remarks
		Part- A		
		Unit-1		
1	05/02/18	Importance of Bogue's compounds		
2	06/02/18	Structure of hydrated cement paste		
3	07/02/18	Volume of hydrated product		
4	07/02/18	Porosity of paste and concrete		
5	08/02/18	Transition of zone, Elastic modulus		
6	12/02/18	Factors affecting strength and elasticity of concrete		
7	14/02/18	Rheology of concrete in terms of Bingham parameters		
		Unit-2		
8	14/02/18	Chemical Admixtures – Mechanism of chemical admixtures, plasticizers and Superplasticizers		
9	15/02/18	plasticizers and Superplasticizers		
10	19/02/18	Their effect on concrete property in fresh state		
11	20/02/18	Their effect on concrete property in hardened state		
12	21/02/18	Marsh cone test for optimum dosage of super plasticizer, Retarders and accelerators		
13	21/02/18	Air entraining admixtures, new generation super plasticizers		
14	22/02/18	Mineral admixtures, flyash, silica fume, GGBS		
15	26/02/18	Their effect on concrete property in fresh and hardened state		
		Unit-3		
16	27/02/18	Mix Design- Factors affecting mix design		
17	28/02/18	Design of concrete mix using IS10262		
18	28/02/18	Design of concrete mix using IS10262		
19	01/03/18	Design of concrete mix using current ACI method		
20	05/03/18	Design of concrete mix using current BS method		
21	06/03/18	Provisions in revised IS 10262-2064		
		Unit-4		
22	07/03/18	Durability of concrete-Introduction, Permeability of concrete		
23	07/03/18	Chemical attack and acid attack		
24	08/03/18	Efflorescence and corrosion in concrete		
25	13/03/18	Corrosion in concrete		
26	14/03/18	Thermal conductivity		
27	14/03/18	Thermal diffusivity and specific heat		
28	15/03/18	Alkali aggregate reaction		
29	19/03/18	IS 456-2000 requirements for durability		
		Part- B		
		Unit-5		
30	20/03/18	RMC Concrete – Manufacture, transporting,		

		placing, precautions		
31	21/03/18	Methods: pumping, under water concreting		
32	21/03/18	Shotcrete, high volume flyash concrete concept		
33	22/03/18	Properties, typical mix		
34	26/03/18	Self compacting concrete concept, materials		
35	27/03/18	Tests, properties, applications and typical mix		
		Unit-6		
36	28/03/18	Fiber reinforced concrete – Fibers types and properties		
37	28/03/18	Behaviour of FRC in compression		
38	29/03/18	Behaviour of FRC in tension including pre-craking stage and post cracking stages		
39	02/04/18	Behaviour of FRC in tension including pre-craking stage and post cracking stages		
40	03/04/18	Behaviour in flexure and shear		
41	04/04/18	Ferro cement- materials, techniques of manufacture		
42	04/04/18	Properties and applications		
		Unit-7		
43	05/04/18	Light weight concrete- materials and properties		
44	09/04/18	Types and properties		
45	10/04/18	Typical light weight concrete mix		
46	11/04/18	High density concrete, materials and properties		
47	11/04/18	High performance concrete, materials and properties		
48	12/04/18	Applications of different types		
49	19/04/18	Typical mix of different types		
		Unit-8		
50	23/04/18	Tests on hardened concrete- Effect of end condition of specimens		
51	24/04/18	Capping, H/D ratio		
52	25/04/18	Rate of loading, moisture condition		
53	25/04/18	Compression and tension tests		
54	26/04/18	Flexure tests		
55	30/04/18	Tests on composition of hardened concrete, cement content		
56	02/05/18	Tests on composition of hardened concrete, cement content		
57	02/05/18	Original W/C ratio, NDT Tests concepts		
58	03/05/18	NDT Tests concepts		
59	09/05/18	NDT Tests concepts		
60	09/05/18	Rebound hammer test		
61	10/05/18	Pulse velocity test method		

Mr. C Nagaraja
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HOD

Dr. B Phaniraju
Principal

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Shridevi Institute of Engineering and Technology

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VIII Year: 2017-18

Subject Title: **DESIGN AND DRAWING OF STEEL STRUCTURES**	*Subject Code:* **10 CV 82**
Total contact Hours: **26 (T) + 39 (D)**	*Duration of Exam:* **04 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr.Manogna H N/ Nagaraja C**	*Date of commencement of semester :* ***05/02/18***
Checked by: **Dr M A Nagesh**	

Learning Objectives:

The students will learn & draw

1. About Connections: Bolted and welded, beam-beam, Beam-column, seated, stiffened and un-stiffened.
2. About Columns: Splices, Column-column of same and different sections. Lacing and battens.
3. Column Bases: Slab base and gusseted base, grillage foundation.
4. Design of Bolted and welded plate girder
5. Design of Roof Truss (Forces in the members to be given)
6. Design of Gantry girder

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations

2) **Text book \ Reference Books:**
   - i. Structural Design & Drawing – N.Krishna Raju, Unversities Press, India.
   - ii. Design of Steel Structures - N. Subramanian : Oxford University, Press.
   - iii. Design of Steel Structures - Negi - Tata Mc Graw Hill Publishers.
   - iv. Design of Steel Structures - Arya and Ajaman- Nem Chand & Bros. Roorkee.
   - v. Design of Steel Structures.- Raghupati
   - vi. IS : 800 – 2007,
   - vii. SP 6 (1) – 1984 or Steel Table.

3) **Scheme of Examination:**
   - i. In **Part A**, Two questions to be set, out of which one question to be answered (30% weightage).
   - ii. In **Part B**, Two questions to be set, out of which one question to be answered (70% weightage).

4) **Evaluation:**
   Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments.
   University Examinations (100 Marks).

DEPARTMENT OF CIVIL ENGINEERING

10 CV 82 - DESIGN AND DRAWING OF STEEL STRUCTURES

Sl.No.	Class	Date	Hrs	Topics	Remarks
Part- A				**Unit 1:**	
1	Theory	05-02-18	1	Bolted and welded, beam-beam, Beam column, seated, stiffened and un-stiffened	
2		05-02-18	1		
3	Practice	05-02-18	3		
4	Theory	12-02-18	1		
5		12-02-18	1		
6	Practice	12-02-18	3		
				Unit 2:	
7	Theory	19-02-18	1	Splices, Column-column of same and different sections. Lacing and battens	
8		19-02-18	1		
9	Practice	19-02-18	3		
				Unit 3:	
10	Theory	26-02-18	1	Slab base and gusseted base, grillage foundation	
11		26-02-18	1		
12	Practice	26-02-18	3		
				Unit 4: i)	
13	Theory	05-03-18	1	Design & Drawing of Bolted Plate Girder	
14		05-03-18	1		
15	Practice	05-03-18	3		
16	Theory	12-03-18	1		
17		12-03-18	1		
18	Practice	12-03-18	3		
				Unit 4: i)	
19	Theory	19-03-18	1	Design & Drawing of Welded Plate Girder	
20		19-04-18	1		
21	Practice	19-03-18	3		
22	Theory	26-03-18	1		
23		26-03-18	1		
24	Practice	26-03-18	3		
25	Theory	2-04-18	1		
				Unit 4: ii)	
26	Theory	02-04-18	1	Design & Drawing of Roof Truss	
27	Practice	02-04-18	3		
28	Theory	09-04-18	1		
29		09-04-18	1		
30	Practice	09-04-18	3		
31	Theory	23-04-18	1		
32		23-04-18	1		
				Unit 4: iii)	
33	Practice	23-04-18	3	Design & Drawing of Gantry Girder	
34	Theory	30-04-18	1		
35		30-04-18	1		
36	Practice	30-04-18	3		
37	Theory	07-05-18	1		
38		07-05-18	1		
39	Practice	07-05-18	3		

(Manogna H N)
Staff in Charge

(Dr M A Nagesh)
H.O.D

(Dr. H B Phani Raju)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VIII Year: 2017-18

Subject Title: **PAVEMENT DESIGN**	*Subject Code:* **10 CV 833**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mrs.Supriya.C B**	*Date of commencement of semester :* ***05/02/18***
Checked by: **Dr.M.A.Nagesh**	

Learning Objectives:

The students will

Learn about Desirable characteristics of pavement, types and components, Difference between Highway pavement and Air field pavement– Design strategies of variables – Functions of sub-grade, sub base – Base course – surface course – comparison between Rigid and flexible pavement.

Learn about **Fundamentals of Design of Pavements:** Design life – Traffic factors – climatic factors – Road geometry – Subgrade strength and drainage, Stresses and deflections, Boussinesqs theory – principle, Assumptions –Limitations and problems on above - Busmister theory – Two layered analysis – Assumptions – problems on above.

Learn about Design wheel load – contact pressure – ESWL concept – Determination of ESWL by equivalent deflection criteria – Stress criteria – EWL concept.

Understand about **Flexible Pavement Design:** Assumptions – McLeod Method – Kansas method – Tri-axial method - CBR method – IRC Method (old) -CSA Method using IRC 37-2001, problems on above

Learn about **Stresses in Rigid Pavement:** Principle – Factors - wheel load and its repetition – properties of sub grade – propertie Pp ps ppppppconcrete. External conditions – joints – Reinforcement – Analysis of stresses – Assumptions – Westergaard's Analysis – Modified Westergaard equations – Critical stresses – Wheel load stresses, Warping stress – Frictional stress –combined stresses (using chart / equations) - problems on above.

Learn about **Design of Rigid Pavement:** Design of C.C. Pavement by IRC: 38 – 2002 for dual and Tendem axle load – Reinforcement in slabs –Requirements of joints – Types of joints – Expansion joint – contraction joint – warping joint – construction joint – longitudinal joint, Design of joints, Design of Dowel bars, Design of Tie bars – problems of the above.

Learn about **Flexible Pavement Failures, Maintenance and Evaluation:** Types of failures, causes, remedial/maintainance measures in flexible pavements – Functional Evaluation by visual inspection and unevenness measurement by using different technics - Structural Evaluation by Benkelman Beam Deflection Method, Falling

weight deflectometer, GPR Method. Design factors for Runway Pavements - Design methods for Airfield pavements and problems on above

Learn about **Rigid Pavement Failures, Maintenance and Evaluation:** Types of failures, causes, remedial/maintainance measures in rigid pavements – Functional Evaluation by visual inspection and unevenness measurements. Design factors for Runway Pavements – Design methods for Airfield pavements.

Learning Outcomes: Students will be able to understand about Desirable characteristics of pavement, types and components, Difference between Highway pavement and Air field pavement– Design strategies of variables – Functions of sub-grade, sub base – Base course – surface course – comparison between Rigid and flexible pavement.. They will be able to know about Fundamentals of Design of Pavements: Design life – Traffic factors – climatic factors – Road geometry – Subgrade strength and drainage, Stresses and deflections, Boussinesqs theory – principle, Assumptions –Limitations and problems on above - Busmister theory – Two layered analysis – Assumptions – problems on above. They will know about ESWL Concept, Flexible Pavement Design- Mclead method,IRC method etc. They will come to know about Stresses in Rigid Pavements, Joints analysis of stresses westergaard's analysis. They will be able to know about Design of Rigid Pavements IRC method, Design of Joints, Design of Dowel Bars and Tie Bars. They will study about Flexible & Rigid Pavement failures,Maintainence and Evaluation.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text book:**

1. **Highway Engineering-** Khanna & Justo
2. **Principles & Practices of Highway Engineering-** L R Kadiyalli & N B. Lal
3. **Pavement Analysis & Design** - Yang H. Huang- II edition.
4. Relavent IRC codes

3) **Reference Books:**

1. **Principles of Pavement Design-** Yoder and Witzack - 2nd edition, John Wileys a and Sons
2. **Principles of Pavement Design-** Subha Rao.

4) **Scheme of Examination:**

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B.**

5) **Evaluation:** Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments.

University Examinations (100 Marks).

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

10CV833 – PAVEMENT DESIGN

Sl.No.	Date	Topics	Remarks
		Part A	
		Unit 1: INTRODUCTION	
1	05-02-18	Desirable characteristics of pavement,	
2	06-02-18	types and components,	
3	07-02-18	Difference between Highway pavement and Air field pavement	
4	08-02-18	Design strategies of variables	
5	12-02-18	Functions of sub-grade, sub base – Base course -surface course	
6	14-02-18	Functions of sub-grade, sub base – Base course – surface course, comparison between Rigid and flexible pavement	
		Unit 2: FUNDAMENTALS OF DESIGN OF PAVEMENTS	
7	15-02-18	Design life – Traffic factors	
8	19-02-18	climatic factors – Road geometry – Subgrade strength and drainage	
9	20-02-18	Stresses and deflections. Boussinesqs theory – principle. Assumptions - Limitations	
10	21-02-18	Busmister theory – Two layered analysis – Assumptions	
11	22-02-18	Problems on Above	
12	26-02-18	Problems on Above	
		Unit 3: DESIGN FACTORS	
13	27-02-18	Design wheel load	
14	28-02-18	contact pressure	
15	01-03-18	ESWL concept	
16	05-03-18	Determination of ESWL by equivalent deflection criteria	
17	06-03-18	Stress criteria. EWL concept	
		Unit 4: FLEXIBLE PAVEMENT DESIGN	
18	07-03-18	Assumptions – McLeod Method	
19	08-03-18	Kansas method	
20	13-03-18	Tri-axial method	
21	14-03-18	CBR method	
22	15-03-18	IRC Method (old)	
23	19-03-18	CSA Method using IRC 37-2001	
24	20-03-18	Problems on above	
		Part B	
		Unit 5: Stresses In Rigid Pavement	
25	21-03-18	Principle – Factors - wheel load and its repetition	
26	22-03-18	properties of sub grade, Properties of Concrete	
27	26-03-18	External conditions – joints	
28	27-03-18	Reinforcement – Analysis of stresses	
29	28-03-18	Assumptions – Westergaard's Analysis – Modified Westergaard equations	
30	02-04-18	Critical stresses – Wheel load stresses, Warping stress – Frictional stress –combined stresses (using chart / equations) - problems on above	
		Unit 6- Design of Rigid Pavement	
31	03-04-18	Design of Rigid Pavement: Design of C.C. Pavement by IRC: 38 – 2002 for dual and Tendem axle load	
32	04-04-18	Reinforcement in slabs	

33	05-04-18	Requirements of joints – Types of joints	
34	09-04-18	Expansion joint – contraction joint	
35	10-04-18	warping joint – construction joint	
36	11-04-18	longitudinal joint, Design of joints, Design of Dowel bars	
		Unit 7- Flexible Pavement Failures, Maintenance And Evaluation	
37	12-04-18	Types of failures, causes	
38	19-04-18	remedial/maintainance measures in flexible pavements	
39	23-04-18	Functional Evaluation by visual inspection	
		unevenness measurement by using different technics	
40	24-04-18	Structural Evaluation by Benkelman Beam Deflection Method	
41	25-04-18	Structural Evaluation by Falling weight deflectometer	
42	26-04-18	GPR Method , Design methods for Airfield pavements , Design factors for Runway Pavements	
		Unit 8: Rigid Pavement Failures, Maintenance And Evaluation	
43	30-04-18	Types of failures	
44	02-05-18	causes	
45	03-05-18	remedial/maintainance measures in regid pavements	
46	07-05-18	Functional Evaluation by visual inspection	
47	08-05-18	Functional Evaluation by unevenness measurements	
48	09-05-18	Design factors for Runway Pavements	
49	10-05-18	Design methods for Airfield pavements.	
50	11-05-18	Revision	
51	11-05-18	Revision	
52	12-05-18	Revision	

Supriya CB

Mrs. Supriya C B
Staff in charge

Dr. M A Nagesh
HOD

Dr H B Phani Raju
Principal

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Shridevi Institute of Engineering and Technology-Tumkur

(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF CIVIL ENGINEERING

Semester: VIII **Year: 2017-18**

Subject Title: **URBAN TRANSPORT PLANNING**	*Subject Code:* **10CV843**
Total contact Hours: **52**	*Duration of Exam*: **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Prakash J Mrs.Supriya C B**	*Date:* ***05/02/18***
Checked by: **Dr. M.A. Nagesh**	

Course Objectives:

In the first part of the course, it deals with introduction of urban transportation planning system such as data collection, trip generation, trip distribution, mode choice and trip assignment. In the second part, it familiarizes the students with important issues of public transport system such as system, technology and quality of service. Various kinds of public transportation system like bus, bus rapid transit, light rapid transit, railway rapid transit will be discussed.

1. To introduce the issues of transportation planning and transportation policy.
2. To introduce travel survey method for understanding travel behavior.
3. To introduce the key concepts of the urban transportation planning system.
4. To introduce the fundamental concepts of public transport system such as system, technology and quality of service.

Learning Outcomes

Upon completion of this course, students should have:

1. Basic understanding of what transportation planning is, its theoretical backgrounds and applications
2. Skill for collecting data about travel behaviour and analyzing the data for use in transport planning
3. Ability to understand the important concepts about public transport system
4. Ability to work in team and communicate with others effectively for transport related topics

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text book:**

1. **Traffic Engineering and Transport Planning**- L.R. Kadiyali -Khanna Publishers.
2. **Principles of urban transport system planning** - B.G. Hutchinson - Scripta Book Co., Washington D.C. & McGraw Hill Book Co.
3. **Introduction to transportation engineering**- Jotin Kristey and Kentlal - PHI, New Delhi.

REFERENCE BOOKS:

1. **Urban Transport planning**- Black John - Croom Helm ltd, London.
2. **Urban and Regional models in geography and planning**-Hutchison B G - John Wiley and sons London.

Scheme of Examination:

One full question to be set from each unit. Students have to answer any **five** full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B.**

Evaluation:

Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments.

University Examinations (100 Marks)

Lesson Plan

10CV843 - Subject Name: URBAN TRANSPORT PLANNING

Sl No	Date	Topics	Remarks
		UNIT 1: Introduction	
1	06/02/2018	Scope of Urban transport planning	
2	07/02/2018	Scope of Urban transport planning	
3	08/02/2018	Inter dependency of land use and traffic	
4	08/02/2018	Inter dependency of land use and traffic	
5	14/02/2018	System Approach to urban planning.	
6	15/02/2018	System Approach to urban planning.	
		UNIT 2: Stages In Urban Transport Planning	
7	15/02/2018	Trip generation, Trip production	
8	20/02/2018	Trip distribution	
9	21/02/2018	Modal split	
10	22/02/2018	Trip assignment	
		UNIT 3: Urban Transport Survey	
11	22/02/2018	Definition of study area	
12	27/02/2018	Zoning-Types of Surveys	
13	28/02/2018	Zoning-Types of Surveys	
14	01/03/2018	Zoning-Types of Surveys	
15	01/03/2018	Inventory of transportation facilities	
16	06/03/2018	Inventory of transportation facilities	
17	07/03/2018	Expansion of data from sample.	
18	08/03/2018	Expansion of data from sample.	
		UNIT 4: Trip Generation	
19	08/03/2018	Trip purpose	
20	13/03/2018	Factors governing trip generation and attraction	
21	14/03/2018	Factors governing trip generation and attraction	
22	15/03/2018	Category analysis	
23	15/03/2018	Problems on above	
24	20/03/2018	Problems on above	
		UNIT 5: Trip Distribution	
25	21/03/2018	Methods	
26	22/03/2018	Growth factors methods	
27	22/03/2018	Synthetic methods	
28	27/03/2018	Synthetic methods	
29	28/03/2018	Fractor and Furness method and problems on the above	
30	03/04/2018	Fractor and Furness method and problems on the above	
		UNIT 6: Modal Split	
31	04/04/2018	Factors affecting	
32	05/04/2018	characteristics of split	
33	05/04/2018	Model split in urban transport planning	
34	10/04/2018	Model split in urban transport planning	
35	11/04/2018	problems on above	
36	12/04/2018	problems on above	

		UNIT 7: Trip Assignment	
37	**12/04/2018**	Assignment Techniques	
38	**19/04/2018**	Traffic fore casting	
39	**19/04/2018**	Land use transport models	
40	**24/04/2018**	Lowry Model	
41	**25/04/2018**	Lowry Model	
42	**26/04/2018**	Garin Lowry model	
43	**26/04/2018**	Garin Lowry model	
44	**01/05/2018**	Applications in India – (No problems on the above)	
		Unit 8: Urban transport planning for small and medium cities	
45	**02/05/2018**	Introduction –	
46	**03/05/2018**	Difficulties in transport planning	
47	**03/05/2018**	Difficulties in transport planning	
48	**08/05/2018**	Recent Case Studies	
49	**09/05/2018**	Recent Case Studies	
50	**10/05/2018**	Revision	
51	**10/05/2018**	Revision	
52	**11/05/2018**	Revision	

(Mr. Prakash J Mrs.Supriya C B)
Course Instructor

(Dr. M A Nagesh)
H.O.D

(Dr H B Phani Raju)
Principal

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ESTD: 2002

Criteria 1.1

Curriculum Planning and Implementation

Lesson Plans (Civil Engg)

2018 – 2023

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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY, TUMKUR-06
(An ISO 9001-2008 Certified Institution)
DEPARTMENT OF MATHEMATICS
Academic Year 2018-19(Odd semester)

LECTURE PLAN

Name of the Staff: RASHMI S B
Class: III semester
Subject: Engg. Mathematics-III

Department: Mathematics
Section : CV
Subject code: 17MAT31

Course Learning Objectives:

The objectives of this course is to introduce students to the mostly used analytical and numerical methods in the different engineering fields by making them to learn Fourier series,Fourier transforms and Z-transforms, statistical methods, numerical methods to solve algebraic and transcendental equations, vector integration and calculus of variation.

Sl No	DATE	TOPICS	REMARKS
		MODULE-1 : FOURIER SERIES	
1	2/8/2018	Periodic functions	
2	3/8/2018	Dirichlet's conditions	
3	9/8/2018	Fourier series of Periodic functions with period 2π	
4	10/8/2018	Problems continued	
5	16/8/2018	Fourier series of Periodic functions with arbitrary $2c$	
6	17/8/2018	Problems continued	
7	23/8/2018	Fourier series of even and odd functions	
8	24/8/2018	Problems continued	
9	30/8/2018	Half range Fourier series expansion, Problems	
10	31/8/2018	Problems continued	
11	6/9/2018	Practical Harmonic Analysis: Problems	
12	7/9/2018	Problems continued	
13	14/9/2018	Revision	
		MODULE-3: STATISTICAL METHODS, CURVE FITTING , NUMERICAL METHODS	
14	27/9/2018	**Statistical methods**: review of measures of central tendency and dispersion.	
15	28/9/2018	Correlation-Karl Pearson's coefficient of Correlation-Problems	
16	4/10/2018	Regression analysis	
17	5/10/2018	Lines of Regression(without proof) -Problems	
18	11/10/2018	**Curve fitting :** Curve fitting by the method of least squares	
19	12/10/2018	Fitting of the curves of the form $y = ax + b$, $y = ax^2 + bx + c$	
20	18/10/2018	Fitting of the curves of the form $y = ae^{bx}$	
21	25/10/2018	**Numerical Methods**: Numerical solutions of algebraic and transcendental equations	
22	26/10/2018	Regula-Falsi method and Problems	
23	2/11/2018	Newton-Raphson method and Problems	

24	9/11/2018	Problems Continued and Revision	
MODULE-5: VECTOR INTEGRATION, CALCULUS OF VARIATIONS			
25	15/11/2018	**Vector integration**: Line integrals- definition and problems	
26	16/11/2018	Surface and volume integrals- definitions and problems	
27	22/11/2018	Green's theorem (without proof) in a plane and problems	
28	23/11/2018	Stoke's theorem (without proof) and problems	
29	29/11/2018	Gauss-divergence theorem (without proof) and problems	
30	30/11/2018	Problems Continued and Revision	

Course outcomes: On completion of this course, students are able to,

CO1: Know the use of periodic signals and Fourier series to analyze circuits and system communications

CO2: Explain the general linear system theory for continuous-time signals and digital signal processing using the Fourier Transform and Z-Transform.

CO3: Employ appropriate numerical methods to solve algebraic and transcendental equations.

CO4: Apply Green's Theorem, Divergence Theorem and Stoke's Theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems.

CO5: Determine the externals of functional and solve the simple problems of the calculus of variations.

Text Books:

1. Higher Engineering Mathematics by B.S.Grewal
2. Advanced Engineering Mathematics by E. Kreszig VI edition

Reference Books:

1. Engineering Mathematics by N.P. Bali and Manish Goyal
2. Higher Engineering Mathematics by B.V. Ramana
3. Higher Engineering Mathematics by H. K. Dass & Er.RajnishVerma

31/7/18

(Mrs.RASHMI S B)
Staff in charge

31/1/2018

(Dr. Chetana C)
HOD

31-7-18

(Dr. Hemadri Naidu T)
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TUMKUR - 572106.

Shridevi Institute of Engineering and Technology-Tumkur
(An ISO 9001-2008 Certified Institution)
DEPARTMENT OF CIVIL ENGINEERING

B.E., Semester: III Year: 2018-19

Course Title: **Strength of Materials**	*Course Code:* **17CV32**
Total lecture hours: **50**	*Duration of Exam:* **03 Hrs.**
SEE Marks: **60**	*CIE marks:* **40**
Credits:04	
Lesson plan author: **Mr. Nagaraja C**	*Date: 01/08/18*
Checked by: **Dr. G Mahesh Kumar**	*Date: 01/08/18*

Course Objectives:

The course will enable the students

i. to learn to classify stresses into various types, state and apply Hooke's law. Compute stress intensities and strain intensities, deformations, thermal stresses & strains, relation between the modulus of elasticity, modulus of rigidity, bulk modulus and Poisson's ratio. Composite and compound stresses also will be learnt.

ii. to understand the concept of stress components on inclined planes in two dimensional system. Principal stresses and strains and their intensities will be computed.

iii. to revise the types of beams, loadings and supports. The concept of shear force and bending moment in beams and their relationship will be studied. The diagrams of SF and BM will be drawn for different cases of simply supported, overhanging and and other determinate beams.

iv. to understand the concept of bending and shear stress distribution across the cross section of beams. The derivation of formulae for the computation of stresses will be made. The students will understand the concepts of flexural rigidity and horizontal shear stress in I and T sections and shear centre.

v. to learn the concepts of pure torsion and power transmission. The relationship between torsion, polar modulus, twist and rigidity modulus will be established. The importance of torsional rigidity, comparison of solid and circular shafts will be learnt.

vi. to learn the concepts of pure torsion and power transmission. The relationship between torsion, polar modulus, twist and rigidity modulus will be established. The importance of torsional rigidity, comparison of solid and circular shafts will be learnt.

vii. to learn the occurance of internal pressure, hoop stress and longitudinal stresses, consequent changes in volume and the pressure distribution.

viii. to understand the concepts of failure and theories developed based on the concepts.

Course Outcomes:

The students will be able to:

1. evaluate the strength of various structural elements internal forces such as compression, tension, shear, bending and torsion.

2. suggest suitable material from among the available in the field of construction and manufacturing.

3. evaluate the behavior and strength of structural elements under the action of compound stresses and thus understand failure concepts.

4. understand the basic concepts of analysis and design of members subjected to torsion.

5. understand the basic concept of analysis and design of structural elements such as columns and struts.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD presentations

2) **Text book:**
Strength of Materials – B S Basavarajaiah and P Mahadevappa, Universities Press 2010 Edition.
Mechanics of Materials – Ferdinand P Beer, E Russel Johnston and Jr. John T DeWolf, Tata Mc Graw Hill, Third Edition.

3) **Reference Books:**
Elements of Strength of Materials – D H Young and S P Timoshenko, EastWest Press Pvt ltd., 5th Edition(Reprint 2014).
A Text book of Strength of Materials – R K Bansal, 4th Edition, Laxmi Publications, 2010.
Strength of Materials – S SRattan, McGraw Hill Education (India) Pvt. ltd. 2nd Edition (Sixth Reprint 2013).
Analysis of structures – Vazirani V N, Ratwani, M M and S K Duggal, Vol 1, 17th Edition, Khanna Publishers, New Delhi.

4) **Scheme of Examination:**
The question paper will have ten questions, each full question carrying 20 marks. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module. Each full question shall cover the topics under a module. The students shall answer five full questions selecting one full question from each module. If more than one question is answered in modules, the best answer will be considered for the award of marks limiting one full question answer in each module.

5) **Evaluation:**
Student Assessment: Through Internal Assessment Tests (30 Marks), Assignments (10 marks), University Examination (60 Marks)

Lesson Plan

17CV32 – Strength of Materials

Sl No	Date	Topics	Topics Covered	Remarks
		Module 1: Simple stresses and strains		
1	01/08/18	Introduction, Definition and concept and of stress and strain. Hooke's law		
2	03/08/18	Stress-Strain diagrams for ferrous materials		
3	03/08/18	Stress – strain diagrams for non ferrous materials,		
4	06/08/18	Elongation of tapering bars of circular and rectangular cross – sections,		
5	07/08/18	Elongation due to self weight		
6	08/08/18	Problems		
7	10/08/18	Problems		
8	10/08/18	Saint Venant's principle, Compound bars, Temperature stresses		
9	13/08/18	Problems		
10	14/08/18	Problems		
11	15/08/18	state of simple shear		
12	17/08/18	Elastic constants and their relationship		
13	17/08/18	Problems		
		Module 2: Compound stresses		
14	20/08/18	Introduction, state of stress at a point,		
15	21/08/18	General two dimensional stress system,		
16	24/08/18	Principal stresses and principal planes.		
17	24/08/18	Mohr's circle of stresses		
18	27/08/18	problems		
19	28/08/18	problems		
20	29/08/18	problems		
21	31/08/18	**Thick and thin cylinders**: Introduction, Thin cylinders subjected to internal pressure		
22	31/08/18	Hoop stresses, Longitudinal stress and change in volume.		
23	03/09/18	Thick cylinders subjected to both internal and external pressure;		
24	04/09/18	Lame's equation, radial and hoop stress distribution.		
25	05/09/18	problems		
26	06/09/18	problems		
		Module 3: Shear Force and Bending Moment in Beams:		
27	06/09/18	Introduction to types of beams, supports and loadings.		
28	10/09/18	Definition of bending moment and shear force, Sign conventions,		
29	11/09/18	relationship between load intensity, bending moment and shear force.		

30	12/09/18	Shear force and bending moment diagrams for statically determinate beams subjected to point load		
31	14/09/18	Shear force and bending moment diagrams for statically determinate beams subjected to uniformly distributed loads		
32	14/09/18	Shear force and bending moment diagrams for beams subjected to uniformly varying loads		
33	17/09/18	Shear force and bending moment diagrams for statically determinate beams subjected to couple and their combinations.		
34	18/09/18	problems		
35	19/09/18	problems		
36	25/09/18	problems		
37	26/09/18	Bending and shear stress distribution diagrams for 'I', and 'T' sections Problems Shear centre(only concept)		
38	28/09/18	problems		
39	28/09/18	problems		
		Module 4: Bending and shear stresses in beams		
40	01/10/18	Introduction, pure bending theory, Assumptions, derivation of bending equation		
41	03/10/18	modulus of rupture, section modulus, flexural rigidity, Problems		
42	05/10/18	Expression for transverse shear stress in beams,		
43	05/10/18	Bending and shear stress distribution diagrams for circular, rectangular sections		
44	09/10/18	Bending and shear stress distribution diagrams for circular, rectangular, Problems		
45	10/10/18	problems		
46	12/10/18	Bending and shear stress distribution diagrams for 'I', and 'T' sections Problems Shear centre(only concept)		
47	12/10/18	**Columns and Struts:** Introduction, short and long columns, Euler's theory		
48	15/10/18	Assumptions, Derivation for Euler's Buckling load for different end conditions, Limitations of Euler's theory.		
49	16/10/18	Rankine-Gordon's formula for columns.		
50	17/10/18	Rankine-Gordon's formula for columns, problems		
51	02/11/18	problems		
52	02/11/18	problems		
		Module 5: Torsion in Circular Shafts		
53	05/11/18	Introduction, pure torsion, Assumptions, derivation of torsion equation for circular shafts,		
54	07/11/18	Torsional rigidity and polar modulus Power transmitted by a shaft,		
55	09/11/18	combined bending and torsion		
56	09/11/18	combined bending and torsion		

57	12/11/18	problems		
58	13/11/18	problems		
59	14/11/18	problems		
60	16/11/18	problems		
61	16/11/18	**Theories of Failure:** Introduction, maximum principal stress theory (Rankine's theory).		
62	19/11/18	Maximum shearing stress theory (Tresca's theory)		
63	20/11/18	Strain energy theory (Beltrami and Haigh)		
64	23/11/18	Maximum strain theory (St. Venant's theory)		
65	23/11/18	problems		

C Nagaraja
Mr. C Nagaraja
Staff Incharge

Dr. G Mahesh Kumar
HOD

Dr Hemadri Naidu T
Principal

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Semester: III **Year: 201[illegible] 19**

Subject Title : **FLUIDS MECHANICS**	*Subject Code:* **17 CV33**
Total contact Hours:	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Ms. Bhavya C H/Mr. Vinuthan V R**	*Date: 01/08/18*
Checked by: **Dr. G Mahesh Kumar**	*Date: 01/08/18*

Learning Objectives:

The objectives of this course is to make students to learn:

1. The Fundamental properties of fluids and its applications.
2. Hydrostatic laws and application to practical problem solving
3. Principles of Kinematics and Hydro-Dynamics for practical applications
4. Basic design of pipes and pipe networks considering flow, pressure and itslosses.
5. The basic flow rate measurements

Learning Outcomes:

Students will able to understand the fundamental properties of fluids and its applications. Hydrostatic laws and application to practical problem solving. To learn about Principles of Kinematics and Hydro-Dynamics for practical applications. Basic design of pipes and pipe networks considering flow, pressure and its losses.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**

1) **Victor L Streeter, Benjamin Wylie E and Keith W Bedford, "Fluid Mechanics",Tata McGraw Hill Publishing Co Ltd., New Delhi, 2008(Ed)**
2) **K Subramanya, "Fluid Mechanics and Hydraulic Machines", Tata McGraw Hill Publishing Co. Ltd.**
3) **K Subramanya, "Fluid Mechanics and Hydraulic Machines-problems and solutions", Tata McGraw Hill Publishing Co. Ltd.**
4) **4. J. F. Douglas, J. M. Gasoriek, John Swaffield, Lynne Jack, "Fluid Mechanics", Pearson, Fifth Edition**
5) **5. 5. Mohd.Kaleem Khan, "Fluid Mechanics and Machinery", Oxford University Press**

Scheme of Examination:

Two full questions (with a maximum of four sub questions) of twenty marks each to be set from each module. Each question should cover all contents of the respective module. Students have to answer five full questions choosing one full question from each module.

Sl No	Date	Topics	Topics Covered	Remark
		Module 1		
1	01/08/18	Concept of fluid, Systems of units. Properties of fluid		
2	02/08/18	Mass density, Specific weight, Specific gravity, Specific volume, Viscosity, Cohesion, Adhesion, Surface tension& Capillarity		
3	06/08/18	Mass density, Specific weight, Specific gravity, Specific volume, Viscosity, Cohesion, Adhesion, Surface tension& Capillarity		
4	06/08/18	Fluid as a Continuum, , Newton's law of viscosity (theory&problems).		
5	07/08/18	Capillary rise in a vertical tube and between two plane surfaces (theory & problems).		
6	08/08/18	Vapor pressure of liquid, Compressibility and bulk modulus,Capillarity, Surface tension		
7	09/08/18	Pressure inside a water droplet, Pressure inside a soap bubble and liquid jet. Numerical problems		
8	13/08/18	**Fluid Pressure and Its Measurements:** Definition of pressure, Pressure at a point, Pascal's law, Variation of pressure with depth. Types of pressure		
9	13/08/18	Measurement of pressure using simple, differential & inclinemanometers (theory & problems).		
10	14/08/18	Introduction to Mechanical and electronic pressure measuring devices		
		Module 2		
11	16/08/18	**Hydrostatic forces on Surfaces:** Definition, Total pressure, centre of pressure		
12	20/08/18	Total pressure on horizontal, vertical and inclined plane surface, total pressure on curved surfaces		
13	20/08/18	water pressure on gravity dams, Lock gates. Numerical Problems		
14	21/08/18	water pressure on gravity dams, Lock gates. Numerical Problems		
15	23/08/18	**Fundamentals of fluid flow (Kinematics):** Introduction. Methods of describing fluid motion. Velocity and Total acceleration of a fluidparticle.		
16	27/08/18	Types of fluid flow, Description of flow pattern. Basic principles of fluid flow,three-dimensional continuity equation in Cartesian coordinate system.		
17	27/08/18	Derivation for Rotational and irroational motion. Potential function, stream function,		
18	28/08/18	Orthogonality of streamlines and equipotential lines.		
19	29/08/18	Numerical problems on Stream function and velocity potential.		
20	30/08/18	Introduction to flow net.		
		Module 3		
21	03/09/18	**Fluid Dynamics:** Introduction. Forces acting on fluid in motion.		
22	03/09/18	Euler's equation of motion along a streamline and Bernoulli's equation.		
23	04/09/18	Assumptions and limitations of Bernoulli's equation		
24	05/09/18	Modified Bernoulli's equation.		
25	06/09/18	Problems on applications of Bernoulli's equation (with and without losses).		
26	10/09/18	Vortex motion; forced vortex, free vortex, problems Momentum equation		
27	10/09/18	Vortex motion; forced vortex, free vortex, problems Momentum equation		
28	11/09/18	Problems on pipe bends.		
29	12/09/18	**Applications:** Introduction. Venturimeter, Orificemeter		
30	17/09/18	Pitot tube. Numerical Problems		
		Module 4		
31	17/09/18	**Orifice and Mouthpiece:** Introduction, classification, flow through orifice		
32	18/09/18	Hydraulic coefficients, Numerical problems		
33	19/09/18	Mouthpiece, classification, Borda's Mouthpiece (No problems).		
34	25/09/18	**Notches and Weirs:** Introduction. Classification		
35	26/09/18	Discharge over rectangular notches		

36	27/09/18	Discharge over trapezoidal notches		
37	01/10/18	Discharge over Cippoletti notch notches		
38	01/10/18	Discharge over broad crested weirs notches		
39	03/10/18	Numerical Problems.		
40	04/10/18	Ventilation of weirs, Submerged weirs.		
		Module 5		
41	09/10/18	**Flow through Pipes:** Introduction. Major and minor losses in pipe flow		
42	10/10/18	Darcy-Weisbach equation for head loss due to friction in a pipe		
43	11/10/18	Pipes in series, pipes in parallel, equivalent pipe-problems		
44	15/10/18	Minor losses in pipe flow		
45	15/10/18	Equation for head loss due to sudden expansion. Numerical problems		
46	16/10/18	Hydraulic gradient line, energy gradient line		
47	17/10/18	Pipe Networks, Hardy Cross method, Numerical problems.		
48	18/10/18	**Surge Analysis in Pipes:** Water hammer in pipes		
49	22/10/18	Equations for pressure rise due to gradual valve closure and sudden closure for rigid and elastic pipes.		
50	22/10/18	Equations for pressure rise due to gradual valve closure and sudden closure for rigid and elastic pipes. Problems		
51	23/10/18	Question Paper Revision		
52	25/10/18	Question Paper Revision		
53	05/11/18	Question Paper Revision		
54	05/11/18	Question Paper Revision		
55	07/11/18	Question Paper Revision		
56	12/11/18	Question Paper Revision		
57	12/11/18	Question Paper Revision		
58	13/11/18	Question Paper Revision		
59	14/11/18	Question Paper Revision		
60	15/11/18	Question Paper Revision		
61	19/11/18	Question Paper Revision		
62	19/11/18	Question Paper Revision		
63	20/11/18	Question Paper Revision		
64	22/11/18	Question Paper Revision		
65	30/11/18	Question Paper Revision		

Ms. Bhavya C H/Mr Vinuthan
Course Instructor

Dr. G Mahesh Kumar 01/08/18
HOD

Dr T Hemadri Naidu
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.
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Semester: III **Year: 2018-19**

Subject Title: **Basic Surveying**	*Subject Code:* **17CV34**
Total contact Hours: ***54***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mrs. Supriya C B**	*Date:* ***01/08/18***
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to;

1. Understand the basic principles of Surveying
2. Learn Linear and Angular measurements to arrive at solutions to basic surveying problems.
3. Employ conventional surveying data capturing techniques and process the data for computations.
4. Analyze the obtained spatial data to compute areas and volumes and draw contours to represent 3D data on plane figures.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Posses a sound knowledge of fundamental principles Geodetics
2. Measurement of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
3. Capture geodetic data to process and perform analysis for survey problems
4. Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours.

Program Objectives (as per NBA)

- Engineering Knowledge.
- Problem Analysis.
- Interpretation of data.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. B.C. Punmia, "Surveying Vol.1", Laxmi Publications pvt. Ltd., New Delhi – 2009.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part I, Pune Vidyarthi Griha Prakashan, 1988

Reference Books:

1. S.K. Duggal, "Surveying Vol.1", Tata McGraw Hill Publishing Co. Ltd. New Delhi. – 2009.
2. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi. – 2010
3. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi
4. A. Bannister, S. Raymond , R. Baker, "Surveying", Pearson, 7th ed., New Delhi

LECTURE PLAN

Sl. No	Date	Topics
		Module -1: Introduction
01	01/08/18	Definition of surveying, Objectives and importance of surveying
02	02/08/18	Classification of surveys. Principles of surveying
03	03/08/18	Units of measurements, Surveying measurements and errors, types of errors,
04	07/08/18	precision and accuracy. Classification of maps, map scale
05	08/08/18	conventional symbols, topographic maps, map layout, Survey of India Map numbering systems
06	09/08/18	Measurement of Horizontal Distances: Measuring tape and types.
07	10/08/18	Measurement using tapes, Taping on level ground and sloping ground.
08	14/08/18	Errors and corrections in tape measurements, ranging of lines, direct and indirect methods of ranging
09	16/08/18	Electronic distance measurement, basic principle. Booking of tape survey work, Field book, entries
10	17/08/18	Conventional symbols, Obstacles in tape survey.
11	21/08/18	Numerical problems.
		Module -2:
12	23/08/18	Measurement of Directions and Angles: Compass survey: Basic definitions, declination.
13	24/08/18	meridians, bearings, magnetic and True bearings.
14	28/08/18	Prismatic and surveyor's compasses, temporary adjustments
15	29/08/18	Quadrantal bearings, whole circle bearings
16	30/08/18	local attraction and related problems
17	31/08/18	Theodolite Survey and Instrument Adjustment: Theodolite and types
18	04/09/18	Fundamental axes and parts of Transit theodolite
19	05/09/18	uses of theodolite, Temporary adjustments of transit theodolite
20	06/09/18	measurement of horizontal and vertical angles
21	07/09/18	step by step procedure for obtaining permanent adjustment of Transit theodolite
22	11/09/18	step by step procedure for obtaining permanent adjustment of Transit theodolite
		Module -3
23	12/09/18	Traversing: Traverse Survey and Computations:,
24	14/09/18	Latitudes and departures
25	18/09/18	rectangular coordinates
26	19/09/18	Traverse adjustments
27	25/09/18	Bowditch rule and transit rule,
28	26/09/18	Numerical Problems
29	27/09/18	Tacheometry: basic principle
30	28/09/18	types of tacheometry
31	03/10/18	distance equation for horizontal and inclined line of sight in fixed hair method
32	04/10/18	problems
33	05/10/18	problems

		Module -4
34	09/10/18	Leveling: Basic terms
35	10/10/18	Definitions, Curvature and refraction corrections
36	11/10/18	Differential leveling
37	12/10/18	profile leveling, fly leveling
38	16/10/18	check leveling,
39	17/10/18	reciprocal leveling
40	18/10/18	trigonometric leveling (heights and distances-single plane and double plane methods.
41	23/10/18	Methods of leveling, Dumpy level, auto level
42	25/10/18	digital and laser levels.
43	26/10/18	Booking and reduction of levels
		Module -5
44	02/11/18	Areas and Volumes: Measurement of area by dividing the area into geometrical figures
45	07/10/18	area from offsets, mid ordinate rule,
46	09/10/18	trapezoidal and Simpson's one third rule,
47	13/11/18	area from co-ordinates, introduction to planimeter
48	14/11/18	digital planimeter.
49	15/11/18	Measurement of volumes-trapezoidal and prismoidal formula
50	16/11/18	Contouring Contours,
51	20/11/18	Methods of contouring
52	22/11/18	Interpolation of contours
53	23/11/18	contour gradient
54	30/11/18	characteristics of contours and uses

(Mrs. Supriya C B)
Staff in Charge

(Dr. G Mahesh Kumar)
H.O.D

(Dr. T Hemadri Naidu)
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

Semester: III **Year: 2018-19**

Subject Title: **ENGINEERING GEOLOGY**	*Subject Code:* **17CV35**
Total contact Hours: ***54***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mr. Prakash J**	*Date:* ***01/08/18***
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to;

1. To understand the internal structure and composition of the earth.
2. To comprehend the properties, occurrence and uses of minerals in various Industries.
3. To learn about geo-morphological agents such as river, wind, sea waves, and their implications in implementing civil engineering projects.
4. To gain knowledge about the structures of the rocks and their considerations in the selection of site for dams, tunnels, bridges and highways.
5. To learn the application of Topographic maps, remote sensing and GIS in Civil engineering practices and natural resource management.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Students will able to apply the knowledge of geology and its role in Civil Engineering
2. Students will effectively utilize earth's materials such as mineral, rocks and water in civil engineering practices.
3. Analyze the natural disasters and their mitigation.
4. Assess various structural features and geological tools in ground water exploration, Natural resource estimation and solving civil engineering problems.
5. Apply and asses use of building materials in construction and asses their Properties

Program Objectives (as per NBA)

- Engineering Knowledge.
- Problem Analysis.
- Interpretation of data.

Question paper pattern:

• The question paper will have Ten questions, each full question carrying 16 marks.

• There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.

• Each full question shall cover the topics under a module.

• The students shall answer Five full questions selecting one full question from each module.

• If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. P.K. Mukerjee, "A Text Book of Geology", World Press Pvt., Ltd. Kolkatta.

2. Parbin Singh, "Text Book of Engineering and General Geology", Published by S.K.Kataria and Sons, New Dehli

Reference Books:

1. Earthquake Tips - Learning Earthquake Design and Construction - C V R Murthy Published by National Information Centre of Earthquake Engineering, Indian Institute of Technology, Kanpur.

2. Dimitri P Krynine and William R Judd, "Principles of Engineering Geology andGeotechnics", CBS Publishers and Distributors, New Delhi.

3. K V G K Gokhale, "Principles of Engineering Geology", BS Publications,Hyderabad.

4. M Anji Reddy, "Text book of Remote Sensing and Geographical Information System", BS Publications, Hyderabad.

5. Ground water Assessment, development and Management by K.R. Karanth, Tata Mc Graw Hills

6. K. Todd, "Groundwater Hydrology", Tata Mac Grow Hill, New Delhi.

7. D. Venkata Reddy, "Engineering Geology", New Age International Publications, New Delhi.

8. S.K Duggal, H.K Pandey and N Rawal, "Engineering Geology", McGraw Hill Education (India) Pvt, Ltd. New Delhi.

9. M.P Billings, "Structural Geology", CBS Publishers and Distributors, New Delhi.

10. K. S. Valdiya, " Environmental Geology",, Tata Mc Grew Hills.

11. M. B. Ramachandra Rao, "Outlines of Geophysical Prospecting- A Manual for Geologists", Prasaranga, University of Mysore, Mysore

LECTURE PLAN

Sl. No	Date	Topics
		Module -1
01	01/08/18	**Introduction:** Application of Earth Science in Civil Engineering Practices
02	04/08/18	Understanding the earth, internal structure and composition.
03	06/08/18	**Mineralogy:** Mineral properties, composition and their use in the manufacture of construction materials – Quartz Group (Glass)
04	07/08/18	Feldspar Group (Ceramic wares and Flooring tiles)
05	08/08/18	Kaolin (Paper, paint and textile), Asbestos (AC sheets)
06	11/08/18	Carbonate Group (Cement), Gypsum (POP, gypsum sheets, cement)
07	13/08/18	Mica Group (Electrical industries)
08	14/08/18	Ore minerals - Iron ores (Steel)
09	18/08/18	Chromite (Alloy)
10	20/08/18	Bauxite (aluminum)
11	21/08/18	Chalcopyrite (copper)
		Module -2
12	25/08/18	**Petrology:** Formation
13	27/08/18	Classification and Engineering Properties
14	28/08/18	Rock as construction material, concrete aggregate
15	29/08/18	railway ballast, roofing, flooring, cladding and foundation
16	01/09/18	Deformation of rocks, Development of Joints, Folds, Faults and Unconformities.
17	03/09/18	Their impact in the selection of sites for Dams, Reservoirs
18	04/09/18	Tunnels, Highways and Bridges, Rock Quality Determination (RQD)
19	05/09/18	Rock Structure Rating (RSR),:
20	08/09/18	Igneous Rocks - Granite, Gabbro, Dolerite, Basalt
21	10/09/18	Sedimentary rocks - Sandstone, Shale, Limestone, Laterite;
22	11/09/18	Metamorphic rocks - Gneiss, Quartzite,Slate, Charnockite: Decorative stones - Porphyries, Marble and Quartzite
		Module -3
23	12/09/18	**Geomorphology and Seismology:** Landforms – Classification, Rock weathering,
24	15/09/18	Types and its effects on Civil Engineering Projects. Study of Geo-morphological
25	17/09/18	10 aspects in the selection of sites for Dams, Reservoirs, Tunnels, Highways and Bridges.
26	18/09/18	Watershed management, Floods and their control,River valley, Drainage pattern – parameters and development
27	19/09/18	Coastlines and their engineering considerations.
28	25/09/18	Earthquake - Causes and Effects
29	26/09/18	Seismic waves, Engineering problems related to Earthquakes
30	29/09/18	, Earthquake intensity, Richter Scale, Seismograph,
31	01/10/18	Seismic zones- World and India,
32	03/10/18	Tsunami – causes and effects. Early warning system
33	06/10/18	Reservoir Induced Seismicity; Landslides – causes and their control

		Module -4
34	09/10/18	**Hydrogeology:** Hydrological cycle
35	10/10/18	Occurrence of Groundwater in different terrains -Weathered, Hard and Stratified rocks
36	13/10/18	Determination of Quality aspects -SAR, RSC and TH of Groundwater. Groundwater Pollution
37	15/10/18	Groundwater Exploration- Electrical Resistivity and Seismic methods
38	16/10/18	Resistivity curves, Water Bearing Formations
39	17/10/18	Aquifer types and parameters - Porosity
40	20/10/18	Specific yield and retention, Permeability
41	22/10/18	Transmissibility and Storage Coefficient
42	23/10/18	Springs and Artesian Wells, Artificial Recharging of Groundwater
43	27/10/18	Sea water intrusion and remedies.
		Module -5
44	03/11/18	**Geodesy:** Study of Topographic maps and Contour maps
45	05/11/18	Remote Sensing –Concept
46	07/11/18	Application and its Limitations
47	10/11/18	Geographic Information System (GIS) and Global Positioning System (GPS)
48	12/11/18	Concept and their use resource mapping
49	13/11/18	LANDSAT Imagery–Definition and its use.
50	14/11/18	Impact of Mining, Quarrying and Reservoirs on Environment
51	17/11/18	Natural Disasters and their mitigation
52	19/11/18	Revision
53	20/11/18	Revision
54	24/11/18	Revision

(Mr. Prakash J)
Staff in Charge

(Dr. G Mahesh Kumar) 01/08/18
H.O.D

(Dr. T Hemadri Naidu)
Principal

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Shridevi Institute of Engineering and Technology-Tumkur

(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF CIVIL ENGINEERING

Semester: III **Year: 2018-19**

Course Title: **ENGINEERING GEOLOGY**	*Course Code:* **18CV36**
Total contact Hours: ***50***	*Duration of Exam:* **03 Hrs.**
SEE marks: **60**	*CIE marks:* **40**
Credits – 04	*Hours/Week : 04*
Lesson plan author: **Mrs. Sreelakshmi S**	*Date:* ***25/07/19***
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to;

1. To understand the internal structure and composition of the earth.
2. To comprehend the properties, occurrence and uses of minerals in various Industries.
3. To learn about geo-morphological agents such as river, wind, sea waves, and their implications in implementing civil engineering projects.
4. To gain knowledge about the structures of the rocks and their considerations in the selection of site for dams, tunnels, bridges and highways.
5. To learn the application of Topographic maps, remote sensing and GIS in Civil engineering practices and natural resource management.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Students will able to apply the knowledge of geology and its role in Civil Engineering
2. Students will effectively utilize earth's materials such as mineral, rocks and water in civil engineering practices.
3. Analyze the natural disasters and their mitigation.
4. Assess various structural features and geological tools in ground water exploration, Natural resource estimation and solving civil engineering problems.
5. Apply and asses use of building materials in construction and asses their Properties

Program Objectives (as per NBA)

- Engineering Knowledge.
- Problem Analysis.
- Interpretation of data.

Question paper pattern:

- The question paper will have **Ten** questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. P.K. Mukerjee, "A Text Book of Geology", World Press Pvt., Ltd. Kolkatta.
2. Parbin Singh, "Text Book of Engineering and General Geology", Published by S.K.Kataria and Sons, New Dehli

Reference Books:

1. Earthquake Tips - Learning Earthquake Design and Construction - C V R Murthy Published by National Information Centre of Earthquake Engineering, Indian Institute of Technology, Kanpur.
2. Dimitri P Krynine and William R Judd, "Principles of Engineering Geology andGeotechnics", CBS Publishers and Distributors, New Delhi.
3. K V G K Gokhale, "Principles of Engineering Geology", BS Publications,Hyderabad.
4. M Anji Reddy, "Text book of Remote Sensing and Geographical Information System", BS Publications, Hyderabad.
5. Ground water Assessment, development and Management by K.R. Karanth, Tata Mc Graw Hills
6. K. Todd, "Groundwater Hydrology", Tata Mac Grow Hill, New Delhi.
7. D. Venkata Reddy, "Engineering Geology", New Age International Publications, New Delhi.
8. S.K Duggal, H.K Pandey and N Rawal, "Engineering Geology", McGraw Hill Education (India) Pvt, Ltd. New Delhi.
9. M.P Billings, "Structural Geology", CBS Publishers and Distributors, New Delhi.
10. K. S. Valdiya, " Environmental Geology",, Tata Mc Grew Hills.
11. M. B. Ramachandra Rao, "Outlines of Geophysical Prospecting- A Manual for Geologists", Prasaranga, University of Mysore, Mysore

LECTURE PLAN

Sl. No	Date	Topics
		Module -1
01	25/07/19	**Introduction:** Application of Geology in Civil Engineering Practices
02	26/07/19	Understanding the earth, internal structure and composition
03	29/07/19	**Mineralogy:** Mineral properties, composition and their use in the manufacture of construction materials – Quartz Group (Glass)
04	31/07/19	Feldspar Group (Ceramic wares and Flooring tiles)
05	01/08/19	Kaolin (Paper, paint and textile), Asbestos (AC sheets)
06	02/08/19	Carbonate Group (Cement), Gypsum (POP, gypsum sheets, cement)
07	05/08/19	Mica Group (Electrical industries)
08	07/08/19	Ore minerals - Iron ores (Steel)
09	08/08/19	Chromite (Alloy)
10	09/08/19	Bauxite (aluminum)
11	14/08/19	Chalcopyrite (copper)
		Module -2
12	16/08/19	**Petrology and Geomorphology:** Formation
13	19/08/19	Classification and Engineering Properties
14	21/08/19	Igneous Rocks – Types of Granite, Dolerite, Basalt, Pumice, Granite Porphyry
15	22/08/19	Sedimentary rocks - Sandstone, Shale, Limestone, Laterite, Conglomerate
16	23/08/19	Metamorphic rocks - Gneiss, Slate, Muscovite & Biotite schist, Marble and Quartzite
17	26/08/19	Rock weathering: Types and their effects on Civil Engineering Projects
18	28/08/19	Landforms, Drainage pattern and types
19	29/08/19	Soil formation and soil profile
20	30/08/19	The apprehension of Index properties of rocks: Porosity, Density, Permeability and Durability
21	04/09/19	Selection of rocks as materials for construction, as a foundation, Decorative, Flooring and Roofing
22	09/09/19	Concrete Aggregate, Road Metal, Railway Ballast with examples
		Module -3
23	11/09/19	**Structural Geology and Rock Mechanics:** Structural aspects of rocks like Outcrop, Dip and Strike
24	12/09/19	Folds
25	13/09/19	Faults and Joints
26	16/09/19	Unconformities and their influence on Engineering Projects/structures like dams, tunnels, slope treatment
27	18/09/19	Ground improvement, recognition of the structures in field and their types/classification
28	19/09/19	Rock Quality Determination (RQD) & Rock Structure Rating (RSR)
29	20/09/19	Geological site characterization: Dam foundations
30	23/09/19	Rock foundation treatment for Dams heavy structures by grouting and Rock reinforcement
31	25/09/19	Rock foundation treatment for Reservoirs heavy structures by grouting and Rock

		reinforcement
32	26/09/19	Tunnels: Basic terminology and application, site investigations
33	27/09/19	Coastlines and their engineering considerations
		Module -4
34	30/09/19	**Hydrogeology:** Hydrological cycle
35	03/10/19	Vertical distribution of groundwater, Artesian groundwater in soil and rock
36	04/10/19	Water Bearing Formations, Aquifer and its types – Aquitard, Aquifuge and Aquiclude
37	10/10/19	Porosity, Specific yield and retention
38	11/10/19	Permeability, Transmissibility and Storage Coefficient
39	17/10/19	Determination of Quality – SAR, RSC and TH of groundwater
40	18/10/19	Groundwater Exploration- Electrical Resistivity and Seismic methods
41	21/10/19	Artificial Recharging of Groundwater, Rain water harvesting and methods
42	23/10/19	Sea water intrusion in coastal areas and remedies, Groundwater Pollution
43	24/10/19	Floods and its control, Cyclone and its effects
		Module -5
44	25/10/19	**Seismology and Geodesy:** Earthquake - Causes and Effects
45	28/10/19	Seismic waves, Engineering problems related to Earthquakes
46	30/10/19	Earthquake intensity, Richter Scale, Seismograph
47	31/10/19	Seismic zones- World and India, Tsunami – causes and effects
48	04/11/19	Volcanic Eruptions, Landslides (Mass movement) causes, types and remedial measures
49	06/11/19	Stability assessment for soil and rock slopes
50	07/11/19	Study of Topographic maps and Contour maps
51	08/11/19	Remote Sensing –Concept, Application and its Limitations
52	11/11/19	Geographic Information System (GIS) - Concept and their use resource mapping
53	13/11/19	Global Positioning System (GPS) - Concept and their use resource mapping
54	14/11/19	Aerial Photography, LANDSAT Imagery–Definition and its use
55	18/11/19	Impact of Mining, Quarrying and Reservoirs on Environment
56	20/11/19	Natural Disasters and their mitigation
57	25/11/19	Revision
58	27/11/19	Revision
59	28/11/19	Revision
60	29/11/19	Revision

Sreelakshmi. S

(Mrs. Sreelakhmi S)
Staff in Charge

(Dr. G Mahesh Kumar)
H.O.D

(Dr. Narendra Viswanath)
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

[As per Choice Based Credit System (CBCS) scheme]

Semester: IIISem ***Year: 2018-19***

Subject Title: **Building Materials and Construction**	*Subject Code:* **17CV36**
Total contact Hours: **53**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **01/08/2018**
Checked by: **Dr. G. Mahesh Kumar**	

Course objectives:

This course will develop a student;

1. In recognizing the good materials to be used for the construction work

2.In investigation of soil condition, Deciding and design of suitablefoundation for different structures

3.In supervision of different types of masonry

4.In selection of materials, design and supervision of suitable type of floorand roof.

5. To gain knowledge about doors, windows, plastering, painting, dampproofing, scaffolding, shoring, underpinning and to take suitableengineering measures.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Select suitable materials for buildings and adopt suitable constructiontechniques.

2. Adopt suitable repair and maintenance work to enhance durability ofbuildings.

Program Objectives (as per NBA)

o Engineering Knowledge.

o Problem Analysis.

o Interpretation of data.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 20marks.
- There will be two full questions (with a maximum Three sub divisions, ifnecessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question fromeach module.
- If more than one question is answered in modules, best answer will beconsidered for the award of marks limiting one full question answer in eachmodule.

Text Books:

1. Sushil Kumar "Building Materials and construction", 20th edition, reprint, 2015, Standard Publishers

2. Dr. B.C.Punmia, Ashok kumar Jain, Arun Kumar Jain, "BuildingConstruction, Laxmi Publications (P) ltd., New Delhi.

3.Rangawala S. C. "Engineering Materials", Charter Publishing House, Anand, India.

Reference Books:

1.S.K.Duggal, "Building Materials", (Fourth Edition)New Age International (P)Limited, 2016

2. National Building Code(NBC) of India

3. P C Vergese, "Buliding Materials", PHI Learning Pvt. Ltd

4. Building Materials and Components, CBRI, 1990, India

5.Jagadish.K.S, "Alternative Building Materials Technology", New AgeInternational, 2007.

6. M. S. Shetty, "Concrete Technology", S. Chand & Co. New Delhi.

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LECTURE PLAN

17CV36 – Building Materials and Construction

[As per Choice Based Credit System (CBCS) scheme]

Sl.No	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1BUILDING MATERIALS	L1,L2
1	02-08-2018	Stone as building material; Requirement of good building stones	
2	04-08-2018	Dressing of stones, Deteriorationand Preservation of stone work.	
3	06-08-2018	Bricks; Classification, Manufacturing of clay bricks,	
4	07-08-2018	Requirement of good bricks. Field andlaboratory tests on bricks; Compressive strength,water absorption, efflorescence, dimension andwarpage.	
5	09-08-2018	Cement Concrete blocks, Stabilized Mud Blocks,Sizes, requirement of good blocks. Mortar: typesand requirements. Timber as constructionmaterial	
6	11-08-2018	Fine aggregate: Natural and manufactured: Sieve analysis, zoning, specify gravity,	
7	13-08-2018	Bulking,moisture content, deleterious materials.	
8	14-08-2018	Coarse aggregate: Natural and manufactured: Importance of size, shape and texture. Grading of aggregates,	
9	16-08-2018	Sieve analysis, specific gravity,Flakiness and elongation index,	
10	18-08-2018	Crushing, impactand abrasion tests.	
		MODULE- 2 FOUNDATION ANDMASONRY	L1,L2
11	20-08-2018	Foundation:Preliminary investigation of soil, safe bearing capacity of soil	
12	21-08-2018	Function and requirements ofgood foundation	
13	23-08-2018	Types of foundation ,introduction to spread, combined , strap, mat andpile foundation	
14	25-08-2018	Masonry:Definition and terms used in masonry. Brick masonry, characteristics and requirements of good brick masonry,	
15	27-08-2018	Bonds in brick work, Header,Stretcher,	
16	28-08-2018	English, Flemish bond,	
17	30-0.-2018	Stone masonry, Requirements of good stone masonry, Classification,	
18	01-09-2018	Characteristics of different stone masonry	
19	03-09-2018	Joints in stone masonry.	
20	04-09-2018	Types of walls; load bearing, partition walls, cavitywalls	

		MODULE-3 LINTELS, ARCHES, FLOORS AND ROOFS	
21	06-09-2018	Lintels and Arches:Definition, function and classification of lintels,	
22	08-09-2018	Balconies, chejja and canopy. Arches; Elementsand Stability of an Arch.	
23	10-09-2018	Floors:Requirement of good floor, Components of ground floor,	
24	11-09-2018	Selection of flooring material, Layingof Concrete, Mosaic, MarbleFlooring,	**L3**
25	15-09-2018	Granite, Tile flooring, Cladding of tiles.	
26	17-09-2018	Roof;-Requirement of good roof, Types of roof,	
27	18-09-2018	Elements of a pitched roof, Trussed roof,	
28	25-09-2018	Kingpost Truss, Queen Post Truss, Steel Truss,	
29	27-09-2018	Different roofing materials,	
30	29-09-2018	R.C.C.Roof.	
		MODULE-4 DOORS, WINDOWS, VENTILATORS, STAIRS AND FORMWORK	
31	01-10-2018	Doors, Windows and Ventilators: Location of doors and windows, technical terms,	
32	04-10-2018	Materials for doors and windows, Paneled&Flush door,	
33	06-10-2018	Collapsible door, Rolling shutter, PVCDoor, Paneled and glazed Window,	
34	09-10-2018	Bay Window,French window. Ventilators. Sizes as per IS recommendations	**L2 L3 L5**
35	11-10-2018	Stairs: Definitions, technical terms and types ofstairs,	
36	13-10-2018	Requirements of good stairs.	
37	15-10-2018	Geometrical design of RCC doglegged	
38	16-10-2018	Open-well stairs.	
39	20-10-2018	Formwork: Introduction to form work,scaffolding,	
40	22-10-2018	Shoring, under pinning	
		MODULE-5 PLASTERING DAMP PROOFING AND PAINTING	
41	23-10-2018	Plastering and Pointing : purpose, materials and methods of plastering and pointing,	
42	25-10-2018	Defects inplastering-Stucco plastering, lathe plastering	
43	27-10-2018	Damp proofing- causes,	**L4,L5**
44	03-11-2018	Effects and methods.	
45	05-11-2018	Paints- Purpose, types,	
46	10-11-2018	Ingredients in paint	
47	12-11-2018	Defects in painting	
48	15-11-2018	Preparation and applications of paints to new plastered surface	
49	17-11-2018	Applications of paints to Old plastered surfaces	
50	19-11-2018	Applications of paints to wooden and steel surfaces	
51	30-11-2018	Discussion of Previous question papers	
52	22-11-2018	Discussion of Previous question papers	
53	24-11-2018	Discussion of Previous question papers	

(Dr.G. Mahesh Kumar) 01/08/18
Staff in Charge

(Dr. G. Mahesh Kumar) 01/08/18
HOD

(Dr. Hemadri Naidu T)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: V **Year: 2018-19**

Subject Title : **Design of RC Structural Elements**	*Subject Code:* **15CV51**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date of openinng: 01/08/18*
Checked by: **Dr. Mahesh Kumar**	

Learning Objectives:

1. Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
2. Follow a procedural knowledge in designing various structural RC elements.
3. Impart the culture of following the codes for strength, serviceability and durability as an ethics.
4. Provide knowledge in analysis and design of RC elements for the success in competitive examinations

Learning Outcomes:

1. Understand the design philosophy and principles
2. Solve engineering problems of RC elements subjected to flexure, shear and torsion
3. Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings
4. Owns professional and ethical responsibility

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**
   1. **Reinforced Concrete Design**- Unnikrishnan Pillai and Devdas menon., McGraw Hill.
   2. **Design of Concrete Structures**- Subramanian, Oxferd university press.
   3. **Reinforce concrete Vol 1**:- H J Shah, Charotor publishing House..
   5. IS : 456 :2000
   6. SP-16

Scheme of Examination:

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV51- Design of RC Structures

Sl No	Date	Topics	Topics Covered	Remarks
		UNIT 1: INTRODUCTION TO LIMIT STATE & SERVICEABILITY		
1	01/08/18	Introduction to working stress method,.		
2	03/08/18	Difference between Working stress and Limit State Method of design, Modular Ratio and Factor of Safety.		
3	4/08/18	Philosophy and principle of limit state design with assumptions		
4	6/08/18	Partial Safety factors, Characteristic load and strength. Stress block parameters,		
5	7/08/18	Concept of balanced section, under reinforced and over reinforced section.		
6	8/08/18	Concept of balanced section, under reinforced and over reinforced section.		
7	10/08/18	Limiting deflection, short term deflection, long term deflection		
8	11/08/18	Calculation of deflection of singly reinforced beam only.		
9	13/08/18	Calculation of deflection of singly reinforced beam only		
10	14/08/18	Cracking in reinforced concrete members,		
11	17/08/18	Calculation of crack width of singly reinforced beam.		
12	18/08/18	Calculation of crack width of singly reinforced beam.		
13	20/08/18	Side face reinforcement, slender limits of beams for stability.		
14	21/08/18	Side face reinforcement, slender limits of beams for stability.		
		UNIT – 2: LIMIT STATE ANALYSIS OF BEAM		
15	24/08/18	Analysis of singly reinforced beams for flexure and shear		
16	25/08/18	Analysis of singly reinforced beams for flexure and shear		
17	27/08/18	Analysis of singly reinforced beams for flexure and shear		
18	28/08/18	Analysis of singly reinforced beams for flexure and shear		
19	29/08/18	Analysis of doubly reinforced beams for flexure and shear		
20	31/08/18	Analysis of doubly reinforced beams for flexure and shear		
21	3/09/18	Analysis of doubly reinforced beams for flexure and shear		
22	4/09/18	Analysis of doubly reinforced beams for flexure and shear		
23	5/09/18	Analysis of doubly reinforced beams for flexure and shear		
24	7/09/18	Analysis of flanged beams for flexure and shear		
25	8/09/18	Analysis of flanged beams for flexure and shear		
26	10/09/18	Analysis of flanged beams for flexure and shear		
27	11/09/18	Analysis of flanged beams for flexure and shear		
28	12/09/18	Analysis of flanged beams for flexure and shear		
		UNIT – 3: LIMIT STATE DESIGN OF BEAMS		
29	14/09/18	Design of singly and doubly reinforced beams		
30	15/09/18	Design of singly and doubly reinforced beams		

31	17/09/18	Design of singly and doubly reinforced beams		
32	18/09/18	Design of singly and doubly reinforced beams		
33	19/09/18	Design of singly and doubly reinforced beams		
34	25/09/18	Design of flanged beams for shear,		
35	26/09/18	Design of flanged beams for shear,		
36	28/09/18	Design of flanged beams for shear,		
37	29/09/18	Design of flanged beams for shear,		
38	1/10/18	Design for combined bending and torsion		
39	3/10/18	Design for combined bending and torsion		
40	5/10/18	Design for combined bending and torsion		
41	6/10/18	Design for combined bending and torsion		
		UNIT – 4: LIMIT STATE DESIGN OF SLAB AND STAIR		
42	08/10/18	Introduction to one way and two way slabs		
43	9/10/18	Introduction to one way and two way slabs		
44	10/10/18	Design of cantilever slab.		
45	12/10/18	Design of cantilever slab.		
46	13/10/18	Design of simply supported slab		
47	15/10/18	Design of one way continuous slab.		
48	16/10/18	Design of one way continuous slab.		
49	17/10/18	Design of two way slabs for different boundary conditions.		
50	20/10/18	Design of two way slabs for different boundary conditions		
51	22/10/18	Design of dog legged staircase		
52	23/10/18	Design of dog legged staircase		
53	26/10/18	Design of open well staircase		
54	27/10/18	Design of open well staircase		
55	2/11/18	Importance of bond, anchorage length and lap length		
		UNIT - 5 LIMIT STATE OF COLUMN		
56	3/11/18	Analysis and design of short axially loaded RC column		
57	5/11/18	Analysis and design of short axially loaded RC column		
58	7/11/18	Analysis and design of short axially loaded RC column		
59	9/11/18	Analysis and design of short axially loaded RC column		
60	10/11/18	Design of columns with uniaxial and biaxial moments		
61	12/11/18	Design of columns with uniaxial and biaxial moments		
62	13/11/18	Design of columns with uniaxial and biaxial moments		
63	14/11/18	Design concepts of the footings		
64	16/11/18	Design concepts of the footings		
65	17/11/18	Design concepts of the footings		
66	19/11/18	Design of Rectangular and square column footings with axial load and also for axial load & moment		
67	20/11/18	Design of Rectangular and square column footings with axial load and also for axial load & moment		

68	23/11/18	Design of Rectangular and square column footings with axial load and also for axial load & moment		
69	24/11/18	Design of Rectangular and square column footings with axial load and also for axial load & moment		

Mr. Vinuthan V R
Course Instructor

Dr. Mahesh Kumar
HOD

Dr T. Hemadri Naidu
Principal

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SHRIDEVI

DEPARTMENT OF CIVIL ENGINEERING

Semester: **V** *Year: 2018-19*

[As per Choice Based Credit System (CBCS) scheme]

Subject Title: **Analysis of Indeterminate Structures**	*Subject Code:* **15CV52**
Total contact Hours: **53**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **01/08/18**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to:

1. Ability to apply knowledge of mathematics and engineering in calculating slope, deflection, bending moment and shear force using slope deflection, moment distribution method and Kani's method.
2. Ability to identify, formulate and solve problems in structural analysis.
3. Ability to analyze structural system and interpret data.
4. Ability to use the techniques, such as stiffness and flexibility methods to solve engineering problems
5. Ability to communicate effectively in design of structural elements

Course outcomes:

After studying this course, students will be able to:

1. Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method
2. Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
3. Construct the bending moment diagram for beams and frames by Kani's method.
4. Construct the bending moment diagram for beams and frames using flexibility method
5. Analyze the beams and indeterminate frames by system stiffness method.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. **Basic Structural Analysis**- Reddy C.S. - Second Edition, TataMcGraw Hill Publication Company Ltd.
2. **Theory of Structures Vol. 2** - S.P. Gupta, G.S. Pandit and R.Gupta, Tata McGraw Hill Publication Company Ltd.
3. **Structural Dynamics**-by M.Mukhopadhyay.
4. **Structural Analysis-II** -S. S. Bhavikatti – Vikas Publishers, NewDelhi.
5. **Basics of Structural Dynamics and Aseismic Design** ByDamodharSwamy and Kavita PHI Learning Private Limited.
6. **Structural Analysis**- D.S. PrakashRao,, A Unified Approach, University Press

7. **Structural Analysis**-4th SI Edition by AmitPrasanth & AslamKassimali, Thomson Learning.

3) **Text Books:**

1. Hibbeler R C, " Structural Analysis", Pearson Publication
2. L S Negi and R S Jangid, "Structural Analysis", Tata McGraw-Hill Publishing Company Ltd.
3. D S Prakash Rao, "Structural Analysis: A Unified Approach", Universities Press
4. K.U. Muthu, H.Narendra etal, "Indeterminate Structural Analysis", IK International Publishing Pvt. Ltd.

4) **Scheme of Examination:**

Question paper pattern:

• The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks

• There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.

• Each full question shall cover the topics as a module

• The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

Evaluation:

Student Assessment: Through Internal Assessment Tests (20 Marks), Assignments. University Examinations (80 Marks).

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LECTURE PLAN

Sl No	Date	Topics	Remark
		Module -01: Slope Deflection Method	
1	01-08-2018	Introduction, Sign convention,	
2	03-08-2018	Development of slope-deflection equations	
3	06-08-2018	Analysis of Beams- problems	
4	07-08-2018	Analysis of Beams- problems	
5	08-08-2018	Analysis ofOrthogonal Rigid jointed plane frames- problems	
6	10-08-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
7	13-08-2018	Analysis of rigid jointed plane frames by slope-deflection equations	
8	14-08-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
9	17-08-2018	Analysis of rigid jointed plane frames by slope-deflection equations	
10	20-08-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Module -02 : Moment Distribution Method	
11	21-08-2018	Introduction, Definition of terms-Distribution factor, Carry over factor	
12	24-08-2018	Development of method	
13	27-08-2018	Analysis of Beams- problems	

14	28-08-2018	Analysis of Beams- problems	
15	29-08-2018	Analysis of Beams- problems	
16	31-08-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
17	03-09-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
18	04-09-2018	Analysis of rigid jointed plane frames byMoment Distribution Method	
19	05-09-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
20	07-09-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
Module -03 : Kanis Methods			
21	10-09-2018	Introduction, Definition of terms	
22	11-09-2018	Analysis of Beams- problems	
23	12-09-2018	Analysis of Beams- problems	
24	14-09-2018	Analysis of Beams- problems	
25	17-09-2018	Analysis of Beams- problems	
26	18-09-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
27	19-09-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
28	25-09-2018	Analysis of Orthogonal Rigid jointed plane frames- problems	
Module -04 : Matrix Method of Analysis (Flexibility Method)			
29	26-09-2018	Introduction,	
30	28-09-2018	Development of flexibility matrix for plane truss element	
31	01-10-2018	Development of flexibility matrix for plane truss element	
32	03-10-2018	flexibility matrix for axially rigid plane framed structural elements	
33	05-10-2018	flexibility matrix for axially rigid plane framed structural elements	
34	09-10-2018	flexibility matrix for axially rigid plane framed structural elements	
35	10-10-2018	Analysis of plane truss	
36	12-10-2018	Analysis of plane truss	
37	15-10-2018	Analysis of plane truss	
38	16-10-2018	Analysis of axially rigid plane frames	
39	17-10-2018	Analysis of axially rigid plane frames	
Module -05: Matrix Method of Analysis (Stiffness)			
40	22-10-2018	Introduction. Development of flexibility matrix for plane truss element	
41	23-10-2018	flexibility matrix for axially rigid plane framed structural elements	
42	26-10-2018	flexibility matrix for axially rigid plane framed structural elements	
43	02-11-2018	Problems on framed structure	
44	05-11-2018	Problems on framed structure	
45	07-11-2018	Problems on framed structure	
46	09-11-2018	Problems on framed structure	
47	12-11-2018	Analysis of plane truss	
48	13-11-2018	Analysis of plane truss	
49	14-11-2018	Analysis of plane truss	
50	16-11-2018	Analysis of plane truss	
51	19-11-2018	Analysis of axially rigid plane frames	
52	20-11-2018	Analysis of axially rigid plane frames	
53	23-11-2018	Analysis of axially rigid plane frames	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar) 01/08/2018
HOD

(Dr Hemadri Naidu)
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

Semester: V Sem ***Year: 2018-19***

Subject Title: **AppliedGeotechnical Engineering**	*Subject Code:* **15CV53**
Total contact Hours: **65**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **01/08/2018**
Checked by: **Dr. G. Mahesh Kumar**	

Course objectives: This course will enable students to

1. Appreciate basic concepts of soil mechanics as an integral part in the knowledge of Civil Engineering. Also to become familiar with foundation engineering terminology and understand how the principles of Geotechnology are applied in the design of foundations
2. Learn introductory concepts of Geotechnical investigations required for civil engineering projects emphasizing in-situ investigations
3. Conceptually learn various theories related to bearing capacity of soil and their application in the design of shallow foundations and estimation of load carrying capacity of pile foundation
4. Estimate internal stresses in the soil mass and application of this knowledge in proportioning of shallow and deep foundation fulfilling settlement criteria
5. Study about assessing stability of slopes and earth pressure on rigid retaining structures.

Course outcomes: On the completion of this course students are expected to attain the following outcomes;

1. Ability to plan and execute geotechnical site investigation program for different civil engineering projects
2. Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
3. Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
4. Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
5. Capable of estimating load carrying capacity of single and group of piles

Program Objectives

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question paper pattern:

- The question paper will have ten questions.
- Each full question consists of 16 marks.
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.
- Use of IS: 6403 shall be permitted.

Text Books:

1. Gopal Ranjan and Rao A.S.R., Basic and Applied Soil Mechanics, New Age International (P) Ltd., New Delhi.
2.Punmia B C, Soil Mechanics and Foundation Engineering, Laxmi Publications co., New Delhi.
3. Murthy V.N.S., Principles of Soil Mechanics and Foundation Engineering, UBS Publishers and Distributors, New Delhi.
4.Braja, M. Das, Geotechnical Engineering; Thomson Business Information India (P) Ltd., India

Reference Books:

1. T.W. Lambe and R.V. Whitman, Soil Mechanics-, John Wiley & Sons
2. Donald P Coduto, Geotechnical Engineering- Phi Learning Private Limited, New Delhi
3. Shashi K. Gulathi&ManojDatta, Geotechnical Engineering-. , Tata McGraw Hill Publications
4.DebashisMoitra, "Geotechnical Engineering" , Universities Press.,
5. Malcolm D Bolton, " A Guide to soil mechanics", Universities Press., 6. Bowles J E , Foundation analysis and design, McGraw- Hill Publications

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LECTURE PLAN

15CV53 – Applied Geotechnical Engineering

Sl.No.	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1 SOIL EXPLORATION	
1	01-08-2018	Introduction, Objectives and Importance,	
2	01-08-2018	Stages and Methods of exploration- Test pits, Borings,	
3	03-08-2018	Geophysical exploration and Geophysical methods,	
4	06-08-2018	Stabilization of boreholes, Sampling techniques,	
5	07-08-2018	Undisturbed, disturbed and representative samples,	L1,L2,L3
6	08-08-2018	Bore hole log.	
7	08-08-2018	Drainage and Dewatering methods,	
8	10-08-2018	Estimation of depth of GWT (Hvorslev's method).	
9	13-08-2018	Problems in Module-1	
10	14-08-2018	Problems in Module-1	
		MODULE- 2 STRESS IN SOILS	
11	17-08-2018	Introduction, Boussinesq's and Westergaard's theory	
12	20-08-2018	Concentrated load	
13	21-08-2018	Circular and rectangular load	
14	24-08-2018	Equivalent point load method	
15	27-08-2018	Pressure distribution diagrams and contact pressure,	L2,L3,L4
16	28-08-2018	Newmark's chart	
17	29-08-2018	Foundation Settlement - Approximate method for stress distribution on a horizontal plane,	
18	29-08-2018	Types of settlements and importance	
19	31-08-2018	Computation of immediate and consolidation settlement	
20	03-09-2018	Problems in Module-2	
		MODULE-3 LATERIAL EARTH PRESSURE AND STABILITY OF SLOPES	
21	04-09-2018	Active, Passive and earth pressure at rest,	
22	05-09-2018	Rankine's theory for cohesionless and cohesive soils,	
23	05-09-2018	Coulomb's theory,	
24	07-09-2018	Rebhann's and Culmann's graphical construction.	
25	10-09-2018	Stability of Slopes : Assumptions	
26	11-09-2018	Stability of Slopes : infinite slopes,	
27	12-09-2018	Stability of Slopes : finite slopes,	L2,L4,L5
28	12-09-2018	Factor of safety	
29	14-09-2018	Use of Taylor's stability charts,	
30	17-09-2018	Swedish slip circle method for C (Method of slices) soils,	
31	18-09-2018	Swedish slip circle method for C-ϕ (Method of slices) soils,	
32	19-09-2018	Fellineous method for critical slip circle	
33	19-09-2018	Solving Problems in Module-3	
34	25-09-2018	Solving Problems in Module-3	
35	26-09-2018	Solving Problems in Module-3	

		MODULE-4 BEARING CAPACITY AND SHALLOW FOUNDATION	
36	26-09-2018	Types of foundations	
37	28-09-2018	Types of foundations	
38	01-10-2018	Determination of bearing capacity of soil by Terzaghi's method-Continued	
39	03-10-2018	Determination of bearing capacity of soil by Terzaghi's method -Continued	
40	03-10-2018	Determination of bearing capacity of soil by Terzaghi'smethod	
41	05-10-2018	Determination of bearing capacity of soil by BIS method (IS: 6403),	**L2,L4,L5,L6**
42	09-10-2018	Effect of water table on bearing capacity of soil	
43	10-10-2018	Effect of eccentricity loading on bearing capacity of soil	
44	10-10-2018	Field methods - plate load test	
45	12-10-2018	SPT test	
46	15-10-2018	Proportioning of shallow foundations :Isolated footings	
47	16-10-2018	Proportioning of shallow foundations "Ccombined footings (only two columns)	
48	17-10-2018	Problems solving in Module-4	
49	17-10-2018	Problems solving in Module-4	
50	22-10-2018	Problems solving in Module-4	
		MODULE-5 PILE FOUNDATIONS	
51	23-10-2018	Types and classification of piles,	
52	26-10-2018	Single loaded pile capacity in cohesion less soilby static formula	
53	02-11-2018	Single loaded pile capacity in cohesive soilby static formula	
54	05-11-2018	Efficiency of file group,	
55	07-11-2018	Group capacity of piles in cohesion less soils	
56	07-11-2018	Group capacity of piles in cohesive soils	
57	09-11-2018	Negative skin friction	
58	12-11-2018	Pile load tests	**L2,L3,L4**
59	13-11-2018	Settlement of piles	
60	14-11-2018	Under reamed piles (only introductory concepts – no derivation) Problems in Module-5	
61	14-11-2018	Problems solving in Module-5	
62	16-11-2018	Problems solving in Module-5	
63	19-11-2018	Discussion of previous question papers	
64	20-11-2018	Discussion of previous question papers	
65	23-11-2018	Discussion of previous question papers	

(Dr.G. Mahesh Kumar) 01/08/18
Staff in Charge

(Dr. G. Mahesh Kumar) 01/08/18
HOD

(Dr. Hemadri Naidu T)
Principal

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TUMKUR - 572106.

Semester: V Year: 2018-19

Subject Title: **COMPUTER AIDED BUILDING PLANNING & DRAWING**	*Subject Code:* **15 CV54**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Nagaraja C**	*Date of commencement of semester :* ***01/08/18***
Checked by: **Dr G Mahesh Kumar**	

Learning Objectives:

The students will learn & draw to

- Achieve skill sets to prepare computer aided engineering drawings
- Understand the details of construction of different building elements.
- Visualize the completed form of the building and the intricacies of construction based on the engineering drawings.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations
2) **Text book:**
   i. Building drawing with an integrated approach to Built Environment Drawing:-MG Shah, C M Kale & S Y Patki.
   ii. Building Construction- Gurucharan Singh, Standard publishers.
   iii. Civil Engineering Drawing:-Malik R S and Meo G S, Asian publishers.

   Reference Books
   iv. Time savers standard: Dodge F.W, F W Dodge corporation
   v. IS:962-1989 (Code of practice for architectural and drawing)
   vi. National Building code
3) **Scheme of Examination:**
   i. In **Part A**, Two questions to be set, out of which one question to be answered (30 Marks).
   ii. In **Part B**, Two questions to be set, out of which one question to be answered (50 Marks).
4) **Evaluation:**
   Student Assessment: Through Internal Assessment Tests (05 Marks), Assignments (15 Marks).University Examinations (80 Marks).
5) **Question paper pattern**
   There will be two full question with sub divisions if necessary from module 2 with each full question carrying 30 Marks. Students have to answer 1 question. There will be two full questions from module 3 with each full question carrying 50 Marks. Students have to answer 1 question.

DEPARTMENT OF CIVIL ENGINEERING
15CV 54 – COMPUTER AIDED BUILDING &DRAWING
BATCH -1

Sl.No.	Class	Date	Hrs	Topics	Remarks
				Module1:	
1	Theory /Practice	2-08-18	1+3	Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations	
2	Practice Practice	9-08-18	1+3	Simple engineering drawings with CAD drawing tools : Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline, Ellipse, Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Editing, Special Features: View tools, Layers	
3	Theory /Practice	16-08-18	1+3	concept, Dimension tools, Hatching, Customizing toolbars, Working with multiple drawings	
				Module 2:	
4	Theory /Practice	23-08-18	1+3	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings, Different types of bonds in brick masonry	
5	Theory /Practice	30-8-18	1+3	Different types of staircases – Dog legged, Open well, Lintel and chajja RCC slabs and beams, Cross section of a pavement	
6	Theory /Practice	6-9-18	1+3	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system Cross sectional details of a road for a Residential area with provision for all services Steel truss	
				Module 3:	
7	Theory /Practice	27-09-18	1+3	Principles of planning, Planning regulations and building bye-laws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings.	
8	Theory /Practice	4-10-18	1+3		
9	Theory /Practice	11-10-18	1+3	Single and Double story residential building	
10	Theory /Practice	18-10-18	1+3	Hostel building	
11	Theory /Practice	25-10-18	1+3	Hospital building	
12	Theory /Practice	15-11-18	1+3	School building	
13	Theory /Practice	22-11-18	1+3	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	

C Nagaraja
(Mr. Nagaraja C)
Staff in Charge

(Dr G Mahesh Kumar)
H.O.D

(Dr. Hemadri Naidu T)
Principal

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Semester: V *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2018-19**

Course Title: **Railways, Harbour, Tunneling and Airports**	*Subject Code:* **15CV552**
Total contact Hours: **52**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Prakash J**	*Date:* **01/08/2018**
Checked by: **Dr. G Mahesh Kumar**	*Credits:* ***02***

Course objectives:

This course will enable students to:

1. Understand the history and development, role of railways, railway planning and development based on essential criteria's.
2. Learn different types of structural components, engineering properties of the materials, to calculate the material quantities required for construction
3. Understand various aspects of geometric elements, points and crossings, significance of maintenance of tracks.
4. Design and plan airport layout, design facilities required for runway, taxiway and impart knowledge about visual aids
5. Apply design features of tunnels, harbours, dock and necessary navigational aids; also expose them to various methods of tunneling and tunnel accessories.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Acquires capability of choosing alignment and also design geometric aspects of railway system, runway, taxiway.
2. Suggest and estimate the material quantity required for laying a railway track and also will be able to determine the hauling capacity of a locomotive.
3. Develop layout plan of airport, harbor, dock and will be able relate the gained knowledge to identify required type of visual and/or navigational aids for the same.
4. Apply the knowledge gained to conduct surveying, understand the tunnelling activities.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Saxena Subhash C and Satyapal Arora, "A Course in Railway Engineering", Dhanpat Rai and Sons, Delhi,

2. Satish Chandra and Agarwal M.M, "Railway Engineering", 2nd Edition, Oxford University Press, New Delhi,

3. Khanna S K, Arora M G and Jain S S, "Airport Planning and Design", Nemchand and Brothers, Roorkee,

4. C Venkatramaiah, " Transportation Engineering", Volume II: Railways, Airports, Docks and Harbours, Bridges and Tunnels, Universities Press

5. Bindra S P, "A Course in Docks and Harbour Engineering", Dhanpat Rai and Sons, New Delhi,

Reference Books:

1. Oza.H.P. and Oza.G.H., "A course in Docks & Harbour Engineering". Charotar Publishing Co.,

2. Mundrey J.S. "A course in Railway Track Engineering". Tata McGraw Hill,

3. Srinivasan R. Harbour, "Dock and Tunnel Engineering", 26th Edition 2013

Lesson Plan

Sl No	Date	Topics
		Module -1: Railway Planning
1	02/08/18	Significance of Road, Rail, Air and Water transports, creep in rails, defects in rails,
2	02/08/18	Coordination of all modes to achieve sustainability
3	04/08/18	Elements of permanent way – Rails, Sleepers, Ballast, rail fixtures and fastenings
4	04/08/18	Track Stress, coning of wheels
5	09/08/18	Route alignment surveys,
6	09/08/18	conventional and modern methods
7	11/08/18	Soil suitability analysis,
8	11/08/18	Geometric design of railways
9	16/08/18	gradient, super elevation
10	16/08/18	widening of gauge on curves
11	18/08/18	Points and Crossings
		Module -2: Railway Construction and Maintenance
12	18/08/18	Earthwork
13	23/08/18	Stabilization of track on poor soil
14	23/08/18	Calculation of Materials required for track laying
15	25/08/18	Construction and maintenance of tracks-
16	25/08/18	Modern methods of construction & maintenance
17	30/08/18	Railway stations and yards and passenger amenities
18	30/08/18	Railway stations and yards and passenger amenities
19	01/09/18	Urban rail – Infrastructure for Metro,
20	01/09/18	Urban rail – Infrastructure for Metro,
21	06/09/18	Mono and underground railways.
22	06/09/18	Mono and underground railways.
		Module -3: Harbour and Tunnel Engineering
23	08/09/18	Definition of Basic Terms
24	08/09/18	Planning and Design of Harbours
25	15/09/18	Requirements, Classification
26	15/10/18	Location and Design Principles – Harbour Layout and Terminal Facilities
27	27/10/18	Coastal Structures, Inland Water Transport,
28	27/10/18	Wave action on Coastal Structures and Coastal Protection Works.
29	29/10/18	Tunneling: Introduction,
30	29/09/18	size and shape of the tunnel
31	04/10/18	tunneling methods in soils
32	04/10/18	tunnel lining,
33	06/10/18	tunnel drainage and ventilation

		Module -4: Airport Planning
34	06/10/18	Air transport characteristics,
35	11/10/18	airport classification
36	11/10/18	air port planning: objectives, components
37	13/10/18	layout characteristics,
38	13/10/18	socio-economic characteristics of the catchment area,
39	18/10/18	criteria for airport site selection and ICAO stipulations
40	18/10/18	criteria for airport site selection and ICAO stipulations
41	20/10/18	typical airport layouts,
42	20/10/18	typical airport layouts,
43	25/10/18	typical airport layouts,
44	25/10/18	Parking and circulation area.
		Module -5: Airport Design
45	27/10/18	Runway Design: Orientation, Wind Rose Diagram,
46	27/10/18	Wind Rose Diagram continued,
47	03/11/18	Runway length,
48	03/11/18	Problems on basic and Actual Length
49	10/11/18	Geometric design of runways
50	10/11/18	Pavement Design Principles
51	15/11/18	Configuration and, Elements of Taxiway Design,
52	15/11/18	Airport Zones, Passenger Facilities and Services
53	17/11/18	Runway and Taxiway Markings
54	17/11/18	Runway and Taxiway lighting
55	22/11/18	Revision
56	22/11/18	Revision
57	24/11/18	Revision
58	24/11/18	Revision

(Mr. Prakash J)
Staff in Charge

(Dr. G Mahesh Kumar) 01/06/18
H.O.D

(Dr. T Hemadri Naidu)
Principal

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Semester: V *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2018-19**

Course Title: **Traffic Engineering**	*Subject Code:* **15CV561**
Total contact Hours: **56**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mrs Supriya C B**	*Date:* **01/08/2018**
Checked by: **Dr G Mahesh Kumar**	*Credits:* ***03***

Course objectives:

This course will enable students to:

1. Understand fundamental knowledge of traffic engineering, scope and its importance.
2. describe basic techniques for collecting and analysing traffic data, diagnosing problems, designing appropriate remedial treatment, and assessing its effectiveness.
3. Apply probabilistic and queuing theory techniques for the analysis of traffic flow situations and emphasis the interaction of flow efficiency and traffic safety.
4. understand and analyse traffic issues including safety, planning, design, operation and control.
5. Apply intelligent transport system and its applications in the present traffic scenario.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Understand the human factors and vehicular factors in traffic engineering design.
2. Conduct different types of traffic surveys and analysis of collected data using statistical concepts.
3. Use an appropriate traffic flow theory and to comprehend the capacity & signalized intersection analysis.
4. Understand the basic knowledge of Intelligent Transportation System.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Kadiyali.L.R. **"Traffic Engineering and Transport Planning"**, Khanna Publishers, Delhi, 2013
2. S K Khanna and CEG Justo and A Veeraragavan, **"Highway Engineering"**, Nem Chand and Bros.
3. Indian Roads Congress (IRC) Specifications: Guidelines and Special Publications on Traffic Planning and Management.
4. Salter. R.I and Hounsell N.B, **"Highway Traffic Analysis and design"**, Macmillan Press Ltd.1996.

Reference Books:

1. Fred L. Mannering, Scott S. Washburn and Walter P.Kilareski, Principles of Highway Engineering and Traffic Analysis, Wiley India Pvt. Ltd., New Delhi, 2011
2. Garber and Hoel, "Principles of Traffic and Highway Engineering", CENGAGE Learning, New Delhi, 2010
3. SP:43-1994, IRC Specification, "Guidelines on Low-cost Traffic Management Techniques" for Urban Areas, 1994
4. John E Tyworth, "Traffic Management Planning, Operations and control", Addison Wesly Publishing Company,1996
5. Hobbs.F.D. "Traffic Planning and Engineering", University of Brimingham, Peragamon Press Ltd, 2005

Lesson Plan

Sl No	Date	Topics	Remarks
		Module -1	
1	01/08/18	**Traffic Planning And Characteristics:** Road Characteristics-	
2	01/08/18	Road User Characteristics,	
3	03/08/18	PIEV Theory, Vehicle Performance Characteristics,	
4	04/08/18	Fundamentals Of Traffic Flow	
5	08/08/18	Urban Traffic Problems In India	
6	08/08/18	Integrated Planning Of Town,	
7	10/08/18	Country, Regional And All Urban Infrastructures	
8	11/08/18	Sustainable Approach-	
9	17/08/18	Land Use & Transport	
10	18/08/18	Modal Integration	
		Module -2	
11	24/08/18	**Traffic Surveys:** Traffic Surveys- Speed, journey time and delay surveys,	
12	25/08/18	Vehicles Volume Survey including non-motorized transports	
13	29/08/18	Methods and interpretation,	
14	29/08/18	Origin Destination Survey, Methods and presentation	
15	31/08/18	Parking Survey, ,	
16	01/09/18	Accident analyses-Methods	
17	05/09/18	interpretation and presentation	
18	05/09/18	Statistical applications in traffic studies and traffic forecasting	
19	07/09/18	Level of service- Concept	
20	08/09/18	Applications and significance.	
		Module -3	
21	12/09/18	**Traffic Design and Visual Aids:** Intersection Design- channelization,	
22	12/09/18	Rotary intersection design,	
23	14/09/18	Signal design	
24	15/09/18	Coordination of signals	
25	19/09/18	Grade separation	
26	19/09/18	Traffic signs including VMS	
27	26/09/18	road markings	
28	26/09/18	Significant roles of traffic control personnel	
29	28/09/18	Networking pedestrian facilities	
30	29/09/18	& cycle tracks.	

		Module -4	
31	**03/10/18**	**Traffic Safety and Environment:** Road accidents,	
32	**03/10/18**	Causes, effect, prevention, and cost	
33	**05/10/18**	Street lighting,	
34	**06/10/18**	Traffic and environment hazards	
35	**10/10/18**	Air Pollution, causes	
36	**10/10/18**	Noise Pollution and causes	
37	**12/10/18**	abatement measures	
38	**13/10/18**	Promotion and integration of public transportation	
39	**17/10/18**	Promotion and integration of public transportation	
40	**17/10/18**	Promotion of non-motorized transport.	
		Module -5	
41	**20/10/18**	**Traffic Management:** Area Traffic Management System,	
42	**26/10/18**	Traffic Regulatory Measures,	
43	**27/10/18**	Travel Demand Management (TDM)	
44	**02/11/18**	Direct and indirect methods,	
45	**03/11/18**	Congestion and parking pricing	
46	**07/11/18**	Traffic System Management (TSM) with IRC standards	
47	**07/11/18**	All segregation methods- Coordination among different agencies	
48	**09/11/18**	All segregation methods- Coordination among different agencies continued.,	
49	**10/11/18**	Intelligent Transport System for traffic management	
50	**14/11/18**	Enforcement and education.	
51	**14/11/18**	Revision	
52	**16/11/18**	Revision	
53	**17/11/18**	Revision	
54	**23/11/18**	Revision	
55	**24/11/18**	Revision	
56	**30/11/18**	Revision	

Supriya. CB
Mrs Supriya C B
Course Instructors

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DEPARTMENT OF CIVIL ENGINEERING

SUBJECT PLAN

Semester: VII Semester B E Year: 2018-19

Subject Title: **Municipal and Industrial Waste Water Engineering**	Subject Code: **15CV-71**
Total contact Hours: 50	Duration of Exam: 03 Hrs.
Total Theory exam marks: 80	Total I.A. marks: 20
Subject plan author: Ms. Ramya D L	Date: 06/08/2018
Checked by: Dr. G Mahesh kumar	Date: 06/08/2018

Sl. NO	DATE	TOPIC PLANNED	REMARKS
MODULE 1:			
1	06-08-2018	Introduction, need for sanitation, methods of sewage disposal	
2	07-08-2018	Types of sewerage systems, dry weather flow, wet weather flow	
3	08-08-2018	Factors effecting dry and wet weather flow on design of sewerage system	
4	09-08-2018	Estimation of storm flow, time of concentration flow	
5	13-08-2018	Material of sewers, shape of sewers	
6	14-08-2018	Laying and testing of sewers, ventilation of sewers	
7	06-08-2018	Low-cost waste treatment; oxidation pond, septic tank	
8	07-08-2018	Sewer appurtenances, manholes, catch basins	
9	08-08-2018	Basic principles of house drainage	
10	09-08-2018	Typical layout plan showing house drainage connections	
MODULE 2:			
11	27-08-2018	Design of sewers	
12	28-08-2018	Hydraulic formula for velocity	
13	29-08-2018	Effects of variation on velocity, regime velocity	
14	30-08-2018	Design of hydraulic elements for circular sewers for full flow and partial flow conditions	
15	03-09-2018	Disposal of effluents by dilution	
16	04-09-2018	Self purification phenomenon	
17	05-09-2018	Oxygen sag curve, zones of purification	
18	06-09-2018	Sewage farming, sewage sickness	
19	10-09-2018	Numerical problems on disposal of effluents	
20	11-09-2018	Streeter-Phelps equation	

MODULE 3:			
21	12-09-2018	Waste water characteristics	
22	17-09-2018	Sampling, significance and techniques	
23	18-09-2018	Physical, chemical and biological characteristics	
24	19-09-2018	Flow diagram for municipal waste water treatment	
25	25-09-2018	Unit operations; screens, grit chambers, skimming tanks	
26	26-09-2018	Equalization tanks	
27	27-09-2018	Suspended growth and fixed film bio process	
28	01-10-2018	Design of trickling filters, activated sludge process	
29	03-10-2018	Sequential batch reactors, moving bed bio reactors	
30	04-10-2018	Sludge digesters	
MODULE 4:			
31	09-10-2018	Difference between domestic and industrial waste water	
32	10-10-2018	Effect of effluent discharge on streams	
33	11-10-2018	Methods of industrial waste water treatment; volume reduction	
34	15-10-2018	Strength reduction, neutralization	
35	16-10-2018	Equalization and proportioning	
36	17-10-2018	Removal of organic, inorganic and colloidal solids	
37	22-10-2018	Combined treatment methods; merits, demerits and feasibility	
38	23-10-2018	Principles of discharge of raw waste water in to streams	
39	25-10-2018	Discharge of partially treated waste water in to streams	
40	05-11-2018	Discharge of completely treated wastes in to streams	
MODULE 5:			
41	07-11-2018	Process flow chart	
42	12-11-2018	Sources and characteristics of industrial waste water	
43	13-11-2018	Reuse and recovery and disposal of wastes from cotton and textile industry	
44	14-11-2018	Reuse and recovery and disposal of wastes from tanning industry	
45	15-11-2018	Reuse and recovery and disposal of wastes from cane sugar and distilleries	
46	19-11-2018	Reuse and recovery and disposal of wastes from dairy industry	
47	20-11-2018	Reuse and recovery and disposal of wastes from steel and cement industry	
48	22-11-2018	Reuse and recovery and disposal of wastes from paper and pulp industry	
49	03-12-2018	Reuse and recovery and disposal of wastes from pharmaceutical	
50	04-12-2018	Reuse and recovery and disposal of wastes from food processing industry	

TEXT BOOKS:

1. Metcalf and Eddy, "Wastewater Engineering - Collection, Treatment, Disposal and Reuse", McGraw Hill Pub.Co., 2009.
2. Nelson Leonard Nemerow, "Industrial Waste Treatment", Butterworth-Heinemann, 2007.
3. Patwardhan A.D, "Industrial Waste Water Treatment", PHI Learning Private Limited-New Delhi
4. Hammer, M.J. and Hammer, M.J., "Water and Wastewater Technology", 7th Ed., Prentice Hall of India

REFERENCE BOOKS:

1. Manual on Waste Water Treatment : CPHEEO, Ministry of Urban Development, New Delhi.
2. Fair, Geyer and Okun , "Water and Wastewater Engineering" Vol-II, John Willey Publishers, New York.

(Ms. Ramya D L)	(Dr. G Mahesh Kumar)	(Dr. Hemadri Naidu T)
STAFF INCHARGE	HOD	PRINCIPAL

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

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Semester: **VII** ***Year: 2018-19***

Subject Title: **Design of RCC and Steel Structures**	*Subject Code:* **15CV72**
Total contact Hours: **65**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **06/08/18**
Checked by: **Dr. G Mahesh Kumar**	

Course Objectives:

This course will enable students to

i. Provide basic knowledge in the areas of limit state method and concept of design of RC and Steel structures.
ii. Identify, formulate and solve engineering problems in RC and Steel Structures
iii. Give procedural knowledge to design a system, component or process as per needs and specifications of RC Structures like Retaining wall, Footing, Water tanks, Portal Frames and Steel Structures like Roof Truss, Plate Girder and Gantry Girder.
iv. Imbibe the culture of professional and ethical responsibilities by following codal provisions in the analysis, design of RC and Steel Structures.
v. Provide factual knowledge on analysis and design of RC Structural elements, who can participate and succeed in competitive examinations

Course Outcomes:

After studying this course, students will be able to:

i. Students will acquire the basic knowledge in design of RCC and Steel Structures.
ii. Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe RC and Steel members.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **Text Books:**

- N.Subramanian, **Design of Steel Structures,** Oxford, 2008
- K S Duggal, **Limit State Design of Steel Structures,** Tata Mc Graw Hill Publishers 2010
- N Krishna Raju, **Structural Design and Drawing of Reinforced Concrete and Steel,** University Press

3) **Reference Books:**

- Charles E Salman, Johnson & Mathas, **"Steel Structure Design and Behaviour"**, Pearson Publications
- Nether Cot, et.al, **"Behaviour and Design of Steel Structures to EC -III"**, CRC Press

- P C Verghese, **"Limit State Design of Reinforced Concrete"**, PHI Publications, New Delhi
- S N Sinha, "Reinforced Concrete Design", McGraw Hill Publication

4) Scheme of Examination:

- Two questions shall be asked from each module. There can be maximum of three subdivisions in each question, if necessary.
- One full question should be answered from each module.
- Each question carries 40 marks.
- Code books – IS 456, IS 800, IS 3370 (Part IV), SP (6) – Steel Tables, shall be referred for designing
- The above charts shall be provided during examinations

5) Evaluation:

Student Assessment: Through Internal Assessment Tests (20 Marks), Assignments. University Examinations (80 Marks).

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LECTURE PLAN

Sl No	Date	Topics	Remark
		Design of RCC and Steel Structures	
1	06-08-2018	**Footings**: Design of rectangular slab type combined footing.	RCC Design
2	07-08-2018		
3	08-08-2018		
4	09-08-2018		
5	10-08-2018		
6	13-08-2018		
7	14-08-2018	**Roof Truss**: Design of roof truss for different cases of loading, forces in members to be given.	STEEL Design
8	16-08-2018		
9	17-08-2018		
10	20-08-2018		
11	21-08-2018		
12	23-08-2018		
13	24-08-2018	**Retaining Walls:** Design of cantilever Retaining wall	RCC Design
14	27-08-2018		
15	28-08-2018		
16	29-08-2018		
17	30-08-2018		
18	31-08-2018		
19	03-09-2018	**Roof Truss**: Design of roof truss for different cases of loading, forces in members to be given.	STEEL Design
20	04-09-2018		
21	05-09-2018		
22	06-09-2018		
23	07-09-2018		
24	10-09-2018		

25	11-09-2018	Retaining Walls: Design of counter fort Retaining wall	RCC Design
26	12-09-2018		
27	14-09-2018		
28	17-09-2018		
29	18-09-2018		
30	19-09-2018		
31	25-09-2018	**Water Tanks:** Design of circular water tanks resting on ground (Rigid base).	RCC Design
32	26-09-2018		
33	27-09-2018		
34	28-09-2018		
35	01-10-2018		
36	03-10-2018		
37	04-10-2018	**Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks	STEEL Design
38	05-10-2018		
39	09-10-2018		
40	10-10-2018		
41	11-10-2018		
42	12-10-2018		
43	15-10-2018	**Water Tanks:** Design of circular water tanks resting on ground (Flexible base)	RCC Design
44	16-10-2018		
45	17-10-2018		
46	22-10-2018		
47	23-10-2018		
48	25-10-2018		
49	26-10-2018	**Gantry Girder:** Design of gantry girder with all necessary checks	STEEL Design
50	02-11-2018		
51	05-11-2018		
52	07-10-2018		
53	09-11-2018		
54	12-11-2018		
55	13-11-2018	**Portal Frames:** Design of portal frames with fixed based supports	RCC Design
56	14-11-2018		
57	15-11-2018		
58	16-11-2018		
59	19-11-2018		
60	20-11-2018		
61	22-11-2018	**Portal Frames:** Design of portal frames with hinged based supports	RCC Design
62	23-11-2018		
63	30-11-2018		
64	03-12-2018		
65	04-12-2018		

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VII **Year: 2018-19**

Subject Title : **Hydrology & Irrigation Engineering**	*Subject Code:* **15CV73**
Total contact Hours: **53**	*Duration of Exam*: **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date college opening: 06/08/18*
Checked by: **Dr. Mahesh kumar**	

Learning Objectives:

1 Understand the concept of hydrology and components of hydrologic cycle such as pricipitation, infiltration,
evaporation and transpiration.
2. Quantify runoff and use concept of unit hydrograph.
3. Demonstrate different methods of irrigation, methods of application of water and irrigation procedure.
4. Design canals and canal network based on the water requirement of various crops.
5. Determine the reservoir capacity.

Learning Outcomes:

1.Understand the importance of hydrology and its components.
2. Measure precipitation and analyze the data and analyze the losses in precipitation.
3. Estimate runoff and develop unit hydrographs.
4. Find the benefits and ill-effects of irrigation.
5. Find the quantity of irrigation water and frequency of irrigation for various crops.
6. Find the canal capacity, design the canal and compute the reservoir capacity.

Materials and resources required:

1) K. Subramanya, "Engineering Hydrology", Tata McGraw Hill Publishers, New Delhi.
2) Jayarami Reddy, "A Text Book of Hydrology", Lakshmi Publications, New Delhi.
3) Punmia and LalPandey, "Irrigation and Water Power Engineering" Lakshmi Publications, New Delhi.

Scheme of Examination

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV73- Hydrology & Irrigation Engineering

Sl No	Date	Topics	Topics Covered	Remarks
		MODULE-1		
1	06/08/18	**Hydrology:** Introduction		
2	09/08/18	Importance of hydrology		
3	10/08/18	Global and Indian water availability, Practical application of hydrology		
4	10/08/18	Global and Indian water availability, Practical application of hydrology		
5	13/08/18	Hydrologic cycle (Horton's)		
6	16/08/18	engineering representation. Of Hydrological cycle		
7	17/08/18	**Precipitation:** Definition, Forms and types of precipitation		
8	17/08/18	Measurement of rain fall 10 hours L2, L3 using Symon's and Syphon type of rain gauges		
9	20/08/18	Optimum number of rain gauge stations, computation of mean rainfall,		
10	23/08/18	Estimation of missing data, presentation of precipitation data, moving average curve, mass curve, rainfall hyetographs.		
		MODULE-2		
11	24/08/18	**Losses: Evaporation:** Introduction, Process		
12	24/08/18	Factors affecting evaporation, measurement using IS class-A Pan,		
13	27/08/18	Estimation using empirical formulae (Meyer's and Rohwer's equations) Reservoir evaporation and control		
14	30/08/18	**Evapo-transpiration:** Introduction, Consumptive use		
15	31/08/18	AET, PET, Factors affecting, 10 Hours L2, L3 Measurement		
16	31/08/18	Estimation by Blaney-Criddle equation		
17	03/09/18	**Infiltration:** Introduction, factors affecting infiltration capacity		
18	06/09/18	Factors affecting infiltration capacity		
19	07/09/18	Measurement by double ring infiltrometer		
20	07/09/18	Horton's infiltration equation, infiltration indices.		
		MODULE 3		
21	10/09/18	**Runoff:** Definition, concept of catchment		
22	14/09/18	Concept of catchment, factors affecting runoff		
23	14/09/18	Rainfall – runoff relationship using regression analysis.		
24	17/09/18	Rainfall – runoff relationship using regression analysis.		
25	27/09/18	**Hydrographs:** Definition, components of hydrograph		
26	28/09/18	Components of hydrograph, base flow separation		
27	28/09/18	Unit hydrograph, assumption, application and limitations		

28	1/10/18	Unit hydrograph, assumption, application and limitations		
29	04/10/18	Derivation from simple storm hydrographs		
30	05/10/18	S curve and its computations, Conversion of UH of different durations		
		MODULE-4		
31	05/10/18	Irrigation: introduction Definition		
32	08/10/18	Benefits and ill effects of irrigation.		
33	11/10/18	System of irrigation: surface and ground water		
34	12/10/18	Flow irrigation, lift irrigation, Bandhara irrigation.		
35	12/10/18	Flow irrigation, lift irrigation, Bandhara irrigation.		
36	15/10/18	**Water Requirements of Crops:** Duty, delta and base period,		
37	22/10/18	**Water Requirements of Crops:** Duty, delta and base period,		
38	25/10/18	Relationship between duty delta and problems		
39	26/10/18	Factors affecting duty of water crops		
40	26/10/18	Crop seasons in India		
41	2/11/18	Irrigation efficiency, frequency of irrigation.		
42	2/11/18	Irrigation efficiency, frequency of irrigation.		
		MODULE 5		
43	5/11/18	**Canals: introduction** Types of canals		
44	9/11/18	Alignment of canals		
45	9/11/18	Definition of gross command area, cultural command area		
46	12/11/18	Intensity of irrigation time factor, crop factor		
47	15/11/18	Unlined and lined canals. Standard sections.		
48	16/11/18	Design of canals by Lacey's and Kennedy's method		
49	16/11/18	Design of canals by Lacey's and Kennedy's method		
50	19/11/18	Design of canals by Lacey's and Kennedy's method		
51	22/11/18	**Reservoirs:** Definition, investigation for reservoir site		
52	23/11/18	Investigation for reservoir site, storage zones		
53	23/11/18	Determination of storage capacity using mass curves, economical height of dam.		

Mr. Vinuthan V R
Course Instructor

Dr. Mahesh Kumar
HOD
05/11/18

Dr T. Hemadri Naidu
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6-11-18.

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Semester: VII *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2018-19**

Course Title: **Ground Water & Hydraulics**	*Subject Code:* **15CV742**
Total contact Hours: ***54***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mrs Supriya C B**	*Date:* **06/08/2018**
Checked by: **Dr G Mahesh Kumar**	*Credits:* ***03***

Course objectives:

This course will enable students to:

1. To characterize the properties of ground water and aquifers.
2. To quantify the ground water flow.
3. To locate occurrence of ground water and augment ground water resources.
4. To synthesize ground water development methods

Course outcomes:

After a successful completion of the course, the student will be able to:

1. find the characteristics of aquifers.
2. estimate the quantity of ground water by various methods.
3. locate the zones of ground water resources.
4. select particular type of well and augment the ground water storage.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.

• If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. H.M. Raghunath, "Ground Water", Wiley Eastern Publication, New Delhi.
2. K. Todd, "Ground Water Hydrology", Wiley and Sons, New Delhi.
3. Bower. H., "Ground Water Hydrology" McGraw Hill, New Delhi.

Reference Books:

1. Garg Satya Prakash, "Ground Water and Tube Wells", Oxford and IBH, New Delhi.
2. W. C. Walton, "Ground Water Resources and Evaluation" McGraw Hill, Delhi.
3. Michel, D. M., Khepar, S. D., Sondhi, S. K., "Water Wells and Pumps" McGraw Hill, Delhi

Lesson Plan

Sl No	Date	Topics	Remarks
		Module -1	
1	06/08/18	**Introduction:**	
2	07/08/18	Importance	
3	08/08/18	Importance	
4	11/08/18	Vertical distribution of subsurface water	
5	13/08/18	Vertical distribution of subsurface water	
6	14/08/18	Occurrence in different types of rocks and soils	
7	18/08/18	Occurrence in different types of rocks and soils	
8	20/08/18	Definitions-aquifers, aquifuge	
9	21/08/18	aquitard, aquiclude	
10	25/08/18	Confined and Unconfined aquifers.	
		Module -2	
11	27/08/18	**Fundamentals of Ground Water Flow:**	
12	28/08/18	Aquifer parameters	
13	01/09/18	Specific yield and specific retention	
14	03/09/18	Porosity, storage coefficient	
15	04/09/18	Derivation of the expression	
16	05/09/18	Darcy's law, hydraulic conductivity	
17	08/09/18	Coefficient of permeability and intrinsic permeability	
18	10/09/18	Transmissibility, permeability in isotropic	
19	11/09/18	Unisotropic layered soils	
20	12/09/18	Steady one dimensional flow: cases with recharge	
		Module -3	
21	15/09/18	**Well Hydraulics:**	
22	17/09/18	Steady Flow	
23	18/09/18	Radial flow in confined and unconfined aquifers	
24	19/09/18	Pumping test Unsteady Flow, General equation	
25	25/09/18	Derivation; thesis method,	
26	26/09/18	Cooper and Jacob method,	
27	29/09/18	Chow's method	
28	01/10/18	Solution of unsteady flow equations,	
29	03/10/18	Leaky aquifers (only introduction)	
30	06/10/18	Interference of well, image well theory	

		Module -4	
31	**09/10/18**	**Ground Water Exploration:**	
32	**10/10/18**	Seismic method	
33	**13/10/18**	Electrical resistively method	
34	**15/10/18**	Geophysical techniques	
35	**6/10/18**	Electrical logging	
36	**17/10/18**	Electrical logging	
37	**20/10/18**	Radioactive logging	
38	**23/10/18**	Radioactive logging	
39	**27/10/18**	Induction logging	
40	**03/11/18**	Sonic and fluid logging	
		Module -5	
41	**05/11/18**	**Ground Water Development:**	
42	**07/11/18**	Types of wells	
43	**10/11/18**	Methods of construction	
44	**12/11/18**	Tube well design	
45	**13/11/18**	Dug wells	
46	**14/11/18**	Pumps for lifting water	
47	**17/11/18**	Working principles	
48	**19/11/18**	Power requirement	
49	**20/11/18**	Conjunctive use	
50	**24/11/18**	Necessity, techniques and economics	
51	**01/12/18**	**Ground Water Recharge:** Artificial recharge	
52	**03/12/18**	Groundwater runoff	
53	**04/12/18**	Revision	

Supriya. CB
Mrs Supriya C B
Course Instructors

Dr. G Mahesh Kumar 06/08/18
HOD

Dr. T Hemadri Naidu
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

Semester: VII *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2018-19**

Course Title: **Urban Transportation and Planning**	*Subject Code:* **15CV751**
Total contact Hours: **54**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr Prakash J**	*Date:* **06/08/2018**
Checked by: **Dr G Mahesh Kumar**	*Credits:* **03**

Course objectives:

This course will enable students to:

1. Understand and apply basic concepts and methods of urban transportation planning.
2. Apprise about the methods of designing, conducting and administering surveys to provide the data required for transportation planning.
3. Understand the process of developing an organized mathematical modelling approach to solve select urban transportation planning problem.
4. Excel in use of various types of models used for travel forecasting, prediction of future travel patterns.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Design, conduct and administer surveys to provide the data required for transportation planning.
2. Supervise the process of data collection about travel behavior and analyze the data for use in transport planning.
3. Develop and calibrate modal split, trip generation rates for specific types of land use developments.
4. Adopt the steps that are necessary to complete a long-term transportation plan.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Kadiyali.L.R., 'Traffic Engineering and Transportation Planning', Khanna Publishers, New Delhi.

2. Hutchinson, B.G, 'Introduction to Urban System Planning', McGraw Hill.

3. Khisty C.J., 'Transportation Engineering – An Introduction' Prentice Hall.

4. Papacostas,'Fundamentals of Transportation Planning', Tata McGraw Hill.

Reference Books:

1. Mayer M and Miller E, 'Urban Transportation Planning: A decision oriented Approach', McGraw Hill.
2. Bruton M.J., 'Introduction to Transportation Planning', Hutchinson of London.
3. Dicky, J.W., 'Metropolitan Transportation Planning', Tata McGraw Hill.

Lesson Plan

Sl No	Date	Topics	Remarks
		Module -1	
1	07/08/18	**Urban transport planning:** Urbanization	
2	08/08/18	Urban class groups, transportation problems and identification	
3	09/08/18	Impacts of transportation, urban transport system planning process	
4	10/08/18	Urban mass transportation systems: urban transit problems	
5	14/08/18	Travel demand, types of transit systems, public, private	
6	16/08/18	Para-transit transport,	
7	17/08/18	Mass and rapid transit systems	
8	21/08/18	BRTS and Metro rails, capacity,	
9	23/08/18	Merits and comparison of systems	
10	24/08/18	Coordination, types of coordination	
		Module -2	
11	28/08/18	**Data Collection And Inventories:** Collection of data – Organisation of surveys and Analysis	
12	29/08/18	Study Area, Zoning,	
13	30/08/18	Types and Sources of Data, Road Side Interviews	
14	31/08/18	Home Interview Surveys,	
15	04/09/18	Commercial Vehicle Surveys	
16	05/09/18	Sampling Techniques, Expansion Factors	
17	06/09/18	Accuracy Checks, Use of Secondary Sources	
18	07/09/18	Economic data – Income	
19	11/09/18	Population – Employment	
20	12/09/18	Vehicle Owner Ship	
		Module -3	
21	14/09/18	**Trip Generation & Distribution**: UTPS Approach	
22	18/09/18	UTPS Approach, Trip Generation Analysis	
23	19/09/18	Zonal Models, Category Analysis	
24	25/09/18	Household Models, Trip Attraction models	
25	26/09/18	Commercial Trip Rates	
26	27/09/18	Trip Distribution by Growth Factor Methods	
27	28/09/18	**Problems on above**	
28	03/10/18	**Problems on above**	
29	04/10/18	**Problems on above**	
30	05/10/18	**Problems on above**	

		Module -4	
31	**09/10/18**	**Trip Distribution**: Gravity Models	
32	**10/10/18**	Opportunity Models	
33	**11/10/18**	Time Function Iteration Models	
34	**12/10/18**	Travel demand modeling: gravity model	
35	**16/10/18**	opportunity models	
36	**17/10/18**	Desire line diagram	
37	**23/10/18**	Modal split analysis	
38	**25/10/18**	**Problems on above**	
39	**26/10/18**	**Problems on above**	
40	**02/11/18**	**Problems on above**	
		Module -5	
41	**07/11/18**	**Traffic Assignment:** Diversion Curves	
42	**09/10/18**	Basic Elements of Transport Networks,	
43	**13/10/18**	Coding, Route Properties	
44	**14/11/18**	Path Building Criteria, Skimming Tree	
45	**15/11/18**	All-or-Nothing Assignment	
46	**16/11/18**	Capacity Restraint Techniques	
47	**20/11/18**	Reallocation of Assigned Volumes	
48	**22/11/18**	Equilibrium Assignment. Introduction to land use planning models	
49	**23/11/18**	land use and transportation interaction	
50	**30/11/18**	Revision	
51	**04/12/18**	Revision	

Mr Prakash J
Course Instructors

Dr. G Mahesh Kumar 06/08/18
HOD

Dr. T Hemadri Naidu
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

SUBJECT PLAN

Semester: VII Semester B E Year: 2018-19

Subject Title: **Environmental Engineering – II**	Subject Code: **10CV-71**
Total contact Hours: 52	Duration of Exam: 03 Hrs.
Total Theory exam marks: 100	Total I.A. marks: 25
Subject plan author: Ms. Ramya D L	Date: 06/08/2018
Checked by: Dr. G Mahesh kumar	Date: 06/08/2018

Sl. NO	DATE	TOPIC PLANNED	REMARKS
		PART A	
UNIT 1: INTRODUCTION			
1	06-08-2018	Necessity for sanitation, methods of domestic waste water disposal	
2	07-08-2018	Types of sewerage systems and their suitability	
3	08-08-2018	Dry weather flow, factors affecting dry weather flow	
4	09-08-2018	Flow variations and their effects on design of sewerage system	
5	13-08-2018	Computation of design flow, estimation of storm flow	
6	14-08-2018	Rational method and empirical formulae of design of storm water drain	
UNIT 2: DESIGN OF SEWERS			
7	06-08-2018	Hydraulic formulae for velocity, effects of flow variations on velocity	
8	07-08-2018	Self cleansing and non scouring velocities	
9	08-08-2018	Design of hydraulic elements for circular sewers flowing full and flowing partially full (No derivations)	
10	09-08-2018	Sewer materials, shapes of sewers	
11	27-08-2018	Laying of sewers, joints and testing of sewers	
12	28-08-2018	Ventilation and cleaning of sewers	
UNIT 3: SEWER APPURTENANCES			
13	29-08-2018	Catch basins, manholes	
14	30-08-2018	Flushing tanks, oil and grease traps	
15	03-09-2018	Drainage traps	
16	04-09-2018	Basic principles of house drainage	
17	05-09-2018	Typical layout plan showing house drainage connections	
18	06-09-2018	Maintenance of house drainage	

UNIT 4: WASTE WATER CHARACTERIZATION			
19	10-09-2018	Sampling, significance, techniques and frequency	
20	11-09-2018	Physical, Chemical and Biological characteristics	
21	12-09-2018	Aerobic and Anaerobic activity	
22	17-09-2018	CNS cycles	
23	18-09-2018	BOD and COD	
24	19-09-2018	BOD and COD significance & problems	
		PART B	
UNIT 5: DISPOSAL OF EFFLUENTS			
25	25-09-2018	Disposal of Effluents by dilution	
26	26-09-2018	Self purification phenomenon	
27	27-09-2018	Oxygen sag curve, Zones of purification	
28	01-10-2018	Sewage farming, sewage sickness	
29	03-10-2018	Effluent Disposal standards for land, surface water & ocean	
30	04-10-2018	Numerical Problems on Disposal of Effluents, Streeter Phelps equation	
UNIT 6: TREATMENT OF WASTE WATER			
31	09-10-2018	Flow diagram of municipal waste water treatment plant	
32	10-10-2018	Preliminary & Primary treatment : Screening	
33	11-10-2018	Grit chambers	
34	15-10-2018	Skimming tanks	
35	16-10-2018	Primary sedimentation tanks – Design criteria	
36	17-10-2018	Design examples of primary sedimentation tanks	
UNIT 7: SECONDARY TREATMENT:			
37	22-10-2018	Suspended growth bioprocess	
38	23-10-2018	Fixed film bioprocess	
39	25-10-2018	Trickling filter – theory and operation	
40	05-11-2018	Trickling filter types and designs	
41	07-11-2018	Activated sludge process- Principle and flow diagram	
42	12-11-2018	Modifications of ASP	
43	13-11-2018	F/M ratio	
44	14-11-2018	Design of ASP	
UNIT 8:			
45	15-11-2018	Anaerobic Sludge digestion	
46	19-11-2018	Sludge digestion tanks	
47	19-11-2018	Design of Sludge drying beds	
48	20-11-2018	Low cost waste treatment method	
49	22-11-2018	Septic tank	
50	22-11-2018	Oxidation Pond	
51	03-12-2018	Oxidation ditches – Design	
52	04-12-2018	Reuse and recycle of waste water	

TEXT BOOKS:

1. Metcalf and Eddy, "Wastewater Engineering - Collection, Treatment, Disposal and Reuse", McGraw Hill Pub.Co., 2009.
2. Nelson Leonard Nemerow, "Industrial Waste Treatment", Butterworth-Heinemann, 2007.
3. Patwardhan A.D, "Industrial Waste Water Treatment", PHI Learning Private Limited-New Delhi
4. Hammer, M.J. and Hammer, M.J., "Water and Wastewater Technology", 7th Ed., Prentice Hall of India

REFERENCE BOOKS:

1. Manual on Waste Water Treatment : CPHEEO, Ministry of Urban Development, New Delhi.
2. Water and Wastewater Engineering Vol-II :- Fair, Geyer and Okun : John Willey Publishers, New York.
3. Waste Water Treatment, Disposal and Reuse : Metcalf and Eddy inc : Tata McGraw Hill Publications.
4. Water Technology.- Hammer and Hammer
5. Environmental Engineering: Howard S. Peavy, Donald R. Rowe, George Tchnobanoglous McGraw Hill International Edition.

(Ms. Ramya D L)	(Dr. G Mahesh Kumar)	(Dr. Hemadri Naidu T)
STAFF INCHARGE	HOD	PRINCIPAL

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Shridevi Institute of Engineering and Technology-Tumkur
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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VII** *Year: 2018-19*

Subject Title: **DESIGN OF STEEL STRUCTURES**	*Subject Code:* **10CV72**
Total contact Hours: ***54***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **06/08/18**
Checked by: **Dr. G Mahesh Kumar**	

Learning Objectives:

Study of this course should be based on **IS: 800-2007**

The students will be able to know about

i. Learn about the Connections: Bolted and welded, Beam-Beam, Beam-Column, Seated, and Stiffened and un-stiffened.
ii. Plastic Behaviour of Structural Steel
iii. Design of tension and compression members in Bolted and welded Connections
iv. Learn about Column Bases: Slab base and gusseted Base
v. Design of Beams in Bolted and welded Connections

Learning Outcomes:

Students will come to know about how to design of steel structures using **IS: 800-2007.** They will learn about the Connections in steel structures & Design strength of High Strength Friction Grip bolts (HSFG). They will learn about Moment resistant connections, Continuous Beam to Column connections. . They will learn about Plastic theory, Plastic hinge concept, Design of Tension Members, Design of Compression Members, Design of Column Bases and Design of Beams.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. **Design of Steel Structures,** N.Subramanian, Oxford, 2008
2. **Limit State Design of Steel Structures,** Duggal, TATA Megra Hill 2010
3. **Structural Dynamics**-by M.Mukhopadhyay.
4. **Design of Steel Structures** –Negi – Tata Mc Graw Hill Publishers
5. **Design of Steel Structures** – Raghupathi
6. **Bureau of Indian Standards, IS:800-2007, IS:875-1987**
7. **Steel Tables**

3) **Scheme of Examination:**
One full questions to be set from each unit. Students have to answer any five full questions out of eight questions, choosing at least **two** questions from **part A** and two questions from **part B**.

4) **Evaluation:**
Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks).

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LECTURE PLAN

Sl No	Date	Topics	Remark
		Part A	
		Unit – 1 : INTRODUCTION	
1	07-08-2018	Advantages and Disadvantages of Steel structures,	
2	07-08-2018	Loads and Load combinations, Design considerations	
3	10-08-2018	Limit State Method (LSM) of design	
4	10-08-2018	Failure criteria for steel,	
5	14-08-2018	Codes, Specifications	
6	14-08-2018	Section classification.	
		Unit – 2 : BOLTED CONNECTIONS	
7	17-08-2018	Introduction, Behaviour of Bolted joints,	
8	17-08-2018	Design strength of ordinary Black Bolts	
9	21-08-2018	Design strength of High Strength Friction Grip bolts (HSFG)	
10	21-08-2018	Pin Connections, Simple Connections	
11	24-08-2018	Moment resistant connections, Beam to Beam connections,	
12	24-08-2018	Beam and Column splices, Semi rigid connections	
		Unit – 3 : WELDED CONNECTIONS	
13	28-08-2018	Introduction, Welding process, Welding electrodes, Advantages of Welding	
14	28-08-2018	Types and Properties of Welds, Types of joints	
15	31-08-2018	Weld symbols, Weld specifications, Effective areas of welds, Design of welds, Simple joints	
16	31-08-2018	Moment resistant connections, Continuous Beam to Column connections	
17	04-09-2018	Continuous Beam to Beam connections	
18	04-09-2018	Beam Column splices, Tubular connections	
		Unit – 4 : PLASTIC BEHAVIOUR OF STRUCTURAL STEEL	
19	07-09-2018	Introduction, Plastic theory, Plastic hinge concept,	
20	07-09-2018	Plastic collapse load, conditions of plastic analysis	
21	11-09-2018	Theorem of Plastic collapse	
22	11-09-2018	Methods of Plastic analysis	
23	14-09-2018	Methods of Plastic analysis	
24	14-09-2018	Plastic analysis of continuous beams.	
25	18-09-2018	Plastic analysis of continuous beams.	

		Part B	
		Unit – 5 : DESIGN OF TENSION MEMBERS	
26	18-09-2018	Introduction, Types of tension members, Design of strands, Slenderness ratio,	
27	25-09-2018	Behaviour of tension members	
28	25-09-2018	Modes of failure, Factors affecting the strength of tension members	
29	28-09-2018	Angles under tension, Other sections,	
30	28-09-2018	Design of tension member	
31	05-10-2018	Lug angles, Splices, Gussets	
		Unit – 6 : DESIGN OF COMPRESSION MEMBERS	
32	05-10-2018	Introduction, Failure modes, Behaviour of compression members	
33	09-10-2018	Elastic buckling of slender compression members	
34	09-10-2018	Sections used for compression members	
35	12-10-2018	Effective length of compression members	
36	12-10-2018	Design of compression members	
37	16-10-2018	Design of compression members	
38	16-10-2018	Built up compression members	
39	23-10-2018	Built up compression members	
		Unit – 7 : DESIGN OF COLUMN BASES	
40	23-10-2018	Design of simple slab base - problems	
41	26-10-2018	Design of simple slab base - problems	
42	26-10-2018	Design of simple slab base - problems	
43	02-11-2018	Design of gusseted base - problems	
44	02-11-2018	Design of gusseted base - problems	
45	09-11-2018	Design of gusseted base - problems	
46	09-11-2018	Design of gusseted base - problems	
		Unit – 8: DESIGN OF BEAMS	
47	13-11-2018	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability	
48	13-11-2018	Behaviour of simple and built-up beams in bending(without vertical stiffeners)	
49	16-11-2018	Design strength of laterally supported beams in Bending-problems	
50	16-11-2018	Design strength of laterally supported beams in Bending-problems	
51	20-11-2018	Design strength of laterally unsupported beams- problems	
52	20-10-2018	Design strength of laterally unsupported beams, Shear strength of steel beams, Maximum deflection	
53	23-11-2018	Design of beams and purlins - problems	
54	23-11-2018	Design of beams and purlins - problems	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar) 06/08/18
HOD

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TUMKUR - 572106.

Semester: **VII** *Year: 2018-19*

Subject Title: **DESIGN OF STEEL STRUCTURES**	*Subject Code:* **10CV72**
Total contact Hours: ***54***	*Duration of Exam*: **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **25**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **06/08/18**
Checked by: **Dr. G Mahesh Kumar**	

Learning Objectives:

Study of this course should be based on **IS: 800-2007**

The students will be able to know about

i. Learn about the Connections: Bolted and welded, Beam-Beam, Beam-Column, Seated, and Stiffened and un-stiffened.
ii. Plastic Behaviour of Structural Steel
iii. Design of tension and compression members in Bolted and welded Connections
iv. Learn about Column Bases: Slab base and gusseted Base
v. Design of Beams in Bolted and welded Connections

Learning Outcomes:

Students will come to know about how to design of steel structures using **IS: 800-2007.** They will learn about the Connections in steel structures & Design strength of High Strength Friction Grip bolts (HSFG). They will learn about Moment resistant connections, Continuous Beam to Column connections. . They will learn about Plastic theory, Plastic hinge concept, Design of Tension Members, Design of Compression Members, Design of Column Bases and Design of Beams.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. **Design of Steel Structures,** N.Subramanian, Oxford, 2008
2. **Limit State Design of Steel Structures,** Duggal, TATA Megra Hill 2010
3. **Structural Dynamics**-by M.Mukhopadhyay.
4. **Design of Steel Structures** –Negi – Tata Mc Graw Hill Publishers
5. **Design of Steel Structures** – Raghupathi
6. **Bureau of Indian Standards, IS:800-2007, IS:875-1987**
7. **Steel Tables**

3) **Scheme of Examination:**
One full questions to be set from each unit. Students have to answer any five full questions out of eight questions, choosing at least two questions from part A and two questions from part B.

4) **Evaluation:**
Student Assessment: Through Internal Assessment Tests (25 Marks), Assignments. University Examinations (100 Marks).

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SHRIDEVI EDUCATION

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LECTURE PLAN

Sl No	Date	Topics	Remark
		Part A	
		Unit – 1 : INTRODUCTION	
1	07-08-2018	Advantages and Disadvantages of Steel structures,	
2	07-08-2018	Loads and Load combinations, Design considerations	
3	10-08-2018	Limit State Method (LSM) of design	
4	10-08-2018	Failure criteria for steel,	
5	14-08-2018	Codes, Specifications	
6	14-08-2018	Section classification.	
		Unit – 2 : BOLTED CONNECTIONS	
7	17-08-2018	Introduction, Behaviour of Bolted joints,	
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		Unit – 3 : WELDED CONNECTIONS	
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14	28-08-2018	Types and Properties of Welds, Types of joints	
15	31-08-2018	Weld symbols, Weld specifications, Effective areas of welds, Design of welds, Simple joints	
16	31-08-2018	Moment resistant connections, Continuous Beam to Column connections	
17	04-09-2018	Continuous Beam to Beam connections	
18	04-09-2018	Beam Column splices, Tubular connections	
		Unit – 4 : PLASTIC BEHAVIOUR OF STRUCTURAL STEEL	
19	07-09-2018	Introduction, Plastic theory, Plastic hinge concept,	
20	07-09-2018	Plastic collapse load, conditions of plastic analysis	
21	11-09-2018	Theorem of Plastic collapse	
22	11-09-2018	Methods of Plastic analysis	
23	14-09-2018	Methods of Plastic analysis	
24	14-09-2018	Plastic analysis of continuous beams.	
25	18-09-2018	Plastic analysis of continuous beams.	

		Part B	
		Unit – 5 : DESIGN OF TENSION MEMBERS	
26	18-09-2018	Introduction, Types of tension members, Design of strands, Slenderness ratio,	
27	25-09-2018	Behaviour of tension members	
28	25-09-2018	Modes of failure, Factors affecting the strength of tension members	
29	28-09-2018	Angles under tension, Other sections,	
30	28-09-2018	Design of tension member	
31	05-10-2018	Lug angles, Splices, Gussets	
		Unit – 6 : DESIGN OF COMPRESSION MEMBERS	
32	05-10-2018	Introduction, Failure modes, Behaviour of compression members	
33	09-10-2018	Elastic buckling of slender compression members	
34	09-10-2018	Sections used for compression members	
35	12-10-2018	Effective length of compression members	
36	12-10-2018	Design of compression members	
37	16-10-2018	Design of compression members	
38	16-10-2018	Built up compression members	
39	23-10-2018	Built up compression members	
		Unit – 7 : DESIGN OF COLUMN BASES	
40	23-10-2018	Design of simple slab base - problems	
41	26-10-2018	Design of simple slab base - problems	
42	26-10-2018	Design of simple slab base - problems	
43	02-11-2018	Design of gusseted base - problems	
44	02-11-2018	Design of gusseted base - problems	
45	09-11-2018	Design of gusseted base - problems	
46	09-11-2018	Design of gusseted base - problems	
		Unit – 8: DESIGN OF BEAMS	
47	13-11-2018	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability	
48	13-11-2018	Behaviour of simple and built-up beams in bending(without vertical stiffeners)	
49	16-11-2018	Design strength of laterally supported beams in Bending-problems	
50	16-11-2018	Design strength of laterally supported beams in Bending-problems	
51	20-11-2018	Design strength of laterally unsupported beams- problems	
52	20-10-2018	Design strength of laterally unsupported beams, Shear strength of steel beams, Maximum deflection	
53	23-11-2018	Design of beams and purlins - problems	
54	23-11-2018	Design of beams and purlins - problems	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar) 06/08/18
HOD

(Dr Hemadri Naidu)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VI Year: 2018-19

Subject Title: **Software Application Lab**	*Subject Code:* **15 CVL67**
Total contact Hours: **40**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr.VinuthanV.R**	*Date of commencement of semester :* ***1/02/19***
Checked by: **Dr G Mahesh Kumar**	

Learning Objectives:

1Use industry standard software in a professional set up.
2. Understand the elements of finite element modeling, specification of loads and boundary condition, performing
analysis and interpretation of results for final design
3. Develop customized automation tools

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations

Scheme of Examination

- The question paper will have 3 modules comprising of 6 questions.
- There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
- Each full question shall cover the topics as a module
- Module-1: 40 Marks, Module-2: 20 Marks, Module-3: 20 Marks
- The students shall answer three full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

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DEPARTMENT OF CIVIL ENGINEERING

15CVL 67 – SOFTWARE APPLICATION LAB

Sl.No.	Date	Topics	Remarks
		MODULE 1	
1	7/2/19	Introduction to civil engineering software	
2	14/2/19	Analysis of plane trusses	
3	21/2/19	Analysis of continuous beams	
4	28/2/19	Analysis of portal frames	
5	7/3/19	3D analysis of multistoried frame structures	
6	21/3/19	3D analysis of multistoried frame structures	
		MODULE 2	
7	28/3/19	Project Management- Exercise on Project planning and scheduling of a building project using any project management software	
8	4/4/19	Project Management- Exercise on Project planning and scheduling of a building project using any project management software	
9	11/4/19	Project Management- Exercise on Project planning and scheduling of a building project using any project management software	
10	25/4/19	GIS applications using open source software	
		MODULE 3	
11	2/5/19	Use of EXCEL spread sheets: Design of singly reinforced and doubly reinforced rectangular beams	
12	9/4/19	Design of one way and two way slabs	
13	23/5/19	Computation of earthwork, Design of horizontal curve by offset method, Design of super elevation	

Mr. Vinuthan V R
Course Instructor

Dr. G. Mahesh Kumar
HOD

Dr T Hemadri Naidu
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: IV ***Year: 2018-19***

Subject Title: **Engineering Geology Laboratory**	*Subject Code:* **17CVL48**
Total contact Hours: ***40***	*Duration of Exam:* **03 Hrs.**
SEE Marks: **60**	*CIE Marks:* **40**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **01/02/19**
Checked by: **Dr. G Mahesh Kumar**	

Learning Objectives:

The students will be able to know about

1. To identify the minerals and rocks based on their inherent properties and uses in civil engineering
2. To interpret the geological maps related to civil engineering projects.
3. To learn the dip and strike, borehole problems, thickness of geological formation related to foundation, tunnels, reservoirs and mining.
4. To understand subsurface geological conditions through a geophysical techniques and watershed management.
5. To visit the civil engineering projects like dams, reservoirs, tunnels, quarry sites etc.

Learning Outcomes:

Students will come to know about.

1. Identifying the minerals and rocks and utilize them effectively in civil engineering practices.
2. Understanding and interpreting the geological conditions of the area for the implementation o f civil engineering projects.
3. Interpreting subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone by using geophysical methods.
4. The techniques of drawing the curves of electrical resistivity data and its interpretation for geotechnical and aquifer boundaries

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation
2) **Reference Books:**
   a) M P Billings, Structural Geology , CBS Publishers and Distributors, New Delhi
   b) B.S.Satyanarayana Swamy, Engineering Geology Laboratory Manual , Dhanpat Rai Sons, New Delhi.

c) L R A Narayan, Remote sensing and its applications, University Press.
d) P.K.MUKERJEE, Text book of Geology , World Press Pvt. Ltd., Kolkatta
e) John I Platt and John Challinor, Simple Geological Structures, Thomas Murthy & Co, London

3) Scheme of Examination:

One question will be set; Students have to conduct one experiment experiment in individual.

4) Evaluation:

Student Assessment: Through **CIE Marks** (40 Marks), **SEE Marks** (60 Marks) totally evaluated for 100 marks.

Lesson plan:

Sl No	Date	Topics	TOPICS COVERED	Remarks
1	02-02-2019	Identification of minerals as mentioned in theory, their properties, uses and manufacturing of construction materials.		
2	09-02-2019	Identification of minerals as mentioned in theory, their properties, uses and manufacturing of construction materials.		
3	16-02-2019	Identification of rocks as mentioned in theory, their engineering properties and uses in construction and decorative purposes.		
4	23-02-2019	Identification of rocks as mentioned in theory, their engineering properties and uses in construction and decorative purposes.		
5	02-03-2019	Dip and Strike problems: Determination of dip and strike direction in Civil Engineering projects (Railway lines, tunnels, dams, reservoirs) -graphical or any other method.		
6	09-03-2019	Dip and Strike problems: Determination of dip and strike direction in Civil Engineering projects (Railway lines, tunnels, dams, reservoirs) -graphical or any other method.		
7	23-03-2019	Bore hole problems: Determination of subsurface behavior of rocks, their attitude related to foundation, tunnels, reservoirs and mining. Triangular and Square land, assuming ground is horizontal.		
8	13-04-2019	Bore hole problems: Determination of subsurface behavior of rocks, their attitude related to foundation, tunnels, reservoirs and mining. Triangular and Square land, assuming ground is horizontal.		
9	27-04-2019	Calculation of Vertical, True thickness and width of the outcrops		
10	04-05-2019	Calculation of Vertical, True thickness and width of the outcrops		
11	05-05-2019	Interpretation of Electrical resistivity curves to find out subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone		
12	11-05-2019	Interpretation of Electrical resistivity curves to find out subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone		
13	12-05-2019	Interpretation of Toposheets and geological maps related to Civil Engineering projects.		
14	19-05-2019	Interpretation of Toposheets and geological maps related to Civil Engineering projects.		

(Mr. Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar) 01/02/19
HOD

(Dr T Hemadri Naidu)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: III **Year: 2018-19**

Subject Title: **BASIC MATERIAL TESTING LAB**	*Subject Code:* **17CVL37**
Total contact Hours: **42**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: ***Dr*** **G Mahesh Kumar / Bhavya C H**	*Date: 01/08/18*
Checked by: **Dr. G Mahesh Kumar**	*Date: 01/08/18*

SlNo	Date	Topics	Topics Covered	Remark
		Batch 1		
1	01/8/18	Introduction		
2	08/8/18	Tension test on Mild steel and HYSD bars.		
3	29/8/18	Compression test of Mild Steel, Cast iron and Wood.		
4	05/9/18	Torsion test on Mild Steel circular sections		
5	12/9/18	Bending Test on Wood Under two point loading		
6	19/9/18	Shear Test on Mild steel		
7	26/9/18	Impact test on Mild Steel (Charpy&Izod)		
8	22/9/18	Hardness tests on ferrous and non-ferrous metals – Brinell's, Rockwelland Vicker's		
9	03/10/18	Tests on Fine aggregates – Moisture content, Specific gravity, Bulkdensity, Sieve analysis and Bulking		
10	10/10/18	Tests on Coarse aggregates – Absorption, Moisture content, specific gravity		
11	17/10/18	Bulk density and Sieve analysis		
12	24/10/18	Demonstration of Strain gauges and Strain indicators		
13	07/11/18	Repetation		
14	14/11/18	Internals		

Sl No	Date	Topics	Topics Covered	Remarks
		Batch 2		
1	02/8/18	Introduction		
2	09/8/18	Tension test on Mild steel and HYSD bars.		
3	16/8/18	Compression test of Mild Steel, Cast iron and Wood.		
4	23/8/18	Torsion test on Mild Steel circular sections		
5	30/8/18	Bending Test on Wood Under two point loading		
6	06/9/18	Shear Test on Mild steel		
7	27/9/18	Impact test on Mild Steel (Charpy&Izod)		
8	04/10/18	Hardness tests on ferrous and non-ferrous metals – Brinell's, Rockwelland Vicker's		
9	11/10/18	Tests on Fine aggregates – Moisture content, Specific gravity, Bulkdensity, Sieve analysis and Bulking		
10	18/10/18	Tests on Coarse aggregates – Absorption, Moisture content, specific gravity		
11	25/10/18	Bulk density and Sieve analysis		
12	15/11/18	Demonstration of Strain gauges and Strain indicators		
13	22/11/18	Repetation		
14	30/11/18	Internals		

NOTE: All tests to be carried out as per relevant BIS Codes

REFERENCE BOOKS:

1. **Testing of Engineering Materials**, Davis, Troxell and Hawk,International Student Edition – McGraw Hill Book Co. New Delhi.
2. **Mechanical Testing of Materials",** Fenner, George Newnes Ltd.London.
3. **"Experimental Strength of Materials"**, Holes K A, English Universities Press Ltd. London.
4. **"Testing of Metallic Materials"**, Suryanarayana A K, Prentice Hall of India Pvt. Ltd. New Delhi.
5. **Relevant IS Codes**
6. **"Material Testing Laboratory Manual"**, Kukreja C B- Kishore K. Ravi Chawla Standard Publishers & Distributors 1996.
7. **Concrete Manual,** M.L.Gambhir –DhanpatRai& Sons- New Delhi.

Scheme of Examination:

Group Experiments: Tension, Compression Torsion and Bending Tests

Individual Experiments: Remaining tests

Two questions are to be set – one from group experiments and the other as individual experiment.

Ms. Bhavya C H
Course Instructor

Dr. G Mahesh Kumar
HOD
01/08/18

Dr T Hemadri Naidu
Principal
8.8.18.

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Semester: III [As per Choice Based Credit System (CBCS) scheme] **Year: 2018-19**

Course Title: **BASIC SURVEYING PRACTICE**	*Subject Code:* **17CVL38**
Total contact Hours: ***42***	*Duration of Exam:* **03 Hrs.**
Total exam marks: ***60***	*Total I.A. marks:* **40**
Lesson plan author: **Mr Prakash J/ Mrs Supriya C B**	*Date of commencement of semester:* **01/08/18**
Checked by: **Dr.G Mahesh Kumar**	

The objectives of this course are to make students to learn:

1. Apply the basic principles of engineering surveying and measurements

2. Follow effectively field procedures required for a professional surveyor

3. Use techniques, skills and conventional surveying instruments necessary for engineering practice.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Apply the basic principles of engineering surveying and for linear and angular measurements.
2. Comprehend effectively field procedures required for a professional surveyor.

3. Use techniques, skills and conventional surveying instruments necessary for engineering practice.

Program Objectives (as per NBA)

1. Engineering Knowledge.

2. Problem Analysis.

3. Interpretation of data.

Question paper pattern:

- All are individual experiments.

- Instructions as printed on the cover page of answer script for split up of marks to be strictly followed.

- All exercises are to be included for practical examination.

Text Books:

1. B.C. Punmia, "Surveying Vol.1", Laxmi Publications pvt. Ltd., New Delhi – 2009.

2. Kanetkar T P and S V Kulkarni , Surveying and Levelling Part I, Pune VidyarthiGrihaPrakashan, 1988

Reference Books:

1. S.K. Duggal, "Surveying Vol.1", Tata McGraw Hill Publishing Co. Ltd. New Delhi. – 2009.
2. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi. – 2010

Batch-1

Sl No	Date	Topics	Remarks
1	02/08/18	Study of Topographic maps and preparation of Chart of conventional Symbols. Introduction to Map projection System. Co-ordinate systems (spherical and plane)	
2	09/08/18	Measurement of distances using tape along horizontal planes and slopes, direct/indirect ranging, setting out perpendiculars use of cross staff, optical square.	
3	16/08/18	Obstacles in chaining and ranging- chaining but not ranging, ranging but not chaining, both ranging and chaining.	
4	23/08/18	Measurement of bearings/directions using prismatic compass.	
5	30/08/18	Measurement of bearing of the sides of a closed traverse & adjustment of closing error by Bowdich method and Transit method.	
6	06/09/18	Determination of distance between two inaccessible points using compass and accessories	
7	27/09/18	Determination of reduced levels of points using dumpy level/auto level (simple leveling)	
8	04/10/18	Determination of reduced levels of points using dumpy level/auto level (differential leveling).	
9	11/10/18	To determine the difference in elevation between using Reciprocal leveling and to determine the collimation error	
10	18/10/18	Determination of RL of an object above the plane of collimation using inverted leveling.	
11	25/10/18	To conduct profile leveling and cross sectioning, plotting using excel	
12	15/11/18	To conduct block leveling, preparation of contour plan using excel. Use of planimeter/graph and computations of Areas and volumes.	
13	22/11/18	Measurement of horizontal angle by repetition and reiteration methods	
14	23/11/18	Measurement of vertical angles using theodolite.	

Batch-2

Sl No	Date	Topics	Remarks
1	01/08/18	Study of Topographic maps and preparation of Chart of conventional Symbols. Introduction to Map projection System. Co-ordinate systems (spherical and plane)	
2	08/08/18	Measurement of distances using tape along horizontal planes and slopes, direct/indirect ranging, setting out perpendiculars use of cross staff, optical square.	
3	29/08/18	Obstacles in chaining and ranging- chaining but not ranging, ranging but not chaining, both ranging and chaining.	
4	05/09/18	Measurement of bearings/directions using prismatic compass.	
5	12/09/18	Measurement of bearing of the sides of a closed traverse & adjustment of closing error by Bowdich method and Transit method.	
6	19/09/18	Determination of distance between two inaccessible points using compass and accessories	
7	26/09/18	Determination of reduced levels of points using dumpy level/auto level (simple leveling)	
8	03/10/18	Determination of reduced levels of points using dumpy level/auto level (differential leveling).	
9	10/10/18	To determine the difference in elevation between using Reciprocal leveling and to determine the collimation error	
10	17/10/18	Determination of RL of an object above the plane of collimation using inverted leveling.	
11	07/11/18	To conduct profile leveling and cross sectioning, plotting using excel	
12	14/11/18	To conduct block leveling, preparation of contour plan using excel. Use of planimeter/graph and computations of Areas and volumes.	
13	22/11/18	Measurement of horizontal angle by repetition and reiteration methods	
14	23/11/18	Measurement of vertical angles using theodolite.	

Mr Prakash J/Mrs Supriya C B
Course Instructor

Dr.G Mahesh Kumar 01/08/18
HOD

Dr. T Hemadri Naidu
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: V Sem *Year: 2018-19*

Subject Title: **Geotechnical Engineering Laboratory**	*Subject Code:* **15CVL57**
Total contact Hours: **14**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **01/08/2018**
Checked by: **Dr.G. Mahesh Kumar**	

Course Objectives: Provide students with a basic understanding
- To carry out laboratory tests and to identify soil as per IS codal procedures
- To perform laboratory tests to determine index properties of soil
- To perform tests to determine shear strength and consolidation characteristics of soils

Course Outcomes: Students will be able to conduct appropriate laboratory/field experiments and interpret theresults to determine
1. Physical and index properties of the soil
2. Classify based on index properties and field identification
3. To determine OMC and MDD, plan and assess field compaction program
4. Shear strength and consolidation parameters to assess strength and deformation characteristics
5. In-situ shear strength characteristics (SPT- Demonstration)

Reference Books:
1. Punmia B C, Soil Mechanics and Foundation Engineering- (2017), 16th Edition, Laxmi Publications co., New
Delhi.
2. Lambe T.W., "Soil Testing for Engineers", Wiley Eastern Ltd., New Delhi.
3. Head K.H., "Manual of Soil Laboratory Testing" Vol. I, II, III, Princeton Press
4. Bowles J.E., "Engineering Properties of Soil and Their Measurements",- McGraw Hill Book Co. New York.
5. Relevant BIS Codes of Practice: 2720(Part-3/Sec. 1) – 1987; IS 2720 (Part – 2)- 1973; IS 2720 (Part – 4) –
1985; IS 2720 (Part – 5) – 1985; IS 2720 (Part – 6) – 1972; IS 2720 (Part – 7) – 1980; IS 2720 (Part – 8) –
1983; IS 2720 (Part – 17) – 1986; IS 2720 (Part - 10) – 1973; IS 2720 (Part – 13) – 1986; IS2720 (Part 11) –
1971; IS2720 (Part 15) – 1986; IS 2720 (Part 30) – 1987; IS 2720 (Part 14) – 1977; IS 2720 (Part – 14) – 1983;
IS 2720 (Part – 28) – 1974; IS 2720 (Part – 29) – 1966, IS 2720 (Part-60) 1965.4.DebashisMoitra, "Geotechnical Engineering" , Universities Press.,
5. Malcolm D Bolton, " A Guide to soil mechanics", Universities Press., 6. Bowles J E , Foundation analysis and design, McGraw- Hill Publications

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LECTURE PLAN

15CVL57 – Geotechnical Engineering Laboratory

Expt. No.	Date/Batch	Topics	Revised Bloom's Taxonomy (RBT) Level
		BATCH-1	
1	07-08-2018	Visual soil classification. Water content determination by Ovendrying method and infrared moisture method.	
2	14-08-2018	Specific gravity test By pycnometer and density bottle method.	
3	21-08-2018	Grain size analysis i. Sieve analysis ii. Hydrometer analysis	
4	28-08-2018	In-situ density tests i. Core-cutter method ii. Sand replacement method	
5	04-09-2018	Consistency limits i. Liquid limit test (by Casagrande's and cone penetration method) ii. Plastic limit test iii. Shrinkage limit test	
6	11-09-2018	Standard compaction test (light and heavy compaction)	L1, L2
7	18-09-2018	Co-efficient of permeability test i. Constant head test ii. Variable head test	
8	25-09-2018	Shear strength testUnconfined compression test	
9	09-10-2018	Shear strength testDirect shear test	
10	16-10-2018	Shear strength testTri-axial t Shear strength tests	
11	23-10-2018	Consolidation test : Determination of compression index and coefficient of consolidation	
12	30-10-2018	Laboratory vane shear test	
13	13-11-2018	Demonstration of Swell pressure test, Standard penetration testand boring equipment	
14	20-11-2018	Lab Internals	

(Dr.G. Mahesh Kumar) 01/08/18
Staff in Charge

(Dr. G. Mahesh Kumar) 01/08/18
HOD

18/8/18
(Dr. Hemadri Naidu T.)
Principal

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Semester: V **Year: 2018-19**

[As per Choice Based Credit System (CBCS) scheme]

Subject Title: **: Concrete and Highway Materials Laboratory**	*Subject Code:* **15CVL58**
Total contact Hours: **42**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: : **Mrs. Supriya C B**	*Date of commencement of semester:**01/08/2018***
Checked by: **Dr G Mahesh Kumar**	

Learning Objectives:

To learn the principles and procedures of testing Concrete and Highway materials and to get hands on experience by conducting the tests and evolving inferences

Course outcomes:

After studying this course, students will be able to:

1. Conduct appropriate laboratory experiments and interpret the results
2. Determine the quality and suitability of cement
3. Design appropriate concrete mix
4. Determine strength and quality of concrete
5. Test the road aggregates and bitumen for their suitability as road material.
6. Test the soil for its suitability as sub grade soil for pavements.

Reference Books:

1. M.L.Gambir, "Concrete Manual", Danpat Rai and sons, New Delhi
2. Shetty M.S, "Concrete Technology", S. Chand & Co. Ltd, New Delhi.
3. Mehta P.K, "Properties of Concrete", Tata McGraw Hill Publications, New Delhi.
4. Neville AM, "Properties of Concrete", ELBS Publications, London.
5. Relevant BIS codes.
6. S K Khanna, C E G Justo and A Veeraragavan, "Highway Materials Testing Laboratory Manual", Nem Chand Bros, Roorkee
7. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi
8. Relevant IRC Codes
9. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi

Lesson Plan

Batch-1

Sl. No	Date	Topics	Remarks
		Part A: Concrete Lab	
1	06/08/18	**Tests on Cement:** a. Normal Consistency b. setting time	
2	13/08/18	c. compressive strength d. fineness by air permeability test e. specific gravity	
3	20/08/18	**Tests on Concrete:** **a**. Design of concrete mix as per IS-10262	
4	27/08/18	**b. Tests on fresh concrete:** i. slump, ii. compaction factor and iii. Vee Bee test	
5	03/09/18	**c. Tests on hardened concrete:** i. compressive strength test, ii. split tensile strength test, iii. flexural strength test d. NDT tests by rebound hammer and pulse velocity test.	
6	10/09/18	**Tests on Self Compacting Concrete:** a. Design of self compacting concrete, b. slump flow test, c. V-funnel test,	
7	17/09/18	d. J-Ring test, e. U Box test and f. L Box test	
		Part B: Highway materials Lab	
8	01/10/18	**Tests on Aggregates** a. Aggregate Crushing value b. Los Angeles abrasion test	
9	15/10/18	c. Aggregate impact test d. Aggregate shape tests (combined index and angularity number)	
10	05/11/18	**Tests on Bituminous Materials** a. Penetration test b. Ductility test	
11	12/11/18	c. Softening point test d. Specific gravity test	
12	19/11/18	e. Viscosity test by tar viscometer f. Bituminous Mix Design by Marshall Method (Demonstration only)	
13	03/12/18	**Tests on Soil** a. Wet sieve analysis b. CBR test	
14	04/12/18	**Internals test**	

Supriya . CB
(Mrs. Supriya C B)
Staff in Charge

01/08/18
(Dr. G Mahesh Kumar)
H.O.D

4-8-19.
(Dr. T Hemadri Naidu)
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

SUBJECT PLAN

Sem: VII **Year: 2018-2019**

Subject Title: Environmental Engineering Laboratory	**Subject Code: 15CVL-76**
Total contact Hours: 12*3=36	Duration of Exam: 03 Hrs.
Total exam marks: 80	Total I.A. marks: 20
Lesson plan author: Ms. Ramya D L	Date: 06/08/2018
Verified by: Dr. G Mahesh Kumar	Date: 06/08/2018

Sl No.	Batch	Date	EXPERIMENT TITLE
1	B1	07/08/18	Determination of Alkalinity, Acidity and pH
	B2	08/08/18	
	B3	09/08/18	
2	B1	14/08/18	Determination of Calcium, Magnesium and Total Hardness
	B2	29/08/18	
	B3	16/08/18	
3	B1	21/08/18	Determination of Dissolved Oxygen
	B2	05/09/18	
	B3	23/08/18	
4	B1	28/08/18	Determination of BOD
	B2	12/09/18	
	B3	30/08/18	
5	B1	04/09/18	Determination of Chlorides
	B2	19/09/18	
	B3	06/09/18	
6	B1	11/09/18	Determination of percentage of available chlorine in bleaching powder, Determination of Residual Chlorin
	B2	26/09/18	
	B3	27/09/18	
7	B1	18/09/18	Determination of Solids in Sewage: I) Total Solids, II) Suspended Solids, III) Dissolved Solids, IV) Volatile Solids, Fixed Solids, V) Settle able Solids.
	B2	03/10/18	
	B3	04/10/18	

Sl No.	Batch	Date	EXPERIMENT TITLE
8	B1	25/09/18	Determination of Turbidity by Nephelometer
	B2	10/10/18	
	B3	11/10/18	
9	B1	09/10/18	Determination of Optimum Dosage of Alum using Jar test apparatus
	B2	17/10/18	
	B3	25/10/18	
10	B1	16/10/18	Determination Nitrates by spectrophotometer
	B2	07/11/18	
	B3	15/11/18	
11	B1	23/10/18	Determination of Iron & Manganese
	B2	14/11/18	
	B3	22/11/18	
12	B1	23/11/18	1. Determination of COD (DEMO) 2. Air Quality Monitoring (Ambient, stack monitoring , Indoor air pollution) (DEMO)
	B2		
	B3		

Reference Books:

1. Lab Manual, ISO 14001 Environmental Management, Regulatory Standards for Drinking Water and Sewage disposal.

2. Clair Sawyer and Perry McCarty and Gene Parkin, "Chemistry for Environmental Engineering and Science", McGraw-Hill Series in Civil and Environmental Engineering.

(Ms. Ramya D L)
STAFF INCHARGE

(Dr. G Mahesh Kumar)
HOD

(Dr. Hemadri Naidu T)
PRINCIPAL

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VII

Year: 2018-19

Subject Title: **Computer Aided Detailing of Structurs**	*Subject Code:* **15 CVL77**
Total contact Hours: **40**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr.VinuthanV.R**	*Date of commencement of semester :* *6/08/18*
Checked by: **Dr G Mahesh Kumar**	

Learning Objectives:

1.Be aware of the Scale Factors, Sections of drawings,
2. Draft the detailing of RC and Steel Structural member

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations

Scheme of Examination

- Two questions shall be asked from each Module.
- One full question should be answered from each Module.
- Each question carries 40 marks

Text Books:

1. **N Krishna Raju, "Structural Design and Drawing of Reinforced Concrete and Steel", University Press**
2. **2. Krishna Murthy, "Structural Design and Drawing – Concrete Structures", CBS Publishers, New Delhi**

Reference Books:

1. SP 34: Handbook on Concrete Reinforcement and Detailing, Bureau of Indian Standards
2. IS 13920:2016,Ductile Design And Detailing Of Reinforced Concrete Structures Subjected To Seismic Forces - Code Of Practice, Bureau of Indian Standard

DEPARTMENT OF CIVIL ENGINEERING

15CVL77 – Computer Aided Detailing of Structures

Batch –B3

Sl.No.	Date	Topics	Remarks
		MODULE 1	
		Detailing of RCC Structures	
1	7/8/18	Beams – Simply supported, Cantilever and Continuous.	
2	14/8/18	Slab – One way, Two way and One-way continuous	
3	21/8/18	Staircase – Doglegged	
4	28/8/18	Cantilever Retaining wall	
5	4/9/18	Counter Fort Retaining wall	
6	11/9/18	Circular Water Tank	
7	18/9/18	Rectangular Water Tank	
		MODULE 2	
		Detailing of Steel Structures	
8	25/9/18	Connections – Beam to beam	
9	9/10/18	Connections Beam to Column	
10	16/10/18	Built-up Columns with lacings and battens	
11	23/10/18	Column bases and Gusseted bases with bolted and welded connections	
12	13/11/18	Roof Truss – Welded and Bolted	
13	19/11/18	Beams with Bolted and Welded	
14	20/11/18	Gantry Girder	

(Mr. Vinuthan VR)
Staff in Charge

(Dr G Mahesh Kumar) 06/09/18
H.O.D

(Dr. T Hemadri Naidu)
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DEPARTMENT OF CIVIL ENGINEERING

15CVL77 – Computer Aided Detailing of Structures

Batch –B2

Sl.No.	Date	Topics	Remarks
		MODULE 1	
		Detailing of RCC Structures	
1	8/8/18	Beams – Simply supported, Cantilever and Continuous.	
2	29/8/18	Slab – One way, Two way and One-way continuous	
3	5/9/18	Staircase – Doglegged	
4	12/9/18	Cantilever Retaining wall	
5	19/9/18	Counter Fort Retaining wall	
6	26/9/18	Circular Water Tank	
7	3/10/18	Rectangular Water Tank	
		MODULE 2	
		Detailing of Steel Structures	
8	5/10/18	Connections – Beam to beam	
9	10/10/18	Connections Beam to Column	
10	14/10/18	Built-up Columns with lacings and battens	
11	17/10/18	Column bases and Gusseted bases with bolted and welded connections	
12	28/10/18	Roof Truss – Welded and Bolted	
13	7/11/18	Beams with Bolted and Welded	
14	14/11/18	Gantry Girder	

(Mr. Vinuthan VR)
Staff in Charge

(Dr G Mahesh Kumar)
H.O.D

06/08/18

(Dr. T Hemadri Naidu)
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DEPARTMENT OF CIVIL ENGINEERING

15CVL77 – Computer Aided Detailing of Structures

Batch –B1

Sl.No.	Date	Topics	Remarks
		MODULE 1	
		Detailing of RCC Structures	
1	9/8/18	Beams – Simply supported, Cantilever and Continuous.	
2	16/8/18	Slab – One way, Two way and One-way continuous	
3	23/8/18	Staircase – Doglegged	
4	30/8/18	Cantilever Retaining wall	
5	6/9/18	Counter Fort Retaining wall	
6	27/9/18	Circular Water Tank	
7	1/10/18	Rectangular Water Tank	
		MODULE 2	
		Detailing of Steel Structures	
8	4/10/18	Connections – Beam to beam	
9	8/10/18	Connections Beam to Column	
10	11/10/18	Built-up Columns with lacings and battens	
11	15/10/18	Column bases and Gusseted bases with bolted and welded connections	
12	25/10/18	Roof Truss – Welded and Bolted	
13	15/11/18	Beams with Bolted and Welded	
14	22/11/18	Gantry Girder	

(Mr. Vinuthan VR)
Staff in Charge

(Dr G Mahesh Kumar) 06/08/18
H.O.D

(Dr. T Hemadri Naidu)
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DEPARTMENT OF CIVIL ENGINEERING

SUBJECT PLAN

Cover Page: Subject Overview Semester: VII Semester Year: 2018-19

Subject Title: Environmental Engineering Laboratory	Subject Code: 10CVL-77
Total contact Hours: 12*03=36	Duration of Exam: 03 Hrs.
Total exam marks: 50	Total I.A. marks: 25
Lesson plan author: Ms. Ramya D L	Date: 06/08/2018
Verified by: Dr. G Mahesh Kumar	Date: 06/08/2018

SL. NO.	Date	EXPERIMENT TITLE
1	08-08-2018	Determination of Solids in Sewage: Total Solids, Suspended Solids,Dissolved Solids, Volatile Solids, Fixed Solids, Settleable Solids
2	29-08-2018	Electrical conductivity. Determination of Chlorides and Sulphates
3	04-09-2018	Determination of Alkalinity, Acidity and pH
4	11-09-2018	Determination of Calcium, Magnesium and Total Hardness
5	19-09-2018	Determination of Dissolved Oxygen. Determination of BOD
6	26-09-2018	Determination of COD
7	03-10-2018	Determination of percentage of available chlorine in bleaching powder, Residual Chlorine and Chlorine Demand
8	10-10-2018	Jar Test for Optimum Dosage of Alum, Turbidity determination by Nephelometer
9	17-10-2018	Determination of Iron. Phenanthroline method
10	07-11-2018	Determination of Fluorides SPANDS Method
11	13-11-2018	MPN Determination
12	17-11-2018	Determination Nitrates by spectrophotometer

(Ms. Ramya D L)
STAFF INCHARGE

(Dr. G Mahesh Kumar)
HOD

(Dr. Hemadri Naidu T)
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Semester: VII | **Year: 2018-19**

Subject Title: : **Concrete and Highway Materials Laboratory**	*Subject Code:* **10CVL78**
Total contact Hours: **42**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **50**	*Total I.A. marks:* **25**
Lesson plan author: : **Mr. Prakash J**	*Date of commencement of semester:* ***06/08/2018***
Checked by: **Dr G Mahesh Kumar**	

Learning Objectives:

1. Tests on Cement – Normal Consistency, Setting Time, and Soundness by Autoclave method, Compression Strength test and Air permeability test for Fineness, Specific Gravity of cement.

2. Tests on Fresh Concrete – Workability – Slump, Compaction Factor and Vee Bee tests.

3. Tests on Hardened Concrete – Compression strength and split tensile tests. Tests on flexural strength of RCC beams, Permeability of Concrete.

4. Tests on Soil – Density of Soil by Sand Replacement method, CBR Text.

5. Tests on Aggregates – Crushing, abrasion, impact and Shape Tests (Flaky, Elongation, Angularity number) Specific gravity and Water absorption.

6. Bituminous Materials and Mixes – Specific Gravity, Penetration, Ductility, Softening point, Flash and Fire point, Viscosity, proportioning of Aggregate Mixes by Roth futch Method, Marshall Stability tests.

Course outcomes:

After studying this course, students will be able to:

1. Conduct appropriate laboratory experiments and interpret the results
2. Determine the quality and suitability of cement
3. Design appropriate concrete mix
4. Determine strength and quality of concrete
5. Test the road aggregates and bitumen for their suitability as road material.
6. Test the soil for its suitability as sub grade soil for pavements.

Reference Books:

1. M.L.Gambir, "Concrete Manual", Danpat Rai and sons, New Delhi
2. Shetty M.S, "Concrete Technology", S. Chand & Co. Ltd, New Delhi.
3. Mehta P.K, "Properties of Concrete", Tata McGraw Hill Publications, New Delhi.
4. Neville AM, "Properties of Concrete", ELBS Publications, London.
5. Relevant BIS codes.
6. S K Khanna, C E G Justo and A Veeraragavan, "Highway Materials Testing Laboratory Manual", Nem Chand Bros, Roorkee
7. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi
8. Relevant IRC Codes
9. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi

Sl.No.	Date	Topics
	Batch 1	
1	06/08/18	Tests on Cement – Normal Consistency, Setting Time, Specific Gravity of Cement
2	13/08/18	Soundness by Autoclave Method & Compression strength Test
3	20/08/18	Air Permeability Test for Fineness
4	27/08/18	Tests on Fresh Concrete – Slump & Compaction Factor Test
5	03/09/18	Vee Bee Test & Permeability of Concrete
6	10/09/18	Hardened Concrete – Compression, Flexural strength & Split Tensile Test
7	17/09/18	Tests on Soil – Sand Replacement and CBR
8	01/10/18	Tests on Aggregates – Crushing, Abrasion, Impact
9	15/10/18	Shape Tests, Specific Gravity and water Absorption
10	05/11/18	Bituminous Materials and Mixes – Penetration,
11	12/11/18	Ductility, Softening Point,
12	19/11/18	Flash and Fire Point Test Viscosity
13	03/12/18	Marshall stability test.
14	04/12/18	Internals

(Mr. Prakash J)
Staff in Charge

(Dr. G Mahesh Kumar) 26/8/18
H.O.D

(Dr. T Hemadri Naidu)
Principal

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DEPARTMENT OF MATHEMATICS

Academic Year 2018-19(Even semester)

LECTURE PLAN

Cover Page: **Subject Overview**

Branch: **CVE**

Year: **2018-19**

Semester: **IV Semester**

Subject Title: **ENGINEERING MATHEMATICS-IV**	Subject Code: **17MAT41**
Total contact Hours: 27	Duration of Exam: 03 Hrs.
Total exam marks: 100	Total I.A. marks: 40
Lesson plan author: **Dr. CHETANA C**	Date: **31/01/2019**
Checked by: **Dr. CHETANA C**	Date: **31/01/2019**

➢ **Course Objectives:**

The purpose of this course is to make students well conversant with numerical methods to solve ordinary differential equations, complex analysis, sampling theory and joint probability distribution and stochastic processes arising in science and engineering.

SL No	Date	TOPICS	REMARKS
		MODULE-I: NUMERICAL METHODS	
1	04/2/2019	Numerical solution of ordinary differential equations of first order and first degree	
2	05/2/2019	Taylor's series method & problems	
3	11/2/2019	Problems continued	
4	12/2/2019	Modified Euler's method & problems	
5	18/2/2019	Problems continued	
6	19/2/2019	Runge-kutta method of fourth order & problems	
7	25/2/2019	Problems continued	
8	26/2/2019	Milne's predictor and corrector method & problems	
9	05/3/2019	Problems continued	
10	11/3/2019	Adam's-Bashforth predictor and corrector method & problems	
11	12/3/2019	Revision	
		MODULE-II: NUMERICAL METHODS & SPECIAL FUNCTIONS	
12	18/3/2019	**Numerical Methods:** Numerical solution of second order ordinary differential equations	
13	19/3/2019	Runge-kutta method Problems continued	
14	25/3/2019	Milne's method :Problems	
15	26/4/2019	**Special Functions:** Series solution-Frobenious method	
16	01/4/2019	Series solution of Bessel's differential equation leading to $J_n(x)$-Bessel's function of first kind	
17	02/4/2019	Basic properties	
18	08/4/2019	Series solution of Legendre's differential equation leading to $P_n(x)$-Legendre polynomials	
19	09/4/2019	Orthogonality Problems & Rodrigue's formula and problems	

MODULE-V: SAMPLING THEORY & STOCHASTIC PROCESS			
20	15/4/2019	Sampling Theory: Sampling and Sampling distributions	
21	22/4/2019	Standard error	
22	23/4/2019	Test of hypothesis for means and proportions	
23	29/4/2019	Confidence limits for means	
24	30/4/2019	Student's t-distribution	
25	06/5/2019	Chi-square distribution as a test of goodness of fit	
26	13/5/2019	Problems continued	
27	14/5/2019	Revision	

Course outcomes: On completion of this course, students are able to:

- Use appropriate single step and multi-step numerical methods to solve first and second order ordinary differential equations arising in flow data design problems.
- Explain the idea of analyticity, potential fields residues and poles of complex potentials in field theory and electromagnetic theory.
- Employ Bessel's functions and Legendre's polynomials for tackling problems arising in continuum mechanics, hydrodynamics and heat conduction.
- Describe random variables and probability distributions using rigorous statistical methods to analyze problems associated with optimization of circuits, information, coding theory and stability analysis of systems.
- Apply the knowledge of joint probability distributions and Markov chains in attempting engineering problems for feasible random events.

Reference Books:

- Higher Engineering Mathematics by B.S.Grewal
- Advanced Engineering Mathematics by E.Kreszig
- Higher Engineering Mathematics by B.V.Ramana
- Engineering Mathematics by N.P.Bali & Manish Goyal
- Higher Engineering Mathematics by H.K.Dass & Er.Rajnish Verma
- Engineering Mathematics-IV by Dr. K.S.C
- Engineering Mathematics-IV by Dr. D.S.C

31/1/19

(Dr. CHETANA C)
Staff in charge

31/1/19

(Dr. CHETHANA C)
HOD

(Dr. HEMADRI NAIDU T)
PRINCIPAL

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22	03/5/2019	**Joint probability distribution:** Joint Probability distribution for two discrete random variables	
23	09/5/2019	Expectation and covariance	
24	10/5/2019	Correlation coefficient	
MODULE-V: SAMPLING THEORY & STOCHASTIC PROCESS			
25	16/5/2019	Stochastic process: Stochastic processes	
26	17/5/2019	Probability vector and Stochastic matrices	
27	23/5/2019	Fixed points and Regular stochastic matrices Markov chains	
28	23/5/2019	Higher transition probability-simple problems	

Course outcomes: On completion of this course, students are able to:

- Use appropriate single step and multi-step numerical methods to solve first and second order ordinary differential equations arising in flow data design problems.
- Explain the idea of analyticity, potential fields residues and poles of complex potentials in field theory and electromagnetic theory.
- Employ Bessel's functions and Legendre's polynomials for tackling problems arising in continuum mechanics, hydrodynamics and heat conduction.
- Describe random variables and probability distributions using rigorous statistical methods to analyze problems associated with optimization of circuits, information, coding theory and stability analysis of systems.
- Apply the knowledge of joint probability distributions and Markov chains in attempting engineering problems for feasible random events.

Reference Books:

- Higher Engineering Mathematics by B.S.Grewal
- Advanced Engineering Mathematics by E.Kreszig
- Higher Engineering Mathematics by B.V.Ramana
- Engineering Mathematics by N.P.Bali & Manish Goyal
- Higher Engineering Mathematics by H.K.Dass & Er.Rajnish Verma
- Engineering Mathematics-IV by Dr. K.S.C
- Engineering Mathematics-IV by Dr. D.S.C

Rashmi 31/1/19
(Mrs. RASHMI S B)
Staff in charge

31/1/19
(Dr. CHETHANA C)
HOD

(Dr. HEMADRI NAIDU T)
PRINCIPAL

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DEPARTMENT OF MATHEMATICS
Academic Year 2018-19(Even semester)

LECTURE PLAN

Cover Page: **Subject Overview**

Branch: **CVE**

Year: **2018-19**

Semester: **IV Semester**

Subject Title: **ENGINEERING MATHEMATICS-IV**	Subject Code: **17MAT41**
Total contact Hours: 28	Duration of Exam: 03 Hrs.
Total exam marks: 100	Total I.A. marks: 40
Lesson plan author: **Mrs. RASHMI S B**	Date: **31/01/2019**
Checked by: **Mrs. CHETANA C**	Date: **31/01/2019**

➢ **Course Objectives:**

The purpose of this course is to make students well conversant with numerical methods to solve ordinary differential equations, complex analysis, sampling theory and joint probability distributio.. and stochastic processes arising in science and engineering.

SL No	Date	TOPICS	REMARKS
		MODULE-III: COMPLEX VARIABLES & TRANSFORMATIONS	
1	01/2/2019	Complex Variables: Review of a function of a complex variable	
2	07/2/2019	Limits, continuity, differentiability, Analytic functions	
3	08/2/2019	Cauchy-Riemann equations in Cartesian form & Polar form	
4	14/2/2019	Properties and construction of analytic functions	
5	15/2/2018	Complex line integrals	
6	21/2/2019	Cauchy's theorem	
7	22/2/2019	Cauchy's integral formula	
8	28/2/2019	Residues and Poles	
9	01/3/2019	Cauchy's Residue theorem and problems(without proof)	
10	07/3/2019	Transformations: Conformal transformations	
11	08/3/2019	Discussion of $w = z^2$	
12	21/3/2019	Discussion of $w = e^z, w = z + 1/z \ (z \neq 0)$	
13	22/3/2019	Bilinear transformations and problems	
		MODULE-IV: PROBABILITY DISTRIBUTIONS & JOINT PROBABILITY DISTRIBUTION	
14	28/3/2019	Probability Distributions: Random variable	
15	04/4/2019	Discrete and continuous	
16	05/4/2019	Probability mass/density functions	
17	11/4/2019	Problems continued	
18	12/4/2019	Binomial distribution	
19	25/4/2019	Poisson distribution	
20	26/4/2019	Exponential distribution	
21	02/5/2019	Normal distribution and problems	

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DEPARTMENT OF CIVIL ENGINEERING

Semester: IV **Year: 2018-19**

Subject Title : **Analysis of Determinate structure**	*Subject Code:* **17CV42**
Total contact Hours: **62**	*Duration of Exam*: **03 Hrs.**
S E E: **60**	*C I E:* **40**
Lesson plan author: **Mr. VinuthanV R**	*Starting Date: 01/02/19*
Checked by: **Dr. G Mahesh kumar**	*Closing Date: 23/05/19*

Learning Objectives:

1. Apply knowledge of mathematics and engineering in calculating slope and deflections
2. Identify, formulate and solve engineering problems
3. Analyze structural systems and interpret data
4. Engage in lifelong learning with the advances in Structural Engineering

Learning Outcomes:

1.Evaluate the forces in determinate trusses by method of joints and sections.

2. Evaluate the deflection of cantilever, simply supported and overhanging beams by different Methods

3. Understand the energy principles and energy theorems and its applications to determine the deflections of trusses and bent frames.

4. Determine the stress resultants in arches and cables.

5. Understand the concept of influence lines and construct the ILD diagram for the moving Loads

Materials and resources required:

1.Reddy C S, Basic Structural Analysis, Tata McGraw Hill, New Delhi.

2. Muthu K U. etal, Basic Structural Analysis, 2nd edition, IK International Pvt. Ltd., New Delhi,2015.

3. Bhavikatti, Structural Analysis, Vikas Publishing House Pvt. Ltd, New Delhi, 2002.

Scheme of Examination

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV42- Analysis of determinate Structures

Sl No	Date	Topics	Topics Covered	Remarks
		MODULE-1		
		Introduction and Analysis of Plane Trusses		
1	04/02/19	Structural forms, Conditions of equilibrium, Compatibility conditions,		
2	04/02/19	Structural forms, Conditions of equilibrium, Compatibility conditions		
3	05/02/19	Degree of freedom, Linear and non linear analysis		
4	06/02/19	Degree of freedom, Linear and non linear analysis		
5	07/02/19	Static and kinematic indeterminacies		
6	11/02/19	Static and kinematic indeterminacies		
7	11/02/19	Types of trusses, Assumptions in analysis		
8	12/02/19	Analysis of determinate trusses by method of joints and method of sections.		
9	13/02/19	Analysis of determinate trusses by method of joints and method of sections.		
10	14/02/19	Analysis of determinate trusses by method of joints and method of sections.		
		MODULE-2		
		Deflection of Beams		
11	18/02/19	Definition of slope, Deflection and curvature, Sign conventions		
12	18/02/19	Derivation of moment-curvature equation		
13	19/02/19	Double integration method and Macaulay's method		
14	20/02/19	Slope and deflection for standard loading cases		
15	21/02/19	Slope and deflection for standard loading cases		
16	25/02/19	Slope and deflection for standard loading cases		
17	25/02/19	Moment area method: Derivation, Mohr's theorems, Sign conventions		
19	26/02/19	Application of moment area method for determinate prismatic beams, Beams of varying section		
19	27/02/19	Conjugate beam method: Real beam and conjugate beam, conjugate beam theorems		
20	28/02/19	Application of conjugate beam method of determinate beams of variable cross sections.		
		MODULE 3		
		Energy Principles and Energy Theorems		
21	05/03/19	Principle of virtual displacements, Principle of virtual forces, Strain energy and complimentary energy		
22	6/03/19	Strain energy due to axial force, bending, shear and torsion		
23	7/03/19	Deflection of determinate beams and trusses using total strain energy		

24	8/03/19	Deflection of determinate beams and trusses using total strain energy		
25	11/03/19	Deflection at the point of application of single load		
26	11/03/19	Deflection at the point of application of single load		
27	12/03/19	Castigliano's theorems and its applications		
28	13/03/19	Castigliano's theorems and its applications		
29	18/03/19	Special applications-Dummy unit load method		
30	18/03/19	Special applications-Dummy unit load method		
		MODULE-4		
		Arches and Cable Structures		
31	19/03/19	Three hinged parabolic arches with supports at the same and different levels		
32	20/03/19	Three hinged parabolic arches with supports at the same and different levels		
33	21/03/19	Three hinged parabolic arches with supports at the same and different levels		
34	25/03/19	Determination of normal thrust, radial shear and bending moment		
35	25/03/19	Determination of normal thrust, radial shear and bending moment		
36	26/03/19	Determination of normal thrust, radial shear and bending moment		
37	27/03/19	Analysis of cables under point loads		
38	28/03/19	Analysis of cables under point loads		
39	01/04/19	Analysis of cables under UDL		
40	01/04/19	Analysis of cables under UDL		
41	02/04/19	UDL. Length of cables for supports at same and at different level		
42	03/04/19	UDL. Length of cables for supports at same and at different level		
43	04/04/19	Stiffening trusses for suspension cables		
44	08/04/19	Stiffening trusses for suspension cables		
		MODULE 5		
		Influence Lines and Moving Loads		
45	08/04/19	Concepts of influence lines-ILD for reactions		
46	09/04/19	Concepts of influence lines-ILD for reactions		
47	10/04/19	Concepts of influence lines-ILD for reactions		
48	11/04/19	Concepts of influence lines-ILD for reactions		
49	15/04/19	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
50	15/04/19	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
51	22/04/19	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
52	22/04/19	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
53	23/04/19	SF and BM for determinate beams-ILD for axial forces in determinate trusses- Reaction		
54	24/04/19	BM and SF in determinate beams using rolling loads concepts.		

55	25/04/19	BM and SF in determinate beams using rolling loads concepts.		
56	29/04/19	BM and SF in determinate beams using rolling loads concepts.		
57	29/04/19	BM and SF in determinate beams using rolling loads concepts.		
58	30/04/19	BM and SF in determinate beams using rolling loads concepts.		
59	02/05/19	Revision		
60	06/05/19	Revision		
61	06/05/19	Revision		
62	08/05/19	Revision		

Mr. Vinuthan V R
Course Instructor

Dr. G. Mahesh Kumar
HOD

Dr T Hemadri Naidu
Principal

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B.E., Semester: IV Year: 2018-19

Course Title: **Concrete Technology**	*Course Code:* **17CV44**
Total lecture hours: **50**	*Duration of Exam*: **03 Hrs.**
SEE Marks: **60**	*CIE marks:* **40**
*Credits:***04**	*Exam hours: 3*
Lesson plan author: **Mr. Nagaraja C**	*Date:* **01/02/19**
Checked by: **Dr. G Mahesh Kumar**	*Date*: **01/02/19**

Course Objectives:

The course will enable the students to

1. Recognise the importance of material characteristics and their contributions to strength development in concrete.
2. Proportion ingredients of concrete to arrive at most desirable mechanical properties of concrete.
3. Ascertain and measure engineering properties of concrete in fresh and hardened state which meet the requirement of real time structures.

Course Outcomes:

The students will be able to:

1. Relate material characteristics and their influence on microstructure of concrete.
2. Distinguish concrete behaviour based on its fresh and hardened properties.
3. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.

Materials and resources required:

Presentation: Black board, Teaching charts, Models. / OHP/ LCD presentations

Text book:

1. Neville A M, "Properties of Concrete" ELBS Edition, Longman Ltd, London
2. M S Shetty, "Concrete Technology- Theory and Practice", S Chand & Company Pvt Ltd, New Delhi.
3. Kumar Mehta P and Paulo J. M. Monteiro "Concrete- Micro structure, property and materials", 4th Edition, Mc Graw Hill Education, 2014
4. A R Santhakumar, "Concrete Technology", Oxford University Press, New Delhi (New Edition)

Reference Books

1. M L Gambir, "Concrete Technology", Mc Graw Hill Education, 2014
2. N V Nayak, A K Jain "Hand book on Advanced Concrete Technology", ISBN: 978-81-8487-186-9

3. Job Thomas, "Concrete Technology", CENGAGE Learning, 2015
4. IS 4926(2003): Code of Practice Ready - Mixed Concrete [CED2: Cement and Concrete] Criteria for RMC Production Control, Basic Level Certification for production control of Ready Mixed Concrete –BMPTC
5. Specification and Guidelines for Self compacting Concrete, EFNARC, Association

1) Scheme of Examination:

The question paper will have ten questions, each full question carrying 20 marks. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module. Each full question shall cover the topics under a module. The students shall answer five full questions selecting one full question from each module. If more than one question is answered in modules, the best answer will be considered for the award of marks limiting one full question answer in each module.

2) Evaluation:

Student Assessment: Through C IE-Internal Assessment Tests (30 Marks), Assignments (10 marks), SEE-University Examination (60 Marks)

Lesson Plan

17CV44 – Concrete Technology

Sl No	Date	Topics	Topics Covered	Remarks
		Module 1: Concrete Ingredients		
1	01/02/19	Cement- Cement manufacturing process, steps to reduce carbon foot print		
2	04/02/19	Chemical composition and their importance, hydration of cement		
3	05/02/19	Types of cement, testing of cement		
4	07/02/19	Fine aggregates: functions, requirements , alternatives to river sand		
5	08/02/19	M-sand, introduction and manufacturing, coarse aggregates: importance of size, shape and texture		
6	11/02/19	Grading and blending of aggregates, Testing of aggregates, requirement		
7	12/02/19	Recycled aggregates, water – Qualities of water		
8	14/02/19	Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents		
9	15/02/19	Accelerators, retarders and air entraining agents		
10	18/02/19	Mineral admixtures – Pozollanic materials and cementitious materials, Flyash, GGBS, Silica fume		
11	19/02/19	Metakaolin Cementitious materials, Flyash, GGBS, Silica fumes, Metakaolin and Rice husk ash		
		Module 2: Fresh Concrete		
12	21/02/19	Workability- Factors affecting workability		
13	22/02/19	Factors affecting workability		
14	25/02/19	Measurements of workability-Slump		
15	26/02/19	Compaction factor and Vee-Bee consistometer tests, flow tests		
16	28/02/19	Segregation and bleeding, Process of manufacturing of concrete-Batching , mixing		
17	01/03/19	Transporting, placing and compaction.		
18	05/03/19	Curing and methods of curing- Water curing, Membrane curing		
19	07/03/19	Steam curing, accelerated curing , self curing		
20	08/03/19	Good and bad practices of making and using fresh concrete		
21	11/03/19	Effect of heat of hydration during mass concreting at project sites		
		Module 3: Hardened Concrete		
22	12/03/19	Factors influencing strength, W/C ratio, gel/Space ratio		
23	18/03/19	Maturity Concept, Testing of hardened concrete		
24	19/03/19	Creep- Factors affecting creep, shrinkage- plastic shrinkage		
25	21/03/19	Drying Shrinkage, factors affecting shrinkage		

26	22/03/19	Definition and significance of durability, internal and external factors influencing durability		
27	25/03/19	Mechanism- Sulphate and chloride attack		
28	26/03/19	Carbonation, freezing and thawing,		
29	28/03/19	Corrosion, durability requirements as per IS 456		
30	29/03/19	Penetration and pull out test, Rebound hammer test		
31	01/04/19	Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations		
		Module 4: Concrete Mix proportioning		
32	02/04/19	Concept of mix design without admixtures		
33	03/04/19	Concept of mix design with admixtures		
34	05/04/19	Variables in proportioning and exposure conditions		
35	08/04/19	Variables in proportioning and exposure conditions		
36	09/04/19	Selection criteria of ingredients used for mix design		
37	11/04/19	Procedure of mix proportioning		
38	12/04/19	Numerical examples using IS 10262-2009		
39	15/04/19	Numerical examples using IS 10262-2009		
40	22/04/19	Numerical examples using IS 10262-2009		
41	23/04/19	Numerical examples using IS 10262-2009		
		Module 5: Special concretes		
42	25/04/19	RMC-Manufacture and requirement as per QCI-RMCPCS		
43	26/04/19	Properties, advantages and disadvantages		
44	29/04/19	Self compacting concrete – Concept, materials and tests		
45	30/04/19	Properties, applications		
46	02/05/19	Typical mix of SCC		
47	03/05/19	Fiber reinforced concrete(FRC) – Fibers and types		
48	06/05/19	Properties and applications of FRC		
49	09/05/19	Light weight concrete – material properties and types		
50	10/05/19	Typical light weight concrete		
51	13/05/19	Applications of light weight concrete		
52	14/05/19	Revision		
53	20/05/19	Revision		
54	21/05/19	Revision		
55	23/05/19	Revision		

Mr. C Nagaraja
Staff Incharge

Dr. G Mahesh Kumar
HOD

Dr Hemadri Naidu T
Principal

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

17CV45 – BASIC GEOTECHNICAL ENGINEERING

Semester: IV *Year:* 2018-19

Course Title: **Basic Geotechnical Engineering**		*Course Code:*	**17CV45**
Number of Lecture Hours per week :	**04**	*Duration of Exam:*	**03 Hrs**
Total Lecture Hours:	**50**	*CIE marks:*	**40**
SEE marks :	**60**	*Date of Commencement of even Semester:*	**01.02.2019**
Course Instructor :	**Dr. G. Mahesh Kumar**		
HOD :	**Dr. G. Mahesh Kumar**		

Program Objectives (as per NBA):

- Engineering Knowledge.
- Problem Analysis.
- Design / development of solutions (partly).
- Interpretation of data.

Course Objectives:

This course will enable students

- To appreciate basic concepts of soil mechanics as an integral part in the knowledge of civil engineering. Also to become familiar broadly with geotechnical engineering problems such as, foundation engineering, flow of water through soil medium and terminologies associated with geotechnical engineering.
- To know the basic engineering properties and the mechanical behavior of different types of soil. This includes strength-deformation characteristics under shearing stresses, also consolidation properties of clayey soils.
- To determine the improvement in mechanical behavior by densification of soil deposits using compaction.
- To know how the properties of soils that can be measured in the lab

Course Outcomes:

On the completion of this course students are expected to attain the following outcomes;

1. Will acquire an understanding of the procedures to determine index properties of any type of soil, classify the soil based on its index properties
2. Will be able to determine compaction characteristics of soil and apply that knowledge to assess field compaction procedures
3. Will be able to determine permeability property of soils and acquires conceptual knowledge about stresses due to seepage and effective stress; Also acquire ability to estimate seepage losses across hydraulic structure
4. Will be able to estimate shear strength parameters of different types of soils using the data of different shear tests and comprehend Mohr-Coulomb failure theory.

5. Ability to solve practical problems related to estimation of consolidation settlement of soil deposits also time required for the same.

Question paper pattern:

- The question paper will have ten questions.
- Each full question consists of 20 marks.
- There will be 2 full questions (with a maximum of 4 sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Materials and resources required

Text Books:

1. Gopal Ranjan and Rao A.S.R., **Basic and Applied Soil Mechanics- (2000)**, New Age International (P) Ltd., Newe Delhi.

2. Punmia B C, **Soil Mechanics and Foundation Engineering- (2012)** , Laxmi Pulications.

3. Murthy V.N.S., **Principles of Soil Mechanics and Foundation Engineering- (1996),** 4th Edition, UBS Publishers and Distributors, New Delhi.

4. Braja, M. Das, **Geotechnical Engineering-**(2002), Fifth Edition, Thomson Business Information India (P) Ltd., India

Reference Books:

1. T.W. Lambe and R.V. Whitman, **Soil Mechanics**, John Wiley & Sons, 1969.

2. Donold P Coduto, **Geotechnical Engineering-** Phi Learning Private Limited, New Delhi

3. Shashi K. Gulathi & Manoj Datta, **Geotechnical Engineering-**. (2009), "Tata Mc Graw Hill.

4. Narasimha Rao A. V. & Venkatrahmaiah C, **Numerical Problems, Examples and objective questions in Geotechnical Engineering-**. (2000), Universities Press., Hyderabad.

5. Muni Budhu ,**Soil Mechanics and Foundation Engg.**- (2010), 3rd Edition, John Wiely & Sons

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

17CV45 – BASIC GEOTECHNICAL ENGINEERING

Sl. No.	DATE	TOPICS	Remarks
		MODULE-1 INTRODUCTION	
1	02.02.19	Introduction, origin and formation of soil,.	L1, L2
2	04.02.19	Phase Diagram, phase relationships,	
3	06.02.19	definitions and their inter relationships	
4	07.02.19	definitions and their inter relationships- continued	
5	09.02.19	Problems on inter relationships	
6	11.02.19	Determination of Index properties-Specific gravity, water content,	
7	13.02.19	in-situ density and particle size analysis (sieve and sedimentation analysis)	
8	14.02.19	particle size analysis (sieve and sedimentation analysis)-continued	
9	16.02.19	Atterberg's Limits, consistency indices,	
10	18.02.19	relative density, problems on Atterberg limits	
11	20.02.19	Activity of clay, Plasticity chart,	
12	21.02.19	unified and BIS soil classification	
13	23.02.19	Problems soil classification	
		MODULE-2 SOIL STRUCTURE AND CLAY MINERALOGY AND COMPACTION OF SOIL	
14	25.02.19	Single grained, honey combed, flocculent and dispersed structures,	L1, L2
15	27.02.19	Valence bonds, Soil-Water system,	
16	28.02.19	Electrical diffuse double layer, adsorbed water, base-exchange capacity, Isomorphous substitution.	
17	02.03.19	Common clay minerals in soil and their structures-Kaolinite and their application in Engineering	
18	06.03.19	Illite and their application in Engineering	
19	07.03.19	Montmorillonite and their application in Engineering	
20	09.03.19	Compaction of Soils: Definition, Principle of compaction,	
21	11.03.19	Standard and Modified proctor's compaction tests	
22	13.03.19	factors affecting compaction, effect of compaction on soil properties,	
23	18.03.19	Field compaction control - compactive effort & method of compaction, lift thickness and number of passes,	
24	20.03.19	Proctor's needle, Compacting equipments and their suitability.	

25	21.03.19	Problems on compaction	
26	23.03.19	Problems on compaction	
MODULE-3 FLOW THROUGH SOILS SEEPAGE ANALYSIS EFFECTIVE STRESS ANALYSIS			
27	25.03.19	Darcy's law- assumption and validity, coefficient of permeability and its determination (laboratory and field),	L1, L2, L3
28	27.03.19	factors affecting permeability, permeability of stratified soils,	
29	28.03.19	Seepage velocity, superficial velocity	
30	01.04.19	coefficient of percolation, Capillary Phenomena	
31	03.04.19	Seepage Analysis: Laplace equation, assumptions, limitations and its derivation. Flow nets- characteristics and applications.	
32	04.04.19	Flow nets for sheet piles and below the dam section.	
33	08.04.19	Unconfined flow, phreatic line (Casagrande's method –with and without toe filter), flow through dams, design of dam filters.	
34	10.04.19	Problems on flow through soil	
35	11.04.19	Effective Stress Analysis: Geostatic stresses,	
36	13.04.19	Effective stress concept-total stress, effective stress and	
37	15.04.19	Neutral stress and impact of the effective stress in construction of structures,	
38	22.04.19	quick sand phenomena	
39	24.04.19	Problems on effective stress, total stress and neutral stress	
MODULE-4 CONSOLIDATION OF SOIL			
40	25.04.19	Definition, Mass-spring analogy	L1, L2, L3
41	27.04.19	Terzaghi's one dimensional consolidation theory - assumption and limitations.	
42	29.04.19	Derivation of Governing differential Equation Pre-consolidation pressure and its determination by Casagrande's method.	
43	02.05.19	Over consolidation ratio, normally consolidated, under consolidated and over consolidated soils. Problems	
44	04.05.19	Consolidation characteristics of soil (Cc, av, mv and Cv.	
45	06.05.19	Laboratory one dimensional consolidation test, characteristics of e-log(σ') curve,	
46	08.05.19	Determination of consolidation characteristics of soils, compression index and coefficient of consolidation (square root of time fitting method,.	
47	09.05.19	logarithmic time fitting method). Primary and secondary consolidation. Problems	
MODULE-5 SHEAR STRENGTH OF SOIL			
48	11.05.19	Concept of shear strength, Mohr–Coulomb Failure Criterion, Modified Mohr–Coulomb Criterion Concept of pore pressure,	L2, L3, L4
49	13.05.19	Total and effective shear strength parameters, factors affecting shear strength of soils.	
50	15.05.19	Thixotrophy and sensitivity, Problems	
51	20.05.19	Measurement of shear strength parameters - Direct shear	

		test, unconfined compression test	
52	22.05.19	triaxial compression test and field Vane shear test	
53	23.05.19	Test under different drainage conditions. Total and effective stress paths. Problems	

(Dr. G. Mahesh Kumar) 01/02/19
Faculty

(Dr. G. Mahesh Kumar) 01/02/19
HOD

Dr. Hemadri Naidu T) 1/2/19
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DEPARTMENT OF CIVIL ENGINEERING

Semester: VI **Year: 2018-19**

Subject Title Construction Management and Entrepreneurship	*Subject Code:* **15CV61**
Total contact Hours: **50**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Starting Date: 01/02/19*
Checked by: **Dr. G Mahesh Kumar**	*Closing Date: 23/05/19*

Learning Objectives:

1 Understand the concept of planning, scheduling, cost and quality control, safety during construction, organization and use of project information necessary for construction project.

2. Inculcate Human values to grow as responsible human beings with proper personality.

3. Keep up ethical conduct and discharge professional duties.

Learning Outcomes:

1.Understand the construction management process.

2. Understand and solve variety of issues that are encountered by every professional in discharging professional duties.

3. Fulfill the professional obligations effectively with global outlook

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.

2) **Reference Books**

1P C Tripathi and P N Reddy, "Principles of Management", Tata McGraw-Hill Education

2. Chitkara, K.K, "Construction Project Management: Planning Scheduling and Control", Tata McGraw-Hill Publishing Company, New Delhi.

3. Poornima M. Charantimath , "Entrepreneurship Development and Small Business Enterprise", DorlingKindersley (India) Pvt. Ltd., Licensees of Pearson Education

Scheme of Examination:

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV61- Construction Management and Entrepreneurship

Sl No	Date	Topics	Topics Covered	Remarks
		MODULE-1		
1	01/02/19	Management: Characteristics of management		
2	02/02/19	Functions of management, importance and purpose of planning process, types of plans		
3	04/02/19	Construction Project Formulation: Introduction to construction management		
4	06/02/19	Project organization		
5	08/02/19	Management functions, management styles		
6	09/02/19	Construction Planning and Scheduling: Introduction, types of project plans,		
7	11/02/19	work breakdown structure, Grant Chart		
8	13/02/19	Preparation of network diagram- event and activity based		
9	15/02/19	Critical path-critical path method		
10	16/02/19	Concept of activity on arrow and activity on node		
		MODULE-2		
11	18/02/19	Resource Management: Basic concepts of resource management		
12	20/02/19	Class of labour, Wages & statutory requirement		
13	22/02/19	Class of labour, Wages & statutory requirement		
14	23/02/19	Labour Production rate or Productivity		
15	25/02/19	Factors affecting labour output or productivity		
16	27/02/19	Construction Equipments: classification of construction equipment		
17	01/03/19	Estimation of productivity for: excavator, dozer, compactors, graders and dumpers		
19	02/03/19	Estimation of ownership cost, operational and maintenance cost of construction equipments		
19	06/03/19	Selection of construction equipment and basic concept on equipment maintenance		
20	08/03/19	Materials: material management functions, inventory management.		
		MODULE-3		
21	09/03/19	Construction Quality , safety and Human Values: Construction quality process, inspection, quality control and quality assurance		
22	11/03/19	Cost of quality, ISO standards. Introduction to concept of Total Quality Management		
23	13/03/19	HSE: Introduction to concepts of HSE as applicable to Construction. Importance of safety in construction , Safety measures to be taken during Excavation , Explosives , drilling and blasting		
24	18/03/19	Hot bituminous works , scaffolds / platforms / ladder , form work and equipment operation.		
25	20/03/19	Storage of materials. Safety through legislation, safety campaign. Insurances		

26	22/03/19	Ethics : Morals, values and ethics, integrity, trustworthiness , work ethics, need of engineering ethics,		
27	23/03/19	Professional Duties, Professional and Individual Rights		
28	25/03/19	Confidential and Proprietary Information		
29	27/03/19	Conflict of Interest Confidentiality		
30	01/04/19	Gifts and Bribes, Price Fixing, Whistle Blowing		
		MODULE-4		
31	03/04/19	Introduction to engineering economy : Principles of engineering economics		
32	05/04/19	Concept on Micro and macro analysis		
33	08/04/19	problem solving and decision making		
34	10/04/19	Interest and time value of money: concept of simple and compound interest		
35	12/04/19	Interest formula for: single payment		
36	13/04/19	Equal payment and uniform gradient series		
37	15/04/19	Nominal and effective interest rates,		
38	22/04/19	Deferred annuities, capitalized cost		
39	24/04/19	Comparison of alternatives : Present worth, annual equivalent , capitalized and 10 Hours L1,L2,L3 rate of return methods		
40	26/04/19	Minimum Cost analysis and break even analysis		
		MODULE-5		
41	27/04/19	Entrepreneurship: Evolution of the concept, functions of an entrepreneur, concepts of entrepreneurship,		
42	29/04/19	Stages in entrepreneurial process, different sources of finance for entrepreneur, central and state level financial institutions		
3	03/05/19	Micro, Small & Medium Enterprises (MSME): definition, characteristics, objectives, scope, role of MSME in economic development, advantages of MSME		
44	04/05/19	Introduction to different schemes: TECKSOK, KIADB, KSSIDC, DIC, Single Window Agency: SISI, NSIC, SIDBI, KSFC		
45	06/05/19	Business Planning Process: Business planning process, marketing plan, financial plan		
46	08/05/19	project report and feasibility study, guidelines for preparation of model		
47	10/05/19	project report for starting a new venture.		
48	10/05/19	Introduction to international entrepreneurship opportunities		
49	11/05/19	Entry into international business , exporting		
50	11/05/19	Direct foreign investment , venture capital		

Mr. Vinuthan V R
Course Instructor

Dr. G Mahesh Kumar 01/05/19
HOD

Dr T Hemadri Naidu
Principal

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: **VI** ***Year: 2018-19***

[As per Choice Based Credit System (CBCS) scheme]

Subject Title: **Design of Steel Structural Elements**	*Subject Code:* **15CV62**
Total contact Hours: 50	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **01/02/19**
Checked by: **Dr. G Mahesh Kumar**	

Learning Objectives:

Study of this course is based on **IS: 800-2007**

The students will be able to know about

i. Learn about the Connections: Bolted and welded, Beam-Beam, Beam-Column, Seated, and Stiffened and un-stiffened.
ii. Plastic Behaviour of Structural Steel
iii. Design of tension and compression members in Bolted and welded Connections
iv. Learn about Column Bases: Slab base and gusseted Base
v. Design of Beams in Bolted and welded Connections

Learning Outcomes:

i. Possess a knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel
ii. Understand the Concept of Bolted and Welded connections.
iii. Understand the Concept of Design of compression members, built-up columns and columns splices.
iv. Understand the Concept of Design of tension members, simple slab base and gusseted base.
v. Understand the Concept of Design of laterally supported and un-supported steel beams.

Materials and resources required:

I. Presentation: Black board, Teaching charts, Models / OHP/ LCD presentation

II. TEXTBOOKS AND REFERENCE BOOKS:

1. **Design of Steel Structures,** N.Subramanian, Oxford, 2008
2. **Limit State Design of Steel Structures,** Duggal, TATA Megra Hill 2010
3. **Structural Dynamics-**by M.Mukhopadhyay.
4. **Design of Steel Structures** –Negi – Tata Mc Graw Hill Publishers
5. **Design of Steel Structures** – Raghupathi
6. **Bureau of Indian Standards, IS:800-2007, IS:875-1987**
7. **Steel Tables**

III. Question Paper Pattern:

1. The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
2. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.

3. Each full question shall cover the topics as a module
4. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

IV. Evaluation:

Student Assessment: Through Internal Assessment Tests (15 Marks), Assignments (05 Marks), University Examinations (80 Marks).

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LECTURE PLAN

Sl No	Date	Topics	Topics Covered	Remark
		Module -1:		
Introduction:				
1	01-02-2019	Advantages and Disadvantages of Steel structures,		
2	04-02-2019	Limit State Method (LSM) of design Limit state method Limit State of Strength Structural Stability, Serviceability Limit states		
3	06-02-2019	Design considerations, Loads and Load combinations,		
4	07-02-2019	Failure criteria for steel, Codes, Specifications, Section classification.		
Plastic Behaviour of Structural Steel:				
5	08-02-2019	Introduction, Plastic theory, Plastic hinge concept,		
6	11-02-2019	Plastic collapse load, conditions of plastic analysis		
7	13-02-2019	Theorem of Plastic collapse, Concept Plastic analysis, Methods of Plastic analysis		
8	14-02-2019	Plastic analysis of continuous beams.		
		Module -2:		
Bolted Connections:				
9	15-02-2019	Introduction, Types of bolts, Behaviour of Bolted joints,		
10	18-02-2019	Design strength of ordinary Black Bolts		
11	20-02-2019	Design strength of High Strength Friction Grip bolts (HSFG)		
12	21-02-2019	Simple Connections (Lap and Butt joints)		
Welded Connections:				
13	22-02-2019	Introduction, Welding process, Welding electrodes,		
14	25-02-2019	Types and Properties of Welds, Types of joints Weld symbols, Weld specifications,		
15	27-02-2019	Effective areas of welds, Design of welds, Simple joints		
16	28-02-2019	Weld Defects, Advantages of Bolted and Welded connections		
17	01-03-2019	Disadvantages of Bolted and Welded connections		
		Module -3:		
Design of Compression Members:				
18	01-03-2019	Introduction, Failure modes,		
19	06-03-2019	Behaviour of compression members		

20	07-03-2019	Elastic buckling of slender compression members		
21	08-03-2019	Sections used for compression members		
22	11-03-2019	Effective length of compression members		
23	13-03-2019	Design of compression members		
24	18-03-2019	Design of compression members		
25	20-03-2019	Built up compression members		
26	21-03-2019	Built up compression members		
27	22-03-2019	Design of Laced and Battened Systems.		
28	25-03-2019	Design of Laced and Battened Systems.		
Module -4:				
Design of Tension Members:				
29	27-03-2019	Introduction, Types of tension members, Design of strands, Slenderness ratio,		
30	28-03-2019	Behaviour of tension members Modes of failure, Factors affecting the strength of tension members		
31	01-04-2019	Design of tension member		
32	03-04-2019	Design of tension member		
33	04-04-2019	Lug angles, Splices, Gussets		
Design of Column Bases:				
34	05-04-2019	Design of simple slab base - problems		
35	08-04-2019	Design of simple slab base - problems		
36	10-04-2019	Design of gusseted base - problems		
37	11-04-2019	Design of gusseted base - problems		
38	12-04-2019	Design of gusseted base - problems		
Module -5:				
Design of Beams:				
39	22-04-2019	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability		
40	24-04-2019	Behaviour of simple and built-up beams in bending(without vertical stiffeners)		
41	25-04-2019	Design strength of laterally supported beams in Bending- problems		
42	26-04-2019	Design strength of laterally supported beams in Bending- problems		
43	29-04-2019	Design strength of laterally unsupported beams-problems		
44	02-05-2019	Design strength of laterally unsupported beams		
45	03-05-2019	Shear strength of steel beams, Maximum deflection		
46	06-05-2019	Beam to Beam Connections,		
47	08-05-2019	Beam to Beam Connections,		
48	20-05-2019	Beam to Column Connection		
49	22-05-2019	Beam to Column Connection		
50	23-05-2019	Column Splices		

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar) 01/02/19
HOD

04/02/19
(Dr T Hemadri Naidu)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

Year: 2018-19

Semester: VI			
Course Title: Ground Improvement Techniques		*Subject Code:*	15CV654
Total Contact Hours:		*Duration of Exam:*	03Hrs
Total exam marks:	80	*Total I.A. marks:*	20
Lesson Plan Author:	Dr. G. Mahesh Kumar	*Date of Commencement of Semester:*	01.02.2019
Checked by:	Dr. G. Mahesh Kumar		

Course Objectives: This course will enable students to

1. Understand the fundamental concepts of ground improvement techniques
2. Apply knowledge of mathematics, Science and Geotechnical Engineering to solve problems in the field of modification of ground required for construction of civil engineering structures.
3. Understand the concepts of chemical compaction, grouting and other miscellaneous methods.
4. Impart the knowledge of geo-synthetics, vibration, grouting and Injection

Course Outcomes: After studying this course, students will be able to:

1. Give solutions to solve various problems associated with soil formations having less strength.
2. Use effectively the various methods of ground improvement techniques depending upon the requirements.
3. utilize properly the locally available materials and techniques for ground improvement so that economy in the design of foundations of various civil engineering structures

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question Paper Pattern:

- The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
- There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
- Each full question shall cover the topics as a module
- The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Materials and resources required

Text books:

1. Purushothama Raj P, "Ground Improvement Techniques", Laxmi Publications, New Delhi.
2. Koerner R.M, "Construction and Geotechnical Method in Foundation Engineering", Mc Graw Hill Pub. Co.

Reference books:

1. Manfred Hausmann , "Engineering principles of ground modification", Mc Graw Hill Pub. Co.,
2. Bell, F.G., "Methods of treatment of unstable ground", Butterworths, London.
3. Nelson J.D. and Miller D.J, "Expansive soils", John Wiley and Sons.
4. Ingles. C.G. and Metcalf J.B , "Soil Stabilization; Principles and Practice", Butterworths

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

15CV654 – GROUND IMPROVEMENT TECHNIQUES

Sl. No.	DATE	TOPICS	Remarks BBT level
Module-1 Formation and Development of Ground and Compaction			
1	01.02.19	Introduction, Formation of Rock, soil and soil profile	L1, L2 L3
2	02.02.19	Soil distribution in India, Alterations of ground after formation	
3	05.02.19	Reclaimed soils, Natural offshore deposits;.	
4	06.02.19	Ground Improvement Potential – Hazardous ground conditions	
5	08.02.19	Poor ground conditions ,favorable ground conditions	
6	09.02.19	Alternative Approaches, Geotechnical processes	
7	12.02.19	**Compaction:** Introduction, compaction mechanics	
8	13.02.19	Field procedure, surface compaction.	
9	15.02.19	Dynamic Compaction	
10	16.02.19	selection of field compaction procedures	
11	19.02.19	compaction quality control	
Module-2 Drainage Methods and Pre-compression and Vertical Drains			
12	20.02.19	**Drainage Methods:** Introduction, Seepage	L1, L2 L3
13	22.02.19	filter requirements, ground water and seepage control	
14	23.02.19	methods of dewatering systems	
15	26.02.19	Design of dewatering system including pipe line effects of dewatering.	
16	27.02.19	Drains, different types of drains.	
17	01.03.19	**Pre-compression and Vertical Drains:** Importance	
18	02.03.19	Vertical drains	
19	05.03.19	Sand drains,	
20	06.03.19	Drainage of slopes,	
21	08.03.19	Electro kinetic dewatering,	
22	09.03.19	Preloading	
Module-3 Chemical Modification-1 and Chemical Modification-2			
23	12.03.19	**Chemical Modification-I:** Definition, cement stabilization, sandwich technique, admixtures.	
24	13.03.19	Hydration – effect of cement stabilization on permeability	

25	19.03.19	Swelling and shrinkage and strength and deformation characteristics.	L2, L3 L4
26	20.03.19	Criteria for cement stabilization.	
27	22.03.19	Stabilization using Fly ash.	
28	23.03.19	**Chemical Modification-II:** Lime stabilization – suitability, process	
29	26.03.19	criteria for lime stabilization.	
30	27.03.19	Other chemicals like chlorides, hydroxides, lignin	
31	02.04.19	hydrofluoric acid.	
32	03.04.19	Properties of chemical components	
33	05.04.19	reactions and effects. Bitumen, tar or asphalt in stabilization.	
Module-4 Vibration Methods and Grouting and Injection			
34	09.04.19	**Vibration Methods:** Introduction,	L2, L3 L5
35	10.04.19	Vibro compaction – blasting, vibratory probe	
36	12.04.19	Vibro displacement compaction – displacement piles	
37	13.04.19	vibroflotation, sand compaction piles	
38	23.04.19	stone columns, heavy tamping	
39	24.04.19	**Grouting and Injection** Introduction, Effect of grouting. Chemicals and materials used.	
40	26.04.19	Types of grouting.	
41	27.04.19	Grouting procedure, Applications of grouting	
Module-5 Geosynthetics and Miscellaneous Methods (Only Concepts & Uses			
42	30.04.19	**Geosynthetics:** Introduction,	L1, L3 L5
43	03.05.19	Geosynthetic types, properties	
44	04.05.19	materials and fibre properties,.	
45	08.05.19	Geometrical aspects, mechanical properties, Hydraulic properties	
46	10.05.19	Durability, Applications of Geosynthetics -	
47	11.05.19	Separation, Filtration and Fluid Transmission, Reinforcement,	
48	14.05.19	**Miscellaneous Methods (Only Concepts & Uses):** Soil reinforcement,	
49	15.05.19	Thermal methods, Ground improvement by confinement	
50	21.05.19	Crib walls, Gabions and Mattresses, Anchors, Rock bolts	
51	22.05.19	soil nailing, Stone Column, Micro piles	

(Dr. G. Mahesh Kumar) 01/02/19
Faculty

(Dr. G. Mahesh Kumar) 01/02/19
HOD

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DEPARTMENT OF CIVIL ENGINEERING

SUBJECT PLAN

Semester: VI Semester **Year: 2018-19**

Subject Title: **Water Resources Management**	Subject Code: **15CV661**
Total contact Hours: 50	Duration of Exam: 03 Hrs.
Total Theory exam marks: 80	Total I.A. marks: 20
Subject plan author: Mrs. Akshatha V.	Date: 01/02/2019
Checked by: Dr. G. Mahesh Kumar	Date: 01/02/2019

SI. NO	DATE	TOPIC PLANNED	REMARKS
MODULE 1: SURFACE AND GROUND WATER RESOURCES			
1	01-02-2019	Introduction, Hydrologic Cycle	
2	02-02-2019	Global water resources and Indian Water resources,	
3	04-02-2019	Surface Water Resources	
4	05-02-2019	Water Balance, Available Renewable Water Resources	
5	08-02-2019		
6	09-02-2019	Water Scarcity	
7	11-02-2019	The Water Balance as a Result of Human Interference	
8	12-02-2019	Groundwater Resources	
9	15-02-2019	Types of Aquifers	
10	16-02-2019	Groundwater as a Storage Medium	
MODULE 2: WATER RESOURCES PLANNING & MANAGEMENT			
11	18-02-2019	Necessity, System components	
12	19-02-2019	Planning scales, Approaches	
13	22-02-2019	Planning and management aspects	
14	23-02-2019		
15	25-02-2019	Analysis, Models for impact prediction and evaluation	
16	26-02-2019		
17	01-03-2019	Adaptive Integrated Policies	
18	02-03-2019		
19	05-03-2019	Post Planning and management Issues.	
20	08-03-2019		
MODULE 3: INTEGRATED WATER RESOURCES MANAGEMENT			
21	09-03-2019	Definition of IWRM, Principles, Implementation of IWRM	
22	11-03-2019		
23	12-03-2019		
24	18-03-2019	Legislative and Organizational Framework	
25	19-03-2019		
26	22-03-2019		
27	23-03-2019	Types and Forms of Private Sector Involvement.	
28	25-03-2019		

29	26-03-2019	Types and Forms of Private Sector Involvement	
30	01-04-2019		
MODULE -4 WATER GOVERNANCE AND WATER POLICY			
31	02-04-2019	Legal Framework of Water - Substance of National Water Laws - Other key issues	
32	05-04-2019		
33	08-04-2019	Changing incentives through Regulation - National Water Policy - National-Level Commissions	
34	09-04-2019		
35	12-04-2019	Irrigation Management Transfer Policies and Activities	
36	13-04-2019		
37	15-04-2019	Legal Registration of WUAs - Legal Changes in Water Allocation	
38	22-04-2019		
39	23-04-2019	Role of Local Institutions - Community Based Organizations	
40	26-04-2019	Water Policy Reforms: India.	
MODULE -5 WATER HARVESTING AND CONSERVATION			
41	27-04-2019	Water Harvesting Techniques	
42	29-04-2019	Micro-catchments	
43	30-04-2019	Design of Small Water Harvesting Structures	
44	03-05-2019		
45	04-05-2019	Farm Ponds - Percolation Tanks Yield from a Catchment	
46	06-05-2019		
47	10-05-2019	Rain water Harvesting	
48	11-05-2019		
49	13-05-2019	various techniques related to Rural and Urban area	
50	14-05-2019		

TEXT BOOKS:

1. K. Subramanya, "Engineering Hydrology", Tata McGraw Hill Publishers, New Delhi.
2. H.M. Raghunath, "Ground Water", Wiley Eastern Publication, New Delhi.
3. Daniel P. Loucks and Eelco van Beek, "Water Resources Systems. Planning and Management", UNESCO Publication.
4. Mollinga, P. et al, "Integrated Water Resources Management", Water in South Asia Volume i, Sage Publications, 2006.
5. Singh, Chhatrapati "Water Rights in India," Ed: Chhatrapati Singh. Water Law in India: The Indian Law Institute, New Delhi,1992.
6. Dhruva Narayana, G. Sastry, V. S. Patnaik, "Watershed Management", CSWCTRI, Dehradun, ICAR Publications, 1997.

REFERENCE BOOKS:

1. Lal, Ruttan. " Integrated Watershed Management in the Global Ecosystem". CRC Press, New York.
2. Heathcote, I. W. Integrated Watershed Management: Principles and Practice. 1988. John Wiley and Sons, Inc., New York.

(Mrs. Akshatha V)
STAFF INCHARGE

(Dr. G Mahesh Kumar)
HOD

(Dr. T. Hemadri Naidu)
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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VIII** *Year: 2018-19*

[As per Choice Based Credit System (CBCS) scheme]

Course Title: **Design of Prestressed Concrete Elements**	*Subject Code:***15CV82**
Total contact Hours: 52	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **01/02/18**
Checked by: **Dr. G Mahesh Kumar**	

Learning Objectives:

1. Learn about the materials High strength concrete and steel, Stress-Strain characteristics and properties, basic Principles of Pre stressing.
2. To learn about the Stresses in concrete due to pre-stress and loads.
3. Learn about the various losses encountered in pre-tensioning and post tensioning methods.
4. To learn about deflection of a pre-stressed member – Short term and long term deflections
5. To study the Flexure and Shear-IS Code recommendations.
6. To learn about design of pre-tensioned and post-tensioned symmetrical and asymmetrical sections.

Course Outcomes:

After studying this course, students will be able to:

1. Understand the requirement of PSC members for present scenario.
2. Analyse the stresses encountered in PSC element during transfer and at working.
3. Understand the effectiveness of the design of PSC after studying losses
4. Capable of analyzing the PSC element and finding its efficiency.
5. Design PSC beam for different requirements.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.

2) **Reference Books**

1. **Pre-stressed Concrete**- N. Krishna Raju - Tata Mc. Graw Publishers.
2. **Pre-stressed Concrete**- P. Dayarathnam : Oxford and IBH Publishing Co.
3. **Design of pre-stressed concrete structures**- T.Y. Lin and Ned H. Burns - John Wiley & Sons, New York.
4. **Fundamental of pre-stressed concrete**- N.C. Sinha & S.K. Roy
5. IS : 1343 : 1980
6. **Pre-stressed Concrete**- N. Rajgopalan

Question Paper Pattern:

1. The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
2. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
3. Each full question shall cover the topics as a module
4. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Evaluation:

Student Assessment: Through Internal Assessment Tests (15 Marks), Assignments (05 Marks), University Examinations (80 Marks).

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Sl No	Date	Topics	Topics Covered	Remarks
		Module 1		
1	04/02/19	**Introduction and Analysis of Members** Concept of Prestressing		
2	05/02/19	Types of Prestressing - Advantages - Limitations		
3	05/02/19	Prestressing systems - Anchoring devices		
4	06/02/19	Materials - Mechanical Properties of high strength concrete - high strength steel		
5	11/02/19	Materials - Mechanical Properties of high strength concrete - high strength steel		
6	12/02/19	Stress-Strain curve for High strength concrete		
7	12/02/19	Analysis Comparison of behavior of reinforced concrete and prestressed concrete of members at transfer - Stress concept		
8	13/02/19	Analysis Comparison of behavior of reinforced concrete and prestressed concrete of members at transfer - Stress concept		
9	18/02/19	Force concept - Load balancing concept		
10	19/02/19	Kern point -Pressure line.		
		Module 2		
11	19/02/19	**Losses in Prestress**, Loss of Prestress due to Elastic shortening. -		
12	20/02/19	Friction, Anchorage slip, Creep of concrete		
13	25/02/19	Friction, Anchorage slip, Creep of concrete (coun.)		
14	26/02/19	Shrinkage of concrete and Relaxation of steel- Total Loss		
15	26/02/19	Deflection and Crack Width Calculations of Deflection due to gravity loads		
16	27/02/19	Deflection due to prestressing force -Total deflection		
17	05/03/19	Limits of deflection - Limits of span-to-effective depth ratio		
19	05/03/19	Limits of deflection - Limits of span-to-effective depth ratio		
19	06/03/19	Calculation of Crack Width - Limits of crack width.		
20	11/03/19	Calculation of Crack Width - Limits of crack width.		

		Module 3		
21	12/03/19	**Design of Sections for Flexure**		
22	12/03/19	Analysis of members at ultimate strength (problems)		
23	18/03/19	Analysis of members at ultimate strength (problems)		
24	19/03/19	Analysis of members at ultimate strength (problems)		
25	19/03/19	Analysis of members at ultimate strength (problems)		
26	20/03/19	Analysis of members at ultimate strength (problems)		
27	25/03/19	Preliminary Design (problems)		
28	26/03/19	Preliminary Design (problems)		
29	26/03/19	Preliminary Design (problems)		
30	27/03/19	Preliminary Design (problems)		
		Module 4		
31	01/04/19	**Design for Shear**		
32	02/04/19	Analysis for shear		
33	02/04/19	Components of shear resistance		
34	03/04/19	Modes of Failure		
35	08/04/19	Limit State of collapse for shear		
36	09/04/19	Limit State of collapse for shear		
37	09/04/19	Limit State of collapse for shear		
38	10/04/19	Design of transverse reinforcement		
39	15/04/19	Design of transverse reinforcement		
40	22/04/19	Design of transverse reinforcement		
41	23/04/19	Problems on shear design		
42	23/04/19	Problems on shear design		
		Module 5		
43	24/04/19	**Anchorage zone stresses** and design of anchorages. Composite Sections		
44	29/04/19	Anchorage zone stresses and design of anchorages. Composite Sections		
45	30/04/19	Anchorage zone stresses and design of anchorages. Composite Sections		
46	30/04/19	Types of composite construction		
47	06/05/19	Types of composite construction		
48	08/05/19	Types of composite construction		
49	20/05/19	Analysis of composite		
50	21/05/19	Deflection –Flexural and shear strength of composite sections		
51	21/05/19	Deflection –Flexural and shear strength of composite sections		
52	22/05/19	Deflection –Flexural and shear strength of composite sections		

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar) 01/02/19
HOD

01.02.19
(Dr T Hemadri Naidu)
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DEPARTMENT OF CIVIL ENGINEERING

Semester: III Year: 2019-20

Subject Title : **COMPUTER AIDED BUILDING PLANNING & DRAWING**	*Subject Code:* **18CVL37**
Total contact Hours: **53**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date college opening:* 29/07/19
Checked by: **Dr. Mahesh kumar**	

Learning Objectives:

The students will learn & draw

- Achieve skill sets to prepare computer aided engineering drawings
- Understand the details of construction of different building elements.
- Visualize the completed form of the building and the intricacies of construction based on the engineeringdrawings.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts and LCD presentations.
2) **Text book \ Reference Books:**
   i. Building drawing with an integrated approach to Built Environment Drawing:-MG Shah
   ii. Building Construction- Gurucharan Singh, Standard publishers.
   iii. Civil Engineering Drawing:-Malik R S and Meo G S, Asian publishers.
   iv. National Building code
3) **Scheme of Examination:**
   i. In **Part A**, Two questions to be set, out of which one question to be answered (30% weightage).
   ii. In **Part B**, Two questions to be set, out of which one question to be answered (70% weightage).
4) **Evaluation:**
   Student Assessment: Through Internal Assessment Tests (20 Marks), Assignments.
   University Examinations (80 Marks).

DEPARTMENT OF CIVIL ENGINEERING

18 CVL 37 - DESIGN AND DRAWING OF STEEL STRUCTURES

BATCH -1

Sl.No.	Class	Date	Hrs	Topics	Remarks
				Unit 1:	
1	Practice	29-07-19	3	Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations	
2	Theory	5-08-19	1		
3	Practice	5-08-19	2	Simple engineering drawings with CAD drawing tools : Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline, Ellipse, Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customizing toolbars, Working with multiple drawings	
4	Theory	19-08-19	1		
5	Practice	19-08-19	2		
				Unit 2:	
7	Theory	9-09-19	1	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings, Different types of bonds in brick masonry	
8	Practice	9-08-19	2		
9	Theory	16-9-19	1	Different types of staircases – Dog legged, Open well. Lintel and chajja RCC slabs and beams, Cross section of a pavement	
10	Practice	16-9-19	2		
11	Theory	23-9-19	1	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system Cross sectional details of a road for a Residential area with provision for all services Steel truss	
12	Practice	23-9-19	2		
				Unit 3:	
13	Theory	30-09-19	1	Principles of planning, Planning regulations and building bye-laws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings.	Special class
14	Practice	30-09-19	2		
15	Theory	21-10-19	1	Single and Double story residential building	
19	Practice	21-10-19	2		
18	Theory	28-10-19	1	Hostel building	
19	Practice	28-10-19	2		
20	Theory	4-11-19	1	Hospital building	
21	Practice	4-11-19	2		
22	Theory	11-11-19	1	School building	
23	Practice	11-11-19	2		
24	Theory	18-11-19	1		
25	Practice	18-11-19	2	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
26	Theory	25-11-19	1		
27	Practice	25-11-19	2		

Mr. Vinuthan V R
Course Instructor

Dr. Mahesh Kumar
HOD

Dr. Narendra Vishwanath
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DEPARTMENT OF CIVIL ENGINEERING
18 CVL 37 - DESIGN AND DRAWING OF STEEL STRUCTURES
BATCH -1

Sl.No.	Class	Date	Hrs	Topics	Remarks
				Unit 1:	
1	Practice	31-07-19	3	Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations	
2	Theory	7-08-19	1		
3	Practice	7-08-19	2	Simple engineering drawings with CAD drawing tools : Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline, Ellipse, Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features; View tools, Layers concept, Dimension tools, Hatching, Customizing toolbars, Working with multiple drawings	
4	Theory	14-08-19	1		
5	Practice	14-08-19	2		
				Unit 2:	
7	Theory	21-09-19	1	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings, Different types of bonds in brick masonry	
8	Practice	21-08-19	2		
9	Theory	28-8-19	1	Different types of staircases – Dog legged, Open well, Lintel and chajja RCC slabs and beams, Cross section of a pavement	
10	Practice	28-8-19	2		
11	Theory	4-9-19	1	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system Cross sectional details of a road for a Residential area with provision for all services Steel truss	
12	Practice	4-9-19	2		
				Unit 3:	
13	Theory	11-09-19	1	Principles of planning, Planning regulations and building bye-laws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings.	Special class
14	Practice	11-09-19	2		
15	Theory	18-10-19	1	Single and Double story residential building	
19	Practice	18-10-19	2		
18	Theory	25-10-19	1	Hostel building	
19	Practice	25-10-19	2		
20	Theory	30-11-19	1	Hospital building	
21	Practice	30-11-19	2		
22	Theory	9-11-19	1	School building	
23	Practice	23-11-19	2		
24	Theory	30-11-19	1		
25	Practice	6-11-19	2	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
26	Theory	13-11-19	1		
27	Practice	20-11-19	2		

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DEPARTMENT OF CIVIL ENGINEERING

Semester: III **Year: 2019-20**

CourseTitle: **BUILDING MATERIAL TESTING LAB**	*Subject Code:* **18CVL38**
Total contact Hours: **42**	*Duration of Exam:* **03 Hrs.**
SEE marks: **60**	*CIE. marks:* **40**
Course Instructor: **Mrs Bhavya C H**	*Date: 25/07/19*
Checked by: **Dr. G Mahesh Kumar**	*Date: 25/07/19*

SINo	Date	Topics	Topics Covered	Remarks
		Batch 1		
1	31/7/19	Introduction		
2	07/8/19	Tension test on Mild steel and HYSD bars.		
3	14/8/19	Compression test of Mild Steel, Cast iron and Wood.		
4	21/9/19	Torsion test on Mild Steel circular sections		
5	28/9/19	Bending Test on Wood Under two point loading		
6	04/9/19	Shear Test on Mild steel		
7	11/9/19	Impact test on Mild Steel (Charpy&Izod)		
8	18/9/19	Hardness tests on ferrous and non-ferrous metals – Brinell's, Rockwelland Vicker's		
9	25/9/19	Tests on Fine aggregates – Moisture content, Specific gravity, Bulkdensity, Sieve analysis and Bulking		
10	9/10/19	Tests on Coarse aggregates – Absorption, Moisture content, specific gravity		
11	23/10/19	Bulk density and Sieve analysis		
12	30/10/19	Demonstration of Strain gauges and Strain indicators		
13	6/11/19	Repetation		
14	13/11/19	Internals		

SlNo	Date	Topics	Topics Covered	Remarks
		Batch 2		
1	29/7/19	Introduction		
2	05/8/19	Tension test on Mild steel and HYSD bars.		
3	19/8/19	Compression test of Mild Steel, Cast iron and Wood.		
4	26/8/19	Torsion test on Mild Steel circular sections		
5	09/9/19	Bending Test on Wood Under two point loading		
6	16/9/19	Shear Test on Mild steel		
7	23/9/19	Impact test on Mild Steel (Charpy&Izod)		
8	30/9/19	Hardness tests on ferrous and non-ferrous metals – Brinell's, Rockwelland Vicker's		
9	21/10/19	Tests on Fine aggregates – Moisture content, Specific gravity, Bulkdensity, Sieve analysis and Bulking		
10	28/10/19	Tests on Coarse aggregates – Absorption, Moisture content, specific gravity		
11	04/11/19	Bulk density and Sieve analysis		
12	11/11/19	Demonstration of Strain gauges and Strain indicators		
13	18/11/19	Repetation		
14	25/11/19	Internals		

Course Outcomes: After successful completion of the course, the students will be able to:

1. Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.
2. Identify, formulate and solve engineering problems of structural elements subjected to flexure.
3. Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials.

REFERENCE BOOKS:

1. **Testing of Engineering Materials**, Davis, Troxell and Hawk,International Student Edition – McGraw Hill Book Co. New Delhi.
2. **Mechanical Testing of Materials",** Fenner, George Newnes Ltd.London.
3. **"Experimental Strength of Materials"**, Holes K A, English Universities Press Ltd. London.
4. **"Testing of Metallic Materials"**, Suryanarayana A K, Prentice Hall of India Pvt. Ltd. New Delhi.

Scheme of Examination:

Group Experiments: Tension, Compression Torsion and Bending Tests
Individual Experiments: Remaining tests
Two questions are to be set – one from group expefiments and the other as individual experiment.

Mrs. Bhavya C H
Course Instructor

Dr. G Mahesh Kumar
HOD

Dr Narendra Viswanath
Principal

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

Semester: **V** *Year: 2019-20*

Subject Title: **Geotechnical Engineering Lab**	*Subject Code:* **17CVL57**
Total contact Hours: 40	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks: 40*
Lesson plan author: **Dr. G Mahesh Kumar**	*Date of commencement of semester:* **25/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to;

1. To carry out laboratory tests and to identify soil as per IS codal procedures
2. To perform laboratory tests to determine index properties of soil
3. To perform tests to determine shear strength and consolidation characteristics of soils

Course outcomes:

Students will be able to conduct appropriate laboratory/field experiments and interpret the results to determine

1. Physical and index properties of the soil
2. Classify based on index properties and field identification
3. To determine OMC and MDD, plan and assess field compaction program
4. Shear strength and consolidation parameters to assess strength and deformation characteristics
5. In-situ shear strength characteristics (SPT- Demonstration)

Question paper pattern:

1) All experiments are to be included in the examination except demonstration exercises.
2) Candidate to perform experiment assigned to him
3) Marks are to be allotted as per the split up of marks shown on the cover page of answer script

Reference Books:

1. Punmia B C, Soil Mechanics and Foundation Engineering- (2017), 16th Edition, Laxmi Publications co., New Delhi.
2. Lambe T.W., "Soil Testing for Engineers", Wiley Eastern Ltd., New Delhi.
3. Head K.H., "Manual of Soil Laboratory Testing" Vol. I, II, III, Princeton Press
4. Bowles J.E., "Engineering Properties of Soil and Their Measurements",- McGraw Hill Book Co. New York.

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

Sl	Hrs	Date	Topics	Remark
Module -1				
1	3	26-07-2019	Visual soil classification. Water content determination by oven drying method and infrared moisture method. Specific gravity test (pycnometer and density bottle method).	
2	3	31-07-2019		
Module -2				
3	3	02/08/2019	Grain size analysis i. Sieve analysis ii. Hydrometer analysis	
4	3	07/08/2019		
Module -3				
5	3	09/08/2019	In-situ density tests i. Core-cutter method	
6	3	14/08/2019		
7	3	16/08/2019	ii. Sand replacement method	
8	3	21/08/2019		
Module -4				
9	3	23/08/2019	Consistency limits i. Liquid limit test (by Casagrande's and cone penetration method)	
10	3	28/08/2019		
11	3	30/08/2019	ii. Plastic limit test	
12	3	04/09/2019		
13	3	11/09/2019	iii. Shrinkage limit test	
14	3	13/09/2019		
Module -5				
15	3	18/09/2019	Standard compaction test (light compaction)	
16	3	20/09/2019		
17	3	25/09/2019	Standard compaction test (heavy compaction)	
18	3	27/09/2019		

Sl	Hrs	Date	Topics	Remark
Module -6				
19	3	09-10-2019	Co-efficient of permeability test i. Constant head test ii. Variable head test	
20	3	18-10-2019		
Module -7				
21	3	23-10-2019	Shear strength tests i Unconfined compression test ii. Direct shear test	
22	3	25-10-2019		
23	3	30-10-2019	iii. Triaxial test (undrained unconsolidated)	
24	3	06/11/2019		
25	3	08/11/2019	Consolidation test : Determination of compression index and co-efficient of consolidation	
26	3	13/11/2019		
Module -8				
27	3	20/11/2019	Laboratory vane shear test. Demonstration of Swell pressure test, Standard penetration test and boring equipment.	
28	3	27/11/2019	**Lab Internal**	
29	3	29/11/2019		

(Dr. G Mahesh Kumar)
Course Instructor

(Dr. G Mahesh Kumar)
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DEPARTMENT OF CIVIL ENGINEERING

Semester: V **Year: 2019-20**

[As per Choice Based Credit System (CBCS) scheme]

Subject Title: **: Concrete and Highway Materials Laboratory**	*Subject Code:* **17CVL58**
Total contact Hours: **42**	*Duration of Exam:* **03 Hrs.**
SEE marks: **60**	*CIE Marks:* **40**
Lesson plan author: : **Mr. Prakash J**	*Date of commencement of semester:* **25/07/2019**
Checked by: **Dr. G Mahesh Kumar**	

Learning Objectives:

To learn the principles and procedures of testing Concrete and Highway materials and to get hands on experience by conducting the tests and evolving inferences

Course outcomes:

After studying this course, students will be able to:

1. Conduct appropriate laboratory experiments and interpret the results
2. Determine the quality and suitability of cement
3. Design appropriate concrete mix
4. Determine strength and quality of concrete
5. Test the road aggregates and bitumen for their suitability as road material.
6. Test the soil for its suitability as sub grade soil for pavements.

Reference Books:

1. M.L.Gambir, "Concrete Manual", Danpat Rai and sons, New Delhi
2. Shetty M.S, "Concrete Technology", S. Chand & Co. Ltd, New Delhi.
3. Mehta P.K, "Properties of Concrete", Tata McGraw Hill Publications, New Delhi.
4. Neville AM, "Properties of Concrete", ELBS Publications, London.
5. Relevant BIS codes.
6. S K Khanna, C E G Justo and A Veeraragavan, "Highway Materials Testing Laboratory Manual", Nem Chand Bros, Roorkee
7. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi
8. Relevant IRC Codes
9. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi

Lesson Plan

17CVL58 - CONCRETE AND HIGHWAY MATERIALS LABORATORY

Batch-1

Sl. No	Date	Topics
		Part A: Concrete Lab
1	25/07/19	**Tests on Cement:** a. Normal Consistency b. setting time
2	01/08/19	c. compressive strength d. fineness by air permeability test e. specific gravity
3	22/08/19	**Tests on Concrete:** a. Design of concrete mix as per IS-10262
4	29/08/19	**b. Tests on fresh concrete:** i. slump, ii. compaction factor and iii. Vee Bee test
5	12/09/19	**c. Tests on hardened concrete:** i. compressive strength test, ii. split tensile strength test, iii. flexural strength test d. NDT tests by rebound hammer and pulse velocity test.
6	19/09/19	**Tests on Self Compacting Concrete:** a. Design of self compacting concrete, b. slump flow test, c. V-funnel test,
7	26/09/19	d. J-Ring test, e. U Box test and f. L Box test
		Part B: High way materials Lab
8	**03/10/19**	**Tests on Aggregates** a. Aggregate Crushing value b. Los Angeles abrasion test
9	10/10/19	c. Aggregate impact test d. Aggregate shape tests (combined index and angularity number)
10	17/10/19	**Tests on Bituminous Materials** a. Penetration test b. Ductility test
11	24/10/19	c. Softening point test d. Specific gravity test
12	31/10/19	e. Viscosity test by tar viscometer f. Bituminous Mix Design by Marshall Method (Demonstration only)
13	07/11/19	**Tests on Soil** a. Wet sieve analysis b. CBR test
14	14/10/19	**Internals test**

Lesson Plan

17CVL58 - CONCRETE AND HIGHWAY MATERIALS LABORATORY

Batch-2

Sl. No	Date	Topics
		Part A: Concrete Lab
1	30/07/19	**Tests on Cement:** a. Normal Consistency b. setting time
2	06/08/19	c. compressive strength d. fineness by air permeability test e. specific gravity
3	13/08/19	**Tests on Concrete:** a. Design of concrete mix as per IS-10262
4	20/08/19	**b. Tests on fresh concrete:** i. slump, ii. compaction factor and iii. Vee Bee test
5	27/08/19	**c. Tests on hardened concrete:** i. compressive strength test, ii. split tensile strength test, iii. flexural strength test d. NDT tests by rebound hammer and pulse velocity test.
6	03/09/19	**Tests on Self Compacting Concrete:-** a. Design of self compacting concrete, b. slump flow test, c. V-funnel test,
7	17/09/19	d. J-Ring test, e. U Box test and f. L Box test
		Part B: High way materials Lab
8	24/09/19	**Tests on Aggregates** a. Aggregate Crushing value b. Los Angeles abrasion test
9	01/10/19	c. Aggregate impact test d. Aggregate shape tests (combined index and angularity number)
10	22/10/19	**Tests on Bituminous Materials** a. Penetration test b. Ductility test
11	05/11/19	c. Softening point test d. Specific gravity test
12	12/11/19	e. Viscosity test by tar viscometer f. Bituminous Mix Design by Marshall Method (Demonstration only)
13	19/11/19	**Tests on Soil** a. Wet sieve analysis b. CBR test
14	26/11/19	**Internals test**

Mr. Prakash J
Course Instructor

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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VII**

Year: 2019-20

Subject Title: **Environmental Engineering Laboratory**	*Subject Code:* **15CVL76**
Total contact Hours: ***48 (16 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **29/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to:

1. To learn different methods of water & waste water quality
2. To conduct experiments to determine the concentrations of water and waste water.
3. To determine the degree and type of treatment
4. To understand the environmental significance and application in environmental engineering practice.

Course outcomes:

After studying this course, students will be able to:

1. Acquire capability to conduct experiments and estimate the concentration of different parameters.
2. Compare the result with standards and discuss based on the purpose of analysis.
3. Determine type of treatment, degree of treatment for water and waste water.
4. Identify the parameter to be analyzed for the student project work in environmental stream.

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. Manual of Water and Wastewater Analysis – NEERI Publication.
2. Standard Methods for Examination of Water and Wastewater (1995), American Publication – Association, Water Pollution Control Federation, American Water Works Association, Washington DC.
3. IS Standards: 2490-1974, 3360-1974, 3307-1974. ISO 14001 Environmental Management, Regulatory Standards for Drinking Water and Sewage Disposal.
4. Clair Sawyer and Perry McCarty and Gene Parkin, "Chemistry for Environmental Engineering and Science" McGraw-Hill Series in Civil and Environmental Engineering.

3) **Question paper pattern:**

Two experiments shall be asked from the above set

One experiment to be conducted and for the other student should write detailed procedure.

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LECTURE PLAN

Sl No	Date	Topics	Remark
1	29-07-2019	Introduction, Determination of pH , Acidity	
2	05-08-2019	Determination of Alkalinity	
3	19-08-2019	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2019	Determination of Dissolved Oxygen	
5	09-09-2019	Determination of BOD.	
6	16-09-2019	Determination of Chlorides	
7	23-09-2019	Determination of percentage of available chlorine in bleaching powder, Determination of Residual Chlorine	
8	30-09-2019	Determination of Solids in Sewage: I) Total Solids, II) Suspended Solids, III) Dissolved Solids, IV) Volatile Solids, Fixed Solids, V) Settle able Solids.	
9	21-10-2019	Determination of Turbidity by Nephelometer. Determination of Optimum Dosage of Alum using Jar Test apparatus	
10	28-10-2019	Determination of sodium and potassium by flame photometer	
11	04-11-2019	Determination Nitrates by spectrophotometer	
12	11-11-2019	Determination of Iron and Manganese	
13	18-11-2019	Determination of Fluorides SPANDS Method	
14	25-11-2019	Determination of COD.	
15	29-11-2019	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2019	Internals	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
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DEPARTMENT OF CIVIL ENGINEERING

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Semester: **VII** *Year: 2019-20*

Subject Title: **Computer Aided Detailing of Structures**	*Subject Code:* **15CVL77**
Total contact Hours: ***45 (15 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **29/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

Provide students with a basic understanding

1. Be aware of the Scale Factors, Sections of drawings,
2. Draft the detailing of RC and Steel Structural member.

Course outcomes:

After studying this course, students will be able to:

1. Prepare detailed working drawings

1) **Presentation:** CAD Software, Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**
   1. N Krishna Raju, "Structural Design and Drawing of Reinforced Concrete and Steel", University Press
   2. Krishna Murthy, "Structural Design and Drawing – Concrete Structures", CBS Publishers, New Delhi
   3. SP 34: Handbook on Concrete Reinforcement and Detailing, Bureau of Indian Standards
   4. IS 13920:2016,Ductile Design And Detailing Of Reinforced Concrete Structures Subjected To Seismic Forces -Code Of Practice, Bureau of Indian Standard

3) **Question paper pattern:**

- Two questions shall be asked from each Module.
- One full question should be answered from each Module.
- Each question carries 40 marks.

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

	Batch 01			
	Total Contact Hours: 45			Theory: 15 Practice: 45
Sl	Hrs	Date	Topics	Remark
	Module -1: Detailing of RCC Structures			
1	3	02-08-2019	Beams – Simply supported, Cantilever and Continuous.	
2	3	09-08-2019	Slab – One way, Two way and One-way continuous.	
3	3	16-08-2019	Staircase – Doglegged	
4	3	23-08-2019	Cantilever Retaining wall	
5	3	30-08-2019	Counter Fort Retaining wall	
6	3	13-09-2019	Circular Water Tank, Rectangular Water Tank.	
	Module -2: Detailing of Steel Structures			
7	3	13-09-2019	Connections – Beam to beam, Beam to Column by Bolted Connection	
8	3	20-09-2019	Connections – Beam to beam, Beam to Column by Welded Connection	
9	3	27-09-2019	Built-up Columns with lacings and battens	
10	3	04-10-2019	Column bases and Gusseted bases with bolted Connection	
11	3	11-10-2019	Column bases and Gusseted bases with Welded Connection	
12	3	18-10-2019	Roof Truss – Welded and Bolted	
13	3	25-10-2019	Beams with Bolted and Welded	
14	3	08-11-2019	Gantry Girder	
15	3	29-11-2019	**Internals**	

(Manogna H N)
Course Instructor

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2019-20

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEBRUARY – JUNE 2020) MICRO SCHEDULE

COURSE	Concrete Technology	STAFF NAME	Dr C Nagaraja
COURSE CODE	**18CV44**	SEM/SEC	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for asignment)	EXAM MARKS (SEE)	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 1: Concrete Ingredients		
1	03/02/20	Cement- Cement manufacturing process, steps to reduce carbon foot print	✓	Covered
2	04/02/20	Chemical composition and their importance, hydration of cement	✓	Covered
3	06/02/20	Types of cement, testing of cement	✓	Covered
4	08/02/20	Fine aggregates: functions, requirements , alternatives to river sand	✓	Covered
5	10/02/20	M-sand, introduction and manufacturing, coarse aggregates: importance of size, shape and texture	✓	Covered
6	11/02/20	Grading and blending of aggregates, Testing of aggregates, requirement	✓	Covered
7	13/02/20	Recycled aggregates, water – Qualities of water	✓	Covered
8	15/02/20	Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents	✓	Covered
9	17/02/20	Accelerators, retarders and air entraining agents	✓	Covered
10	18/02/20	Mineral admixtures – Pozollanic materials and cementitious materials, Flyash, GGBS, Silica fume	✓	Covered
11	20/02/20	Metakaolin Cementitious materials, Flyash, GGBS, Silica fumes, Metakaolin and Rice husk ash	✓	Covered

SUMMARY

Planned Date	**From : 03/02/2020**	**To: 20/02/2020**	
Actual classes taken	**From : 03/02/2020**	**To:** 20/02/2020	
Number of classes	**Allocated :** 11	**Taken:** 11	
Content covered for IA	**IA 1:** ✓	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

C Nagaraja
Dr. C Nagaraja
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr Narendra viswanath
Principal

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MODULE 2

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 2: Fresh Concrete		
12	24/02/20	Workability- Factors affecting workability	✓	Covered
13	25/02/20	Factors affecting workability	✓	Covered
14	27/02/20	Measurements of workability-Slump	✓	Covered
15	29/02/20	Compaction factor and Vee-Bee consistometer tests, flow tests	✓	Covered
16	02/03/20	Segregation and bleeding, Process of manufacturing of concrete-Batching , mixing	✓	Covered
17	03/03/20	Transporting, placing and compaction.	✓	Covered
18	05/03/20	Curing and methods of curing- Water curing, Membrane curing	✓	Covered
19	07/03/20	Steam curing, accelerated curing , self curing	✓	Covered
20	09/03/20	Good and bad practices of making and using fresh concrete	✓	Covered
21	10/03/20	Effect of heat of hydration during mass concreting at project sites	✓	Covered

SUMMARY

Planned Date	**From : 24/02/2020**	**To: 10/03/2020**	
Actual classes taken	**From :** 24/02/2020	**To:** 10/03/2020	
Number of classes	**Allocated :** 10	**Taken:** 10	
Content covered for IA	**IA 1:** ✓	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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Dr. C Nagaraja
Course Coordinator

Mahesh Kumar
Dr. G Mahesh Kumar
HOD

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MODULE 3

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 3: Hardened Concrete		
22	12/03/20	Factors influencing strength, W/C ratio, gel/Space ratio	✓	Covered
23	17/03/20	Maturity Concept, Testing of hardened concrete	✓	Covered
24	19/03/20	Creep- Factors affecting creep, shrinkage- plastic shrinkage	✓	Covered
25	21/03/20	Drying Shrinkage, factors affecting shrinkage	✓	Covered
26	23/03/20	Definition and significance of durability, internal and external factors influencing durability	✓	Covered
27	24/03/20	Mechanism- Sulphate and chloride attack	✓	Covered
28	25/03/20	Carbonation, freezing and thawing,	✓	Covered
29	27/03/20	Corrosion, durability requirements as per IS 456	✓	Covered
30	28/03/20	Penetration and pull out test, Rebound hammer test	✓	Covered
31	30/03/20	Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations	✓	Covered

SUMMARY

Planned Date	**From : 12/03/2020**	**To: 30/03/2020**	
Actual classes taken	**From :** 12/03/2020	**To:** 30/3/2020	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 4: Concrete Mix proportioning		
32	31/03/20	Concept of mix design without admixtures	✓	Covered
33	02/04/20	Concept of mix design with admixtures	✓	Covered
34	07/04/20	Variables in proportioning and exposure conditions	✓	Covered
35	09/04/20	Variables in proportioning and exposure conditions	✓	Covered
36	16/04/20	Selection criteria of ingredients used for mix design	✓	Covered
37	18/04/20	Procedure of mix proportioning	✓	Covered
38	20/04/20	Numerical examples using IS 10262-2009	✓	Covered
39	21/04/20	Numerical examples using IS 10262-2009	✓	Covered
40	23/04/20	Numerical examples using IS 10262-2009	✓	Covered
41	28/04/20	Numerical examples using IS 10262-2009	✓	Covered

SUMMARY

Planned Date	**From : 31/03/2020**	**To: 28/04/2020**	
Actual classes taken	**From :** 31/03/2020	**To:** 28/04/2020	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

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MODULE 5

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 5: Special concretes		
42	30/04/20	RMC-Manufacture and requirement as per QCI-RMCPCS	✓	Covered
43	04/05/20	Properties, advantages and disadvantages	✓	Covered
44	05/05/20	Self compacting concrete – Concept, materials and tests	✓	Covered
45	09/05/20	Properties, applications	✓	Covered
46	11/05/20	Typical mix of SCC	✓	Covered
47	12/05/20	Fiber reinforced concrete(FRC) – Fibers and types	✓	Covered
48	14/05/20	Properties and applications of FRC	✓	Covered
49	16/05/20	Light weight concrete – material properties and types	✓	Covered
50	18/05/20	Typical light weight concrete mix and applications	✓	Covered
51	19/05/20	Materials, requirements, mix proportions of Geo polymer concrete	✓	Covered
52	21/05/20	Properties of Geo polymer Concrete,	✓	Covered
53	23/05/20	High Strength Concrete and High Performance Concrete.	✓	Covered
54	30/05/20	Revision	✓	Covered
55	01/06/20	Revision	✓	Covered.

SUMMARY

Planned Date	**From : 30/04/2020**	**To: 01/06/2020**	
Actual classes taken	**From :** 30/04/2020	**To:** 01/06/2020	
Number of classes	**Allocated :** 14	**Taken:** 14	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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LESSON PLAN (FEBRUARY – JUNE 2020) MACRO SCHEDULE

SUBJECT	Concrete Technology	STAFF NAME	Dr C Nagaraja
SUBJECT CODE	**18CV44**	SEM/SEC	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for asignment)	EXAM MARKS (SEE)	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Outcomes:

The students will be able to:

CO1. Relate material characteristics and their influence on microstructure of concrete.
CO2. Distinguish concrete behaviour based on its fresh and hardened properties.
CO3. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.
CO4. Adopt suitable concreting methods to place the concrete based on requirement.
CO5. Select a suitable type of concrete based on specific application.

Sl No	Date	Module Lesson Plan	Additional sources
01	03/02/2020 To 20/02/2020	**MODULE 1:** Cement- Cement manufacturing process, steps to reduce carbon foot print, Chemical composition and their importance, hydration of cement, Types of cement, testing of cement, Fine aggregates: functions, requirements , alternatives to river sand, M-sand, introduction and manufacturing, coarse aggregates: importance of size, shape and texture, Grading and blending of aggregates, Testing of aggregates, requirement, Recycled aggregates, water – Qualities of water, Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents, Accelerators, retarders and air entraining agents, Mineral admixtures – Pozollanic materials and cementitious materials, Flyash, GGBS, Silica fume, Metakaolin Cementitious materials, Flyash, GGBS, Silica fumes, Metakaolin and Rice husk ash. **No. of Contact sessions: 11**	https://www.virginiadot.org/VDOT/Business/asset_upload_file313_3529.pdf https://www.slideshare.net/LuvSLife/concrete-its-ingredients-and-products https://youtu.be/n-Pr1KTVSXo
02	24/02/2020 To 10/03/2020	**Module 2:** Workability- Factors affecting workability, Factors affecting workability, Measurements of workability-Slump, Compaction factor and Vee-Bee consistometer tests, flow tests Segregation and bleeding, Process of manufacturing of concrete-Batching , mixing , Transporting, placing and compaction. Curing and methods of curing- Water curing, Membrane curing, Steam curing, accelerated curing , self curing. Good and bad practices of making and using fresh concrete Effect of heat of hydration during mass concreting at project sites **No. of Contact sessions:10**	http://courses.washington.edu/cm425/fresh.pdf https://www.slideshare.net/7odaaliraqi/fresh-concrete-properties-its-standard-tests-2003-ver

Sl No	Date	Module Lesson Plan	Additional sources
03	12/03/2020 To 30/03/2020	**Module 3:** Factors influencing strength, W/C ratio, gel/Space ratio, Maturity Concept, Testing of hardened concrete, Creep- Factors affecting creep, shrinkage- plastic shrinkage, Drying Shrinkage, factors affecting shrinkage , Definition and significance of durability, internal and external factors influencing durability, Mechanism- Sulphate and chloride attack Carbonation, freezing and thawing, Corrosion, durability requirements as per IS 456, Penetration and pull out test, Rebound hammer test, Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations. **No. of Contact sessions: 10**	https://www.slideshare.net/gauravhtandon1/hardened-concrete-72809827 http://pioneer.netserv.chula.ac.th/~pwithit/CE231%206.pdf
04	31/03/2020 To 28/04/2020	**Module 4:** Concept of mix design without admixtures Concept of mix design with admixtures Variables in proportioning and exposure conditions Variables in proportioning and exposure conditions Selection criteria of ingredients used for mix design Procedure of mix proportioning Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 **No. of Contact sessions:10**	https://law.resource.org/pub/in/bis/S03/is.10262.2009.pdf https://panchayatrajengineers.files.wordpress.com/2012/11/principles-of-concrete-mix-design.pdf
05	30/04/2020 To 01/06/2020	**Module 5:** RMC-Manufacture and requirement as per QCI-RMCPCS, Properties, advantages and disadvantages Self compacting concrete – Concept, materials and tests, Properties, applications, Typical mix of SCC Fiber reinforced concrete(FRC) – Fibers and types Properties and applications of FRC, Light weight concrete – material properties and types, Typical light weight concrete mix and applications, Materials, requirements, mix proportions of Geo polymer concrete, Properties of Geo polymer Concrete, High Strength Concrete and High Performance Concrete. Revision **No. of Contact sessions:14**	https://www.slideshare.net/gauravhtandon1/special-concretes-43200098 https://nptel.ac.in/courses/105102012/ https://sjce.ac.in/wp-content/uploads/2018/01/Self-Compacting-Concrete.pdf

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Text books:

1. Neville A M, "Properties of Concrete" ELBS Edition, Longman Ltd, London
2. M S Shetty, "Concrete Technology- Theory and Practice", S Chand & Company Pvt Ltd, New Delhi.
3. Kumar Mehta P and Paulo J. M. Monteiro "Concrete- Micro structure, property and materials", 4th Edition, Mc Graw Hill Education, 2014
4. A R Santhakumar, "Concrete Technology", Oxford University Press, New Delhi (New Edition)

Sl No	Date	Module Lesson Plan	Additional sources
03	12/03/2020 To 30/03/2020	**Module 3:** Factors influencing strength, W/C ratio, gel/Space ratio, Maturity Concept, Testing of hardened concrete, Creep- Factors affecting creep, shrinkage- plastic shrinkage, Drying Shrinkage, factors affecting shrinkage , Definition and significance of durability, internal and external factors influencing durability, Mechanism- Sulphate and chloride attack Carbonation, freezing and thawing, Corrosion, durability requirements as per IS 456, Penetration and pull out test, Rebound hammer test, Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations. **No. of Contact sessions: 10**	https://www.slideshare.net/gauravhtandon1/hardened-concrete-72809827 http://pioneer.netserv.chula.ac.th/~pwithit/CE231%206.pdf
04	31/03/2020 To 28/04/2020	**Module 4:** Concept of mix design without admixtures Concept of mix design with admixtures Variables in proportioning and exposure conditions Variables in proportioning and exposure conditions Selection criteria of ingredients used for mix design Procedure of mix proportioning Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 **No. of Contact sessions:10**	https://law.resource.org/pub/in/bis/S03/is.10262.2009.pdf https://panchayatrajengineers.files.wordpress.com/2012/11/principles-of-concrete-mix-design.pdf
05	30/04/2020 To 01/06/2020	**Module 5:** RMC-Manufacture and requirement as per QCI-RMCPCS, Properties, advantages and disadvantages Self compacting concrete – Concept, materials and tests, Properties, applications, Typical mix of SCC Fiber reinforced concrete(FRC) – Fibers and types Properties and applications of FRC, Light weight concrete – material properties and types, Typical light weight concrete mix and applications, Materials, requirements, mix proportions of Geo polymer concrete, Properties of Geo polymer Concrete, High Strength Concrete and High Performance Concrete. Revision **No. of Contact sessions:14**	https://www.slideshare.net/gauravhtandon1/special-concretes-43200098 https://nptel.ac.in/courses/105102012/ https://sjce.ac.in/wp-content/uploads/2018/01/Self-Compacting-Concrete.pdf

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Text books:

1. Neville A M, "Properties of Concrete" ELBS Edition, Longman Ltd, London
2. M S Shetty, "Concrete Technology- Theory and Practice", S Chand & Company Pvt Ltd, New Delhi.
3. Kumar Mehta P and Paulo J. M. Monteiro "Concrete- Micro structure, property and materials", 4th Edition, Mc Graw Hill Education, 2014
4. A R Santhakumar, "Concrete Technology", Oxford University Press, New Delhi (New Edition)

Reference Books

1. M L Gambir, "Concrete Technology", Mc Graw Hill Education, 2014
2. N V Nayak, A K Jain "Hand book on Advanced Concrete Technology", ISBN: 978-81-8487-186-9
3. Job Thomas, "Concrete Technology", CENGAGE Learning, 2015
4. IS 4926(2003): Code of Practice Ready - Mixed Concrete [CED2: Cement and Concrete] Criteria for RMC Production Control, Basic Level Certification for production control of Ready Mixed Concrete –BMPTC
5. Specification and Guidelines for Self compacting Concrete, EFNARC, Association House

Dr. C Nagaraja
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr Narendra viswanath
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

Semester: V [*As per Choice Based Credit System (CBCS) scheme*] **Year: 2019-20**

Course Title: **Traffic Engineering**	*Subject Code:* **17CV561**
Total contact Hours: **56**	*Duration of Exam:* **03 Hrs.**
SEE marks: **60**	*CIE marks:* **40**
Lesson plan author: **Mr. Prakash J**	*Date:* **25/07/2019**
Checked by: **Dr. G Mahesh Kumar**	*Credits:* **03**

Course objectives:

This course will enable students to:

1. Understand fundamental knowledge of traffic engineering, scope and its importance.
2. Describe basic techniques for collecting and analysing traffic data, diagnosing problems, designing appropriate remedial treatment, and assessing its effectiveness.
3. Apply probabilistic and queuing theory techniques for the analysis of traffic flow situations and emphasis the interaction of flow efficiency and traffic safety.
4. understand and analyse traffic issues including safety, planning, design, operation and control.
5. Apply intelligent transport system and its applications in the present traffic scenario.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Understand the human factors and vehicular factors in traffic engineering design.
2. Conduct different types of traffic surveys and analysis of collected data using statistical concepts.
3. Use an appropriate traffic flow theory and to comprehend the capacity & signalized intersection analysis.
4. Understand the basic knowledge of Intelligent Transportation System.

Lesson Plan

Sl No	Date	Topics
		Module -1
1	**26/07/19**	**Traffic Planning And Characteristics:** Road Characteristics-
2	**27/07/19**	Road User Characteristics,
3	**30/07/19**	PIEV Theory
4	**31/07/19**	Vehicle Performance Characteristics
5	02/08/19	Fundamentals Of Traffic Flow
6	03/08/19	Urban Traffic Problems In India
7	06/08/19	Integrated Planning Of Town,
8	07/08/19	Country, Regional Infrastructures
9	09/08/19	All Urban Infrastructures
10	10/08/19	Sustainable Approach-
11	13/08/19	Land Use & Transport
12	14/08/19	Modal Integration
		Module -2
13	16/08/19	**Traffic Surveys:** Traffic Surveys- Speed, journey time and delay surveys,
14	17/08/19	Vehicles Volume Survey including non-motorized transports
15	20/08/19	Methods and interpretation,
16	23/08/19	Origin Destination Survey, Methods and presentation
17	24/08/19	Parking Survey, ,
18	27/08/19	Accident analyses-Methods
19	28/08/19	interpretation and presentation
20	30/08/19	interpretation and presentation
21	31/08/19	Statistical applications in traffic studies and
22	03/09/19	traffic forecasting
23	04/09/19	Level of service- Concept
24	11/09/19	Applications and significance.
		Module -3
25	13/09/19	**Traffic Design and Visual Aids:** Intersection Design- channelization,
26	14/09/19	Rotary intersection design,
27	17/09/19	Signal design
28	18/09/19	Coordination of signals
29	20/09/19	Grade separation
30	21/09/19	Grade separation
31	24/09/19	Traffic signs including VMS

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Kadiyali.L.R. **"Traffic Engineering and Transport Planning"**, Khanna Publishers, Delhi, 2013
2. S K Khanna and CEG Justo and A Veeraragavan, **"Highway Engineering"**, Nem Chand and Bros.
3. Indian Roads Congress (IRC) Specifications: Guidelines and Special Publications on Traffic Planning and Management.
4. Salter. R.I and Hounsell N.B, **"Highway Traffic Analysis and design"**, Macmillan Press Ltd.1996.

Reference Books:

1. Fred L. Mannering, Scott S. Washburn and Walter P.Kilareski, Principles of Highway Engineering and Traffic Analysis, Wiley India Pvt. Ltd., New Delhi, 2011
2. Garber and Hoel, "Principles of Traffic and Highway Engineering", CENGAGE Learning, New Delhi; 2010
3. SP:43-1994, IRC Specification, "Guidelines on Low-cost Traffic Management Techniques" for Urban Areas, 1994
4. John E Tyworth, "Traffic Management Planning, Operations and control", Addison Wesly Publishing Company,1996
5. Hobbs.F.D. "Traffic Planning and Engineering", University of Brimingham, Peragamon Press Ltd, 2005

32	25/09/19	Traffic signs including VMS
33	27/09/19	road markings
34	01/10/19	Significant roles of traffic control personnel
35	04/10/19	Networking pedestrian facilities
36	05/10/19	& cycle tracks.
		Module -4
37	09/10/19	**Traffic Safety and Environment:** Road accidents,
38	11/10/19	Causes, effect, prevention, and cost
39	12/10/19	Street lighting.
40	18/10/19	Traffic and environment hazards
41	19/10/19	Air Pollution, causes
42	22/10/19	Noise Pollution and causes
43	23/10/19	Noise Pollution and causes
44	25/10/19	abatement measures
45	26/10/19	Promotion and integration of public transportation
46	30/10/19	Promotion and integration of public transportation
47	02/11/19	Promotion of non-motorized transport.
48	05/11/19	Promotion of non-motorized transport.
		Module -5
49	06/11/19	**Traffic Management:** Area Traffic Management System,
50	08/11/19	Traffic Regulatory Measures,
51	09/11/19	Travel Demand Management (TDM)
52	12/11/19	Direct and indirect methods,
53	13/11/19.	Congestion and parking pricing
54	16/11/19	Traffic System Management (TSM) with IRC standards
55	19/11/19	All segregation methods- Coordination among different agencies
56	20/11/19	All segregation methods- Coordination among different agencies continued.,
57	26/11/19	Intelligent Transport System for traffic management
58	27/11/19	Enforcement and education.
59	29/11/19	Revision
60	30/11/19	Revision

Mr. Prakash J
Course Instructors

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DEPARTMENT OF CIVIL ENGINEERING

SUBJECT PLAN

Semester: VII Semester B E Year: 2019-20

Subject Title: **Municipal and Industrial Waste Water Engineering**	Subject Code: **15CV-71**
Total contact Hours: 50	Duration of Exam: 03 Hrs.
Total Theory exam marks: 80	Total I.A. marks: 20
Subject plan author: Mrs. Akshatha V	Date: 29/07/2019
Checked by: Dr. G Mahesh Kumar	Date: 29/07/2019

Sl. NO	DATE	TOPIC PLANNED	REMARKS
MODULE 1:			
1	29-07-2019	Introduction, need for sanitation, methods of sewage disposal	
2	30-07-2019	Types of sewerage systems, dry weather flow, wet weather flow	
3	31-07-2019	Factors effecting dry and wet weather flow on design of sewerage system	
4	01-08-2019	Estimation of storm flow, time of concentration flow	
5	05-08-2019	Material of sewers, shape of sewers	
6	06-08-2019	Laying and testing of sewers, ventilation of sewers	
7	07-08-2019	Low-cost waste treatment; oxidation pond, septic tank	
8	08-08-2019	Sewer appurtenances, manholes, catch basins	
9	13-08-2019	Basic principles of house drainage	
10	14-08-2019	Typical layout plan showing house drainage connections	
MODULE 2:			
11	19-08-2019	Design of sewers	
12	20-08-2019	Hydraulic formula for velocity	
13	21-08-2019	Effects of variation on velocity, regime velocity	
14	22-08-2019	Design of hydraulic elements for circular sewers for full flow and partial flow conditions	
15	26-08-2019	Disposal of effluents by dilution	
16	27-08-2019	Self purification phenomenon	
17	28-08-2019	Oxygen sag curve, zones of purification	
18	29-08-2019	Sewage farming, sewage sickness	
19	03-09-2019	Numerical problems on disposal of effluents	
20	04-09-2019	Streeter-Phelps equation	

MODULE 3:			
21	09-09-2019	Waste water characteristics	
22	11-09-2019	Sampling, significance and techniques	
23	12-09-2019	Physical, chemical and biological characteristics	
24	16-09-2019	Flow diagram for municipal waste water treatment	
25	17-09-2019	Unit operations; screens, grit chambers, skimming tanks	
26	18-09-2019	Equalization tanks	
27	19-09-2019	Suspended growth and fixed film bio process	
28	23-09-2019	Design of trickling filters, activated sludge process	
29	24-09-2019	Sequential batch reactors, moving bed bio reactors	
30	25-09-2019	Sludge digesters	
MODULE 4:			
31	26-09-2019	Difference between domestic and industrial waste water	
32	30-09-2019	Effect of effluent discharge on streams	
33	01-10-2019	Methods of industrial waste water treatment; volume reduction	
34	03-10-2019	Strength reduction, neutralization	
35	09-10-2019	Equalization and proportioning	
36	10-10-2019	Removal of organic, inorganic and colloidal solids	
37	17-10-2019	Combined treatment methods; merits, demerits and feasibility	
38	21-10-2019	Principles of discharge of raw waste water in to streams	
39	22-10-2019	Discharge of partially treated waste water in to streams	
40	23-10-2019	Discharge of completely treated wastes in to streams	
MODULE 5:			
41	24-10-2019	Process flow chart	
42	28-10-2019	Sources and characteristics of industrial waste water	
43	30-10-2019	Reuse and recovery and disposal of wastes from cotton and textile industry	
44	31-10-2019	Reuse and recovery and disposal of wastes from tanning industry	
45	04-11-2019	Reuse and recovery and disposal of wastes from cane sugar and distilleries	
46	05-11-2019	Reuse and recovery and disposal of wastes from dairy industry	
47	06-11-2019	Reuse and recovery and disposal of wastes from steel and cement industry	
48	07-11-2019	Reuse and recovery and disposal of wastes from paper and pulp industry	
49	11-11-2019	Reuse and recovery and disposal of wastes from pharmaceutical	
50	12-11-2019	Reuse and recovery and disposal of wastes from food processing industry	

TEXT BOOKS:

1. Metcalf and Eddy, "Wastewater Engineering - Collection, Treatment, Disposal and Reuse", McGraw Hill Pub.Co., 2009.
2. Nelson Leonard Nemerow, "Industrial Waste Treatment", Butterworth-Heinemann, 2007.
3. Patwardhan A.D, "Industrial Waste Water Treatment", PHI Learning Private Limited-New Delhi
4. Hammer, M.J. and Hammer, M.J., "Water and Wastewater Technology", 7th Ed., Prentice Hall of India

REFERENCE BOOKS:

1. Manual on Waste Water Treatment: CPHEEO, Ministry of Urban Development, New Delhi.
2. Fair, Geyer and Okun , "Water and Wastewater Engineering" Vol-II, John Willey Publishers, New York.

Akshatha V

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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VII** *Year: 2019-20*

Subject Title: **Design of RCC and Steel Structures**	*Subject Code:* **15CV72**
Total contact Hours: **58**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **29/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course Objectives:

This course will enable students to

i. Provide basic knowledge in the areas of limit state method and concept of design of RC and Steel.structures.
ii. Identify, formulate and solve engineering problems in RC and Steel Structures
iii. Give procedural knowledge to design a system, component or process as per needs and specifications of RC Structures like Retaining wall, Footing, Water tanks, Portal Frames and Steel Structures like Roof Truss, Plate Girder and Gantry Girder.
iv. Imbibe the culture of professional and ethical responsibilities by following codal provisions in the analysis, design of RC and Steel Structures.
v. Provide factual knowledge on analysis and design of RC Structural elements, who can participate and succeed in competitive examinations

Course Outcomes:

After stndying this course, students will be able to:

i. Students will acquire the basic knowledge in design of RCC and Steel Structures.
ii. Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe RC and Steel members.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **Text Books:**

- N.Subramanian, **Design of Steel Structures,** Oxford, 2008
- K S Duggal, **Limit State Design of Steel Structures,** Tata Mc Graw Hill Publishers 2010
- N Krishna Raju, **Structural Design and Drawing of Reinforced Concrete and Steel,** University Press

3) **Reference Books:**

- Charles E Salman, Johnson & Mathas, **"Steel Structure Design and Behaviour",** Pearson Publications

- Nether Cot, et.al, **"Behaviour and Design of Steel Structures to EC -III"**, CRC Press
- P C Verghese, **"Limit State Design of Reinforced Concrete"**, PHI Publications, New Delhi
- S N Sinha, **"Reinforced Concrete Design"**, McGraw Hill Publication

4) **Scheme of Examination:**

- Two questions shall be asked from each module. There can be maximum of three subdivisions in each question, if necessary.
- One full question should be answered from each module.
- Each question carries 40 marks.
- Code books – IS 456, IS 800, IS 3370 (Part IV), SP (6) – Steel Tables, shall be referred for designing
- The above charts shall be provided during examinations

5) **Evaluation:**

Student Assessment: Through Internal Assessment Tests (20 Marks), Assignments. University Examinations (80 Marks).

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LECTURE PLAN

Sl No	Date	Topics	Remark
		Design of RCC and Steel Structures	
1	29-07-2019	**Footings**: Design of rectangular slab type combined footing.	**RCC Design**
2	31-07-2019		
3	01-08-2019		
4	02-08-2019		
5	05-08-2019		
6	07-08-2019	**Roof Truss**: Design of roof truss for different cases of loading, forces in members to be given.	**STEEL Design**
7	08-08-2019		
8	09-08-2019		
9	14-08-2019		
10	16-08-2019		
11	19-08-2019	**Roof Truss**: Design of roof truss for different cases of loading, forces in members to be given.	**STEEL Design**
12	21-08-2019		
13	22-08-2019		
14	23-08-2019		
15	26-08-2019	**Retaining Walls:** Design of cantilever Retaining wall	**RCC Design**
16	28-08-2019		
17	29-08-2019		
18	30-08-2019		
19	04-09-2019		

20	09-09-2019	**Retaining Walls:** Design of counter fort Retaining wall	**RCC Design**
21	11-09-2019		
22	12-09-2019		
23	13-09-2019		
24	16-09-2019		
25	18-09-2019	**Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks	**STEEL Design**
26	19-09-2019		
27	20-09-2019		
28	23-09-2019		
29	25-09-2019		
30	26-09-2019	**Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks	**STEEL Design**
31	27-09-2019		
32	30-09-2019		
33	03-10-2019		
34	04-10-2019		
35	09-10-2019	**Water Tanks:** Design of circular water tanks resting on ground (Rigid base).	**RCC Design**
36	10-10-2019		
37	11-10-2019		
38	17-10-2019		
39	18-10-2019	**Water Tanks:** Design of circular water tanks resting on ground (Flexible base)	**RCC Design**
40	21-10-2019		
41	23-10-2019		
42	24-10-2019		
43	25-10-2019		
44	28-10-2019	**Gantry Girder:** Design of gantry girder with all necessary checks	**STEEL Design**
45	30-10-2019		
46	31-10-2019		
47	04-11-2019		
48	06-11-2019		
49	07-10-2019	**Portal Frames:** Design of portal frames with fixed based support	**RCC Design**
50	08-11-2019		
51	11-11-2019		
52	13-11-2019		
53	14-11-2019		
54	18-11-2019	**Portal Frames:** Design of portal frames with hinged based supports	**RCC Design**
55	20-11-2019		
56	27-11-2019		
57	28-11-2019		
58	29-11-2019		

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2019-2020*

[LESSON PLAN (JULY - DECEMBER 2019) MACRO SCHEDULE]

Course Title	*DESIGN OFRCC AND STEEL STRUCTURES*	*Course Instructor*	*Mr. Manogna H N*
Course Code	15CV72	*Sem /Sec*	*VII*
IA Marks (CIE)	*20 (Average of three tests for 20 marks)*	*Maximum Exam Marks (SEE)*	*80*
Date of commencement of semester: 29/07/19	*Total contact Hours: 58*	*Duration of Exam:* 03 Hrs.	*CREDITS: 04*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Students will acquire the basic knowledge in design of RCC and Steel Structures.
CO2. Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe RC and Steel members.

Sl No	Date	Module Lesson Plan	Additional Sources
1	29/07/2019 to 29/11/2019	**Module 1: Design of RC Structures:** **Footings:** Design of rectangular slab type combined footing.. **Retaining Walls:** Design of cantilever Retaining wall **Retaining Walls**: Design of counter fort Retaining wall **Water Tanks:** Design of circular water tanks resting on ground (Rigid base). **Water Tanks**: Design of circular water tanks resting on ground (Flexible base) **Portal Frames:** Design of portal frames with fixed based support **Portal Frames**: Design of portal frames with hinged based supports	https://nptel.ac.in/courses/105105162/ https://nptel.ac.in/courses/105106112/
2	29/07/2019 to 29/11/2019	**Module 2: Design of Steel Structures:** **Roof Truss:** Design of roof truss for different cases of loading, forces in members to given. **Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks. **Gantry Girder:** Design of gantry girder with all necessary checks	https://nptel.ac.in/courses/105105162/

Text Books:

- N.Subramanian, **Design of Steel Structures,** Oxford, 2008
- K S Duggal, **Limit State Design of Steel Structures,** Tata Mc Graw Hill Publishers 2010
- N Krishna Raju, **Structural Design and Drawing of Reinforced Concrete and Steel,** University Press

Reference Books:

- Charles E Salman, Johnson & Mathas, **"Steel Structure Design and Behaviour"**, Pearson Publications
- Nether Cot, et.al, **"Behaviour and Design of Steel Structures to EC -III"**, CRC Press
- P C Verghese, **"Limit State Design of Reinforced Concrete"**, PHI Publications, New Delhi
- S N Sinha, **"Reinforced Concrete Design"**, McGraw Hill Publication

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2019-2020*

[LESSON PLAN (JULY - DECEMBER 2019) MICRO SCHEDULE]

Course Title	*DESIGN OFRCC AND STEEL STRUCTURES*	*Course Instructor*	*Mr. Manogna H N*
Course Code	15CV72	*Sem / Sec*	*VII*
IA Marks (CIE)	*20 (Average of three tests for 20 marks)*	*Maximum Exam Marks (SEE)*	*80*
Date of commencement of semester: 29/07/19	*Total contact Hours: 58*	*Duration of Exam*: 03 Hrs.	*CREDITS: 04*

Module 1: Design of RC Structures:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
1	29-07-19	**Footings:** Design of rectangular slab type combined footing		
2	31-07-19			
3	01-08-19			
4	02-08-19			
5	05-08-19			
15	26-08-19	**Footings:** Design of cantilever Retaining wall		
16	28-08-19			
17	29-08-19			
18	30-08-19			
19	04-09-19			
20	09-09-19	**Retaining Walls:** Design of counter fort Retaining wall		
21	11-09-19			
22	12-09-19			
23	13-09-19			
24	16-09-19			
35	09-10-19	**Water Tanks:** Design of circular water tanks resting on ground (Rigid base).		
36	10-10-19			
37	11-10-19			
38	17-10-19			
39	18-10-19	**Water Tanks:** Design of circular water tanks resting on ground (Flexible base)		
40	21-10-19			
41	23-10-19			
42	24-10-19			
43	25-10-19			
49	07-10-19	**Portal Frames:** Design of portal frames with fixed based support		
50	08-11-19			
51	11-11-19			
52	13-11-19			
53	14-11-19			

54	18-11-19	**Portal Frames:** Design of portal frames with hinged based supports		
55	20-11-19			
56	27-11-19			
57	28-11-19			
58	29-11-19			

SUMMARY

Planned Date	**From:** 29/07/2019	**To:** 29/11/2019	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 13	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2019-2020*

Module 2: Design of Steel Structures:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
6	07-08-19	**Roof Truss:** Design of roof truss for different cases of loading, forces in members to be given.		
7	08-08-19			
8	09-08-19			
9	14-08-19			
10	16-08-19			
11	19-08-19	**Roof Truss:** Design of roof truss for different cases of loading, forces in members to be given.		
12	21-08-19			
13	22-08-19			
14	23-08-19			
25	18-09-19	**Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks		
26	19-09-19			
27	20-09-19			
28	23-09-19			
29	25-09-19			
30	26-09-19	**Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks		
31	27-09-19			
32	30-09-19			
33	03-10-19			
34	04-10-19			
44	28-10-19	**Gantry Girder:** Design of gantry girder with all necessary checks		
45	30-10-19			
46	31-10-19			
47	04-11-19			
48	06-11-19			

SUMMARY

Planned Date	**From:** 29/07/2019	**To:** 06/11/2019	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 13	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VII **Year: 2019-20**

Subject Title : **Hydrology & Irrigation Engineering**	*Subject Code:* **15CV73**
Total contact Hours: **53**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date college opening: 29/07/19*
Checked by: **Dr. Mahesh kumar**	

Learning Objectives:

1 Understand the concept of hydrology and components of hydrologic cycle such as pricipitation, infiltration,
evaporation and transpiration.
2. Quantify runoff and use concept of unit hydrograph.
3. Demonstrate different methods of irrigation, methods of application of water and irrigation procedure.
4. Design canals and canal network based on the water requirement of various crops.
5. Determine the reservoir capacity.

Learning Outcomes:

1.Understand the importance of hydrology and its components.
2. Measure precipitation and analyze the data and analyze the losses in precipitation.
3. Estimate runoff and develop unit hydrographs.
4. Find the benefits and ill-effects of irrigation.
5. Find the quantity of irrigation water and frequency of irrigation for various crops.
6. Find the canal capacity, design the canal and compute the reservoir capacity.

Materials and resources required:

1) K. Subramanya, "Engineering Hydrology", Tata McGraw Hill Publishers, New Delhi.
2) Jayarami Reddy, "A Text Book of Hydrology", Lakshmi Publications, New Delhi.
3) Punmia and LalPandey, "Irrigation and Water Power Engineering" Lakshmi Publications, New Delhi.

Scheme of Examination

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

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DEPARTMENT OF CIVIL ENGINEERING

15CV73- Hydrology & Irrigation Engineering

Sl No	Date	Topics	Topics Covered	Remarks
		MODULE-1		
1	30/07/19	**Hydrology:** Introduction		
2	31/07/19	Importance of hydrology		
3	1/08/19	Global and Indian water availability, Practical application of hydrology		
4	2/08/19	Global and Indian water availability, Practical application of hydrology		
5	6/08/19	Hydrologic cycle (Horton's)		
6	7/08/19	engineering representation. Of Hydrological cycle		
7	8/08/19	**Precipitation:** Definition, Forms and types of precipitation		
8	13/08/19	Measurement of rain fall 10 hours L2, L3 using Symon's and Syphon type of rain gauges		
9	14/08/19	Optimum number of rain gauge stations, computation of mean rainfall,		
10	15/08/19	Estimation of missing data, presentation of precipitation data, moving average curve, mass curve, rainfall hyetographs.		
		MODULE-2		
11	16/08/19	**Losses: Evaporation:** Introduction, Process		
12	20/08/19	Factors affecting evaporation, measurement using IS class-A Pan,		
13	21/08/19	Estimation using empirical formulae (Meyer's and Rohwer's equations) Reservoir evaporation and control		
14	22/08/19	**Evapo-transpiration:** Introduction, Consumptive use		
15	23/08/19	AET, PET, Factors affecting, 10 Hours L2, L3 Measurement		
16	27/08/19	Estimation by Blaney-Criddle equation		
17	28/08/19	**Infiltration:** Introduction, factors affecting infiltration capacity		
19	29/08/19	Factors affecting infiltration capacity		
19	30/08/19	Measurement by double ring infiltrometer		
20	03/09/19	Horton's infiltration equation, infiltration indices.		
		MODULE 3		
21	4/09/19	**Runoff:** Definition, concept of catchment		
22	11/09/19	Concept of catchment, factors affecting runoff		
23	12/09/19	Rainfall – runoff relationship using regression analysis.		
24	13/09/19	Rainfall – runoff relationship using regression analysis.		
25	16/09/19	**Hydrographs:** Definition, components of hydrograph		
26	17/09/19	Components of hydrograph, base flow separation		
27	18/09/19	Unit hydrograph, assumption, application and limitations		

28	19/9/19	Unit hydrograph, assumption, application and limitations		
29	20/9/19	Derivation from simple storm hydrographs		
30	24/9/19	S curve and its computations, Conversion of UH of different durations		
		MODULE-4		
31	25/9/19	Irrigation: introduction Definition		
32	26/9/19	Benefits and ill effects of irrigation.		
33	27/9/19	System of irrigation: surface and ground water		
34	1/10/19	Flow irrigation, lift irrigation, Bandhara irrigation.		
35	3/10/19	Flow irrigation, lift irrigation, Bandhara irrigation.		
36	4/10/19	**Water Requirements of Crops:** Duty, delta and base period,		
37	9/10/19	**Water Requirements of Crops:** Duty, delta and base period,		
38	10/10/19	Relationship between duty delta and problems		
39	11/10/19	Factors affecting duty of water crops		
40	17/10/19	Crop seasons in India		
41	18/10/19	Irrigation efficiency, frequency of irrigation.		
42	22/10/19	Irrigation efficiency, frequency of irrigation.		
		MODULE 5		
43	23/10/19	**Canals: introduction** Types of canals		
44	24/10/19	Alignment of canals		
45	25/10/19	Definition of gross command area, cultural command area		
46	30/10/19	Intensity of irrigation time factor, crop factor		
47	31/10/19	Unlined and lined canals. Standard sections.		
48	5/11/19	Design of canals by Lacey's and Kennedy's method		
49	6/11/19	Design of canals by Lacey's and Kennedy's method		
50	7/11/19	Design of canals by Lacey's and Kennedy's method		
51	8/11/19	**Reservoirs:** Definition, investigation for reservoir site		
52	12/11/19	Investigation for reservoir site, storage zones		
53	13/11/19	Determination of storage capacity using mass curves, economical height of dam.		

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VII *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2019-2020**

Course Title: **Ground Water & Hydraulics**	*Subject Code:* **15CV742**
Total contact Hours: ***50***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mrs Sreelakshmi S**	*Date:* **29/07/2019**
Checked by: **Dr G Mahesh Kumar**	*Credits:* ***03***

Course objectives:

This course will enable students to:

1. To characterize the properties of ground water and aquifers.
2. To quantify the ground water flow.
3. To locate occurrence of ground water and augment ground water resources.
4. To synthesize ground water development methods

Course outcomes:

After a successful completion of the course, the student will be able to:

1. find the characteristics of aquifers.
2. estimate the quantity of ground water by various methods.
3. locate the zones of ground water resources.
4. select particular type of well and augment the ground water storage.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.

• If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. H.M. Raghunath, "Ground Water", Wiley Eastern Publication, New Delhi.
2. K. Todd, "Ground Water Hydrology", Wiley and Sons, New Delhi.
3. Bower. H., "Ground Water Hydrology" McGraw Hill, New Delhi.

Reference Books:

1. Garg Satya Prakash, "Ground Water and Tube Wells", Oxford and IBH, New Delhi.
2. W. C. Walton, "Ground Water Resources and Evaluation" McGraw Hill, Delhi.
3. Michel, D. M., Khepar, S. D., Sondhi, S. K., "Water Wells and Pumps" McGraw Hill, Delhi

Lesson Plan

Sl No	Date	Topics	Remarks
		Module -1	
1	01/08/19	**Introduction:**	
2	02/08/19	Importance about Groundwater	
3	05/08/19	Importance about Groundwater	
4	06/08/19	Vertical distribution of subsurface water	
5	08/08/19	Occurrence in different types of rocks	
6	09/08/19	Occurrence in different types of soils	
7	13/08/19	About Aquifers and Aquifuge	
8	16/08/19	About Aquitard and Aquiclude	
9	19/08/19	Confined aquifers	
10	20/08/19	Unconfined aquifers	
		Module -2	
11	22/08/19	**Fundamentals of Ground Water Flow:** Introduction	
12	23/08/19	Aquifer parameters	
13	26/08/19	Specific yield and Specific retention	
14	27/08/19	Porosity, Storage coefficient	
15	29/08/19	Derivation of the expression	
16	30/08/19	Darcy's law, hydraulic conductivity	
17	03/09/19	Coefficient of permeability and Intrinsic permeability	
18	09/09/19	Transmissibility, Permeability in isotropic	
19	12/09/19	Unisotropic layered soils	
20	13/09/19	Steady one dimensional flow: cases with recharge	
		Module -3	
21	16/09/19	**Well Hydraulics:** Introduction	
22	17/09/19	Steady Flow	
23	19/09/19	Radial flow in confined and unconfined aquifers	
24	20/09/19	Pumping test Unsteady Flow, General equation	
25	23/09/19	Derivation; Thesis method	
26	24/09/19	Cooper and Jacob method	
27	26/09/19	Chow's method	
28	27/09/19	Solution of unsteady flow equations	
29	30/09/19	Leaky aquifers (only introduction)	
30	01/10/19	Interference of well, Image well theory	

		Module -4	
31	**03/10/19**	**Ground Water Exploration:** Introduction	
32	**04/10/19**	Seismic method	
33	**10/10/19**	Electrical resistively method	
34	**11/10/19**	Geophysical techniques	
35	**17/10/19**	Electrical logging	
36	**18/10/19**	Electrical logging	
37	**21/10/19**	Radioactive logging	
38	**22/10/19**	Induction logging	
39	**24/10/19**	Sonic logging	
40	**25/10/19**	Fluid logging	
		Module -5	
41	**28/10/19**	**Ground Water Development:** Introduction	
42	**31/10/19**	Types of wells	
43	**04/11/19**	Methods of construction	
44	**05/11/19**	Tube well design	
45	**07/11/19**	Dug wells	
46	**08/11/19**	Pumps for lifting water	
47	**11/11/19**	Working principles, Power requirement	
48	**12/11/19**	Conjunctive use, Necessity	
49	**14/11/19**	Techniques and Economics	
50	**18/11/19**	**Ground Water Recharge:** Artificial recharge	
51	**19/11/19**	Groundwater runoff	
52	**25/11/19**	Revision	
53	**26/11/19**	Revision	
54	**28/11/19**	Revision	
55	**29/11/19**	Revision	

Sreelakshmi. S

(Mrs. Sreelakshmi S)
Course Instructors

(Dr. G Mahesh Kumar)
HOD

(Dr. Narendra Viswanath)
Principal

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Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

Semester: VII *[As per Choice Based Credit System (CBCS) scheme]* **Year: 2019-20**

Course Title: **Urban Transportation and Planning**	*Subject Code:* **15CV751**
Total contact Hours: **55**	*Duration of Exam:* **03 Hrs.**
SEE: **60**	*CIE:* **40**
Lesson plan author: **Mr. Prakash J**	*Date:* **01/08/2019**
Checked by: **Dr. G Mahesh Kumar**	*Credits: 03*

Course objectives:

This course will enable students to:

1. Understand and apply basic concepts and methods of urban transportation planning.
2. Apprise about the methods of designing, conducting and administering surveys to provide the data required for transportation planning.
3. Understand the process of developing an organized mathematical modelling approach to solve select urban transportation planning problem.
4. Excel in use of various types of models used for travel forecasting, prediction of future travel patterns.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Design, conduct and administer surveys to provide the data required for transportation planning.
2. Supervise the process of data collection about travel behaviour and analyze the data for use in transport planning.
3. Develop and calibrate modal split, trip generation rates for specific types of land use developments.
4. Adopt the steps that are necessary to complete a long-term transportation plan.

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Lesson Plan

Sl No	Date	Topics
		Module -1 :Urban transport planning
1	01/08/19	Urbanization
2	05/08/19	Urban class groups, transportation problems and identification
3	06/08/19	Impacts of transportation, urban transport system planning process
4	07/08/19	Urban mass transportation systems: urban transit problems
5	08/08/19	Travel demand, types of transit systems, public, private
6	13/08/19	Para-transit transport,
7	14/08/19	Mass and rapid transit systems
8	19/08/19	BRTS and Metro rails, capacity,
9	20/08/19	Merits and comparison of systems
10	21/08/19	Coordination, types of coordination
		Module -2: Data Collection And Inventories:
11	22/08/19	Collection of data – Organisation of surveys and Analysis
12	26/08/19	Study Area, Zoning,
13	27/08/19	Types and Sources of Data, Road Side Interviews
14	28/08/19	Home Interview Surveys,
15	29/08/19	Commercial Vehicle Surveys
16	03/09/19	Sampling Techniques, Expansion Factors
17	04/09/19	Accuracy Checks, Use of Secondary Sources
18	09/09/19	Economic data – Income
19	11/09/19	Population – Employment
20	12/09/19	Vehicle Owner Ship
		Module -3 :Trip Generation & Distribution
21	16/09/19	UTPS Approach
22	17/09/19	UTPS Approach,Trip Generation Analysis
23	18/09/19	Zonal Models, Category Analysis
24	19/09/19	Household Models, Trip Attraction models
25	23/09/19	Commercial Trip Rates
26	24/09/19	Trip Distribution by Growth Factor Methods
27	25/09/19	**Problems on above**
28	26/09/19	**Problems on above**
29	30/09/19	**Problems on above**
30	01/10/19	**Problems on above**

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Kadiyali.L.R., 'Traffic Engineering and Transportation Planning', Khanna Publishers, New Delhi.

2. Hutchinson, B.G, 'Introduction to Urban System Planning', McGraw Hill.

3. Khisty C.J., 'Transportation Engineering – An Introduction' Prentice Hall.

4. Papacostas,'Fundamentals of Transportation Planning', Tata McGraw Hill.

Reference Books:

1. Mayer M and Miller E, 'Urban Transportation Planning: A decision oriented Approach', McGraw Hill.
2. Bruton M.J., 'Introduction to Transportation Planning', Hutchinson of London.
3. Dicky, J.W., 'Metropolitan Transportation Planning', Tata McGraw Hill.

		Module -4 : Trip Distribution
31	03/10/19	Gravity Models
32	09/10/19	Opportunity Models
33	10/10/19	Time Function Iteration Models
34	21/10/19	Travel demand modeling: gravity model
35	22/10/19	opportunity models
36	23/10/19	Desire line diagram
37	24/10/19	Modal split analysis
38	28/10/19	**Problems on above**
39	30/10/19	**Problems on above**
40	31/10/19	**Problems on above**
		Module -5: Traffic Assignment
41	04/11/19	Diversion Curves
42	05/11/19	Basic Elements of Transport Networks,
43	06/11/19	Coding, Route Properties
44	07/11/19	Path Building Criteria, Skimming Tree
45	11/11/19	All-or-Nothing Assignment
46	12/11/19	Capacity Restraint Techniques
47	13/11/19	Reallocation of Assigned Volumes
48	14/11/19	Equilibrium Assignment.
49	18/11/19	Introduction to land use planning models
50	19/11/19	land use and transportation interaction
51	20/11/19	Revision
52	25/11/19	Revision
53	26/11/19	Revision
54	27/11/19	Revision
55	28/11/19	Revision

Mr Prakash J
Course Instructors

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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VII** *Year: 2019-20*

Subject Title: **Computer Aided Detailing of Structures**	*Subject Code:* **15CVL77**
Total contact Hours: ***45 (15 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **29/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

Provide students with a basic understanding

1. Be aware of the Scale Factors, Sections of drawings,
2. Draft the detailing of RC and Steel Structural member.

Course outcomes:

After studying this course, students will be able to:

1. Prepare detailed working drawings

1) **Presentation:** CAD Software, Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**
   1. N Krishna Raju, "Structural Design and Drawing of Reinforced Concrete and Steel", University Press
   2. Krishna Murthy, "Structural Design and Drawing – Concrete Structures", CBS Publishers, New Delhi
   3. SP 34: Handbook on Concrete Reinforcement and Detailing, Bureau of Indian Standards
   4. IS 13920:2016,Ductile Design And Detailing Of Reinforced Concrete Structures Subjected To Seismic Forces -Code Of Practice, Bureau of Indian Standard

3) **Question paper pattern:**

- Two questions shall be asked from each Module.
- One full question should be answered from each Module.
- Each question carries 40 marks.

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LECTURE PLAN

	Batch 01			
	Total Contact Hours: 59			**Theory: 14** **Practice: 45**
Sl	**Hrs**	**Date**	**Topics**	**Remark**
	Module -1: Detailing of RCC Structures			
1	3	29-07-2019	Beams – Simply supported, Cantilever and Continuous.	
2	3	05-08-2019	Slab – One way, Two way and One-way continuous.	
3	3	19-08-2019	Staircase ← Doglegged	
4	3	26-08-2019	Cantilever Retaining wall	
5	3	09-09-2019	Counter Fort Retaining wall	
6	3	16-09-2019	Circular Water Tank, Rectangular Water Tank.	
	Module -2: Detailing of Steel Structures			
7	3	23-09-2019	Connections – Beam to beam, Beam to Column by Bolted Connection	
8	3	30-09-2019	Connections – Beam to beam, Beam to Column by Welded Connection	
9	3	21-10-2019	Built-up Columns with lacings and battens	
10	3	28-10-2019	Column bases and Gusseted bases with bolted Connection	
11	3	04-11-2019	Column bases and Gusseted bases with Welded Connection	
12	3	11-11-2019	Roof Truss – Welded and Bolted	
13	3	18-11-2019	Beams with Bolted and Welded	
14	3	25-11-2019	Gantry Girder	
15	3	27-09-2019	**Internals**	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VII** *Year: 2019-20*

Subject Title: **Environmental Engineering Laboratory**	*Subject Code:* **15CVL76**
Total contact Hours: ***48 (16 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **29/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to:

1. To learn different methods of water & waste water quality
2. To conduct experiments to determine the concentrations of water and waste water.
3. To determine the degree and type of treatment
4. To understand the environmental significance and application in environmental engineering practice.

Course outcomes:

After studying this course, students will be able to:

1. Acquire capability to conduct experiments and estimate the concentration of different parameters.
2. Compare the result with standards and discuss based on the purpose of analysis.
3. Determine type of treatment, degree of treatment for water and waste water.
4. Identify the parameter to be analyzed for the student project work in environmental stream.

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. Manual of Water and Wastewater Analysis – NEERI Publication.
2. Standard Methods for Examination of Water and Wastewater (1995), American Publication – Association, Water Pollution Control Federation, American Water Works Association, Washington DC.
3. IS Standards: 2490-1974, 3360-1974, 3307-1974. ISO 14001 Environmental Management, Regulatory Standards for Drinking Water and Sewage Disposal.
4. Clair Sawyer and Perry McCarty and Gene Parkin, "Chemistry for Environmental Engineering and Science" McGraw-Hill Series in Civil and Environmental Engineering.

3) **Question paper pattern:**

- Two experiments shall be asked from the above set
- One experiment to be conducted and for the other student should write detailed procedure.

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LECTURE PLAN

Sl No	Date	Topics	Remark
1	29-07-2019	Introduction, Determination of pH , Acidity	
2	05-08-2019	Determination of Alkalinity	
3	19-08-2019	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2019	Determination of Dissolved Oxygen	
5	09-09-2019	Determination of BOD.	
6	16-09-2019	Determination of Chlorides	
7	23-09-2019	Determination of percentage of available chlorine in bleaching powder, Determination of Residual Chlorine	
8	30-09-2019	Determination of Solids in Sewage: I) Total Solids, II) Suspended Solids, III) Dissolved Solids, IV) Volatile Solids, Fixed Solids, V) Settle able Solids.	
9	21-10-2019	Determination of Turbidity by Nephelometer. Determination of Optimum Dosage of Alum using Jar Test apparatus	
10	28-10-2019	Determination of sodium and potassium by flame photometer	
11	04-11-2019	Determination Nitrates by spectrophotometer	
12	11-11-2019	Determination of Iron and Manganese	
13	18-11-2019	Determination of Fluorides SPANDS Method	
14	25-11-2019	Determination of COD.	
15	29-11-2019	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2019	Internals	

(Manogna H N)
Course Instructor

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HOD

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LESSON PLAN

MICRO SCHEDULE (16/03/2020 TO 30/04/2020)

[As per Choice Based Credit System (CBCS) scheme and Outcome Based Education (OBE]

Semester: IV **Year: 2019-20**

Course Title: **ADVANCED SURVEYING**	*Course Code:* **18CV45**
Course Instructor: **Mr. Prakash J**	*Date of commencement:* **03/02/2020**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- 100	*Duration of Exam:* **03 Hrs**

MODULE – III : CURVE SURVEY

Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
23	17/03/20	TUE	Elements, Designation of curves, Setting out simple curves by linear methods		
24	18/03/20	WED	numerical problems on offsets from long chord & chord produced method		
25	20/03/20	FRI	Setting out curves by Rankines deflection angle method		
26	23/03/20	MON	Compound curves, Elements, Design of compound curves		
27	24/03/20	TUE	Setting out of compound curves		
28	27/03/20	FRI	numerical problems Setting out of compound curves, Reverse curve between two parallel		
29	30/03/20	MON	numerical problems on Equal radius and unequal radius		
30	31/03/20	TUE	Transition curves Characteristics, numerical problems on Length of Transition curve		
31	01/04/20	WED	Vertical curves –Types – (theory).		

SUMMARY

PLANNED DATE	**FROM: 11.03.2020**	**TO: 01.04.2020**	
ACTUAL CLASSES TAKEN	**FROM:**	**TO:**	
NUMBER OF CLASSES	**ALLOCATED: 10**	**TAKEN:**	
CONTENT COVERED FOR IA	**IA 1:**	**IA 2:**	**IA 3:**
VALUE ADDITION TO THE MODULE	**ASSIGNMENTS:**	**TUTORIALS:**	**QP DISCUSSION:**
	QUIZ:	**SEMINARS:**	**ANY OTHER:**

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MODULE – IV : AERIAL PHOTOGRAMMETRY					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
32	07/04/20	TUE	Introduction, Uses		
33	08/04/20	WED	Aerial photographs, Definitions,		
34	15/04/20	WED	Scale of vertical and tilted photograph		
35	17/04/20	FRI	Problems on Scale of vertical and tilted photograph		
36	20/04/20	MON	Ground Co-ordinates		
37	21/04/20	TUE	Simple problems on Ground Co-ordinates		
38	22/04/20	WED	Relief Displacements- Theory		
39	28/04/20	TUE	Ground control, Procedure of aerial survey, overlaps and mosaics		
40	29/04/20	WED	Stereoscopes		

SUMMARY

PLANNED DATE	**FROM: 07.04.2020**	**TO: 29.04.2020**	
ACTUAL CLASSES TAKEN	**FROM:**	**TO:**	
NUMBER OF CLASSES	**ALLOCATED: 10**	**TAKEN:**	
CONTENT COVERED FOR IA	**IA 1:**	**IA 2:**	**IA 3:**
VALUE ADDITION TO THE MODULE	**ASSIGNMENTS:**	**TUTORIALS:**	**QP DISCUSSION:**
	QUIZ:	**SEMINARS:**	**ANY OTHER:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB -JUNE 2020) MACRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme and Outcome Based Education (OBE]

Semester: IV **Year: 2019-20**

Course Title: **ADVANCED SURVEYING**	*Course Code:* **18CV45**
Course Instructor: **Mr. Prakash J**	*Date of commencement:* **03/02/2020**
Total contact Hours Planned: 53	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- 100	*Duration of Exam:* **03 Hrs**

Course Outcomes or COs:

After a successful completion of the course, the student will be able to:

CO1: Apply the knowledge of geometric principles to arrive at surveying problems

CO2: Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.

CO3: Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments;

CO4: Design and implement the different types of curves for deviating type of alignments.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Sl. No.	DATE	MODULE LESSON PLAN	ADDITIONAL SOURCES
1	03/02/20 to 18/02/20	**Module-1** **Theodolite Survey and Instrument Adjustment:** Theodolite and types, Fundamental axes and parts of Transit theodolite, uses of theodolite, Temporary adjustments of transit theodolite, measurement of horizontal and vertical angles, step by step procedure for obtaining permanent adjustment of Transit theodolite. **Trigonometric Levelling**: Trigonometric levelling (heights and distances-single plane and double plane methods).	
2	19/02/20 to 10/03/20	**Module-2** **Tacheometry:** Basic principle, types of tacheometry, distance equation for horizontal and inclined line of sight in fixed hair method, problems. **Geodetic Surveying**: Principle and Classification of triangulation system, Selection of base line and stations, Orders of triangulation, Triangulation figures, Reduction to Centre, Selection and marking of stations.	
3	11/03/20 to 01/04/20	**Module-3** **Curve Surveying:** Curves – Necessity – Types, Simple curves, Elements , Designation of curves, Setting out simple curves by linear methods (numerical problems on offsets from long chord & chord produced method), Setting out curves by Rankines deflection angle method (Numerical problems). Compound curves, Elements, Design of compound curves, Setting out of compound curves (numerical problems). Reverse curve between two Parallel straights (numerical problems on Equal radius and unequal radius). Transition curves Characteristics, numerical problems on Length of Transition curve, Vertical curves & Types – (theory).	
4	07/04/20 to 04/05/20	**Module-4** **Aerial Photogrammetry** Introduction, Uses, Aerial photographs, Definitions, Scale of vertical and tilted photograph (simple problems), Ground Co-Ordinates (simple problems), Relief Displacements (Derivation), Ground control, Procedure of aerial survey, overlaps and mosaics, Stereoscopes, Derivation Parallax.	
5	05/05/20 to 01/06/20	**Module-5** **Modern Surveying Instruments** Introduction, Electromagnetic spectrum, Electromagnetic distance measurement, Total station, Lidar scanners for topographical survey. **Remote Sensing:** Introduction, Principles of energy interaction in atmosphere and earth surface features, Image interpretation techniques, visual interpretation. Digital image processing, Global Positioning system **Geographical Information System:** Definition of GIS, Key Components of GIS, Functions of GIS, Spatial data, spatial information system Geospatial analysis, Integration of Remote sensing and GIS and Applications in Civil Engineering(transportation, town planning).	

Text Books:

1. B.C. Punmia, "Surveying Vol.2", Laxmi Publications pvt. Ltd., New Delhi.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part 2, Pune Vidyarthi Griha Prakashan,
3. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi.
4. SateeshGopi, Global Positioning System, Tata McGraw Hill Publishing Co. Ltd. New Delhi.

Reference Books:

1. S.K. Duggal, "Surveying Vol. I & II", Tata McGraw Hill Publishing Co. Ltd. New Delhi.
2. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi.
3. David Clerk, Plane and Geodetic Surveying Vol1 and Vol2, CBSpublishers
4. B Bhatia, Remote Sensing and GIS, Oxford University Press, New Delhi.
5. T.M Lillesand, R.W Kiefer,. and J.W Chipman, Remote sensing and Image interpretation, 5th edition, John Wiley and SonsIndia
6. James M Anderson and Adward M Mikhail, Surveying theory and practice, 7th Edition, Tata McGraw HillPublication.
7. Kang-tsung Chang, Introduction to geographic information systems, McGraw Hill HigherEducation

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB - JUNE 2020) MICRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme and Outcome Based Education (OBE]

Semester: IV **Year: 2018-19**

Course Title: **ADVANCED SURVEYING**	*Course Code:* **18CV45**
Course Instructor: **Mr. Prakash J**	*Date of commencement:* **03/02/2020**
Total contact Hours Planned: ***53***	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
*Total Marks- **100***	*Duration of Exam:* **03 Hrs**

MODULE - I					
Sl. No.	**DATE**	**DAY**	**LESSON PLANNED**	**LESSON COVERED**	**REMARKS**
1	03/02/20	MON	**Theodolite Survey and Instrument Adjustment:** Theodolite and types		
2	04/02/20	TUE	Fundamental axes and parts of Transit theodolite		
3	05/02/20	WED	uses of theodolite		
4	07/02/20	FRI	Temporary adjustments of transit theodolite		
5	10/02/20	MON	measurement of horizontal angles		
6	11/02/20	TUE	measurement of vertical angles		
7	12/02/20	WED	Step by step procedure for obtaining permanent adjustment of Transit theodolite.		
8	14/02/20	FRI	**Trigonometric Levelling:** Introduction		
9	17/02/20	MON	Distances-Single Plane		
10	18/02/20	TUE	Double Plane Methods		

SUMMARY

PLANNED DATE	**FROM: 3.02.2020**	**TO: 18.02.2020**	
ACTUAL CLASSES TAKEN	**FROM:**	**TO:**	
NUMBER OF CLASSES	**ALLOCATED: 10**	**TAKEN:**	
CONTENT COVERED FOR IA	**IA 1:**	**IA 2:**	**IA 3:**
VALUE ADDITION TO THE MODULE	**ASSIGNMENTS:**	**TUTORIALS:**	**QP DISCUSSION:**
	QUIZ:	**SEMINARS:**	**ANY OTHER:**

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MODULE - II					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
11	19/02/20	WED	**Tacheometry:** Basic principle		
12	24/02/20	MON	Types of tacheometry		
13	25/02/20	TUE	Distance equation for horizontal line of sight		
14	26/02/20	WED	inclined line of sight in fixed hair method		
15	28/02/20	FRI	Problems on above		
16	02/03/20	MON	**Geodetic Surveying:** Principle and Classification of triangulation system		
17	03/03/20	TUE	Selection of base line and stations		
18	04/03/20	WED	Orders of triangulation		
19	06/03/20	FRI	Triangulation figures		
20	09/03/20	MON	Reduction to Centre		
21	10/03/20	TUE	Selection and marking of stations		

SUMMARY

PLANNED DATE	FROM: 19.02.2020	TO: 10.03.2020	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 11	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE – III : CURVE SURVEY					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
22	11/03/20	WED	Introduction: Curves – Necessity – Types, Simple curves		
23	17/03/20	TUE	Elements, Designation of curves, Setting out simple curves by linear methods		
24	18/03/20	WED	numerical problems on offsets from long chord & chord produced method		
25	20/03/20	FRI	Setting out curves by Rankines deflection angle method		
26	23/03/20	MON	Compound curves, Elements, Design of compound curves		
27	24/03/20	TUE	Setting out of compound curves		
28	27/03/20	FRI	numerical problems Setting out of compound curves, Reverse curve between two parallel		
29	30/03/20	MON	numerical problems on Equal radius and unequal radius		
30	31/03/20	TUE	Transition curves Characteristics, numerical problems on Length of Transition curve		
31	01/04/20	WED	Vertical curves –Types – (theory).		

SUMMARY

PLANNED DATE	FROM: 11.03.2020	TO: 01.04.2020	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 10	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE – V : MODERN SURVEYING INSTRUMENTS

Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
			,Electromagnetic distance measurement		
43	06/05/20	WED	Total station		
44	08/05/20	FRI	LIDAR scanners for topographical survey		
45	11/05/20	MON	Remote Sensing: Introduction		
46	12/05/20	TUE	Principles of energy interaction in atmosphere and earth surface features		
47	13/05/20	WED	Image interpretation techniques, visual interpretation		
48	15/05/20	FRI	Digital image processing		
49	18/05/20	MON	Global Positioning system Geographical Information System: Definition of GIS,		
50	19/05/20	TUE	Key Components of GIS, Functions of GIS, Spatial data		
51	20/05/20	WED	spatial information system Geospatial analysis		
52	29/05/20	FRI	Integration of Remote sensing and GIS and		
53	01/06/20	MON	Applications in Civil Engineering (transportation, town planning).		

SUMMARY

PLANNED DATE	**FROM: 05.05.2020**	**TO: 01.06.2020**	
ACTUAL CLASSES TAKEN	**FROM:**	**TO:**	
NUMBER OF CLASSES	**ALLOCATED: 12**	**TAKEN:**	
CONTENT COVERED FOR IA	**IA 1:**	**IA 2:**	**IA 3:**
VALUE ADDITION TO THE MODULE	**ASSIGNMENTS:**	**TUTORIALS:**	**QP DISCUSSION:**
	QUIZ:	**SEMINARS:**	**ANY OTHER:**

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MODULE – IV : AERIAL PHOTOGRAMMETRY					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
32	07/04/20	TUE	Introduction, Uses		
33	08/04/20	WED	Aerial photographs, Definitions,		
34	15/04/20	WED	Scale of vertical and tilted photograph		
35	17/04/20	FRI	Problems on Scale of vertical and tilted photograph		
36	20/04/20	MON	Ground Co-ordinates		
37	21/04/20	TUE	Simple problems on Ground Co-ordinates		
38	22/04/20	WED	Relief Displacements- Theory		
39	28/04/20	TUE	Ground control, Procedure of aerial survey, overlaps and mosaics		
40	29/04/20	WED	Stereoscopes		
41	04/05/20	MON	Derivation Parallax(Derivation)		

SUMMARY

PLANNED DATE	FROM: 07.04.2020	TO: 04.05.2020	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 10	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2019-2020*

[LESSON PLAN (FEB - JUNE 2020) MACRO SCHEDULE]

Course Title	*DESIGN OF STEEL STRUCTURAL ELEMENTS*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*17CV62*	*Sem /Sec*	*VI*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **03/02/2020**	*Total contact Hours: 62*	*Duration of Exam*: **03 Hrs.**	*CREDITS: 04*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Possess a knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel.
CO2. Understand the Concept of Bolted and Welded connections.
CO3. Understand the Concept of Design of compression members, built-up columns and columns splices
CO4. Understand the Concept of Design of tension members, simple slab base and gusseted base.
CO5. Understand the Concept of Design of laterally supported and un-supported steel beams.

Sl No	Date	Module Lesson Plan	Additional Sources
1	03/02/2020 to 20/02/2020	**Module 1: Introduction to steel structures and Plastic Behaviour of Structural Steel** **Introduction:** Advantages and Disadvantages of Steel Structures, Limit state method Limit State of Strength, Structural Stability, Serviceability Limit states, Failure Criteria of steel, Design Consideration, Loading and load combinations, IS code provisions, Specification and Section classification. **Plastic Behaviour of Structural Steel:** Introduction, Plastic theory, Plastic Hinge Concept, Plastic collapse load, load factor, Shape factor, Theorem of plastic collapse, Methods of Plastic analysis, Plastic analysis of Continuous Beams. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105105162/ https://nptel.ac.in/courses/105106112/ https://www.slideshare.net/pks12m/design-of-steel-structures-introduction https://www.slideshare.net/hassanyamout1/plastic-analysis-anddesignofsteelstructures
2	24/02/2020 to 12/03/2020	**Module 2: Bolted Connections and Welded Connections:** **Bolted Connections:** Introduction, Types of Bolts, Behaviour of bolted joints, Design of High Strength friction Grip (HSFG) bolts, Design of Simple bolted Connections (Lap and Butt joints) **Welded Connections:** Introduction, Types and properties of welds, Effective areas of welds, Weld Defects, Simple welded joints for truss	https://nptel.ac.in/courses/105105162/ https://www.slideshare.net/babunaveen/steel-

		member, Advantages and Disadvantages of Bolted and Welded Connections. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2L3**	connections https://youtu.be/SR1le6bra88
3	**19/03/2020 to 16/04/2020**	**Module 3: Design of Compression Members:** Introduction, Failure modes, Behaviour of compression members, Sections used for compression members, Effective length of compression members, Design of compression members and built up Compression members, Design of Laced and Battened Systems. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105105162/ https://www.slideshare.net/sabnabaiju/design-of-compression-members https://youtu.be/t2oJ2z_IxiE
4	**17/04/2020 to 11/05/2020**	**Module 4: Design of Tension Members and Design of Column Bases:** **Design of Tension Members:** Introduction, Types of Tension members, Slenderness ratio, Modes of Failure, Factors affecting the strength of tension members, Design of Tension members and Lug angles, Splices, Gussets. **Design of Column Bases:** Design of Simple Slab Base and Gusseted Base. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105105162 https://www.slideshare.net/DineshNath4/tension-members https://youtu.be/lEJN3JIeiQ4
5	**14/05/2020 to 30/05/2020**	**Module 5: Design of Beams:** Design of Beams: Introduction, Beam types, Lateral Stability of beams, factors affecting lateral stability, Behaviour of Beams in Bending, Design strength of laterally supported beams in Bending, Design of Laterally unsupported Beams [No Numerical Problems], Shear Strength of Steel Beams. Beam to Beam Connections, Beam to Column Connection and Column Splices [No Numerical Problems] **No. of Contact Sessions: 10 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105105162 https://www.slideshare.net/sabnabaiju/design-of-beams https://youtu.be/GRDX6mNlZbc

Text Books:

1. N Subramanian., "Design of Steel Structures" (2016), Oxford University Press, New Delhi.
2. Duggal S K., "Limit State Method of Design of Steel Structures", Tata McGraw Hill, New Delhi.

Reference Books:

1. Dayarathnam P, "Design of Steel Structures", S Chand and Company Ltd., New Delhi.
2. Kazim S M A and Jindal R S, "Design of Steel Structures", Prentice Hall of India, New Delhi.
3. IS 800-2007: General Construction in Steel Code Practice (Third revision), Bureau of Indian Standards, New Delhi.

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2019-2020*

[LESSON PLAN (FEB - JUNE 2020) MICRO SCHEDULE]

Course Title	*DESIGN OF STEEL STRUCTURAL ELEMENTS*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*17CV62*	*Sem /Sec*	*VI*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **03/02/2020**	*Total contact Hours: 62*	*Duration of Exam*: **03 Hrs.**	*CREDITS: 04*

Module 1: Introduction to steel structures and Plastic Behaviour of Structural Steel

Sl No	Date	Day	Topics	Topics Covered	Remarks
1	03/02/20	MON	Introduction to steel structures		
2	03/02/20	MON	Advantages and Disadvantages of Steel structures		
3	06/02/20	THU	Limit State Method (LSM) of design Limit state method		
4	07/02/20	FRI	Limit State of Strength, Structural Stability, Serviceability		
5	08/02/20	SAT	Design considerations, Loads and Load combinations,		
6	10/02/20	MON	Failure criteria for steel, IS Code Provisions,		
7	10/02/20	MON	Specifications, Section classification.		
8	13/02/20	THU	Introduction to Plastic theory, Plastic hinge concept,		
9	14/02/20	FRI	Plastic collapse load, conditions of plastic analysis		
10	15/02/20	SAT	Theorem of Plastic collapse, Concept Plastic analysis,		
11	17/02/20	MON	Methods of Plastic analysis		
12	17/02/20	MON	Plastic analysis of continuous beams problems.		
13	20/02/20	THU	Plastic analysis of continuous beams problems.		

SUMMARY

Planned Date	**From:** 3.02.2020	**To:** 20.02.2020	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 13	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 2: Bolted Connections and Welded Connections:					
Sl No	**Date**	**Day**	**Topics**	**Topics Covered**	**Remarks**
14	24/02/20	MON	Introduction, Types of bolts, Behaviour of Bolted joints,		
15	24/02/20	MON	Design strength of ordinary Black Bolts		
16	27/02/20	THU	Design strength of ordinary Black Bolts		
17	28/02/20	FRI	Design strength of High Strength Friction Grip bolts (HSFG)		
18	29/02/20	SAT	Simple Connections (Lap and Butt joints)		
19	02/03/20	MON	Simple Connections (Lap and Butt joints)		
20	02/03/20	MON	Introduction, Welding process, Welding electrodes,		
21	05/03/20	THU	Types and Properties of Welds, Types of joints Weld symbols, Weld specifications,		
22	06/03/20	FRI	Effective areas of welds, Design of welds, Simple joints		
23	07/03/20	SAT	Weld Defects, Advantages of Bolted and Welded connections		
24	09/03/20	MON	Disadvantages of Bolted and Welded connections		
25	09/03/20	MON	Problems on welds		
26	12/03/20	THU	Problems on welded designs		

SUMMARY

Planned Date	**From:** 24.02.2020	**To:** 12.03.2020	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 13	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 3: Design of Compression Members:					
Sl No	Date	Day	Topics	Topics Covered	Remarks
27	19/03/20	THU	Introduction, Failure modes,		
28	20/03/20	FRI	Behaviour of compression members		
29	21/03/20	SAT	Elastic buckling of slender compression members		
30	23/03/20	MON	Sections used for compression members		
31	23/03/20	MON	Effective length of compression members		
32	26/03/20	THU	Design of compression members		
33	27/03/20	FRI	Design of compression members		
34	28/03/20	SAT	Design of compression members		
35	30/03/20	MON	Design of compression members		
36	30/03/20	MON	Built up compression members		
37	02/04/20	THU	Built up compression members		
38	09/04/20	THU	Design of Laced and Battened Systems.		
39	16/04/20	THU	Design of Laced and Battened Systems.		

SUMMARY

Planned Date	**From:** 19.03.2020	**To:** 16.04.2020	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 13	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 4: Design of Tension Members and Design of Column Bases:					
Sl No	**Date**	**Day**	**Topics**	**Topics Covered**	**Remarks**
40	17/04/20	FRI	Introduction, Types of tension members, Design of strands, Slenderness ratio,		
41	18/04/20	SAT	Behaviour of tension members Modes of failure,		
42	20/04/20	MON	Factors affecting the strength of tension members		
43	20/04/20	MON	Design of tension member		
44	23/04/20	THU	Design of tension member		
45	30/04/20	THU	Design of tension member		
46	04/05/20	MON	Design of tension member		
47	04/05/20	MON	Lug angles, Splices, Gussets		
48	07/05/20	THU	Design of simple slab base - problems		
49	08/05/20	FRI	Design of simple slab base - problems		
50	09/05/20	SAT	Design of gusseted base - problems		
51	11/05/20	MON	Design of gusseted base - problems		
52	11/05/20	MON	Design of gusseted base - problems		

SUMMARY

Planned Date	**From:** 17.04.2020	**To:** 11.05.2020	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 13	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 5: Design of Beams:					
Sl No	Date	Day	Topics	Topics Covered	Remarks
53	14/05/20	THU	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability		
54	15/05/20	FRI	Behaviour of simple and built-up beams in bending(without vertical stiffeners)		
55	16/05/20	SAT	Design strength of laterally supported beams in Bending-problems		
56	18/05/20	MON	Design strength of laterally supported beams in Bending-problems		
57	18/05/20	MON	Design strength of laterally unsupported beams- problems		
58	21/05/20	THU	Design strength of laterally unsupported beams		
59	22/05/20	FRI	Shear strength of steel beams, Maximum deflection		
60	23/05/20	SAT	Beam to Beam Connections,		
61	29/05/20	FRI	Beam to Beam Connections,		
62	30/05/20	SAT	Beam to Column Connection		

SUMMARY

Planned Date	**From:** 14.05.2020	**To:** 30.05.2020	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 10	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB -JUNE 2020) MACRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme]

Semester: VI **Year: 2019-20**

Course Title: **Highway Engineering**	*Subject Code:* **17CV63**
Lesson plan author: **Mr. Prakash J**	*Date of commencement:* **01/02/2019**
Total contact Hours: 50	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- 100	*Duration of Exam:* **03 Hrs**

Course Outcomes or COs:

After a successful completion of the course, the student will be able to:

CO1: Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.

CO2: Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.

CO3: Design road geometrics, structural components of pavement and drainage.

CO4: Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Sl. No.	DATE	MODULE LESSON PLAN	ADDITIONAL SOURCES
1	04/02/20 to 20/02/20	**Module-1** **Principles of Transportation Engineering:** Importance of transportation, Different modes of transportation and comparison, Characteristics of road transport Jayakar committee recommendations, and implementation - Central Road Fund, Indian Roads Congress, Central Road Research Institute **Highway Development and Planning:** Road types and classification, road patterns, planning surveys, master plan - saturation system of road planning, phasing road development in India, problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies, Present scenario of road development in India (NHDP & PMGSY) and in Karnataka (KSHIP & KRDCL) Road development plan - vision 2021.	
2	22/02/20 to 10/03/20	**Module-2** **Highway Alignment and Surveys:** Ideal Alignment, Factors affecting the alignment, Engineering surveys-Map study, Reconnaissance, Preliminary and Final location & detailed survey, Reports and drawings for new and re-aligned projects **Highway Geometric Design:** Cross sectional elements-width, surface, camber, Sight distances-SSD, OSD, ISD, HSD, Design of horizontal and vertical alignment-curves, super-elevation, widening, gradients, summit and valley curves.	
3	12/03/20 to 31/03/20	**Module-3** **Pavement Materials:** Subgrade soil - desirable properties-HRB soil classification determination of CBR and modulus of subgrade reaction with Problems Aggregates- Desirable properties and tests, Bituminous materials-Explanation on Tar, bitumen, cutback and emulsion-tests on bituminous material **Pavement Design:** Pavement types, component parts of flexible and rigid pavements and their functions, ESWL and its determination (Graphical method only)-Examples.	
4	02/04/20 to 30/04/20	**Module-4** **Pavement Construction:** Design of soil aggregate mixes by Rothfuch' s method. Uses and properties of bituminous mixes and cement concrete in pavement construction. Earthwork; cutting and Filling, Preparation of subgrade, Specification and construction of i) Granular Sub base, ii)WBM Base, iii) WMM base, iv) Bituminous Macadam, v)Dense Bituminous Macadam vi) Bituminous Concrete, vii)Dry Lean Concrete sub base and PQC viii) concrete roads	

5	02/05/20 to 30/05/20	**Module-5** **Highway Drainage:** Significance and requirements, Surface drainage system and design-Examples, sub surface drainage system, design of filter materials, Types of cross drainage structures, their choice and location. **Highway Economics:** Highway user benefits, VOC using charts only-Examples, Economic analysis - annual cost method-Benefit Cost Ratio method-NPV-IRR methods-Examples, Highway financing-BOT-BOOT concepts	

Text Books:

1. S K Khanna and C E G Justo, " Highway Engineering", Nem Chand Bros, Roorkee
2. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi.
3. R Srinivasa Kumar, "Highway Engineering", University Press.
4. K.P.subramanium, "Transportation Engineering", SciTech Publications, Chennai

Reference Books:

1. Relevant IRC Codes
2. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi.
3. C. JotinKhisty, B. Kent lal, "Transportation Engineering", PHI Learning Pvt. Ltd. New Delhi.

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB -JUNE 2020) MICRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme]

Semester: VI **Year: 2019-20**

Course Title: **Highway Engineering**	*Subject Code:* **17CV63**
Lesson plan author: **Mr. Prakash J**	*Date of commencement:* **01/02/2019**
Total contact Hours: 50	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- 100	*Duration of Exam:* **03 Hrs**

MODULE - I					
Sl. No.	**DATE**	**DAY**	**LESSON PLANNED**	**LESSON COVERED**	**REMARKS**
1	04/02/20	TUE	**Principles of Transportation Engineering:** Importance of transportation		
2	06/02/20	THU	Different modes of transportation and comparison, Characteristics of road transport		
3	07/02/20	FRI	Jayakar committee recommendations, and implementation – Central Road Fund		
4	08/02/20	SAT	Indian Roads Congress, Central Road Research Institute		
5	11/02/20	TUE	**Highway Development and Planning:** Road types and classification, road patterns		
6	13/02/20	THU	planning surveys, master plan – saturation system of road planning, phasing road development in India		
7	14/02/20	FRI	problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies		
8	15/02/20	SAT	Present scenario of road development in India (NHDP & PMGSY)		
9	18/02/20	TUE	and in Karnataka (KSHIP & KRDCL)		
10	20/02/20	THU	Road development plan - vision 2021		

SUMMARY

PLANNED DATE	FROM: 3.02.2020	TO: 20.02.2020	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 10	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE - II					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
11	25/02/20	TUE	**Highway Alignment and Surveys:** Ideal Alignment		
12	27/02/20	THU	Factors affecting the alignment		
13	28/02/20	FRI	Engineering surveys-Map study		
14	29/02/20	SAT	Reconnaissance, Preliminary and Final location & detailed survey		
15	03/03/20	TUE	Reports and drawings for new and re-aligned projects		
16	05/03/20	THU	**Highway Geometric Design:** Cross sectional elements–width, surface, camber,		
17	06/03/20	FRI	Sight distances–SSD, OSD, ISD, HSD		
18	07/03/20	SAT	Design of horizontal and vertical alignment–curves		
19	10/03/20	TUE	super-elevation, widening		
20	12/03/20	THU	gradients, summit and valley curves		

SUMMARY

PLANNED DATE	FROM: 25/02/20	TO: 12/03/20	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 10	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE - III					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
21	17/03/20	TUE	**Pavement Materials:** Subgrade soil - desirable properties		
22	19/03/20	THU	HRB soil classification-determination of CBR		
23	20/03/20	FRI	modulus of subgrade reaction with Problems		
24	21/03/20	SAT	Aggregates- Desirable properties and tests		
25	24/03/20	TUE	Bituminous materials- Explanation on Tar		
26	26/03/20	THU	bitumen, cutback and emulsion		
27	27/03/20	FRI	tests on bituminous material		
28	28/03/20	SAT	**Pavement Design:** Pavement types, component parts of flexible		
29	31/03/20	TUE	Rigid pavements and their functions		
30	02/04/20	THU	ESWL and its determination (Graphical method only)-Examples		

SUMMARY

PLANNED DATE	FROM: 17/03/20	TO: 02/04/20	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 10	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE - IV					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
31	07/04/20	TUE	**Pavement Construction:** Design of soil aggregate mixes by Rothfuch's method		
32	09/04/20	THU	Uses and properties of bituminous mixes		
33	16/04/20	THU	cement concrete in pavement construction.		
34	17/04/20	FRI	Earthwork; cutting and Filling		
35	18/04/20	SAT	Preparation of subgrade, Specification		
36	21/04/20	TUE	construction of i) Granular Sub base, ii) WBM Base		
37	23/04/20	THU	iii) WMM base, iv) Bituminous Macadam		
38	28/04/20	TUE	v) Dense Bituminous Macadam vi) Bituminous Concrete		
39	30/04/20	THU	vii) Dry Lean Concrete sub base and PQC		
40	05/05/20	TUE	viii) concrete roads		

SUMMARY

PLANNED DATE	FROM: 07/04/20	TO: 05/05/20	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 10	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE - V					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
41	07/05/20	THU	**Highway Drainage:** Significance and requirements		
42	08/05/20	FRI	Surface drainage system and design-Examples		
43	09/05/20	SAT	sub surface drainage system, design of filter materials		
44	12/05/20	TUE	Types of cross drainage structures, their choice and location		
45	14/05/20	THU	**Highway Economics:** Highway user benefits		
46	15/05/20	FRI	VOC using charts only-Examples		
47	16/05/20	SAT	Economic analysis - annual cost method		
48	19/05/20	TUE	Benefit Cost Ratio method-NPV-IRR methods-Examples		
49	29/05/20	FRI	Benefit Cost Ratio method-NPV-IRR methods-Examples		
50	30/05/20	SAT	Highway financing-BOT-BOOT concepts		

SUMMARY

PLANNED DATE	FROM: 07/05/20	TO: 30/05/20	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 10	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB -JUNE 2020) MACRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme]

Year: 2019-20

Semester: VI

Course Title: **Ground Improvement Techniques**	*Subject Code:* **17CV654**
Lesson plan author: **Dr. G. Mahesh Kumar**	*Date of commencement:* **03/02/2020**
Total contact Hours: **54**	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Credits- 3	*Duration of Exam:* **03 Hrs.**

COURSE OUTCOMES OR COS:

After studying this course, students will be able to:

1. Give solutions to solve various problems associated with soil formations having less strength.
2. Use effectively the various methods of ground improvement techniques depending upon the requirements.
3. utilize properly the locally available materials and techniques for ground improvement so that economy in the design of foundations of various civil engineering structures

QUESTION PAPER PATTERN:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

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LESSON PLAN (FEB -JUNE 2020) MACRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme]

Sl. No.	DATE	MODULE LESSON PLAN	ADDITIONAL SOURCES
1	03/02/20 to 19/02/20	**MODULE-1** **Formation and Development of Ground :** Introduction, Formation of Rock, soil and soil profile, Soil distribution in India, Alterations of ground after formation, Reclaimed soils, Natural offshore deposits; Ground Improvement Potential – Hazardous ground conditions, poor ground conditions, favourable ground conditions, Alternative Approaches, Geotechnical processes. **Compaction:** Introduction, compaction mechanics, Field procedure, surface compaction, Dynamic Compaction, selection of field compaction procedures, compaction quality control.	https://nptel.ac.in/content/storage2/courses/108075/module8/lectue23.pdf https://nptel.ac.in/content/storage2/nptel data3 html/mhrd/ict/text/10505168//lec14.pdf https://nptel.ac.in/content/storage2/courses/108075/module2/Lecture05.pdf
2	24/02/20 to 11/03/20	**MODULE-2** **Drainage Methods:** Introduction, Seepage, filter requirements, ground water and seepage control, methods of dewatering systems, Design of dewatering system including pipe line effects of dewatering. Drains, different types of drains. **Pre-compression and Vertical Drains:** Importance, Vertical drains, Sand drains, Drainage of slopes, Electro kinetic dewatering, Preloading	https://nptel.ac.in/content/storage2/nptel_data3 html/mhrd/ict/text/12605010/lec44.pdf https://nptel.ac.in/content/storage2/courses/108075/module4/Lecture11.pdf
3	17/03/20 to 08/04/20	**MODULE-3** **Chemical Modification-I:** Definition, cement stabilization, sandwich technique, admixtures. Hydration – effect of cement stabilization on permeability, Swelling and shrinkage and strength and deformation characteristics. Criteria for cement stabilization. Stabilization using Fly ash. **Chemical Modification-II:** Lime stabilization – suitability, process, criteria for lime stabilization. Other chemicals like chlorides, hydroxides, lignin and hydrofluoric acid. Properties of chemical components, reactions and effects. Bitumen, tar or asphalt in stabilization	https://nptel.ac.in/content/storage2/nptel_data3 html/mhrd/ict/text/10508075/lec2.pdf https://nptel.ac.in/content/storage2/courses/108075/module6/Lecture19.pdf https://nptel.ac.in/content/storage2/nptel_data3 html/mhrd/ict/text/10508075/lec17.pdf

4	15/04/20 to 09/05/20	**MODULE-4** **Vibration Methods:** Introduction, Vibro compaction – blasting, vibratory probe, Vibro displacement compaction – displacement piles, vibroflotation, sand compaction piles, stone columns, heavy tamping **Grouting And Injection:** Introduction, Effect of grouting. Chemicals and materials used. Types of grouting. Grouting procedure, Applications of grouting	https://nptel.ac.in/content/storage2/courses/101101005/downloads/Lec34.pdf https://nptel.ac.in/content/storage2/courses/108108075/module7/Lecture21.pdf
5	11/05/20 to 01/06/20	**MODULE-5** **Geosynthetics:** Introduction, Geosynthetic types, properties of Geosynthetics – materials and fibre properties, Geometrical aspects, mechanical properties, Hydraulic properties, Durability ; Applications of Geosynthetics - Separation, Filtration and Fluid Transmission, Reinforcement, **Miscellaneous Methods (Only Concepts & Uses):** Soil reinforcement, Thermal methods, Ground improvement by confinement – Crib walls, Gabions and Mattresses, Anchors, Rock bolts and soil nailing. Stone Column, Micro piles.	https://nptel.ac.in/content/storage2/nptel_data/html/mhrd/ict/text/10506052/lec1.pdf https://nptel.ac.in/content/storage2/courses/108108075/module6/Lecture16.pdf https://www.docsity.com/en/ground-anchor-rock-bolt-ground-improvement-lecture-notes/310202/

Text Books:

1. Purushothama Raj P, "Ground Improvement Techniques", Laxmi Publications, New Delhi.
2. Koerner R.M, "Construction and Geotechnical Method in Foundation Engineering", Mc Graw Hill Pub. Co.

Reference Books:

1. Manfred Hausmann, "Engineering principles of ground modification", Mc Graw Hill Pub. Co.,
2. Bell, F.G., "Methods of treatment of unstable ground", Butterworths, London.
3. Nelson J.D. and Miller D.J, "Expansive soils", John Wiley and Sons.
4. Ingles. C.G. and Metcalf J.B , "Soil Stabilization; Principles and Practice", Butterworths

Dr. G Mahesh Kumar
Course Instructor

Dr. G Mahesh Kumar
HOD

Dr. Narendra Viswanath
Principal

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB-JUNE) MICROSCHEDULE

Subject Name & Subject Code	Ground Improvement Techniques 17CV654
Staff Name	Dr. G. Mahesh Kumar
Semester	VI
IA Marks (CIE)	40 (Average of three tests for 30 marks + 10 marks for assignment)
Maximum Marks(SEE)	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE-1

Sl.No	Date	Day	Lesson Planned	Lesson covered	Remarks
1	03.02.20	Mon	Introduction, Formation of Rock, soil and soil profile, Soil distribution in India,		
2	04.02.20	Tue	Alterations of ground after formation, Reclaimed soils,		
3	05.02.20	Wed	Natural offshore deposits;. Ground Improvement Potential – Hazardous ground conditions,		
4	08.02.20	Sat	poor ground conditions, favourable ground conditions,		
5	10.02.20	Mon	Alternative Approaches, Geotechnical processes		
6	11.02.20	Tue	**Compaction:** Introduction, compaction mechanics,		
7	12.02.20	Wed	Field procedure, surface compaction,		
8	15.02.20	Sat	Dynamic Compaction,		
9	17.02.20	Mon	selection of field compaction procedures		
10	18.02.20	Tue	compaction quality control		
11	19.02.20	Wed	Discussion 1. Previous question Papers 2. Assignment questions		

SUMMARY

Planned Date	From 03.02.2020	To 19.02.2020
Actual Classes Taken	From	To
Number of Classes	Allocated : 11	Taken :
Content Covered for IA	IA- 1	
Value addition to the Module	Assignment-1	Previous question Papers

Faculty	HOD	Principal

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LEESON PLAN (FEB-JUNE) MICROSCHEDULE

Subject Name & Subject Code	Ground Improvement Techniques 17CV654
Staff Name	Dr. G. Mahesh Kumar
Semester	VI
IA Marks (CIE)	40 (Average of three tests for 30 marks + 10 marks for assignment)
Maximum Marks(SEE)	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE-2

Sl.No	Date	Day	Lesson Planned	Lesson covered	Remarks
1	24.02.20	Mon	**Drainage Methods:** Introduction, Seepage, filter requirements,		
2	25.02.20	Tue	ground water and seepage control		
3	26.02.20	Wed	methods of dewatering systems		
4	29.02.20	Sat	Design of dewatering system including pipe line effects of dewatering.		
5	02.03.20	Mon	Drains, different types of drains		
6	03.03.20	Tue	**Pre-compression and Vertical Drains:** Importance, Vertical drains,		
7	04.03.20	Wed	Sand drains		
8	07.03.20	Sat	Drainage of slopes,		
9	09.03.20	Mon	Electro kinetic dewatering,		
10	10.03.20	Tue	Preloading		
11	11.03.20	Wed	Discussion 1. Previous question Papers 2. Assignment questions		

SUMMARY

Planned Date	From 24.02.2020	To 11.03.2020
Actual Classes Taken	From	To
Number of Classes	Allocated : 11	Taken :
Content Covered for- IA	IA- 2	
Value addition to the Module	Assignment-2	Previous question Papers

Faculty	HOD	Principal

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LEESON PLAN (FEB-JUNE) MICROSCHEDULE

Subject Name & Subject Code	Ground Improvement Techniques 17CV654
Staff Name	Dr. G. Mahesh Kumar
Semester	VI
IA Marks (CIE)	40 (Average of three tests for 30 marks + 10 marks for assignment)
Maximum Marks(SEE)	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE-3

Sl.No	Date	Day	Lesson Planned	Lesson covered	Remarks
1	17.03.20	Tue	**Chemical Modification-I:** Definition, cement stabilization,		
2	18.03.20	Wed	sandwich technique, admixtures.		
3	21.03.20	Sat	Hydration – effect of cement stabilization on permeability,		
4	23.03.20	Mon	Swelling and shrinkage and strength and deformation characteristics.		
5	24.03.20	Tue	Criteria for cement stabilization. Stabilization using Fly ash.		
6	28.03.20	Sat	**Chemical Modification-II:** Lime stabilization – suitability, process,		
7	30.03.20	Mon	criteria for lime stabilization..		
8	31.03.20	Tue	Other chemicals like chlorides, hydroxides, lignin and hydrofluoric acid		
9	01.04.20	Wed	Properties of chemical components, reactions and effects.		
10	07.04.20	Tue	Bitumen, tar or asphalt in stabilization		
11	08.04.20	Wed	Discussion 1. Previous question Papers 2. Assignment questions		

SUMMARY

Planned Date	From 17.03.2020	To 08.04.2020
Actual Classes Taken	From	To
Number of Classes	Allocated : 11	Taken :
Content Covered for IA	IA- 2	
Value addition to the Module	Assignment-2	Previous question Papers

Faculty	HOD	Principal

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LEESON PLAN (FEB-JUNE) MICROSCHEDULE

Subject Name & Subject Code	Ground Improvement Techniques 17CV654
Staff Name	Dr. G. Mahesh Kumar
Semester	VI
IA Marks (CIE)	40 (Average of three tests for 30 marks + 10 marks for assignment)
Maximum Marks(SEE)	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE-4

Sl.No	Date	Day	Lesson Planned	Lesson covered	Remarks
1	15.04.20	Wed	**Vibration Methods:** Introduction, Vibro compaction – blasting,		
2	18.04.20	Sat	vibratory probe, Vibro displacement		
3	20.04.20	Mon	compaction – displacement piles, vibroflotation,		
4	21.04.20	Tue	sand compaction piles,		
5	22.04.20	Wed	stone columns, heavy tamping		
6	28.04.20	Tue	**Grouting And Injection:** Introduction,		
7	29.04.20	Wed	Effect of grouting.		
8	04.05.20	Mon	Chemicals and materials used.		
9	05.05.20	Tue	Types of grouting. Grouting procedure,		
10	06.05.20	Wed	Applications of grouting		
11	09.05.20	Sat	Discussion 1. Previous question Papers 2. Assignment questions		

SUMMARY

Planned Date	From 15.04.2020	To 09.05.2020
Actual Classes Taken	From	To
Number of Classes	Allocated : 11	Taken :
Content Covered for IA	IA- 3	
Value addition to the Module	Assignment-3	Previous question Papers

Faculty	HOD	Principal

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LEESON PLAN (FEB-JUNE) MICROSCHEDULE

Subject Name & Subject Code	Ground Improvement Techniques 17CV654
Staff Name	Dr. G. Mahesh Kumar
Semester	VI
IA Marks (CIE)	40 (Average of three tests for 30 marks + 10 marks for assignment)
Maximum Marks(SEE)	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE-5

Sl.No	Date	Day	Lesson Planned	Lesson covered	Remarks
1	11.05.20		**Geosynthetics:** Introduction, Geosynthetic types,		
2	12.05.20		properties of Geosynthetics – materials and fibre properties,;		
3	13.05.20		Geometrical aspects, mechanical properties, Hydraulic properties, Durability		
4	16.05.20		Applications of Geosynthetics - Separation, Filtration and Fluid Transmission, Reinforcement		
5	18.05.20		**Miscellaneous Methods (Only Concepts & Uses):** Soil reinforcement,		
6	19.05.20		Thermal methods,		
7	20.05.20		Ground improvement by confinement – Crib walls,		
8	23.05.20		Gabions and Mattresses, Anchors,		
9	30.05.20		Rock bolts and soil nailing. Stone Column, Micro piles.		
10	01.06.20		Discussion 1. Previous question Papers 2. Assignment questions		

SUMMARY

Planned Date	From 11.05.2020	To 01.06.2020
Actual Classes Taken	From	To
Number of Classes	Allocated : 10	Taken :
Content Covered for IA	IA- 3	
Value addition to the Module	Assignment-3	Previous question Papers

Faculty	HOD	Principal

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB -JUNE 2020) MACRO SCHEDULE

Semester: VIII [*As per Choice Based Credit System (CBCS) scheme*] **Year: 2019-20**

Course Title: **Pavement Design**	*Course Code:* **15CV833**
Lesson plan author: **Mr. Prakash J**	*Date of commencement :* **03/02/2020**
Total contact Hours: ***55***	*Number of Lecture Hours/Week:* **04**
CIE: **20 (Average of two tests for 30 marks & reduced to 15 marks+ 5 marks for assignment)**	
SEE: **80**	*Exam Hours*: **03 Hrs.**
Total Marks: ***100***	*Credits:* ***04***

Course Outcomes or COs:

After studying this course, students will be able to:

CO1. Systematically generate and compile required data's for design of pavement (Highway & Airfield).

CO2. Analyze stress, strain and deflection by boussinesq's, burmister's and westergaard's theory.

CO3. Design rigid pavement and flexible pavement conforming to IRC58-2002 and IRC37-2001.

CO4. Evaluate the performance of the pavement and also develops maintenance statement based on site specific requirements.

Question Paper Pattern:

1. The question paper will have 5 modules comprising of ten questions. Each full question carrying 16 marks
2. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
3. Each full question shall cover the topics as a module.
4. The students shall answer five full questions, selecting one full question from each module. If more than one Question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Sl. No.	DATE	MODULE LESSON PLAN	ADDITIONAL SOURCES

1	04/02/20 to 20/02/20	**Module-1** Introduction: Desirable characteristics of pavement, Types and components, Difference between Highway pavement and Air field pavement, Design strategies of variables, Functions of sub grade, sub base, Base course, surface course, comparison between Rigid and flexible pavement. Fundamentals of Design of Pavements: Stresses and deflections, Principle, Assumptions and Limitations of Boussinesq's theory, Burmister theory and problems on above	
2	22/02/20 to 10/03/20	**Module-2** Design Factors: Design wheel load, contact pressure, Design life, Traffic factors, climatic factors, Road geometry, Subgrade strength and drainage, ESWL concept. Determination of ESWL by equivalent deflection criteria, Stress criteria, EWL concept, and problems on above. Flexible pavement Design: Assumptions, Mcleod Method, Kansas method, CBR method, IRC Method (old), CSA method using IRC-37-2001, problems on above	
3	12/03/20 to 31/03/20	**Module-3** Flexible Pavement Failures, Maintenance and Evaluation, Types of failures, Causes, Remedial/Maintenance measures in flexible pavements, Functional Evaluation by Visual inspection and unevenness measurements, Structural evaluation by Benkleman beam deflection method, Falling weight deflectometer, GPR method. Design factors for runway pavements, Design methods for Airfield pavement and problems on above	
4	02/04/20 to 30/04/20	**Module-4** Types of stress, Analysis of Stresses, Westergaard's Analysis, Modified Westergaard equations, Critical stresses, Wheel load stresses, Warping stress, Frictional stress, combined stresses (using chart / equations), problems on above. Design of Rigid Pavement: Design of CC pavement by IRC: 58-2002 for dual and Tandem axle load, Reinforcement in slabs, Design of Dowel bars, Design of Tie bars, Design factors for Runway pavements, Design methods for airfield pavements, problems of the above.	
5	02/05/20 to 30/05/20	**Module-5** Rigid Pavement Failures, Maintenance and Evaluation: Types of failures, causes, remedial/maintenance measures in rigid pavements, Functional evaluation by Visual inspection and unevenness measurements, wheel load and its repetition, properties of subgrade, properties of concrete. External conditions, joints, Reinforcement, Requirements of joints, Types of joints, Expansion joint, contraction joint, warping joint, construction joint, longitudinal joint, Design of joints	

Text Books:

1. S K Khanna, C E G Justo, and A Veeraragavan, "Highway Engineering", Nem Chand & Brothers
2. L.R.Kadiyali and Dr.N.B.Lal, " Principles and Practices of Highway Engineering", Khanna publishers
3. Yang H. Huang , "Pavement Analysis and Design", University of Kentucky

Reference Books:

1. Yoder & wit zorac , "Principles of pavement design", John Wiley & Sons.
2. Subha Rao, "Principles of Pavement Design".
3. R Srinivasa Kumar, "Pavement Design" , University Press.
4. Relevant recent IRC codes

Mr. Prakash J
Course Instructor

Dr. G Mahesh Kumar
HOD

Dr. Narendra Viswanath
Principal

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Sri Shridevi Charitable Trust (R.)

SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY

(Recognised by Govt. of Karnataka, Affiliated to VTU, Belagavi and Approved by AICTE, New Delhi)
Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB -JUNE 2020) MICRO SCHEDULE

Semester: VIII [*As per Choice Based Credit System (CBCS) scheme*] **Year: 2019-20**

Course Title: **Pavement Design**	*Course Code:* **15CV833**
Lesson plan author: **Mr. Prakash J**	*Date of commencement :* **03/02/2020**
Total contact Hours: ***55***	*Number of Lecture Hours/Week:* **04**
CIE: **20 (Average of two tests for 30 marks & reduced to 15 marks+ 5 marks for assignment)**	
SEE: **80**	*Exam Hours*: **03 Hrs.**
Total Marks: ***100***	*Credits:* ***04***

MODULE - I: INTRODUCTION

Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
1	03/02/20	MON	Desirable characteristics of pavement, Types and components		
2	03/02/20	MON	Difference between Highway pavement and Air field pavement		
3	04/02/20	TUE	Design strategies of variables		
4	05/02/20	WED	Functions of sub grade, sub base, Base course, surface course		
5	10/02/20	MON	comparison between Rigid and flexible pavement		
6	10/02/20	MON	Fundamentals of Design of Pavements:		
7	11/02/20	TUE	Stresses and deflections Principle		
8	12/02/20	WED	Assumptions and Limitations of Boussinesq's theory		
9	17/02/20	MON	Burmister theory		
10	17/02/20	MON	problems on above		
11	18/02/20	TUE	problems on above		

SUMMARY

PLANNED DATE	**FROM: 3.02.2020**	**TO: 18/02/20**	
ACTUAL CLASSES TAKEN	**FROM:**	**TO:**	
NUMBER OF CLASSES	**ALLOCATED: 11**	**TAKEN:**	
CONTENT COVERED FOR IA	**IA 1:**	**IA 2:**	**IA 3:**
VALUE ADDITION TO THE MODULE	**ASSIGNMENTS:**	**TUTORIALS:**	**QP DISCUSSION:**
	QUIZ:	**SEMINARS:**	**ANY OTHER:**

Course Instructor **HOD** **Principal**

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MODULE - II					
Sl. No.	**DATE**	**DAY**	**LESSON PLANNED**	**LESSON COVERED**	**REMARKS**
12	**19/02/20**	WED	Design Factors: Design wheel load, contact pressure, Design life, Traffic factors		
13	**24/02/20**	MON	climatic factors, Road geometry		
14	**24/02/20**	MON	Subgrade strength and drainage		
15	**25/02/20**	TUE	ESWL concept Determination of ESWL by equivalent deflection criteria		
16	**26/02/20**	WED	Stress criteria, EWL concept and problems		
17	**02/03/20**	MON	Flexible pavement Design: Assumptions		
18	**02/03/20**	MON	Mcleod Method		
19	**03/03/20**	TUE	Kansas method, CBR method		
20	**04/03/20**	WED	IRC Method (old)		
21	**09/03/20**	MON	CSA method using IRC-37-2001		
22	**09/03/20**	MON	problems		

SUMMARY

PLANNED DATE	**FROM: 19/02/20**	**TO: 09/03/20**	
ACTUAL CLASSES TAKEN	**FROM:**	**TO:**	
NUMBER OF CLASSES	**ALLOCATED: 11**	**TAKEN:**	
CONTENT COVERED FOR IA	**IA 1:**	**IA 2:**	**IA 3:**
VALUE ADDITION TO THE MODULE	**ASSIGNMENTS:**	**TUTORIALS:**	**QP DISCUSSION:**
	QUIZ:	**SEMINARS:**	**ANY OTHER:**

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MODULE - III					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
23	10/03/20	TUE	Flexible Pavement Failures		
24	11/03/20	WED	Maintenance and Evaluation		
25	17/03/20	TUE	Types of failures, Causes		
26	18/03/20	WED	Remedial/Maintenance measures in flexible pavements		
27	23/03/20	MON	Functional Evaluation by Visual inspection and unevenness measurements		
28	23/03/20	MON	Structural evaluation by Benkleman beam deflection method		
29	24/03/20	TUE	Falling weight deflectometer		
30	30/03/20	MON	GPR method		
31	30/03/20	MON	Design factors for runway pavements		
32	31/03/20	TUE	Design methods for Airfield pavement		
33	01/04/20	WED	problems		

SUMMARY

PLANNED DATE	FROM: 10/03/20	TO: 01/04/20	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 11	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE - IV					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
34	07/04/20	TUE	Stresses in Rigid Pavement : Types of stress, Analysis of Stresses		
35	08/04/20	WED	Westergaard's Analysis, Modified Westergaard equations		
36	15/04/20	WED	Critical stresses, Wheel load stresses,		
37	20/04/20	MON	Warping stress Frictional stress, combined stresses (using chart / equations),		
38	20/04/20	MON	Problems on above		
39	21/04/20	TUE	Design of Rigid Pavement: Design of CC pavement by IRC: 58-2002 for dual and Tandem axle load		
40	22/04/20	WED	Reinforcement in slabs		
41	28/04/20	TUE	Design of Dowel bars, Design of Tie bars		
42	29/04/20	WED	Design factors for Runway pavements		
43	04/05/20	MON	Design methods for airfield pavements		
44	04/05/20	MON	problems		

SUMMARY

PLANNED DATE	FROM: 07/04/20	TO: 04/05/20	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 11	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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MODULE – V: RIGID PAVEMENT FAILURES, MAINTENANCE AND EVALUATION					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
45	05/05/20	TUE	Types of failures, causes		
46	06/05/20	WED	remedial/maintenance measures in rigid pavements		
47	11/05/20	MON	Functional evaluation by Visual inspection and unevenness measurements		
48	11/05/20	MON	wheel load and its repetition		
49	12/05/20	TUE	properties of sub grade, properties of concrete		
50	13/05/20	WED	External conditions, joints		
51	18/05/20	MON	Reinforcement, Requirements of joints		
52	18/05/20	MON	Types of joints, Expansion joint, contraction joint		
53	19/05/20	TUE	warping joint, construction joint		
54	20/05/20	WED	longitudinal joint		
55	01/06/20	MON	Design of joints		

SUMMARY

PLANNED DATE	FROM: 05/05/20	TO: 01/06/20	
ACTUAL CLASSES TAKEN	FROM:	TO:	
NUMBER OF CLASSES	ALLOCATED: 11	TAKEN:	
CONTENT COVERED FOR IA	IA 1:	IA 2:	IA 3:
VALUE ADDITION TO THE MODULE	ASSIGNMENTS:	TUTORIALS:	QP DISCUSSION:
	QUIZ:	SEMINARS:	ANY OTHER:

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67	13/11/2019	Problems continued	
68	14/11/2019	Problems continued	
69	18/11/2019	Euler's Equation & Problems	
70	19/11/2019	Problems continued	
71	20/11/2019	Geodesics & Problems	
72	25/11/2019	Problems continued	
73	26/11/2019	Hanging Chain Problems	
74	27/11/2019	Problems continued	
75	28/11/2019	Revision	
76	29/11/2019	Question paper Revision	

Course outcomes: On completion of this course, students are able to,

CO1: Use LT and inverse LT in solving differential/integral equation arising in network analysis, control systems and other fields of engineering.

CO2: Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory.

CO3:Make use of Fourier Transform and Z-Transform to illustrate discrete/continuous function arising in wave and heat propogation, signals and systems.

CO4: Solve first and second order differential equations arising in engineering problems using single step and multistep numerical methods.

CO5: Determine the externals of functional using calculus of variations and solve the problems arising in dynamics of rigid bodies and vibrational analysis.

Text Books:

1. Higher Engineering Mathematics by B.S.Grewal
2. Advanced Engineering Mathematics by E. Kreszig
3. Engineering Mathematics by Srimant Pal et al

Reference Books:

1. Engineering Mathematics by N.P. Bali and Manish Goyal
2. Higher Engineering Mathematics by B.V. Ramana
3. Advanced Engineering Mathematics by Chandrika Prasad and Reena Garg
4. Advanced Engineering Mathematics by C Ray Wylie,Louis C Barrett
5. Introductory methods of numerical analysis by S S Sastry

(Dr. Chetana C/ MrsRashmi S B)
Staff in charge

(Dr. Chetana C)
HOD

PRINCIPAL
SIET., TUMAKURU.

(Dr. Narendra Viswanath)
PRINCIPAL

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SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY, TUMKUR-06

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DEPARTMENT OF MATHEMATICS

Academic Year 2019-20(Odd semester)

LECTURE PLAN

Name of the Staff: Dr. Chetana C/ Mrs.Rashmi S B **Department**: Mathematics

Class: III semester **Section**: CVE+ME

Subject: Transform calculus, fourier series and numerical techniques

Subject code: 18MAT31

Course Learning Objectives:

- To have an insight into fourier series, fourier transforms, Laplace transform, difference equations and Z-transforms.
- To develop the proficiency in variational calculus and solving ODE's arising in engineering applications, using numerical methods.

Sl No	DATE	TOPICS	REMARKS
MODULE-1: LAPLACE TRANSFORM & INVERSE LAPLACE TRANSFORM			
1	25/07/2019	Definition of Laplace Transform	
2	26/07/2019	Laplace Transforms of elementary functions(statements only)	
3	29/07/2019	Problems on Laplace Transforms	
4	30/07/2019	Problems continued	
5	31/07/2019	Laplace Transforms of Periodic functions (Statement only)	
6	01/08/2019	Problems on Laplace Transforms of Periodic functions	
7	02/08/2019	Problems continued	
8	05/08/2019	Unit – step functions & Problems	
9	06/08/2019	Problems continued	
10	07/08/2019	Inverse Laplace Transforms : Definitions	
11	08/08/2019	Problems continued	
12	09/08/2019	Problems continued	
13	13/08/2019	Convolution theorem to find the inverse Laplace Transform (without Proof) & Problems	
14	14/08/2019	Problems continued	
15	16/08/2019	Problems continued	
16	19/08/2019	Solution of Linear differential equations using Laplace Transforms & Problems	
17	20/08/2019	Revision	
MODULE-2: FOURIER SERIES			
18	21/08/2019	Periodic functions	
19	22/08/2019	Dirichlet's conditions	
20	23/08/2019	Fourier series of Periodic functions with period 2π	
21	26/08/2019	Problems continued	
22	27/08/2019	Fourier series of Periodic functions with arbitrary $2c$	
23	28/08/2019	Problems continued	
24	29/08/2019	Fourier series of even and odd functions	
25	30/08/2019	Problems continued	
26	03/09/2019	Half range Fourier series expansion, Problems	
27	04/09/2019	Problems continued	
28	09/09/2019	Practical Harmonic Analysis: Problems	

29	11/09/2019	Problems continued	
30	12/09/2019	Problems continued	
31	13/09/2019	Revision	
MODULE-3: FOURIER TRANSFORMS, DIFFERENCE EQUATIONS AND Z-TRANSFORMS			
32	16/09/2019	**Fourier Transform:** Infinite Fourier transform and problems	
33	17/09/2019	Problems continued	
34	18/09/2019	Fourier Sine and Cosine transforms	
35	19/09/2019	Problems continued	
36	20/09/2019	Inverse Fourier transforms	
37	23/09/2019	Problems continued	
38	24/09/2019	Inverse Fourier Sine and Cosine transforms	
39	25/09/2019	Problems continued	
40	26/09/2019	**Z-transforms:** Difference equations – basic definitions, Z- Transforms-definition, standard forms	
41	27/09/2019	Damping rule, shifting rule	
42	30/09/2019	Problems continued	
43	01/10/2019	Initial value and Final value theorems(without proof) and problems	
44	03/10/2019	Inverse Z-transforms and problems	
45	04/10/2019	Problems continued	
46	09/10/2019	Application of Z-transforms to solve difference equations	
47	10/10/2019	Problems continued	
48	11/10/2019	Revision	
MODULE-4: NUMERICAL SOLUTIONS OF ORDINARY DIFFERENTIAL EQUATIONS(ODE's)			
49	17/10/2019	**Numerical solution of ODE's of first order and first degree**	
50	18/10/2019	Taylor's series and problems	
51	21/10/2019	Problems continued	
52	22/10/2019	Modified Euler's method and Problems	
53	23/10/2019	Problems continued	
54	24/10/2019	Runge – Kutta method of 4^{th} order and problems	
55	25/10/2019	Problems continued	
56	28/10/2019	Milen's & Adams –Bash forth Predictor- Corrector method and Problems	
57	30/10/2019	Problems continued	
58	31/10/2019	Revision	
MODULE-5: NUMERICAL SOLUTIONS OF SECOND ORDER ODE's & CALCULUS OF VARIATIONS			
60	04/11/2019	Runge – Kutta method of second order ODE and problems	
61	05/11/2019	Problems continued	
62	06/11/2019	Milne's Predictor- Corrector method and Problems	
63	07/11/2019	Problems continued	
64	08/11/2019	Variation of function and functional	
65	11/11/2019	Problems continued	
66	12/11/2019	**Variational Probems**	

B.E., Semester: III Year: 2019 - 20

Course Title: **Strength of Materials**	*Course Code:* **18CV32**
Total lecture hours /week: **5**	*Duration of Exam:* **03 Hrs.**
SEE Marks: **60**	*CIE marks:* **40**
Credits:04	
Lesson plan author: **Mr. Nagaraja C**	*Date: 25/07/19*
Checked by: **Dr. G Mahesh Kumar**	*Date: 25/07/19*

Course Objectives:

The course will enable the students

1. To understand the basic concepts of the stresses and strains for different materials and strength of structural elements and solutions to problems under different conditions.
2. To know the development of internal forces and resistance mechanism for one dimensional and two dimensional structural elements.
3. To analyse and understand different internal forces and stresses induced due to representative loads on structural elements.
4. To determine the slope and deflection of beams
5. To evaluate the behaviour of torsion members, columns and struts.

Course Outcomes:

The students will be able to:

1. Evaluate the strength of various structural elements internal forces such as compression, tension, shear, bending and torsion.
2. Suggest suitable material from among the available in the field of construction and manufacturing.
3. Evaluate the behavior and strength of structural elements under the action of compound stresses and thus understand failure concepts.
4. Evaluate the basic concepts of slopes and deflections of structural elements.
5. Understand the basic concept of analysis and design of structural elements such as columns and struts.

Materials and resources required:

Presentation: Black board, Teaching charts, Models. / OHP/ LCD presentations

Text books:

Strength of Materials – B S Basavarajaiah and P Mahadevappa, Universities Press. 3rd Edition, 2010.

Mechanics of Materials – Ferdinand P Beer, E Russel Johnston and Jr. John T DeWolf, Tata Mc Graw Hill, Third Edition.

Reference Books:

Elements of Strength of Materials – D H Young and S P Timoshenko, EastWest Press Pvt ltd., 5th Edition(Reprint 2014).

A Text book of Strength of Materials – R K Bansal, 4th Edition, Laxmi Publications, 2010.

Strength of Materials – S S Rattan, McGraw Hill Education (India) Pvt. ltd. 2nd Edition (Sixth Reprint 2013).

Analysis of structures – Vazirani V N, Ratwani, M M and S K Duggal, Vol 1, 17th Edition, Khanna Publishers, New Delhi.

Scheme of Examination:

The question paper will have ten questions, each full question carrying 20 marks. There will be two full questions (with a maximum of three subdivisions, if necessary) from each module. Each full question shall cover the topics under a module. The students shall answer five full questions selecting one full question from each module. If more than one question is answered in modules, the best answer will be considered for the award of marks limiting one full question answer in each module. The marks scored for 100 marks will be reduced to 60 marks proportionately.

Evaluation:

Student Assessment: Through Internal Assessment Tests (30 Marks), Assignments (10 marks), University Examination (60 Marks)

Lesson Plan

17CV32 – Strength of Materials

Sl No	Date	Topics	Topics Covered	Remarks
		Module 1: Simple stresses and strains		
1	25/07/19	Introduction, Definition and concept and of stress and strain. Hooke's law		
2	26/07/19	Stress-Strain diagrams for ferrous materials		
3	30/07/19	Stress – strain diagrams for non ferrous materials,		
4	30/07/19	Elongation of tapering bars of circular and rectangular cross – sections,		
5	31/07/19	Elongation due to self weight		
6	01/08/19	Problems		
7	02/08/19	Problems		
8	06/08/19	Saint Venant's principle, Compound bars, Temperature stresses		
9	06/08/19	Compound section subjected to thermal stresses		
10	07/08/19	Problems		
11	08/08/19	state of simple shear		
12	09/08/19	Elastic constants and their relationship		
13	13/08/19	Problems		
14	13/08/19	Problems		
15	16/08/19	Problems		

		Module 2: Compound stresses		
16	20/08/19	Introduction, state of stress at a point,		
17	20/08/19	General two dimensional stress system,		
18	21/08/19	Principal stresses and principal planes.		
19	22/08/19	Mohr's circle of stresses		
20	23/08/19	problems		
21	27/08/19	Theories of failure: Maximum shear stress theory and maximum principal stress theory		
22	27/08/19	problems		
23	28/08/19	**Thick and thin cylinders**: Introduction, Thin cylinders subjected to internal pressure		
24	29/08/19	Hoop stresses, Longitudinal stress and change in volume.		
25	30/08/19	Thick cylinders subjected to both internal and external pressure;		
26	03/09/19	Lame's equation, radial and hoop stress distribution.		
27	03/09/19	Problems		
28	04/09/19	Problems		
29	11/09/19	Problems		
		Module 3: Shear Force and Bending Moment in Beams:		
30	12/09/19	Introduction to types of beams, supports and loadings.		
31	13/09/19	Definition of bending moment and shear force, Sign conventions,		
32	17/09/19	relationship between load intensity, bending moment and shear force.		
33	17/09/19	Shear force and bending moment diagrams for statically determinate beams subjected to point load		
34	18/09/19	Shear force and bending moment diagrams for statically determinate beams subjected to uniformly distributed loads		
35	19/09/19	Shear force and bending moment diagrams for beams subjected to uniformly varying loads		
36	20/09/19	Shear force and bending moment diagrams for statically determinate beams subjected to couple and their combinations.		
37	24/09/19	problems		
38	24/09/19	problems		
39	25/09/19	problems		
40	26/09/19	problems		
41	27/09/19	problems		
42	01/10/19	Problems		
43	01/10/19	Problems		
		Module 4: Bending and shear stresses in beams		
44	03/10/19	Introduction, pure bending theory, Assumptions, derivation of bending equation		

45	04/10/19	modulus of rupture, section modulus, flexural rigidity, Problems		
46	09/10/19	Expression for transverse shear stress in beams,		
47	10/10/19	Bending and shear stress distribution diagrams for circular, rectangular sections		
48	11/10/19	Bending and shear stress distribution diagrams for circular, rectangular sections. Problems		
49	17/10/19	problems		
50	18/10/19	Bending and shear stress distribution diagrams for 'I', and 'T' sections Problems. Shear centre(only concept)		
51	22/10/19	**Torsion in Circular Shafts**		
52	22/10/19	Introduction, pure torsion, Assumptions, derivation of torsion equation for circular shafts,		
53	23/10/19	Torsional rigidity and polar modulus Power transmitted by a shaft,		
54	24/10/19	Problems		
55	25/10/19	problems		
56	30/10/19	problems		
57	31/10/19	problems		
58	05/11/19	problems		
59	05/11/19	problems		
60	06/11/19	problems		
		Module 5: Deflection of Beams		
61	07/11/19	Definition of slope, deflection and curvature, Sign conventions		
62	08/11/19	Derivation of moment – curvature equation		
63	12/11/19	Double integration and Macaulay's method		
64	12/11/19	Slope and deflection for standard loading cases		
65	13/11/19	Slope and deflection for determinate prismatic beams subjected to point loads, Udl, Uvl and couple		
66	14/11/19	problems		
67	19/11/19	problems		
68	19/11/19	problems		
69	20/11/19	**Columns and Struts:** Introduction, short and long columns. Euler's theory		
70	26/11/19	Assumptions, Derivation for Euler's Buckling load for different end conditions, Limitations of Euler's theory.		
71	26/11/19	Rankine - Gordon's formula for columns.		
72	27/11/19	Rankine - Gordon's formula for columns		
73	28/11/19	problems		
74	29/11/19	problems		

C. Nagaraj
Mr. C Nagaraja
Staff Incharge

Dr. G Mahesh Kumar 24/9
HOD

Dr Hemadri Naidu T
Principal

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Shridevi Institute of Engineering and Technology-Tumkur
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DEPARTMENT OF CIVIL ENGINEERING

Semester: III **Year: 2019-20**

Course Title : **FLUIDS MECHANICS**	*course Code:* **18 CV33**
Total contact Hours: 62	*Duration of Exam:* **03 Hrs.**
SEE marks: **60**	*CIE. marks:* **40**
Lesson plan author: **Ms. Bhavya C H**	*Credits- 03*
Checked by: **Dr. G Mahesh Kumar**	*Commencement of semester:* *25/07/19*

Learning Objectives:

The objectives of this course is to make students to learn:

1. The Fundamental properties of fluids and its applications.
2. Hydrostatic laws and application to practical problem solving
3. Principles of Kinematics and Hydro-Dynamics for practical applications
4. Basic design of pipes and pipe networks considering flow, pressure and itslosses.
5. The basic flow rate measurements

Learning Outcomes:

Students will able to understand the fundamental properties of fluids and its applications. Hydrostatic laws and application to practical problem solving. To learn about Principles of Kinematics and Hydro-Dynamics for practical applications. Basic design of pipes and pipe networks considering flow, pressure and its losses.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**

1) **Victor L Streeter, Benjamin Wylie E and Keith W Bedford, "Fluid Mechanics",Tata McGraw Hill Publishing Co Ltd., New Delhi, 2008(Ed)**
2) **K Subramanya, "Fluid Mechanics and Hydraulic Machines", Tata McGraw Hill Publishing Co. Ltd.**
3) **K Subramanya, "Fluid Mechanics and Hydraulic Machines-problems and solutions", Tata McGraw Hill Publishing Co. Ltd.**
4) **4. J. F. Douglas, J. M. Gasoriek, John Swaffield, Lynne Jack, "Fluid Mechanics", Pearson, Fifth Edition**
5) **5. 5. Mohd.Kaleem Khan, "Fluid Mechanics and Machinery", Oxford University Press**

Scheme of Examination:

Two full questions (with a maximum of four sub questions) of twenty marks each to be set from each module. Each question should cover all contents of the respective module. Students have to answer five full questions choosing one full question from each module.

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DEPARTMENT OF CIVIL ENGINEERING

18CV33- Fluid Mechanics

Sl No	Date	Topics	Topics Covered	Remark
		Module 1		
1	25/07/19	Concept of fluid, Systems of units. Properties of fluid		
2	26/07/19	Mass density, Specific weight, Specific gravity, Specific volume, Viscosity, Cohesion, Adhesion, Surface tension& Capillarity		
3	29/07/19	Mass density, Specific weight, Specific gravity, Specific volume, Viscosity, Cohesion, Adhesion, Surface tension& Capillarity		
4	31/07/19	Fluid as a Continuum, , Newton's law of viscosity (theory&problems).		
5	01/08/19	Capillary rise in a vertical tube and between two plane surfaces (theory & problems).		
6	02/08/19	Vapor pressure of liquid, Compressibility and bulk modulus,Capillarity, Surface tension		
7	05/08/19	Pressure inside a water droplet, Pressure inside a soap bubble and liquid jet. Numerical problems		
8	07/08/19	**Fluid Pressure and Its Measurements:** Definition of pressure, Pressure at a point, Pascal's law, Variation of pressure with depth. Types of pressure		
9	08/08/19	Measurement of pressure using simple, differential & inclinemanometers (theory & problems).		
10	10/08/19	Introduction to Mechanical and electronic pressure measuring devices		
		Module 2		
11	14/08/19	**Hydrostatic forces on Surfaces:** Definition, Total pressure, centre of pressure		
12	15/08/19	Total pressure on horizontal, vertical and inclined plane surface, total pressure on curved surfaces		
13	17/08/19	water pressure on gravity dams, Lock gates. Numerical Problems		
14	19/08/19	water pressure on gravity dams, Lock gates. Numerical Problems		
15	21/08/19	**Fundamentals of fluid flow (Kinematics):** Introduction. Methods of describing fluid motion. Velocity and Total acceleration of a fluidparticle.		
16	22/08/19	Types of fluid flow, Description of flow pattern. Basic principles of fluid flow,three-dimensional continuity equation in Cartesian coordinate system.		
17	23/08/19	Derivation for Rotational and irroational motion. Potential function, stream function,		
18	26/08/19	Orthogonality of streamlines and equipotential lines.		
19	28/08/19	Numerical problems on Stream function and velocity potential.		
20	29/08/19	Introduction to flow net.		
		Module 3		
21	30/08/19	**Fluid Dynamics:** Introduction. Forces acting on fluid in motion.		
22	04/09/19	Euler's equation of motion along a streamline and Bernoulli's equation.		
23	09/09/19	Assumptions and limitations of Bernoulli's equation		
24	11/09/19	Modified Bernoulli's equation.		
25	12/09/19	Problems on applications of Bernoulli's equation (with and without losses).		
26	13/09/19	Vortex motion; forced vortex, free vortex, problems Momentum equation		
27	16/09/19	Vortex motion; forced vortex, free vortex, problems Momentum equation		
28	18/09/19	Problems on pipe bends.		
29	19/09/19	**Applications:** Introduction. Venturimeter, Orificemeter		
30	20/09/19	Pitot tube. Numerical Problems		

		Module 4		
31	23/09/19	**Orifice and Mouthpiece:** Introduction, classification, flow through orifice		
32	25/09/19	Hydraulic coefficients, Numerical problems		
33	26/09/19	Mouthpiece, classification, Borda's Mouthpiece (No problems).		
34	27/09/19	**Notches and Weirs:** Introduction. Classification		
35	30/09/19	Discharge over rectangular notches		
36	03/10/19	Discharge over trapezoidal notches		
37	04/10/19	Discharge over Cippoletti notch notches		
38	09/10/19	Discharge over broad crested weirs notches		
39	10/10/19	Numerical Problems.		
40	11/10/19	Ventilation of weirs, Submerged weirs.		
		Module 5		
41	17/10/19	**Flow through Pipes:** Introduction. Major and minor losses in pipe flow		
42	18/10/19	Darcy-Weisbach equation for head loss due to friction in a pipe		
43	21/10/19	Pipes in series, pipes in parallel, equivalent pipe-problems		
44	23/10/19	Minor losses in pipe flow		
45	24/10/19	Equation for head loss due to sudden expansion. Numerical problems		
46	25/10/19	Hydraulic gradient line, energy gradient line		
47	28/10/19	Pipe Networks, Hardy Cross method, Numerical problems.		
48	30/10/19	**Surge Analysis in Pipes:** Water hammer in pipes		
49	31/10/19	Equations for pressure rise due to gradual valve closure and sudden closure for rigid and elastic pipes.		
50	04/11/19	Equations for pressure rise due to gradual valve closure and sudden closure for rigid and elastic pipes. Problems		
51	06/11/19	Question Paper Revision		
52	07/11/19	Question Paper Revision		
53	08/11/19	Question Paper Revision		
54	11/11/19	Question Paper Revision		
55	13/11/19	Question Paper Revision		
56	14/11/19	Question Paper Revision		
57	18/11/19	Question Paper Revision		
58	20/11/19	Question Paper Revision		
59	25/11/19	Question Paper Revision		
60	27/11/19	Question Paper Revision		
61	28/11/19	Question Paper Revision		
62	29/11/19	Question Paper Revision		

Mrs. Bhavya C H
Course Instructor

Dr. G Mahesh Kumar
HOD

Dr Narendra Viswanath
Principal

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DEPARTMENT OF CIVIL ENGINEERING

[As per Choice Based Credit System (CBCS) scheme]

Semester: III Sem ***Year: 2019-20***

Subject : **Building Materials and Construction**	*Code:* **18CV34**
Totalcontact Hours: **61**	*Exam Duration :* **03 Hrs.**
SEE marks: **60**	*CIE marks:* **40**
Course Instructor: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **25/07/2019**
HOD: **Dr. G. Mahesh Kumar**	

Course Learning Objectives: This course will develop a student;
1. To recognize good construction materials based on properties.
2. To investigate soil properties and design suitable foundation.
3. To understand the types and properties of masonry materials and supervise masonry construction.
4. To gain knowledge of structural components like lintels, arches, staircase and roofs.
5. To understand the finishes in construction like flooring, plastering, paining.

Course outcomes: After a successful completion of the course, the student will be able to:
1. Select suitable materials for buildings and adopt suitable construction techniques.
2. Decide suitable type of foundation based on soil parameters
3. Supervise the construction of different building elements based on suitability
4. Exhibit the knowledge of building finishes and form work requirements

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. Sushil Kumar "Building Materials and construction", 20th edition, reprint 2015,StandardPublishers
2. Dr. B. C. Punmia, Ashok kumar Jain, Arun Kumar Jain, "Building Construction, Laxmi Publications (P) ltd., New Delhi.
3. Rangawala S. C. "Engineering Materials", Charter Publishing House, Anand, India.

Reference Books:

1. S. K. Duggal, "Building Materials", (Fourth Edition)New Age International (P) Limited, 2016 National Building Code(NBC) of India
2. P C Vergese, "Building Materials", PHI Learning Pvt.Ltd
3. Building Materials and Components, CBRI, 1990,India
4. Jagadish. K.S, "Alternative Building Materials Technology", New Age International,2007.
5. M. S. Shetty, "Concrete Technology", S. Chand & Co. New Delhi.

DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

18CV34 – Building Materials and Construction

[As per Choice Based Credit System (CBCS) scheme]

Sl. No	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1BUILDING MATERIALS	
1	27-07-2019	Stone as building material; Requirement of good building stones	
2	30-07-2019	Dressing of stones, Deteriorationand Preservation of stone work.	
3	30-07-2019	Bricks; Classification, Manufacturing of clay bricks,	
4	31-07-2019	Requirement of good bricks. Field and laboratory tests on bricks; Compressive strength,water absorption, efflorescence, dimension and warpage.	
5	03-08-2019	Cement Concrete blocks, Autoclaved Aerated Concrete Blocks, Sizes, requirement of good blocks	L1,L2
6	06-08-2019	Timber as construction material	
7	06-08-2019	Fine aggregate: Natural and manufactured: Sieve analysis, zoning, specify gravity	
8	07-08-2019	Bulking, moisture content, deleterious materials.	
9	10-08-2019	Coarse aggregate: Natural and manufactured: Importance of size, shape and texture.	
10	13-08-2019	Grading of aggregates, Sieve analysis, specific gravity	
11	13-08-2019	Flakiness and elongation index,	
12	14-08-2019	crushing, impact and abrasion tests.	
		MODULE- 2 FOUNDATION AND MASONRY	
13	17-08-2019	**Foundation:** Preliminary investigation of soil, safe bearing capacity of soil	
14	20-08-2019	Function and requirements of good foundation	
15	20-08-2019	Types of foundation ,introduction to spread, combined , strap, mat and pile foundation	
16	21-08-2019	**Masonry:** Definition and terms used in masonry. Brick masonry	L1,L2
17	24-08-2019	characteristics and requirements of good brick masonry	
18	27-08-2019	Bonds in brick work, Header bond, Stretcher bond,	
19	27-08-2019	English bond, Flemish bond	
20	28-08-2019	Stone masonry: Requirements of good stone masonry,	
21	31-08-2019	Classification of stone masonry	
22	03-09-2019	Characteristics of different stone masonry	
23	03-09-2019	Joints in stone masonry.	
24	04-09-2019	Types of walls; load bearing, partition walls, cavitywalls	
		MODULE-3 LINTELS, ARCHES, FLOORS AND ROOFS	L3
25	07-09-2019	**Lintels and Arches:**	

		Definition, function and classification of lintels,	
26	11-09-2019	Balconies, chejja and canopy. Arches; Elements and Stability of an Arch.	
27	14-09-2019	**Floors:** Requirement of good floor, Components of ground floor	
28	17-09-2019	Selection of flooring material, Procedure for Laying of Concrete(VDF), Mosaic, Kota, Slate, Marble,	
29	17-09-2019	Granite, Tile flooring, Cladding of tiles.	
30	18-09-2019	**Roof;**-Requirement of good roof, Types of roof,	
31	21-09-2019	Elements of a pitched roof, Trussed roof,	
32	24-09-2019	Kingpost Truss, Queen Post Truss, Steel Truss,	
33	24-09-2019	Different roofing materials,	
34	25-09-2019	R.C.C. Roof.	
35	01-10-2019	**MODULE-4 DOORS, WINDOWS, VENTILATORS, STAIRS AND FORMWORK**	
36	01-10-2019	**Doors, Windows and Ventilators:** Location of doors and windows, technical terms,	
37	05-10-2019	Materials for doors and windows:PVC, CPVC and Aluminium Types of Doors and Windows: Panelled &Flush door,	
38	09-10-2019	Collapsible door, Rolling shutter, Panelled and glazed Window,	
39	12-10-2019	Bay Window,French window. Steel Window, Ventilators. Sizes as per IS recommendations	**L2 L3 L5**
40	19-10-2019	**Stairs:** Definitions, technical terms and types ofstairs, Wood, RCC, Metal.	
41	22-10-2019	Requirements of good stairs.	
42	22-10-2019	Geometrical design of RCC doglegged	
43	23-10-2019	Open-well stairs.	
44	26-10-2019	**Formwork:** Introduction to form work,Scaffolding,	
45	30-10-2019	Shoring, under pinning	
		MODULE-5 PLASTERING DAMP PROOFING AND PAINTING	
46	02-11-2019	**Plastering and Pointing :** Mortar and its types. purpose, materials and methods of plastering and pointing, Sand faced plastering, Stucco plastering, lathe plastering	
47	05-11-2019	Defects in plastering, Water proofing with various thicknesses	
48	05-11-2019	**Damp proofing:**- Causes	
49	06-11-2019	Damp proofing :Effects and methods.	
50	09-11-2019	**Paints-** Purpose, types, technical terms	
51	12-11-2019	Ingredients in paint	
52	12-11-2019	Defects in painting	**L4,L5**
53	13-11-2019	Preparation and applications of paints to new plastered surface	
54	16-11-2019	Applications of paints to old plastered surfaces	
55	19-11-2019	Applications of paints to wooden and steel surfaces	
56	19-11-2019	Revision	
57	20-11-2019	Revision	
58	26-11-2019	Revision	
59	26-11-2019	Discussion of Previous question papers	
60	27-11-2019	Discussion of Previous question papers	
61	30-11-2019	Discussion of Previous question papers	

(Dr. G. Mahesh Kumar)
Staff in Charge

(Dr. G. Mahesh Kumar)
HOD

Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: III **Year: 2019-20**

Subject Title: **Basic Surveying**	*Subject Code:* **18CV35**
Total contact Hours: **53**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mrs. Bhavya C. H**	*Date:* ***25/07/19***
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to;

1. Understand the basic principles of Surveying
2. Learn Linear and Angular measurements to arrive at solutions to basic surveying problems.
3. Employ conventional surveying data capturing techniques and process the data for computations.
4. Analyze the obtained spatial data to compute areas and volumes and draw contours to represent 3D data on plane figures.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Posses a sound knowledge of fundamental principles Geodetics
2. Measurement of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
3. Capture geodetic data to process and perform analysis for survey problems
4. Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours.

Program Objectives (as per NBA)

- Engineering Knowledge.
- Problem Analysis.
- Interpretation of data.

Question paper pattern:

- The question paper will have **Ten** questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Text Books:

1. B.C. Punmia, "Surveying Vol.1", Laxmi Publications pvt. Ltd., New Delhi – 2009.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part I, Pune Vidyarthi Griha Prakashan, 1988

Reference Books:

1. S.K. Duggal, "Surveying Vol.1", Tata McGraw Hill Publishing Co. Ltd. New Delhi. – 2009.
2. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi. – 2010
3. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi
4. A. Bannister, S. Raymond , R. Baker, "Surveying", Pearson, 7th ed., New Delhi

LECTURE PLAN

Sl. No	Date	Topics
		Module -1: Introduction
01	25/07/19	Definition of surveying, Objectives and importance of surveying
02	29/07/19	Classification of surveys. Principles of surveying
03	30/07/19	Units of measurements, Surveying measurements and errors, types of errors,
04	30/07/19	precision and accuracy. Classification of maps, map scale
05	1/08/19	conventional symbols, topographic maps, map layout, Survey of India Map numbering systems
06	5/08/19	Measurement of Horizontal Distances: Measuring tape and types.
07	06/08/19	Measurement using tapes, Taping on level ground and sloping ground.
08	06/08/19	Errors and corrections in tape measurements, ranging of lines, direct and indirect methods of ranging
09	13/08/19	Electronic distance measurement, basic principle. Booking of tape survey work, Field book, entries
10	13/08/19	Conventional symbols, Obstacles in tape survey.
11	15/08/19	Numerical problems.
		Module -2:
12	19/08/19	Measurement of Directions and Angles: Compass survey: Basic definitions, declination.
13	20/08/19	meridians, bearings, magnetic and True bearings.
14	20/08/19	Prismatic and surveyor's compasses, temporary adjustments
15	22/08/19	Quadrantal bearings, whole circle bearings
16	26/08/19	local attraction and related problems
19	27/08/19	Theodolite Survey and Instrument Adjustment: Theodolite and types
18	27/08/19	Fundamental axes and parts of Transit theodolite
19	29/08/19	uses of theodolite, Temporary adjustments of transit theodolite
20	3/09/19	measurement of horizontal and vertical angles
21	3/09/19	step by step procedure for obtaining permanent adjustment of Transit theodolite
22		step by step procedure for obtaining permanent adjustment of Transit theodolite
		Module -3
23	9/09/19	Traversing: Traverse Survey and Computations:,
24	12/09/19	Latitudes and departures
25	16/09/19	rectangular coordinates
26	17/09/19	Traverse adjustments
27	17/09/19	Bowditch rule and transit rule,
28	19/09/19	Numerical Problems
29	23/09/19	Tacheometry: basic principle
30	24/09/19	types of tacheometry
31	24/09/19	distance equation for horizontal and inclined line of sight in fixed hair method
32	26/09/19	problems
33	30/09/19	problems

		Module -4
34	1/10/19	Leveling: Basic terms
35	1/10/19	Definitions, Curvature and refraction corrections
36	3/10/19	Differential leveling
37	17/10/19	profile leveling, fly leveling
38	21/10/19	check leveling,
39	22/10/19	reciprocal leveling
40	22/10/19	trigonometric leveling (heights and distances-single plane and double plane methods.
41	24/10/19	Methods of leveling, Dumpy level, auto level
42	31/10/19	digital and laser levels.
43	4/10/19	Booking and reduction of levels
		Module -5
44	5/10/19	Areas and Volumes: Measurement of area by dividing the area into geometrical figures
45	5/10/19	area from offsets, mid ordinate rule,
46	7/10/19	trapezoidal and Simpson's one third rule,
47	11/11/19	area from co-ordinates, introduction to planimeter
48	12/11/19	digital planimeter.
49	12/11/19	Measurement of volumes-trapezoidal and prismoidal formula
50	14/11/19	Contouring Contours,
51	18/11/19	Methods of contouring
52	19/11/19	Interpolation of contours
53	19/11/19	contour gradient, characteristics of contours and uses
54	15/11/19	

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(Dr. G Mahesh Kumar)
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DEPARTMENT OF CIVIL ENGINEERING

Semester: V **Year: 2019-20**

Subject Title : **Design of RC Structural Elements**	*Subject Code:* **17CV51**
Total contact Hours: **69**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **80**	*Total I.A. marks:* **20**
Lesson plan author: **Mr. VinuthanV R**	*Date of openinng: 25/07/19*
Checked by: **Dr. Mahesh Kumar**	

Learning Objectives:

1. Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
2. Follow a procedural knowledge in designing various structural RC elements.
3. Impart the culture of following the codes for strength, serviceability and durability as an ethics.
4. Provide knowledge in analysis and design of RC elements for the success in competitive examinations

Learning Outcomes:

1. Understand the design philosophy and principles
2. Solve engineering problems of RC elements subjected to flexure, shear and torsion
3. Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings
4. Owns professional and ethical responsibility

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models. / OHP/ LCD Presentations.
2) **Reference Books**

1. **Reinforced Concrete Design**- Unnikrishnan Pillai and Devdas menon., McGraw Hill.
2. **Design of Concrete Structures**- Subramanian, Oxferd university press.
3. **Reinforce concrete Vol 1**:- H J Shah, Charotor publishing House..
5. IS : 456 :2000
6. SP-16

Scheme of Examination:

Two full question to be set from each unit. The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

31	13/09/19	Design of singly and doubly reinforced beams		
32	16/09/19	Design of singly and doubly reinforced beams		
33	17/09/19	Design of singly and doubly reinforced beams		
34	18/09/19	Design of flanged beams for shear,		
35	19/09/19	Design of flanged beams for shear,		
36	20/09/19	Design of flanged beams for shear,		
37	23/09/19	Design of flanged beams for shear,		
38	24/9/19	Design for combined bending and torsion		
39	25/9/19	Design for combined bending and torsion		
40	26/9/19	Design for combined bending and torsion		
41	27/9/19	Design for combined bending and torsion		
		UNIT – 4: LIMIT STATE DESIGN OF SLAB AND STAIR		
42	30/9/19	Introduction to one way and two way slabs		
43	1/10/19	Introduction to one way and two way slabs		
44	3/10/19	Design of cantilever slab.		
45	4/10/19	Design of cantilever slab.		
46	9/10/19	Design of simply supported slab		
47	10/10/19	Design of one way continuous slab.		
48	11/10/19	Design of one way continuous slab.		
49	17/10/19	Design of two way slabs for different boundary conditions.		
50	18/10/19	Design of two way slabs for different boundary conditions		
51	21/10/19	Design of dog legged staircase		
52	22/10/19	Design of dog legged staircase		
53	24/10/19	Design of open well staircase		
54	25/10/19	Design of open well staircase		
55	28/10/19	Importance of bond, anchorage length and lap length		
		UNIT - 5 LIMIT STATE OF COLUMN		
56	30/10/19	Analysis and design of short axially loaded RC column		
57	31/10/19	Analysis and design of short axially loaded RC column		
58	4/11/19	Analysis and design of short axially loaded RC column		
59	5/11/19	Analysis and design of short axially loaded RC column		
60	6/11/19	Design of columns with uniaxial and biaxial moments		
61	7/11/19	Design of columns with uniaxial and biaxial moments		
62	8/11/19	Design of columns with uniaxial and biaxial moments		
63	11/11/19	Design concepts of the footings		
64	12/11/19	Design concepts of the footings		
65	13/11/19	Design concepts of the footings		
66	14/11/19	Design of Rectangular and square column footings with axial load and also for axial load & moment		
67	18/11/19	Design of Rectangular and square column footings with axial load and also for axial load & moment		

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DEPARTMENT OF CIVIL ENGINEERING

15CV51- Design of RC Structures

Sl No	Date	Topics	Topics Covered	Remarks
		UNIT 1: INTRODUCTION TO LIMIT STATE & SERVICEABILITY		
1	25/07/19	Introduction to working stress method,.		
2	29/07/19	Difference between Working stress and Limit State Method of design, Modular Ratio and Factor of Safety.		
3	30/07/19	Philosophy and principle of limit state design with assumptions		
4	31/07/19	Partial Safety factors, Characteristic load and strength. Stress block parameters,		
5	1/08/19	Concept of balanced section, under reinforced and over reinforced section.		
6	2/08/19	Concept of balanced section, under reinforced and over reinforced section.		
7	5/08/19	Limiting deflection, short term deflection, long term deflection		
8	6/08/19	Calculation of deflection of singly reinforced beam only.		
9	7/08/19	Calculation of deflection of singly reinforced beam only		
10	8/08/19	Cracking in reinforced concrete members,		
11	9/08/19	Calculation of crack width of singly reinforced beam.		
12	13/08/19	Calculation of crack width of singly reinforced beam.		
13	14/08/19	Side face reinforcement, slender limits of beams for stability.		
14	15/08/19	Side face reinforcement, slender limits of beams for stability.		
		UNIT – 2: LIMIT STATE ANALYSIS OF BEAM		
15	16/08/19	Analysis of singly reinforced beams for flexure and shear		
16	19/08/19	Analysis of singly reinforced beams for flexure and shear		
17	20/08/19	Analysis of singly reinforced beams for flexure and shear		
18	21/08/19	Analysis of singly reinforced beams for flexure and shear		
19	22/08/19	Analysis of doubly reinforced beams for flexure and shear		
20	23/08/19	Analysis of doubly reinforced beams for flexure and shear		
21	26/08/19	Analysis of doubly reinforced beams for flexure and shear		
22	27/08/19	Analysis of doubly reinforced beams for flexure and shear		
23	28/08/19	Analysis of doubly reinforced beams for flexure and shear		
24	29/08/19	Analysis of flanged beams for flexure and shear		
25	30/08/19	Analysis of flanged beams for flexure and shear		
26	3/09/19	Analysis of flanged beams for flexure and shear		
27	4/09/19	Analysis of flanged beams for flexure and shear		
28	9/09/19	Analysis of flanged beams for flexure and shear		
		UNIT – 3: LIMIT STATE DESIGN OF BEAMS		
29	11/09/19	Design of singly and doubly reinforced beams		
30	12/09/19	Design of singly and doubly reinforced beams		

68	19/11/19	Design of Rectangular and square column footings with axial load and also for axial load & moment		
69	20/11/19	Design of Rectangular and square column footings with axial load and also for axial load & moment		

Mr. Vinuthan V R
Course Instructor

Dr. Mahesh Kumar
HOD

Dr. Narendra Vishwanath
Principal

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Shridevi Institute of Engineering and Technology-Tumkur
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SHRIDEVI

DEPARTMENT OF CIVIL ENGINEERING

Year: 2019-20

Semester: V

[As per Choice Based Credit System (CBCS) scheme]

Title of the Course: **Analysis of Indeterminate Structures**	*Course Code:* **17CV52**
Total contact Hours: 77	*Duration of Exam:* **03 Hrs.**
CIE marks: **40**	*SEE marks:* **60**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **25/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to:

1. Apply knowledge of mathematics and engineering in calculating slope, deflection, bending moment and shear force using slope deflection, moment distribution method and Kani' s method.
2. Identify, formulate and solve problems in structural analysis.
3. Analyze structural system and interpret data.
4. Use the techniques, such as stiffness and flexibility methods to solve engineering problems
5. Communicate effectively in design of structural elements

Course outcomes:

After studying this course, students will be able to:

1. Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method
2. Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
3. Construct the bending moment diagram for beams and frames by Kani's method.
4. Construct the bending moment diagram for beams and frames using flexibility method
5. Analyze the beams and indeterminate frames by system stiffness method.

Materials and resources required:

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

a. **Basic Structural Analysis**- Reddy C.S. - Second Edition, TataMcGraw Hill Publication Company Ltd.
b. **Theory of Structures Vol. 2** - S.P. Gupta, G.S. Pandit and R.Gupta, Tata McGraw Hill Publication Company Ltd.
c. **Structural Dynamics**-by M.Mukhopadhyay.
d. **Structural Analysis-II** -S. S. Bhavikatti – Vikas Publishers, NewDelhi.
e. **Basics of Structural Dynamics and Aseismic Design** By DamodharSwamy and Kavita PHI Learning Private Limited.
f. **Structural Analysis**- D.S. PrakashRao., A Unified Approach, University Press
g. **Structural Analysis** - 4th SI Edition by AmitPrasanth & AslamKassimali, Thomson Learning.

3) **Text Books:**

i. Hibbeler R C, " **Structural Analysis**", Pearson Publication
ii. L S Negi and R S Jangid, "**Structural Analysis**", Tata McGraw-Hill Publishing Company Ltd.
iii. D S Prakash Rao, "**Structural Analysis: A Unified Approach**", Universities Press
iv. K.U. Muthu, H.Narendra etal, "**Indeterminate Structural Analysis**", IK International Publishing Pvt. Ltd.

4) **Scheme of Examination:**

Question paper pattern:

- The question paper will have 5 modules comprising of ten questions. Each full question carrying 20 marks
- There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
- Each full question shall cover the topics as a module
- The students shall answer five full questions, selecting one full question from each module. If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module

Evaluation:

Student Assessment: Through

- Continuous Internal Evaluation 40 Marks (Internal Test for 30 Marks, and Assignments 10 Marks).
- Semester End Examination 60 Marks (question paper is set for 100 Marks and it will be reduced to 60 Marks).

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LECTURE PLAN

Sl No	Date	Topics	Remark
		Module -01: Slope Deflection Method	
1	25-07-2019	Introduction, Sign convention.	
2	27-07-2019	Development of slope-deflection equations	
3	29-07-2019	Analysis of Beams- problems	
4	30-07-2019	Analysis of Beams- problems	
5	31-07-2019	Analysis of Beams- problems	
6	01-08-2019	Analysis of Beams- problems	
7	03-08-2019	Analysis of Beams- problems	
8	05-08-2019	Analysis of Beams- problems	
9	06-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
10	07-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
11	08-08-2019	Analysis of rigid jointed plane frames by slope-deflection equations	
12	10-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	

	13-08-2019	Analysis of rigid jointed plane frames by slope-deflection equations	
14	14-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Module -02 : Moment Distribution Method	
15	17-08-2019	Introduction, Definition of terms-Distribution factor, Carry over factor	
16	19-08-2019	Development of method	
17	20-08-2019	Analysis of Beams- problems	
18	21-08-2019	Analysis of Beams- problems	
19	22-08-2019	Analysis of Beams- problems	
20	24-08-2019	Analysis of Beams- problems	
21	26-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
22	27-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
23	28-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
24	29-08-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
25	31-08-2019	Analysis of rigid jointed plane frames by Moment Distribution Method	
26	03-09-2019	Analysis of rigid jointed plane frames by Moment Distribution Method	
27	04-09-2019	Analysis of rigid jointed plane frames by Moment Distribution Method	
28	09-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
29	11-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
30	12-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
31	14-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Module -03 : Kanis Methods	
32	16-08-2019	Introduction, Definition of terms	
33	17-09-2019	Analysis of Beams- problems	
34	18-09-2019	Analysis of Beams- problems	
35	19-09-2019	Analysis of Beams- problems	
36	21-09-2019	Analysis of Beams- problems	
37	23-09-2019	Analysis of Beams- problems	
38	24-09-2019	Analysis of Beams- problems	
39	25-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
40	26-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
41	28-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
42	30-09-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
43	01-10-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
44	03-10-2019	Analysis of Orthogonal Rigid jointed plane frames- problems	
		Module -04 : Matrix Method of Analysis (Flexibility Method)	
45	05-10-2019	Introduction,	
46	09-10-2019	Development of flexibility matrix for plane truss element	
47	10-10-2019	Development of flexibility matrix for plane truss element	
48	12-10-2019	Development of flexibility matrix for plane truss element	
49	17-10-2019	Development of flexibility matrix for plane truss element	
50	19-10-2019	flexibility matrix for axially rigid plane framed structural elements	
51	21-10-2019	flexibility matrix for axially rigid plane framed structural elements	
52	22-10-2019	flexibility matrix for axially rigid plane framed structural elements	
53	23-10-2019	flexibility matrix for axially rigid plane framed structural elements	
54	24-10-2019	Analysis of plane truss	
55	26-10-2019	Analysis of plane truss	
56	28-10-2019	Analysis of plane truss	

57	30-10-2019	Analysis of axially rigid plane frames	
58	31-10-2019	Analysis of axially rigid plane frames	
59	02-11-2019	Analysis of axially rigid plane frames	
60	04-11-2019	Analysis of axially rigid plane frames	
61	05-11-2019	Analysis of axially rigid plane frames	
Module -05: Matrix Method of Analysis (Stiffness)			
62	06-11-2019	Introduction, Development of flexibility matrix for plane truss element	
63	07-11-2019	flexibility matrix for axially rigid plane framed structural elements	
64	09-11-2019	flexibility matrix for axially rigid plane framed structural elements	
65	11-11-2019	Problems on framed structure	
66	12-11-2019	Problems on framed structure	
67	13-11-2019	Problems on framed structure	
68	14-11-2019	Problems on framed structure	
69	16-11-2019	Problems on framed structure	
70	18-11-2019	Analysis of plane truss	
71	19-11-2019	Analysis of plane truss	
72	20-11-2019	Analysis of plane truss	
73	25-11-2019	Analysis of plane truss	
74	26-11-2019	Analysis of axially rigid plane frames	
75	27-11-2019	Analysis of axially rigid plane frames	
76	28-11-2019	Analysis of axially rigid plane frames	
77	30-11-2019	Analysis of axially rigid plane frames	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr. Narendra Viswanath)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

17CV53 – Applied Geotechnical Engineering

Semester: V Sem *Year: 2019-20*

Subject Title: **Applied Geotechnical Engineering**	*Subject Code:* **17CV53**
Total Number of Lecture Hours Planned: 59	*Exam Hours:* **03 Hrs.**
Number of Lecture Hours Per Week : 04	*Continuous Internal Evaluation Marks:* **40**
Semester End Exam Marks: 60	*Course Instructor:* **Dr. G. Mahesh Kumar**
Head of Department : **Dr. G. Mahesh Kumar**	*Date of commencement of semester:* **25/07/2019**

Course Objectives: This course will enable students to

1. Appreciate basic concepts of soil mechanics as an integral part in the knowledge of Civil Engineering. Also to become familiar with foundation engineering terminology and understand how the principles of Geotechnology are applied in the design of foundations
2. Learn introductory concepts of Geotechnical investigations required for civil engineering projects emphasizing in situ investigations
3. Conceptually learn various theories related to bearing capacity of soil and their application in the design of shallow foundations and estimation of load carrying capacity of pile foundation
4. Estimate internal stresses in the soil mass and application of this knowledge in proportioning of shallow and deep foundation fulfilling settlement criteria
5. Study about assessing stability of slopes and earth pressure on rigid retaining Structures

Course Outcomes: On the completion of this course students are expected to attain the following outcomes;

1. Ability to plan and execute geotechnical site investigation program for different civil engineering projects
2. Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
3. Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
4. Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
5. Capable of estimating load carrying capacity of single and group of piles

Materials and resources required:

Presentation: Black board, Teaching charts, Models/ OHP/ LCD presentation

Text books:

1.Gopal Ranjan and Rao A.S.R., Basic and Applied Soil Mechanics, New Age International (P) Ltd., New Delhi.
2.Punmia B C, Soil Mechanics and Foundation Engineering, Laxmi Publications co., New Delhi.
3.Murthy V.N.S., Principles of Soil Mechanics and Foundation Engineering, UBS Publishers and Distributors, New Delhi.
4.Braja, M. Das, Geotechnical Engineering; Thomson Business Information India (P) Ltd., India

Reference Books:

1.T.W. Lambe and R.V. Whitman, Soil Mechanics-, John Wiley & Sons
2.Donald P Coduto, Geotechnical Engineering- Phi Learning Private Limited, New Delhi
3.Shashi K. Gulathi & Manoj Datta, Geotechnical Engineering- . Tata McGraw Hill Publications
4.Debashis Moitra, "Geotechnical Engineering". Universities Press.,
5.Malcolm D Bolton, "A Guide to soil mechanics", Universities Press.,
6.Bowles J.E , Foundation analysis and design, McGraw- Hill Publications

Scheme of Examination:

Question Paper Pattern for Theory Courses (2017 Scheme):

- The question paper will have TEN questions.
- Each full question carries 20 marks.
- There will be two full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- Students will have to answer 5 full questions, selecting one full question from each module.

Evaluation:

Student Assessment: Through Continuous Internal Evaluation (40 Marks) 3 Tests and Assignments. University Examinations (Question Paper set for 100 Marks. It will be reduced to 60marks).

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DEPARTMENT OF CIVIL ENGINEERING

17CV53 – Applied Geotechnical Engineering

Sl. No.	Date	Topics	Remarks
		Module - 1 SOIL EXPLORATION	
1	26-07-19	Introduction	L1,L2,L3
2	29-07-19	Introduction	
3	30-07-19	Objectives and Importance	
4	31-07-19	Stages and Methods of exploration-	
5	02-08-19	Test pits, Borings	
6	05-08-19	Geophysical methods	
7	06-08-19	Geophysical methods	
8	07-08-19	stabilization of boreholes, Sampling techniques,	
9	09-08-19	Undisturbed, disturbed and representative samples	
10	13-08-19	Geophysical exploration and Bore hole log.	
11	14-08-19	Drainage and Dewatering methods,	
12	16-08-19	Estimation of depth of GWT (Hvorslev's method).	
		Module -2 STRESSES IN SOILS	
13	19-08-19	Introduction,	L2,L3,L4
14	20-08-19	Boussinesq's and Westergaard's theory concentrated load,	
15	21-08-19	circular and rectangular load,	
16	23-08-19	equivalent point load method,	
17	26-08-19	pressure distribution diagrams and contact pressure,	
18	27-08-19	Newmark's chart Foundation Settlement -	
19	28-08-19	Newmark's chart Foundation Settlement -	
20	30-08-19	Approximate method for stress distribution on a horizontal plane	
21	03-09-19	Types of settlements and importance -continurd	
22	04-09-19	Types of settlements and importance	
23	09-09-19	Computation of immediate and consolidation settlement	
24	11-09-19	Computation of immediate and consolidation settlement	
		Module 3 LATERAL EARTH PRESSURE	
25	13-09-19	**Lateral Earth Pressure**: Active, Passive & earth pressure at rest,	L2,L4,L5
26	16-09-19	Active, Passive and earth pressure at rest	
27	17-09-19	Rankine's theory for cohesionless and cohesive soils,	
28	18-09-19	Rankine's theory for cohesionless and cohesive soils,	
29	20-09-19	Coulomb's theory. Rebhann's	
30	23-09-19	Culmann's graphical construction.	
31	24-09-19	**Stability of Slopes** : Assumptions	
32	25-09-19	infinite and finite slopes, factor of safety,	
33	27-09-19	use of Taylor's stability charts,	
34	30-09-19	Swedish slip circle method for C & C-Φ (method of slices) soils,	
35	01-10-19	Swedish slip circle method for C & C-Φ (Method of slices) soils,	
36	04-10-19	Fellineous method for critical slip circle	
		Module 4 BEARING CAPACITY OF SHALLOW FOUNDATION	
37	09-10-19	**Bearing Capacity of Shallow Foundation:** Types of foundations	L2,L4,L5, L6
38	11-10-19	Determination of bearing capacity by Terzaghi's method	

39	18-10-19	Determination of bearing capacity by BIS method (IS: 6403)	
40	21-10-19	Effect of water table and eccentricity	
41	22-10-19	Effect of water table and eccentricity-continued	
42	23-10-19	Effect of water table and eccentricity	
43	25-10-19	Field methods - plate load test-continued	
44	28-10-19	Field methods - plate load test	
45	30-10-19	Standard Penetration Test (SPT)-continued	
46	04-11-19	Standard Penetration Test (SPT)	
47	05-11-19	Proportioning of shallow foundations- isolated	
48	06-11-19	Proportioning of shallow foundations- combined footings (only two columns)	
		Module 5 PILE FOUNDATION	
49	08-11-19	Types and classification of piles,	**L1,L2,L3, L4**
50	11-11-19	single loaded pile capacity in cohesionless soils by static formula	
51	12-11-19	single loaded pile capacity in cohesive soils by static formula,	
52	13-11-19	efficiency of file group	
53	18-11-19	Group capacity of piles in cohesionless soils,	
54	19-11-19	Group capacity of piles in cohesive soils	
55	20-11-19	Negative skin friction,	
56	25-11-19	pile load tests	
57	26-11-19	Settlement of piles.	
58	27-11-19	under reamed piles -continued	
59	29-11-19	under reamed piles (only introductory concepts – no derivation)	

(Dr. G. Mahesh Kumar)
Faculty

(Dr. G. Mahesh Kumar) 24/7/19
HOD
Head
Dept. of Civil Engineering
S.I.T., TUMKUR

(Dr. Hemadri Naidu T.)
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DEPARTMENT OF CIVIL ENGINEERING

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Semester: **V** ***Year: 2019-20***

Subject Title: **COMPUTER AIDED BUILDING PLANNING AND DRAWING**	*Subject Code:* **17CV54**
Total contact Hours: ***45 (15 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **25/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

Provide students with a basic understanding

1. Achieve skill sets to prepare computer aided engineering drawings
2. Understand the details of construction of different building elements.
3. Visualize the completed form of the building and the intricacies of construction based on the engineering drawings.

Course outcomes:

After studying this course, students will be able to:

1. Gain a broad understanding of planning and designing of buildings
2. Prepare, read and interpret the drawings in a professional set up.
3. Know the procedures of submission of drawings and Develop working and submission drawings for building
4. Plan and design a residential or public building as per the given requirements

1) **Presentation:** CAD Software, Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. MG Shah, CM Kale, SY Patki, "Building drawing with an integrated approach to Built Environment Drawing" , Tata Mc Graw Hill Publishing co. Ltd., New Delhi
2. Gurucharan Singh, "Building Construction", Standard Publishers, & distributors, New Delhi
3. Malik R S and Meo G S, "Civil Engineering Drawing" , Asian Publishers/Computech Publications Pvt Ltd
4. Time Saver Standard by Dodge F. W., F. W. Dodge Corp.,
5. IS: 962-1989 (Code of practice for architectural and building drawing)
6. National Building Code, BIS, New Delhi.

3) **Question paper pattern:**

- There will be two full questions with sub divisions if necessary from Module 2 with each full question carrying **thirty** marks. Students have to answer one question.
- There will be two full questions from Module 3 with each full question carrying **fifty** marks. Students have to answer one question.
- The conduction of examination and question paper format of should be in lines of1st year CAED drawing. It' s a drawing paper but the exam will be conducted by batches in the computer labs. question papers should be given in batches

LECTURE PLAN

	Batch 01			
	Total Contact Hours: 59			**Theory: 14** **Practice: 45**
Sl	**Hrs**	**Date**	**Topics**	**Remark**
	Module -1:			
1	1	29-07-2019	Drawing Basics: Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations and conventional representations as per IS: 962 Simple engineering drawings with CAD drawing tools: Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline and Ellipse.	
2	3	30-07-2019	Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customising toolbars, Working with multiple drawings.	
	Module -2:			
3	1	05-08-2019	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings.	
4	3	06-08-2019	Different types of bonds in brick masonry	
5	3	13-08-2019	Different types of staircases – Dog legged, Open well	
6	1	19-08-2019	Lintel and chajja, RCC slabs and beams, Cross section of a pavement	
7	3	20-08-2019	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system	
8	1	26-08-2019	Cross sectional details of a road for a Residential area with provision for all services	
9	3	27-08-2019	Steel truss (connections Bolted)	
	Module -3:			
10	3	03-09-2019	Principles of planning, Planning regulations and building byelaws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings. Recommendations of NBC.	
11	1	09-09-2019	Drawing of Single story residential building	
12	3	10-09-2019	Drawing of Single story residential building	
13	1	16-09-2019	Drawing of Single story residential building	
14	3	17-09-2019	Drawing of Single story residential building	
15	1	23-09-2019	Drawing of Double story residential building	

16	3	24-09-2019	Drawing of Double story residential building	
17	1	30-09-2019	Drawing of Double story residential building	
18	3	01-10-2019	Drawing of Double story residential building	
19	1	21-10-2019	Drawing of Hostel building	
20	3	22-10-2019	Drawing of Hostel building	
21	1	28-10-2019	Drawing of Hostel building	
22	1	04-11-2019	Drawing of Hospital building	
23	3	05-11-2019	Drawing of Hostel building	
24	1	11-11-2019	Drawing of Hospital building	
25	3	12-11-2019	Drawing of Hospital building	
26	1	18-11-2019	Drawing of School building	
27	3	19-11-2019	Drawing of School building	
28	1	25-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
29	3	26-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
30	3	29-11-2019	**Internals**	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr. Narendra Viswanath)
Principal

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LECTURE PLAN

	Batch 02			
	Total Contact Hours: 59			**Theory: 14** **Practice: 45**
Sl	**Hrs**	**Date**		
1	1	29-07-2019	Drawing Basics: Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations and conventional representations as per IS: 962 Simple engineering drawings with CAD drawing tools: Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline and Ellipse.	
2	3	01-08-2019	Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customising toolbars, Working with multiple drawings.	
	Module -2:			
3	1	05-08-2019	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings.	
4	3	08-08-2019	Different types of bonds in brick masonry	
5	1	19-08-2019	Different types of staircases – Dog legged, Open well	
6	3	22-08-2019	Lintel and chajja, RCC slabs and beams, Cross section of a pavement	
7	1	26-08-2019	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system	
8	3	29-08-2019	Cross sectional details of a road for a Residential area with provision for all services	
9	1	09-09-2019	Steel truss (connections Bolted)	
	Module -3:			
10	3	12-09-2019	Principles of planning, Planning regulations and building byelaws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings. Recommendations of NBC.	
11	1	16-09-2019	Drawing of Single story residential building	
12	3	19-09-2019	Drawing of Single story residential building	
13	1	23-09-2019	Drawing of Single story residential building	
14	3	26-09-2019	Drawing of Single story residential building	

15	1	30-09-2019	Drawing of Double story residential building	
16	3	03-10-2019	Drawing of Double story residential building	
17	3	10-10-2019	Drawing of Double story residential building	
18	3	17-10-2019	Drawing of Double story residential building	
19	1	21-10-2019	Drawing of Hostel building	
20	3	24-10-2019	Drawing of Hostel building	
21	1	28-10-2019	Drawing of Hostel building	
22	3	31-10-2019	Drawing of Hospital building	
23	1	04-11-2019	Drawing of Hostel building	
24	3	07-11-2019	Drawing of Hospital building	
25	1	11-11-2019	Drawing of Hospital building	
26	3	14-11-2019	Drawing of School building	
27	1	18-11-2019	Drawing of School building	
28	1	25-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
29	3	28-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
30	3	30-11-2019	**Internals**	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr. Narendra Viswanath)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Semester: V *Year: 2019-20*

Subject Title: **COMPUTER AIDED BUILDING PLANNING AND DRAWING**	*Subject Code:* **17CV54**
Total contact Hours: ***45 (15 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **25/07/19**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

Provide students with a basic understanding

1. Achieve skill sets to prepare computer aided engineering drawings
2. Understand the details of construction of different building elements.
3. Visualize the completed form of the building and the intricacies of construction based on the engineering drawings.

Course outcomes:

After studying this course, students will be able to:

1. Gain a broad understanding of planning and designing of buildings
2. Prepare, read and interpret the drawings in a professional set up.
3. Know the procedures of submission of drawings and Develop working and submission drawings for building
4. Plan and design a residential or public building as per the given requirements

1) **Presentation:** CAD Software, Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. MG Shah, CM Kale, SY Patki, "Building drawing with an integrated approach to Built Environment Drawing" , Tata Mc Graw Hill Publishing co. Ltd., New Delhi
2. Gurucharan Singh, "Building Construction", Standard Publishers, & distributors, New Delhi
3. Malik R S and Meo G S, "Civil Engineering Drawing" , Asian Publishers/Computech Publications Pvt Ltd
4. Time Saver Standard by Dodge F. W., F. W. Dodge Corp.,
5. IS: 962-1989 (Code of practice for architectural and building drawing)
6. National Building Code, BIS, New Delhi.

3) **Question paper pattern:**

- There will be two full questions with sub divisions if necessary from Module 2 with each full question carrying **thirty** marks. Students have to answer one question.
- There will be two full questions from Module 3 with each full question carrying **fifty** marks. Students have to answer one question.
- The conduction of examination and question paper format of should be in lines of1st year CAED drawing. It' s a drawing paper but the exam will be conducted by batches in the computer labs. question papers should be given in batches

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LECTURE PLAN

	Batch 01			
	Total Contact Hours: 59		Theory: 14 Practice: 45	
Sl	Hrs	Date	Topics	Remark
	Module -1:			
1	1	29-07-2019	Drawing Basics: Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations and conventional representations as per IS: 962 Simple engineering drawings with CAD drawing tools: Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline and Ellipse.	
2	3	30-07-2019	Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customising toolbars, Working with multiple drawings.	
	Module -2:			
3	1	05-08-2019	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings.	
4	3	06-08-2019	Different types of bonds in brick masonry	
5	3	13-08-2019	Different types of staircases – Dog legged, Open well	
6	1	19-08-2019	Lintel and chajja, RCC slabs and beams, Cross section of a pavement	
7	3	20-08-2019	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system	
8	1	26-08-2019	Cross sectional details of a road for a Residential area with provision for all services	
9	3	27-08-2019	Steel truss (connections Bolted)	
	Module -3:			
10	3	03-09-2019	Principles of planning, Planning regulations and building byelaws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings. Recommendations of NBC.	
11	1	09-09-2019	Drawing of Single story residential building	
12	3	10-09-2019	Drawing of Single story residential building	
13	1	16-09-2019	Drawing of Single story residential building	
14	3	17-09-2019	Drawing of Single story residential building	
15	1	23-09-2019	Drawing of Double story residential building	

16	3	24-09-2019	Drawing of Double story residential building	
17	1	30-09-2019	Drawing of Double story residential building	
18	3	01-10-2019	Drawing of Double story residential building	
19	1	21-10-2019	Drawing of Hostel building	
20	3	22-10-2019	Drawing of Hostel building	
21	1	28-10-2019	Drawing of Hostel building	
22	1	04-11-2019	Drawing of Hospital building	
23	3	05-11-2019	Drawing of Hostel building	
24	1	11-11-2019	Drawing of Hospital building	
25	3	12-11-2019	Drawing of Hospital building	
26	1	18-11-2019	Drawing of School building	
27	3	19-11-2019	Drawing of School building	
28	1	25-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
29	3	26-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
30	3	29-11-2019	**Internals**	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr. Narendra Viswanath)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

	Batch 02			
	Total Contact Hours: 59			**Theory: 14** **Practice: 45**
Sl	**Hrs**	**Date**		
1	1	29-07-2019	Drawing Basics: Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations and conventional representations as per IS: 962 Simple engineering drawings with CAD drawing tools: Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline and Ellipse.	
2	3	01-08-2019	Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customising toolbars, Working with multiple drawings.	
	Module -2:			
3	1	05-08-2019	Cross section of Foundation, masonry wall, RCC columns with isolated & combined footings.	
4	3	08-08-2019	Different types of bonds in brick masonry	
5	1	19-08-2019	Different types of staircases – Dog legged, Open well	
6	3	22-08-2019	Lintel and chajja, RCC slabs and beams, Cross section of a pavement	
7	1	26-08-2019	Septic Tank and sedimentation Tank, Layout plan of Rainwater recharging and harvesting system	
8	3	29-08-2019	Cross sectional details of a road for a Residential area with provision for all services	
9	1	09-09-2019	Steel truss (connections Bolted)	
	Module -3:			
10	3	12-09-2019	Principles of planning, Planning regulations and building byelaws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings. Recommendations of NBC.	
11	1	16-09-2019	Drawing of Single story residential building	
12	3	19-09-2019	Drawing of Single story residential building	
13	1	23-09-2019	Drawing of Single story residential building	
14	3	26-09-2019	Drawing of Single story residential building	

15	1	30-09-2019	Drawing of Double story residential building	
16	3	03-10-2019	Drawing of Double story residential building	
17	3	10-10-2019	Drawing of Double story residential building	
18	3	17-10-2019	Drawing of Double story residential building	
19	1	21-10-2019	Drawing of Hostel building	
20	3	24-10-2019	Drawing of Hostel building	
21	1	28-10-2019	Drawing of Hostel building	
22	3	31-10-2019	Drawing of Hospital building	
23	1	04-11-2019	Drawing of Hostel building	
24	3	07-11-2019	Drawing of Hospital building	
25	1	11-11-2019	Drawing of Hospital building	
26	3	14-11-2019	Drawing of School building	
27	1	18-11-2019	Drawing of School building	
28	1	25-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
29	3	28-11-2019	Submission drawing (sanction drawing) of two storied residential building with access to terrace including all details and statements as per the local bye-laws	
30	3	30-11-2019	**Internals**	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr. Narendra Viswanath)
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Sri Shridevi Charitable Trust (R.)
SHRIDEVI INSTITUTE OF ENGINEERING & TECHNOLOGY
(Recognised by Govt. of Karnataka, Affiliated to VTU, Belagavi and Approved by AICTE, New Delhi)
Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

Semester: V [*As per Choice Based Credit System (CBCS) scheme*] **Year: 2019-20**

Course Title: **Railways, Harbour, Tunnelling and Airports**	*Subject Code:* **17CV552**
Total contact Hours: **60**	*Duration of Exam:* **03 Hrs.**
SEE Marks: **60**	*CIE marks:* **40**
Lesson plan author: **Mr. Prakash J**	*Date:* **25/07/2019**
Checked by: **Dr. G Mahesh Kumar**	*Credits: 03*

Course objectives:

This course will enable students to:

1. Understand the history and development, role of railways, railway planning and development based on essential criteria's.
2. Learn different types of structural components, engineering properties of the materials, to calculate the material quantities required for construction
3. Understand various aspects of geometric elements, points and crossings, significance of maintenance of tracks.
4. Design and plan airport layout, design facilities required for runway, taxiway and impart knowledge about visual aids
5. Apply design features of tunnels, harbours, dock and necessary navigational aids; also expose them to various methods of tunnelling and tunnel accessories.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Acquires capability of choosing alignment and also design geometric aspects of railway system, runway, taxiway.
2. Suggest and estimate the material quantity required for laying a railway track and also will be able to determine the hauling capacity of a locomotive.
3. Develop layout plan of airport, harbor, dock and will be able relate the gained knowledge to identify required type of visual and/or navigational aids for the same.
4. Apply the knowledge gained to conduct surveying, understand the tunnelling activities.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Saxena Subhash C and Satyapal Arora, "A Course in Railway Engineering", Dhanpat Rai and Sons, Delhi,

2. Satish Chandra and Agarwal M.M, "Railway Engineering", 2nd Edition, Oxford University Press, New Delhi,

3. Khanna S K, Arora M G and Jain S S, "Airport Planning and Design", Nemchand and Brothers, Roorkee,

4. C Venkatramaiah, " Transportation Engineering", Volume II: Railways, Airports, Docks and Harbours, Bridges and Tunnels, Universities Press

5. Bindra S P, "A Course in Docks and Harbour Engineering", Dhanpat Rai and Sons, New Delhi,

Reference Books:

1. Oza.H.P. and Oza.G.H., "A course in Docks & Harbour Engineering". Charotar Publishing Co.,

2. Mundrey J.S. "A course in Railway Track Engineering". Tata McGraw Hill,

3. Srinivasan R. Harbour, "Dock and Tunnel Engineering", 26th Edition 2013

Lesson Plan

Sl No	Date	Topics
		Module -1: Railway Planning
1	25/07/19	Significance of Road, Rail, Air and Water transports, creep in rails, defects in rails,
2	26/07/19	Coordination of all modes to achieve sustainability
3	27/07/19	Elements of permanent way – Rails, Sleepers, Ballast
4	29/07/19	rail fixtures and fastenings
5	01/08/19	Track Stress, coning of wheels
6	02/08/19	Route alignment surveys,
7	03/08/19	conventional and modern methods
8	05/08/19	Soil suitability analysis
9	08/08/19	Geometric design of railways
10	09/08/19	gradient, super elevation
11	10/08/19	widening of gauge on curves
12	16/08/19	Points and Crossings
		Module -2: Railway Construction and Maintenance
13	17/08/19	Earthwork
14	19/08/19	Stabilization of track on poor soil
15	22/08/19	Calculation of Materials required for track laying
16	23/08/19	Construction and maintenance of tracks-
17	24/08/19	Modern methods of construction
18	26/08/19	Track maintenance
19	29/08/19	Railway stations and yards
20	30/08/19	passenger amenities
21	31/08/19	Urban rail
22	09/09/19	Infrastructure for Metro
23	12/09/19	Mono
24	13/09/19	underground railways
		Module -3: Harbour and Tunnel Engineering
25	16/09/19	Definition of Basic Terms
26	19/09/19	Planning and Design of Harbours
27	20/09/19	Requirements, Classification
28	21/09/19	Location and Design Principles – Harbour Layout and Terminal Facilities
29	23/09/19	Coastal Structures, Inland Water Transport,
30	26/09/19	Wave action on Coastal Structures and Coastal Protection Works.
31	27/09/19	Tunnelling: Introduction
32	30/09/19	size and shape of the tunnel

33	03/10/19	tunnelling methods in soils
34	04/10/19	tunnelling methods in soils
35	05/10/19	tunnel lining, tunnel drainage
36	10/10/19	Tunnel ventilation
		Module -4: Airport Planning
37	11/10/19	Air transport characteristics,
38	12/10/19	airport classification
39	17/10/19	air port planning: objectives
40	18/10/19	Airport components
41	19/10/19	layout characteristics
42	21/10/19	layout characteristics
43	24/10/19	socio-economic characteristics of the catchment area
44	25/10/19	criteria for airport site selection
45	26/10/19	ICAO stipulations
46	28/10/19	typical airport layouts
47	31/10/19	typical airport layouts
48	02/11/19	Parking and circulation area
		Module -5: Airport Design
49	04/11/19	Runway Design: Orientation, Wind Rose Diagram,
50	07/11/19	Wind Rose Diagram continued,
51	08/11/19	Runway length,
52	09/11/19	Problems on basic and Actual Length
53	11/11/19	Geometric design of runways
54	14/11/19	Pavement Design Principles
55	16/11/19	Configuration and, Elements of Taxiway Design
56	18/11/19	Configuration and, Elements of Taxiway Design
57	25/11/19	Airport Zones
58	28/11/19	Passenger Facilities and Services
59	29/11/19	Runway and Taxiway Markings
60	30/11/19	Runway and Taxiway lighting

Mr Prakash J
Course Instructor

Dr. G Mahesh Kumar
HOD

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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VI** *Year:* **2021-22**

Subject Title: **SOFTWARE APPLICATION LABORATORY**	*Subject Code:* **18CVL67**
Total contact Hours: ***42 (14 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **04/04/22**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to:

1. Use industry standard software in a professional set up.
2. Understand the elements of finite element modeling, specification of loads and boundary condition, performing analysis and interpretation of results for final design.
3. Develop customized automation tools.

Course outcomes:

After studying this course, students will be able to:

1. use software skills in a professional set up to automate the work and thereby reduce cycle time for completion of the work.

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**
   1. Training manuals and User manuals and Relevant course reference books

3) **Question paper pattern:**
   - The question paper will have 6 questions under 3 modules.
   - There will be two full questions (with a maximum of three subdivisions, if necessary) from each module.
   - Each full question shall cover the topics under a module.
   - Module-1: 40 Marks, Module-2: 30 Marks, Module-3: 30 Marks.
   - The students shall answer three full questions, selecting one full question from each module.

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN-(B1)

Sl No	Date	Topics	Remark
Module -1: Use of civil engineering software's:			
1	28-04-2022	Analysis of plane trusses.	
2	03-05-2022	Analysis of continuous beams.	
3	20-05-2022	Analysis of portal frames.	
4	12-05-2022	3D analysis of multistoried frame structures.	
Module -2: Exercise on Project planning and scheduling of a building project using any project management software:			
5	17-05-2022	a. Understanding basic features of Project management software b. Constructing Project: create WBS, Activities, and tasks and Computation Time using Excel spread sheet and transferring the same to Project management software. c. Identification of Predecessor and Successor activities with constrain	
6	24-05-2022	d. Constructing Network diagram (AON Diagram) and analyzing for Critical path, Critical activities and Othernon Critical paths, Project duration, Floats. e. Study on various View options available f. Basic understanding about Resource Creation and allocation g. Understanding about Splitting the activity, Linking multiple activity, assigning Constrains, Merging Multiple projects, Creating Baseline Project	
7	26-05-2022	**GIS applications using open source software:** a. To create shape files for point, line and polygon features with a map as reference.	
8	31-05-2022	b. To create decision maps for specific purpose.	
Module -3: Use of EXCEL spread sheets:			
9	07-06-2022	Design of singly reinforced and doubly reinforced rectangular beams,	
10	14-06-2022	design of one way and two way slabs	
11	21-06-2022	computation of earthwork,	
12	28-06-2022	Design of horizontal curve by offset method,	
13	05-07-2022	Design of super elevation.	
14	12-07-2022	Internals	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

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LECTURE PLAN-(B2)

Sl No	Date	Topics	Remark
Module -1: Use of civil engineering software's:			
1	25-04-2022	Analysis of plane trusses.	
2	02-05-2022	Analysis of continuous beams.	
3	09-05-2022	Analysis of portal frames.	
4	16-05-2022	3D analysis of multistoried frame structures.	
Module -2: Exercise on Project planning and scheduling of a building project using any project management software:			
5	18-05-2022	a. Understanding basic features of Project management software b. Constructing Project: create WBS, Activities, and tasks and Computation Time using Excel spread sheet and transferring the same to Project management software. c. Identification of Predecessor and Successor activities with constrain	
6	23-05-2022	d. Constructing Network diagram (AON Diagram) and analyzing for Critical path, Critical activities and Othernon Critical paths, Project duration, Floats. e. Study on various View options available f. Basic understanding about Resource Creation and allocation g. Understanding about Splitting the activity, Linking multiple activity, assigning Constrains, Merging Multiple projects, Creating Baseline Project	
7	30-05-2022	**GIS applications using open source software:** a. To create shape files for point, line and polygon features with a map as reference.	
8	06-06-2022	b. To create decision maps for specific purpose.	
Module -3: Use of EXCEL spread sheets:			
9	13-06-2022	Design of singly reinforced and doubly reinforced rectangular beams,	
10	16-06-2022	design of one way and two way slabs	
11	20-06-2022	computation of earthwork,	
12	27-06-2022	Design of horizontal curve by offset method,	
13	04-07-2022	Design of super elevation.	
14	11-07-2022	Internals	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

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LESSON PLAN (April 2021 – August 2022) MICRO SCHEDULE

COURSE	DESIGN OF PRESTRESSED CONCRTE	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV81**	SEM/SECTION	08
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction to analysis of members	
1	04-04-2022	Concept of Pre stressing, Types of Pre stressing	
2	05-04-2022	Advantages - Limitations Pre stressing systems	
3	06-04-2022	Anchoring devices Materials	
4	11-04-2022	Mechanical Properties of high strength concrete	
5	12-04-2022	high strength steel, Stress-Strain curve for High strength concrete	
6	13-04-2022	Analysis of members at transfer - Stress concept	
7	18-04-2022	Comparison of behavior of reinforced concrete – pre stressed concrete	
8	19-04-2022	Force concept - Load balancing concept - Kern point -Pressure line.	
9	20-04-2022	Numericals	
10	25-04-2022	Numericals	

SUMMARY

Planned Date	**From : 04/04/2022**	**To: 25/04/2022**	
Actual classes taken	**From : 04/04/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Losses in Pre-stress	
11	26-04-2022	Loss of Pre stress due to Elastic shortening, Friction, Anchorage slip, Creep of concrete, Shrinkage of concrete, Relaxation of steel, Total Loss	
12	27-04-2022	Deflection and Crack Width Calculations of Deflection due to prestressing force, Deflection due to gravity loads	
13	02-05-2022	Deflection due to prestressing loads, Total deflection	
14	03-05-2022	Limits of deflection, Limits of span-to-effective depth ratio	
15	04-05-2022	Calculation of Crack Width, Limits of crack width	
16	09-05-2022	Numericals on losses of prestress	
17	10-05-2022	Numericals on losses of prestress	
18	11-05-2022	Numericals on losses of prestress	
19	16-05-2022	Numericals on losses of prestress	
20	18-05-2022	Numericals on losses of prestress	

SUMMARY

Planned Date	**From : 26/04/2022**	**To: 18/04/2022**	
Actual classes taken	**From : 26/04/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Design of sections for flexure	
21	23-05-2022	Analysis of members at ultimate strength	
22	24-05-2022	Preliminary Design -	
23	25-05-2022	Final Design for Type 1members.	
24	30-05-2022	Problems on design of flexure	
25	31-05-2022	Problems on design of flexure	
26	01-06-2022	Problems on design of flexure	
27	06-06-2022	Problems on design of flexure	
28	07-06-2022	Problems on design of flexure	
29	08-06-2022	Problems on design of flexure	
30	13-06-2022	Problems on design of flexure	

SUMMARY

Planned Date	**From : 23/05/2022**	**To: 13/06/2022**	
Actual classes taken	**From : 23/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mrs. Radhika T N
Course Coordinator

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Design for Shear		
31	14-06-2022	Analysis for shear		
32	14-06-2022	Components of shear resistance		
33	14-06-2022	Modes of Failure		
34	14-06-2022	Limit State of collapse for shear		
35	15-06-2022	Design of transverse reinforcement.		
36	15-06-2022	Problems on shear		
37	17-06-2022	Problems on shear		
38	17-06-2022	Problems on transverse reinforcement		
39	20-06-2022	Problems on transverse reinforcement		
40	21-06-2022	Problems on transverse reinforcement		

SUMMARY

Planned Date	**From : 14/06/2022**	**To: 21/06/2022**	
Actual classes taken	**From : 14/06/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

Dr. G Mahesh Kumar
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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Anchorage zone stress and design of anchorages	
41	22-06-2022	anchorage system	
42	22-06-2022	Different anchorage system	
43	23-06-2022	Problems on anchorages	
44	26-62-2022	Problems on anchorages	
45	27-06-2022	Problems on anchorages	
46	28-06-2022	Problems on anchorages	

SUMMARY

Planned Date	**From : 22/06/2022**	**To: 28/06/2022**	
Actual classes taken	**From : 22/06/2022**	**To:**	
Number of classes	**Allocated : 6**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (April 2022 – June 2022) MACRO SCHEDULE

COURSE	DESIGN OF PRESTRESSED CONCRTE	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV81**	SEMESTER	03
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to learn Design of Pre Stressed Concrete Elements.

Course outcomes: After studying this course, students will be able to:
1. Understand the requirement of PSC members for present scenario.
2. Analyse the stresses encountered in PSC element during transfer and at working.
3. Understand the effectiveness of the design of PSC after studying losses
4. Capable of analyzing the PSC element and finding its efficiency.
5. Design PSC beam for different requirements.

Sl No	Date	Module & Lesson Plan	Additional sources
01	/202 To /202 26/4/2022	**Module-1** **Introduction and Analysis of Members:** Concept of Pre stressing - Types of Pre stressing - Advantages - Limitations – Pre stressing systems - Anchoring devices - Materials - Mechanical Properties of high strength concrete - high strength steel - Stress-Strain curve for High strength concrete. Analysis of members at transfer - Stress concept - Comparison of behavior of reinforced concrete – pre stressed concrete - Force concept - Load balancing concept - Kern point -Pressure line. **No. of Contact sessions: 12**	http://www.bgsit.ac.in/documents/civil/Course/8thSem/theory/Design%20of%20Prestressed%20Concrete%20Elements%20(17CV82).pdf
02	/202 To /202 18/5/2022	**Module 2:** **Losses in Pre stress:** Loss of Pre stress due to Elastic shortening, Friction, Anchorage slip, Creep of concrete, Shrinkage of concrete and Relaxation of steel - Total Loss. Deflection and Crack Width Calculations of Deflection due to gravity loads - Deflection due to prestressing force -Total deflection - Limits of deflection - Limits of span-to-effective depth ratio -Calculation of Crack Width - Limits of crack width. **No. of Contact sessions: 12**	https://theconstructor.org/concrete/prestress-losses-prestressed-concrete/3287/ https://www.slideshare.net/ManjuParanthaman/7-losses-in-prestress

03	13/1/202 To 3/6/2022	**Module 3:** **Design of Sections for Flexure:** Analysis of members at ultimate strength - Preliminary Design - Final Design for Type 1members. **No. of Contact sessions: 10**	https://gcekbpatna.ac.in/assets/documents/lecture notes/Design_of_FlexuralMembers_Type-1.pdf
04	14/6/2022 To 24/6/2022	**Module 4:** **Analysis for shear** - Components of shear resistance - Modes of Failure - Limit State of collapse for shear - Design of transverse reinforcement. **No. of Contact sessions: 10**	http://www.assakkaf.com/courses/ence355/lectures/part1/chapter4b.pdf
05	25/01/2022 To 19/02/2022	**Module 5:** Different anchorage system and design of end block by latest IS codes. **No. of Contact sessions: 12**	https://www.slideshare.net/haripriyakumar1/unit-1-anchorage-systems

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:
1.Krishna Raju, N. "Pre stressed Concrete", Tata McGraw Hill Publishing Company, New Delhi 2006
2. Krishna Raju. N., "Pre-stressed Concrete - Problems and Solutions", CBS Publishers and Distributors, Pvt. Ltd., New Delhi.
3. Rajagopalan N, "Pre - stressed Concrete", Narosa Publishing House, New Delhi

Reference Books:
1. Praveen Nagarajan, "Advanced Concrete Design", Person Publishers
2. P. Dayaratnam, "Pre stressed Concrete Structures", Scientific International Pvt. Ltd.
3. Lin T Y and Burns N H, 'Design of Pre - stressed Concrete Structures' , John Wiley and Sons, New York
4. Pundit G S and Gupta S P, "Pre - stressed Concrete", C B S Publishers, New Delhi
5. IS: 1343: Indian Standard code of practice for Pre stressed concrete, BIS, New Delhi.
6. IS: 3370-Indian Standard code of practice for concrete structures for storage of liquids, BIS, New Delhi.

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Course Coordinator

Dr. G Mahesh Kumar
HOD

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SHRIDEVI EDUCATION

DEPARTMENT OF CIVIL ENGINEERING

Semester: VIII Sem ***Year: 2021-22***

Subject Title: **Rehabilitation and Retrofitting**	*Subject Code:* **18CV824**
Total contact Hours: **60**	*Duration of Exam:* **03 Hrs.**
Total exam marks: 100	*Total I.A. marks:* **40**
Lesson plan author: **Dr. G. Mahesh Kumar**	*Date of commencement of semester:* ***04/04/2022***
Checked by: **Dr. G. Mahesh Kumar**	

Course Learning Objectives: This course will enable students to;
1. Investigate the cause of deterioration of concrete structures.
2. Strategies different repair and rehabilitation of structures.
3. Evaluate the performance of the materials for repair..

Course Outcomes: After studying this course, students will be able to:
1. Identify the causes for structural (Concrete) deterioration.
2. Assess the type and extent of damage and carry out damage assessment of structures through various types of tests.
3. Recommend maintenance requirements of the buildings and preventive measures against influencing factors.
4. Select suitable material and suggest an appropriate method for repair and rehabilitation.

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Text Books:

1. Sidney, M. Johnson, "Deterioration, Maintenance and Repair of Structures"
2. Denison Campbell, Allen & Harold Roper, "Concrete Structures – Materials, Maintenance and Repair"- Longman Scientific and Technical.

Reference Books:

1. R.T.Allen and S.C. Edwards, "Repair of Concrete Structures"-Blakie and Sons
2. Raiker R.N., "Learning for failure from Deficiencies in Design, Construction and Service"- R&D Center (SDCPL). 3. CPWD Manual

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LECTURE PLAN

18CV824 – Rehabilitation and Retrofitting

Sl.No.	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
MODULE- 1 GENERAL			
1	11-04-2022	General: Introduction	L1,L2,L3
2	11-04-2022	Definition for Repair,	
3	12-04-2022	Definition for Retrofitting,	
4	12-04-2022	Strengthening and rehabilitation.	
5	13-04-2022	Physical Causes of deterioration of concrete structures,	
6	18-04-2022	Physical Causes of deterioration of concrete structures,	
7	18-04-2022	Chemical Causes of deterioration of concrete structures,	
8	19-04-2022	Chemical Causes of deterioration of concrete structures,	
9	19-04-2022	Evaluation of structural damages to the concrete structural elements due to earthquake.	
10	20-04-2022	Evaluation of structural damages to the concrete structural elements due to earthquake.	
11	25-04-2022	Evaluation of structural damages to the concrete structural elements due to earthquake.	
MODULE- 2 DAMAGE ASSESSMENT			
12	25-04-2022	Purpose of assessment	L2,L3,
13	26-04-2022	Purpose of assessment	
14	26-04-2022	Rapid assessment,	
15	27-04-2022	Rapid assessment,	
16	02-05-2022	Rapid assessment,	
17	02-05-2022	Investigation of damage	
18	03-05-2022	Investigation of damage,	
19	03-05-2022	Evaluation of surface and structural cracks,	
20	04-05-2022	Damage assessment procedure,	
21	09-05-2022	Destructive, non-destructive testing systems.	
22	09-05-2022	Semi destructive testing systems.	
MODULE-3 INFLUENCE ON SERVICEABILITY AND DURABILITY			
23	10-05-2022	Effects due to climate,	L1,L2,L3
24	10-05-2022	Effect due to temperature	
25	11-05-2022	Effect due to chemicals,	
26	16-05-2022	Effect due to wear and erosion,	
27	16-05-2022	Design and construction errors,	
28	17-05-2022	Corrosion mechanism,	
29	17-05-2022	Effects of cover thickness and cracking,	
30	18-05-2022	Methods of corrosion protection,	
31	23-05-2022	Corrosion inhibitors,	
32	23-05-2022	Corrosion resistant steels,	
33	24-05-2022	coatings, and cathodic protection.	
MODULE-4 MAINTENANCE AND RETROFITTING TECHNIQUES			

34	24-05-2022	Definitions: Maintenance,	
35	25-05-2022	Facts of Maintenance and importance of Maintenance	
36	30-05-2022	Need for retrofitting	
37	30-05-2022	Retrofitting of structural members i.e., column by Jacketing technique	
38	31-05-2022	Retrofitting of structural members i.e., beams by Jacketing technique	
39	31-05-2022	Externally bonding(ERB) technique,	L2, L3
40	01-06-2022	Near surface mounted (NSM) technique,	
41	06-06-2022	External post-tensioning, Section enlargement and guidelines for seismic rehabilitation of existing building.	
42	06-06-2022	External post-tensioning,	
43	07-06-2022	Section enlargement and guidelines for seismic rehabilitation of existing building.	
44	07-06-2022	Section enlargement and guidelines for seismic rehabilitation of existing building.	
45	08-06-2022	Section enlargement and guidelines for seismic rehabilitation of existing building.	
MODULE-5 MATERIALS FOR REPAIR AND RETROFITTING			
46	13-06-2021	Artificial fiber reinforced polymer like CFRP,	
47	13-06-2022	Artificial fiber reinforced polymer like GFRP,	
48	14-06-2022	Artificial fiber reinforced polymer like AFRP	
49	14-06-2022	Artificial fiber reinforced polymer like and natural fiber like Sisal and Jute.	
50	15-06-2022	Adhesive like, Epoxy Resin, ..	
51	20-06-2022	Special concretes and mortars	
52	20-06-2022	Concrete chemicals,	
53	21-06-2022	Special elements for accelerated strength gain,	L2, L3
54	21-06-2022	Techniques for Repair: Rust eliminators and polymers coating for rebar during repair foamed concrete,	
55	22-06-2022	mortar and dry pack, vacuum concrete,	
56	27-06-2022	Gunite and Shot Crete.	
57	27-06-2022	Epoxy injection,	
58	28-06-2022	Mortar repair for cracks,	
59	28-06-2022	Shoring	
60	29-06-2022	Underpinning	

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Staff in Charge

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HOD

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (APRIL2022 – JULY 2022) MICRO SCHEDULE

COURSE	**Quantity Surveying and Contracts Management**	FACULTY NAME	NIRANJANI B
COURSE CODE	**17CV81**	SEM/SECTION	08
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Quantity Estimation for Building	
1	11/04/2022	Quantity Estimation for Building	
2	11/04/2022	Study of various drawing attached with estimates	
3	12/04/2022	Important terms, units of measurements, abstract	
4	18/04/2022	Types of estimates - Approximate, detailed, supplementary and revised	
5	18/04/2022	Estimation of building - Short wall and long wall method	
6	19/04/2022	Centre line method	
7	25/04/2022	Estimate of R.C.C structures including Slab	
8	25/04/2022	Beam, column , footings, with bar bending schedule	
9	26/04/2022	Problems	
10	02/05/2022	Problems	

SUMMARY

Planned Date	**From : 11/04/2022**	**To: 02/05/2022**	
Actual classes taken	**From : 11/04/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Quantity Estimation for Roads	
11	02/05/2022	Estimate of Steel truss	
12	03/05/2022	manhole and septic tanks	
13	09/05/2022	Quantity Estimation for Roads: Road estimation	
14	09/052022	earthwork fully in banking	
15	10/05/2022	cutting	
16	16/05/2022	partly cutting and partly Filling	
17	16/05/2022	Detailed estimate	
18	17/052022	cost analysis for roads	
19	23/05/2022	Problems	
20	23/05/2022	Problems	

SUMMARY

Planned Date	From : 02/05/2022	To: 23/05/2022	
Actual classes taken	From : 02/05/2022	To:	
Number of classes	Allocated : 10	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Specification for Civil Engineering Works	
21	24/05/2022	**Specification for Civil Engineering Works:** Objective of writing specifications essentials in specifications	
22	30/05/2022	general and detail specifications of different items of works in buildings	
23	30/05/2022	**Analysis of Rates :** Factors Affecting Cost of Civil Works	
24	31/05/2022	Concept of Direct Cost	
25	01/06/2022	Indirect Cost and Project Cost Rate analysis and preparation of bills	
26	01/06/2022	Data analysis of rates for various items of Works	
27	02/06/2022	Data analysis of rates for various items of Works	
28	06/06/2022	Sub-structure components	
29	06/06/2022	Rate analysis for R.C.C	
30	07/06/2022	slabs, columns and beams	

SUMMARY

Planned Date	**From : 24/05/2022**	**To: 07/06/2022**	
Actual classes taken	**From : 24/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Contract Management	
31	07/06/2022	Prequalification, administrative approval & Technical sanction	
32	13/06/2022	Bid submission and Evaluation process.	
33	13/06/2022	Contract Formulation: covering Award of contract, letter of intent, letter of acceptance and notice to proceed	
34	14/06/2022	Features / elements of standard Tender document	
35	14/06/2022	(source: PWD / CPWD / International Competitive Bidding – NHAI / NHEPC / NPC).	
36	20/06/2022	Law of Contract as per Indian Contract act 202272	
37	20/06/2022	Types of Contract, Entire contract, Lump sum contract	
38	21/06/2022	Item rate, % rate, Cost plus with Target, Labour, EPC and BOT, Sub Contracting	
39	21/06/2022	Contract Forms : FIDIC contract Forms	
40	27/06/2022	CPWD , NHAI , NTPC , NHEPC	

SUMMARY

Planned Date	**From : 07/06/2022**	**To: 27/06/2022**	
Actual classes taken	**From : 07/06/2022**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Module -5 Contract Management-Post award :	
41	27/06/2022	Basic understanding on definitions, Performance security,	
42	27/06/2022	Mobilization and equipment advances, Secured Advance, Suspension of work, Time limit for completion,	
43	28/06/2022	Liquidated damages and bonus, measurement and payment, additions and alterations or variations and deviations, breach of contract,	
44	28/06/2022	Escalation, settlement of account or final payment, claims, Delay's	
45	29/06/2022	Compensation, Disputes & its resolution mechanism, Contract management and administration	
46	29/06/2022	**Valuation:** Definitions of terms used in valuation process, Cost, Estimate, Value and its relationship, Capitalized value	
47	28/06/2022	Concept of supply and demand in respect to properties (land , building , facilities')	
48	30/06/2022	freehold and lease hold , Sinking fund	
49	30/06/2022	depreciation–methods of estimating depreciation, Outgoings	
50	30/06/2022	Processand methods of valuation : Rent fixation, valuation for mortgage, valuation of land	

SUMMARY

Planned Date	**From : 27/06/2022**	**To: 30/06/2022**	
Actual classes taken	**From : 27/06/2022**	**To:**	
Number of classes	**Allocated :09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

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LESSON PLAN (APRIL 2022 – JULY 2022) MACRO SCHEDULE

COURSE	**Quantity Surveying and Contracts Management**	FACULTY NAME	NIRANJANI B
COURSE CODE	**17CV81**	SEM/SECTION	08
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to;

1. Estimate the quantities of work, develop the bill of quantities and arrive at the Cost of civil engineering Project
2. Understand and apply the concept of Valuation for Properties.
3. Understand, Apply and Create the Tender and Contract document.

Course outcomes: After studying this course, s students will be able to:

1. Prepare detailed and abstract estimates for roads and building.
2. Prepare valuation reports of buildings.
3. Interpret Contract document's of domestic and international construction works.

Sl No	Date	Module& Lesson Plan	Additional sources
01	11/04/2022 To 02/05/2022	**Module-1** **Quantity Estimation for Building**: study of various drawing attached with estimates, important terms, units of measurements, abstract, Types of estimates. Estimation of building by Short wall and long wall method - centre line method. Estimate of R.C.C structures including Slab, beam, column, footings. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1T7F1OrHjMmjetsf_N_qxclfloipW8vaY/view
02	02/05/2022 To23/05/2022	**Module 2:** Estimate of Steel truss, manhole and septic tanks and slab culvert. **Quantity Estimation for Roads:** Computation of volume of earthwork fully in banking, cutting, partly cutting and partly Filling by mid-section, trapezoidal and Prismoidal Methods. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1T7F1OrHjMmjetsf_N_qxclfloipW8vaY/view

03	24/05/2022 To 07/06/2022	**Module 3:** **Specification for Civil Engineering Works:** Objective of writing specifications essentials in specifications, general and detail specifications of different items of works in buildings and roads. **Analysis of Rates** : Factors Affecting Cost of Civil Works Concept of Direct Cost , Indirect Cost and Project Cost Rate analysis and preparation of bills, Data analysis of rates for various items of Works, Sub-structure components, Rate analysis for R.C.C. slabs, columns and beams. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1jjIsuDiKLCN7bdd1nHcl9KP8qgtaoX43/view
04	07/06/2022 To 27/07/2022	**Module 4:** **Contract Management**-Tender and its Process: Invitation to tender, Prequalification, administrative approval & Technical sanction. Bid submission and Evaluation process. Contract Formulation: Letter of intent, Award of contract, letter of acceptance and notice to proceed. Features / elements of standard Tender document (source: PWD / CPWD / International Competitive Bidding – NHAI / NHEPC / NPC). Law of Contract as per Indian Contract act 1872, Types of Contract, Joint venture. **Contract Forms:** FIDIC contract Forms, CPWD, NHAI, NTPC, NHEPC **No. of Contact sessions: 10**	https://drive.google.com/file/d/1kmddjdr-XVOk2LWqhXvN92OBZ-LkOzVY/view
05	27/06/2022 To 30/06/2022	**Module 5:** **Contract Management-Post award** :Basic understanding on definitions, Performance security, Mobilization and equipment advances, Secured Advance, Suspension of work, Time limit for completion, Liquidated damages and bonus, measurement and payment, additions and alterations or variations and deviations, breach of contract, Escalation, settlement of account or final payment, claims, Delay's and Compensation, Disputes & its resolution mechanism, Contract management and administration. **Valuation:** Definitions of terms used in valuation process, Purpose of valuation, Cost, Estimate, Value and its relationship, Capitalized value. Freehold and lease hold and easement, Sinking fund, depreciation–methods of estimating depreciation, Outgoings, Process and methods of valuation: Rent fixation, valuation for mortgage, valuation of land. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1vNknPROOZ41koK79tnZnAfnrFslETahu/view

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. Datta B.N., "Estimating and costing", UBSPD Publishing House, New Delhi
2. B.S. Patil, " Civil Engineering Contracts and Estimates", Universities Press
3. M. Chakraborthi; "Estimation, Costing and Specifications", Laxmi Publications
4. MORTH Specification for Roads and Bridge Works – IRC New Delhi

Reference Books:

1. Kohli D.D and Kohli R.C, " Estimating and Costing",12 th Edition, S.Chand Publishers, 2014.
2. Vazirani V.N and Chandola S.P, " Estimating and costing", Khanna Publishers, 2015.
3. Rangwala, C. "Estimating, Costing and Valuation", Charotar Publishing House Pvt. Ltd., 2015.
4. Duncan Cartlidge , "Quantity Surveyor's Pocket Book", Routledge Publishers, 2012.
5. Martin Brook, "Estimating and Tendering for Construction Work", A Butterworth-Heinemann publishers, 2008.
6. Robert L Peurifoy , Garold D. Oberlender , " Estimating Construction Costs" – 5ed , Tata McGraw-Hill ,New Delhi
7. David Pratt , " Fundamentals of Construction Estimating" – 3ed ,
8. PWD Data Book ,CPWD Schedule of Rates (SoR). and NH SoR – Karnataka
9. FIDIC Contract forms
10. B.S. Ramaswamy " Contracts and their Management" 3ed , Lexis Nexis (a division of Reed Elsevier India Pvt Ltd)

Ms. Niranjani B
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr. Narendra viswanath
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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (APRIL - JUNE 2022) MICRO SCHEDULE]

Course Title	*EARTHQUAKE ENGINEERING*		*Course Instructor*	*Mr. Manogna H N*
Course Code	*17CV831*		*Sem /Sec*	*VIII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*		*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/04/2022**	*Total contact Hours: 46*	*Duration of Exam*: 03 Hrs.		*CREDITS: 04*

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Engineering Seismology	
1	04-04-2022	Terminologies (Focus, Focal depth, Epicentre, etc.);	
2	05-04-2022	Causes of Earthquakes; Theory of plate tectonics;	
3	06-04-2022	Types and characteristics faults; Classification of Earthquakes;	
4	11-04-2022	Major past earthquakes and their consequences; Types and characteristics of seismic waves;	
5	12-04-2022	Magnitude and intensity of earthquakes; local site effects;	
6	13-04-2022	Earthquake ground motion characteristics: Amplitude, frequency	
7	18-04-2022	duration; Seismic zoning mapof India;	
8	19-04-2022	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	
9	20-04-2022	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	
10	25-04-2022	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	

SUMMARY

Planned Date	From : 04/04/2022	To: 25/04/2022	
Actual classes taken	From : 04/04/2022	To:	
Number of classes	Allocated : 10	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Response Spectrum	
11	26-04-2022	Basics of structural dynamics;	
12	27-04-2022	Free and forced vibration of SDOFsystem;	
13	02-05-2022	Effect of frequency of input motion and Resonance;	
14	03-05-2022	Numerical evaluation of response of SDOF system (Linear acceleration method),	
15	04-05-2022	Numerical evaluation of response of SDOF system (Linear acceleration method),	
16	09-05-2022	Earthquake Response spectrum: Definition,	
17	10-05-2022	Earthquake Response spectrum construction,	
18	11-05-2022	Earthquake Response spectrum Characteristics	
19	16-05-2022	Earthquake Response spectrum application	
20	18-05-2022	Elastic design spectrum.	

SUMMARY

Planned Date	**From : 26/04/2022**	**To: 18/04/2022**	
Actual classes taken	**From : 26/04/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Seismic Performance of Buildings and Over View of IS-1893 (Part-1):	
21	23-05-2022	Types of damages to building observed during past earthquakes;	
22	24-05-2022	Plan irregularities; mass irregularity; stiffness irregularity;	
23	25-05-2022	Concept of soft and weak storey;	
24	30-05-2022	Torsional irregularity and its consequences; configuration problems;	
25	31-05-2022	continuous load path;	
26	01-06-2022	Architectural aspects of earthquake resistant buildings;	
27	06-06-2022	Lateral load resistant systems.	
28	07-06-2022	Seismic design philosophy;	
29	08-06-2022	Structural modeling;	
30	13-06-2022	Code based seismic design methods	

SUMMARY

Planned Date	**From : 23/05/2022**	**To: 13/06/2022**	
Actual classes taken	**From : 23/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Determination of Design Lateral Forces	
31	14-06-2022	Equivalent lateral force procedure	
32	14-06-2022	Dynamic analysis procedure.	
33	14-06-2022	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
34	14-06-2022	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
35	15-06-2022	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
36	15-06-2022	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
37	17-06-2022	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
38	17-06-2022	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
39	20-06-2022	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
40	21-06-2022	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	

SUMMARY

Planned Date	**From : 14/06/2022**	**To: 21/06/2022**	
Actual classes taken	**From : 14/06/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Earthquake Resistant Analysis and Design of RC Buildings: Earthquake Resistant Design of Masonry Buildings:	
41	22-06-2022	**Earthquake Resistant Analysis and Design of RC Buildings:** Typical failures of RC frame structures Ductility in Reinforced Concrete, Design of Ductile Reinforced Concrete Beams,	
42	22-06-2022	Seismic Design of Ductile Reinforced Concrete column, Concept of weak beam-strong column, Detailing of Beam-Column Joints to enhance ductility, Detailing as per IS-13920. Retrofitting of RC buildings	
43	23-06-2022	**Earthquake Resistant Design of Masonry Buildings:** Performance of Unreinforced, Reinforced, Infill Masonry Walls,	
44	26-62-2022	Box Action, Lintel and sill Bands,	
45	27-06-2022	elastic properties of structural masonry, lateral load analysis	
46	28-06-2022	Recommendations for Improving performance of Masonry Buildings during earthquakes; Retrofitting of Masonry buildings.	

SUMMARY

Planned Date	**From : 22/06/2022**	**To: 28/06/2022**	
Actual classes taken	**From : 22/06/2022**	**To:**	
Number of classes	**Allocated : 6**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Reference Books:

1. David Dowrick, "Earthquake resistant design and risk reduction" , John Wiley and Sons Ltd.
2. C. V. R. Murty, Rupen Goswami, A. R. Vijayanarayanan & Vipul V. Mehta, "Some Concepts in Earthquake Behaviour of Buildings" , Published by Gujarat State Disaster Management Authority, Government of Gujarat.
3. IS-13920 - 2016, Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces, BIS, New Delhi
4. IS-1893 - 2016, Indian Standard Criteria for Earthquake Resistant Design of Structures, Part-1, BIS, New Delhi
5. IS- 4326 - 2013, Earthquake Resistant Design and Construction of Buildings, BIS, New Delhi.
6. IS-13828 - 1993, Indian Standard Guidelines for Improving Earthquake Resistance of Low Strength Masonry Buildings, BIS, New Delhi.
7. IS-3935 - 1993, Repair and Seismic Strengthening of Buildings-Guidelines, BIS, New Delhi.

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DEPARTMENT OF CIVIL ENGINEERING

[As per Choice Based Credit System (CBCS) scheme]

Semester: III Sem ***Year: 2020-21***

Subject : **Building Materials and Construction**	*Code:* **18CV34**
Total contact Hours: **63**	*Exam Duration :* **03 Hrs.**
SEE marks: **60**	*CIE marks:* **40**
Course Instructor: **Dr.G. Mahesh Kumar**	*Date of commencement of semester:* **01/09/2020**
HOD: **Dr. G. Mahesh Kumar**	

Course Learning Objectives: This course will develop a student;

1. To recognize good construction materials based on properties.
2. To investigate soil properties and design suitable foundation.
3. To understand the types and properties of masonry materials and supervise masonry construction.
4. To gain knowledge of structural components like lintels, arches, staircase and roofs.
5. To understand the finishes in construction like flooring, plastering, paining.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Select suitable materials for buildings and adopt suitable construction techniques.
2. Decide suitable type of foundation based on soil parameters
3. Supervise the construction of different building elements based on suitability
4. Exhibit the knowledge of building finishes and form work requirements

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. Sushil Kumar "Building Materials and construction", 20th edition, reprint 2015,StandardPublishers
2. Dr. B. C. Punmia, Ashok kumar Jain, Arun Kumar Jain, "Building Construction, Laxmi Publications (P) ltd., New Delhi.
3. Rangawala S. C. "Engineering Materials", Charter Publishing House, Anand, India.

Reference Books:

1. S. K. Duggal, "Building Materials", (Fourth Edition)New Age International (P) Limited, 2016 National Building Code(NBC) of India
2. P C Vergese, "Building Materials", PHI Learning Pvt.Ltd
3. Building Materials and Components, CBRI, 1990,India
4. Jagadish. K.S, "Alternative Building Materials Technology", New Age International,2007.
5. M. S. Shetty, "Concrete Technology", S. Chand & Co. New Delhi.

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (APRIL - JUNE 2022) MACRO SCHEDULE]

Course Title	*EARTHQUAKE ENGINEERING*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*17CV831*	*Sem /Sec*	*VIII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: 04/04/2022	*Total contact Hours: 46*	*Duration of Exam*: 03 Hrs.	*CREDITS: 03*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Fundamentals of engineering seismology.
CO2. Irregularities in building which are detrimental to its earthquake performance.
CO3. Different methods of computation seismic lateral forces for framed and masonry structures
CO4. Earthquake resistant design requirements for RCC and Masonry structures.
CO5. Relevant clauses of IS codes of practice pertinent to earthquake resistant design of structures.

Sl No	Date	Module Lesson Plan	Additional Sources
1	04/04/22 to 25/04/22	**Module 1: Engineering Seismology** Terminologies (Focus, Focal depth, Epicenter, etc.); Causes of Earthquakes; Theory of plate tectonics; Types and characteristics faults; Classification of Earthquakes; Major past earthquakes and their consequences; Types and characteristics of seismic waves; Magnitude and intensity of earthquakes; local site effects; Earthquake ground motion characteristics: Amplitude, frequency and duration; Seismic zoning map of India; (Problems on computation of wave velocities. Location of epicenter, Magnitude of earthquake) **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/shafkatislam/group-presentation https://youtu.be/Vdx2dNGsuEM
2	26/04/2022 to 18/05/2022	**Module 2: Response Spectrum** Basics of structural dynamics; Free and forced vibration of SDOF system; Effect of frequency of input motion and Resonance; Numerical evaluation of response of SDOF system (Linear acceleration method), Earthquake Response spectrum: Definition, construction, Characteristics and application; Elastic design spectrum. **No. of Contact Sessions: 14 Hours.**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/ManjuParanthaman/7 https://youtu.be/Oa75GTf2-h8

		Revised Bloom's Taxonomy (RBT) Level: L1,L2	
3	**23/05/2022 to 13/06/2022**	**Module 3: Seismic Performance of Buildings and Over View of IS-1893 (Part-1):** Types of damages to building observed during past earthquakes; Plan irregularities; mass irregularity; stiffness irregularity; Concept of soft and weak storey; Torsional irregularity and its consequences; configuration problems; continuous load path; Architectural aspects of earthquake resistant buildings; Lateral load resistant systems. Seismic design philosophy; Structural modeling; Code based seismic design methods. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/QTRGn5vAprY
4	**14/06/2022 to 21/06/2022**	**Module 4: Determination of Design Lateral Forces:** Equivalent lateral force procedure and dynamic analysis procedure. Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method and response spectrum methods (maximum of 4 storeys and without infill walls). **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/BIJTWBlguHs
5	**22/06/2022 to 28/06/2022**	**Module 5: Earthquake Resistant Analysis and Design of RC Buildings: Earthquake Resistant Design of Masonry Buildings:** **Earthquake Resistant Analysis and Design of RC Buildings:** Typical failures of RC frame structures, Ductility in Reinforced Concrete, Design of Ductile Reinforced Concrete Beams, Seismic Design of Ductile Reinforced Concrete column, Concept of weak beam-strong column, Detailing of Beam-Column Joints to enhance ductility, Detailing as per IS-13920. Retrofitting of RC buildings **Earthquake Resistant Design of Masonry Buildings:** Performance of Unreinforced, Reinforced, Infill Masonry Walls, Box Action, Lintel and sill Bands, elastic properties of structural masonry, lateral load analysis, Recommendations for Improving performance of Masonry Buildings during earthquakes; Retrofitting of Masonry buildings. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/2qV4osntg6g

Text Books:

1. Pankaj Agarwal and Manish Shrikande, "Earthquake resistant design of structures" , PHI India
2. S.K. Duggal, "Earthquake Resistant Design of Structures" , Oxford University Press
3. Anil K. Chopra, "Dynamics of Structures: Theory and Applications to Earthquake Engineering" , Pearson Education, Inc.
4. T. K. Datta, "Seismic Analysis of Structures" , John Wiley & Sons (Asia) Ltd.

DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN

18CV34 – Building Materials and Construction

[As per Choice Based Credit System (CBCS) scheme]

Sl. No	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1BUILDING MATERIALS	
1	01-09-2020	Stone as building material; Requirement of good building stones	
2	02-09-2020	Dressing of stones, Deteriorationand Preservation of stone work.	
3	03-09-2020	Bricks; Classification, Manufacturing of clay bricks,	
4	07-09-2020	Requirement of good bricks. Field and laboratory tests on bricks; Compressive strength,water absorption, efflorescence, dimension and warpage.	
5	08-09-2020	Cement Concrete blocks, Autoclaved Aerated Concrete Blocks, Sizes, requirement of good blocks	L1,L2
6	09-09-2020	Timber as construction material	
7	10-09-2020	Fine aggregate: Natural and manufactured: Sieve analysis, zoning, specify gravity	
8	14-09-2020	Bulking, moisture content, deleterious materials.	
9	15-09-2020	Coarse aggregate: Natural and manufactured: Importance of size, shape and texture.	
10	16-09-2020	Grading of aggregates, Sieve analysis, specific gravity	
11	21-09-2020	Flakiness and elongation index,	
12	22-09-2020	crushing, impact and abrasion tests.	
		MODULE- 2 FOUNDATION AND MASONRY	
13	23-09-2020	**Foundation:** Preliminary investigation of soil, safe bearing capacity of soil	
14	24-09-2020	Function and requirements of good foundation	
15	28-09-2020	Types of foundation ,introduction to spread, combined , strap, mat and pile foundation	
16	29-09-2020	**Masonry:** Definition and terms used in masonry. Brick masonry	L1,L2
17	30-09-2020	characteristics and requirements of good brick masonry	
18	01-10-2020	Bonds in brick work, Header bond, Stretcher bond,	
19	05-10-2020	English bond, Flemish bond	
20	06-10-2020	Stone masonry: Requirements of good stone masonry,	
21	07-10-2020	Classification of stone masonry	
22	08-10-2020	Characteristics of different stone masonry	
23	15-10-2020	Joints in stone masonry.	
24	19-10-2020	Types of walls; load bearing, partition walls, cavitywalls	
		MODULE-3 LINTELS, ARCHES, FLOORS AND ROOFS	L3
25	20-10-2020	**Lintels and Arches:** Definition, function and classification of lintels,	
26	21-10-2020	Balconies, chejja and canopy.	

		Arches; Elements and Stability of an Arch.	
27	22-10-2020	**Floors:** Requirement of good floor, Components of ground floor	
28	27-10-2020	Selection of flooring material, Procedure for Laying of Concrete(VDF), Mosaic, Kota, Slate, Marble,	
29	28-10-2020	Granite, Tile flooring, Cladding of tiles.	
30	29-10-2020	**Roof;**-Requirement of good roof, Types of roof,	
31	02-11-2020	Elements of a pitched roof, Trussed roof,	
32	03-11-2020	Kingpost Truss, Queen Post Truss, Steel Truss,	
33	04-11-2020	Different roofing materials,	
34	05-11-2020	R.C.C. Roof.	
35	09-11-2020	**MODULE-4 DOORS, WINDOWS, VENTILATORS, STAIRS AND FORMWORK**	
36	10-11-2020	**Doors, Windows and Ventilators:** Location of doors and windows, technical terms,	
37	11-11-2020	Materials for doors and windows:PVC, CPVC and Aluminium Types of Doors and Windows: Panelled &Flush door,	
38	12-11-2020	Collapsible door, Rolling shutter, Panelled and glazed Window,	
39	17-11-2020	Bay Window,French window. Steel Window, Ventilators. Sizes as per IS recommendations	**L2 L3 L5**
40	18-11-2020	**Stairs:** Definitions, technical terms and types ofstairs, Wood, RCC, Metal.	
41	19-11-2020	Requirements of good stairs.	
42	23-11-2020	Geometrical design of RCC doglegged	
43	24-11-2020	Open-well stairs.	
44	25-11-2020	**Formwork:** Introduction to form work,Scaffolding,	
45	30-11-2020	Shoring, under pinning	
		MODULE-5 PLASTERING DAMP PROOFING AND PAINTING	
46	01-12-2020	**Plastering and Pointing :** Mortar and its types. purpose, materials and methods of plastering and pointing, Sand faced plastering, Stucco plastering, lathe plastering	
47	02-12-2020	Defects in plastering, Water proofing with various thicknesses	
48	07-12-2020	**Damp proofing:-** Causes	
49	08-12-2020	Damp proofing :Effects and methods.	
50	09-12-2020	**Paints-** Purpose, types, technical terms	
51	10-12-2020	Ingredients in paint	**L4,L5**
52	14-12-2020	Defects in painting	
53	15-12-2020	Preparation and applications of paints to new plastered surface	
54	16-12-2020	Applications of paints to old plastered surfaces	
55	17-12-2020	Applications of paints to wooden and steel surfaces	
56	21-12-2020	Revision	
57	22-12-2020	Revision	
58	23-12-2020	Revision	
59	24-12-2020	Revision	
60	28-12-2020	Discussion of Previous question papers	
61	29-12-2020	Discussion of Previous question papers	
62	30-12-2020	Discussion of Previous question papers	
63	31-12-2020	Discussion of Previous question papers	

(Dr. G. Mahesh Kumar)
Staff in Charge

(Dr. G. Mahesh Kumar)
HOD

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LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE

COURSE	**Basic Surveying**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV35**	SEM/SECTION	03
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		INTRODUCTION	
01	19/10/21	Definition of surveying, Objectives and importance of surveying	
02	20/10/21	Classification of surveys. Principles of surveying	
03	22/10/21	Units of measurements, Surveying measurements and errors, types of errors,	
04	26/10/21	Precision and accuracy. Classification of maps, map scale	
05	27/10/21	conventional symbols, topographic maps, map layout, Survey of India Map numbering systems	
06	28/10/21	Measurement of Horizontal Distances: Measuring tape and types.	
07	29/10/21	Measurement using tapes, Taping on level ground and sloping ground.	
08	02/11/21	Errors and corrections in tape measurements, ranging of lines, direct and indirect methods of ranging	
09	03/11/21	Electronic distance measurement, basic principle. Booking of tape survey work, Field book, entries	
10	04/11/21	Conventional symbols, Obstacles in tape survey.	
11	10/11/21	Numerical problems.	

SUMMARY

Planned Date	**From : 19/10/2021**	**To: 10/11/2021**	
Actual classes taken	**From : 19/10/2021**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mr. Prakash J
Course Coordinator

Dr. G Mahesh Kumar
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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Measurement of Directions and Angles	
12	11/11/21	Measurement of Directions and Angles: Compass survey: Basic definitions, declination.	
13	12/11/21	Meridians, bearings, magnetic and True bearings.	
14	16/11/21	Prismatic and surveyor's compasses, temporary adjustments	
15	17/11/21	Quadrantal bearings, whole circle bearings	
16	18/11/21	local attraction and related problems	
17	19/11/21	Theodolite Survey and Instrument Adjustment: Theodolite and types	
18	23/11/21	Fundamental axes and parts of Transit theodolite	
19	24/11/21	uses of theodolite, Temporary adjustments of transit theodolite	
20	25/11/21	measurement of horizontal and vertical angles	
21	26/11/21	step by step procedure for obtaining permanent adjustment of Transit theodolite	
22	30/12/21	step by step procedure for obtaining permanent adjustment of Transit theodolite	

SUMMARY

Planned Date	**From : 11/11/2021**	**To: 30/12/2021**	
Actual classes taken	**From : 11/11/2021**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Traversing	
23	01/12/21	Traversing: Traverse Survey and Computations:,	
24	02/12/21	Latitudes and departures	
25	03/12/21	rectangular coordinates	
26	09/12/21	Traverse adjustments	
27	10/12/21	Bowditch rule and transit rule,	
28	14/12/21	Numerical Problems	
29	15/12/21	Tacheometry: basic principle	
30	16/12/21	types of tacheometry	
31	17/12/21	distance equation for horizontal and inclined line of sight in fixed hair method	
32	21/12/21	problems	

SUMMARY

Planned Date	**From : 01/12/2021**	**To: 21/01/2022**	
Actual classes taken	**From : 01/12/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Leveling	
34	23/12/21	Leveling: Basic terms	
35	24/12/21	Definitions, Curvature and refraction corrections	
36	28/12/21	Differential leveling	
37	29/12/21	profile leveling, fly leveling	
38	30/12/21	check leveling,	
39	31/12/21	reciprocal leveling	
40	04/01/22	Trigonometric leveling (heights and distances-single plane and double plane methods.	
41	05/01/22	Methods of leveling, Dumpy level, auto level	
42	06/01/22	Digital and laser levels.	
43	07/01/22	Booking and reduction of levels	

SUMMARY

Planned Date	**From : 23/12/2021**	**To: 07/01/2022**	
Actual classes taken	**From : 23/12/2021**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Areas and Volumes	
44	11/01/22	Areas and Volumes: Measurement of area by dividing the area into geometrical figures	
45	12/01/22	area from offsets, mid ordinate rule,	
46	13/01/22	trapezoidal and Simpson's one third rule,	
47	14/01/22	area from co-ordinates, introduction to planimeter	
48	18/01/22	Digital planimeter.	
49	19/01/22	Measurement of volumes-trapezoidal and prismoidal formula	
50	20/01/22	Contouring Contours,	
51	21/01/22	Methods of contouring	
52	25/01/22	Interpolation of contours	
53	27/01/22	contour gradient	
54	28/01/22	characteristics of contours and uses	

SUMMARY

Planned Date	**From : 11/01/2022**	**To: 28/01/2022**	
Actual classes taken	**From : 11/01/2022**	**To:**	
Number of classes	**Allocated :11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MACRO SCHEDULE

COURSE	**Basic Surveying**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV35**	SEM/SECTION	03
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to;

1. Understand the basic principles of Surveying
2. Learn Linear and Angular measurements to arrive at solutions to basic surveying problems.
3. Employ conventional surveying data capturing techniques and process the data for computations.
4. Analyze the obtained spatial data to compute areas and volumes and draw contours to represent 3D data on plane figures.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Posses a sound knowledge of fundamental principles Geodetics
2. Measurement of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
3. Capture geodetic data to process and perform analysis for survey problems
4. Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours.

Sl No	Date	Module& Lesson Plan	Additional sources
01	**19/10/2021 To 10/11/2021**	**Module-1** **Introduction:** Definition of surveying, Objectives and importance of surveying. Classification of surveys. Principles of surveying. Units of measurements, Surveying measurements and errors, types of errors, precision and accuracy. Classification of maps, map scale, conventional symbols, topographic maps, map layout, Survey of India Map numbering systems. Measurement of Horizontal Distances: Measuring tape and types. Measurement using tapes, Taping on level ground and sloping ground. Errors and corrections in tape measurements, ranging of lines, direct and indirect methods of ranging. Electronic distance measurement, basic principle. Booking of tape survey work, Field book, entries, Conventional symbols, Obstacles in tape survey, Numerical problems. **No. of Contact sessions: 11**	https://drive.google.com/file/d/1xVrNGFlmLo5blNetZkMesOuoRgFDuFbW/view

02	11/11/2021 To 30/12/2021	**Module 2:** **Measurement of Directions and Angles**: Compass survey: Basic definitions; meridians, bearings, magnetic and True bearings. Prismatic and surveyor's compasses, temporary adjustments, declination. Quadrantal bearings, whole circle bearings, local attraction and related problems **Traversing**: Traverse Survey and Computations: Latitudes and departures, rectangular coordinates, Traverse adjustments, Bowditch rule and transit rule, Numerical Problems. **No. of Contact sessions: 11**	https://drive.google.com/file/d/1xVrNGFlmLo5blNetZkMesOuoRgFDuFbW/view
03	01/12/2021 To 22/12/2021	**Module 3:** **Leveling**: Basic terms and definitions, Methods of leveling, Dumpy level, auto level, digital and laser levels. Curvature and refraction corrections. Booking and reduction of levels. Differential leveling, profile leveling, fly leveling, check leveling, reciprocal leveling. **No. of Contact sessions: 10**	https://drive.google.com/drive/folders/0B-ITW-kTxwdfbUFsNTllVEdiZlE?resourcekey=0-9v2JkntwHBk1_wSu4ulw2Q
04	23/12/2021 To 07/01/2022	**Module 4:** **Plane Table Surveying**: Plane table and accessories, Advantages and limitations of plane table survey, Orientation and methods of orientation, Methods of plotting – Radiation, Intersection, Traversing, Resection method, Two point and three point problems, Solution to two point problem by graphical method, Solution to three point problem Bessel's graphical method, Errors in plane table survey. **No. of Contact sessions: 11**	https://drive.google.com/drive/folders/0B-ITW-kTxwdfbUFsNTllVEdiZlE?resourcekey=0-9v2JkntwHBk1_wSu4ulw2Q
05	11/01/2022 To 28/01/2022	**Module 5:** **Areas and Volumes**: Measurement of area by dividing the area into geometrical figures, area from offsets, mid ordinate rule, trapezoidal and Simpson's one third rule, area from co-ordinates, introduction to planimeter, digital planimeter. **Measurement of volumes** trapezoidal and prismoidal formula. Contouring: Contours, Methods of contouring, Interpolation of contours, contour gradient, characteristics of contours and uses. **No. of Contact sessions: 10**	https://drive.google.com/drive/folders/0B-ITW-kTxwdfbUFsNTllVEdiZlE?resourcekey=0-9v2JkntwHBk1_wSu4ulw2Q

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. B.C. Punmia, "Surveying Vol.1", Laxmi Publications pvt. Ltd., New Delhi – 2009.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part I, Pune VidyarthiGrihaPrakashan, 1988

Reference Books:

1. S.K. Duggal, "Surveying Vol.1", Tata McGraw Hill Publishing Co. Ltd. New Delhi. – 2009.
2. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi. – 2010
3. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi
4. A. Bannister, S. Raymond , R. Baker, "Surveying", Pearson, 7th ed., New Delhi

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (Oct 2021 – Jan 2022) MICRO SCHEDULE

COURSE	CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP	FACULTY NAME	Ms. Vanishree S
COURSE CODE	**18CV51**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
1	10-10-2021	**Management:** Characteristics of management, functions of management	
2	11-10-2021	Importance and purpose of planning process, types of plans.	
3	12-10-2021	**Construction Project Formulation:** Introduction to construction management,	
4	14-10-2021	project organization, management functions	
5	15-10-2021	management st	
6	17-10-2021	**Construction Planning and Scheduling:** Introduction, types of project plans,	
7	18-10-2021	work breakdown structure, Grant Chart,	
8	19-10-2021	preparation of network diagram- event and activity based and its critical path critical path method,	
9	21-10-2021	preparation of network diagram- event and activity based and its critical path critical path method, PERT method,	
10	22-10-2021	concept of activity on arrow and activity on node.	

SUMMARY

Planned Date	**From : 10/10/2021**	**To: 22/10/2021**	
Actual classes taken	**From : 10/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
11	25-10-2021	**Resource Management:** Basic concepts of resource management, class of lab our,	
12	28-10-2021	Wages & statutory requirement,	
13	29-10-2021	Labour Production rate or Productivity,	
14	31-10-2021	Factors affecting labour output or productivity.	
15	02-11-2021	**Construction Equipments:** classification of construction equipment,	
16	04-11-2021	estimation of productivity for: excavator, dozer, compactors, graders and dumpers.	
17	05-11-2021	Estimation of ownership cost, operational and maintenance cost of construction equipments.	
18	07-11-2021	Selection of construction equipment and basic concept on equipment maintenance	
19	08-11-2021	**Materials:** material management functions	
20	09-11-2021	inventory management.	

SUMMARY

Planned Date	**From : 25/10/2021**	**To: 09/11/2021**	
Actual classes taken	**From : 25/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
21	16-11-2021	**Construction Quality , safety and Human Values:** Construction quality process, inspection,	
22	18-11-2021	quality control and quality assurance, cost of quality	
23	19-11-2021	ISO standards. Introduction to concept of Total Quality Management	
24	21-11-2021	**HSE:** Introduction to concepts of HSE as applicable to Construction.	
25	22-11-2021	Importance of safety in construction	
26	23-11-2021	Safety measures to be taken during Excavation	
27	25-11-2021	, Explosives , drilling and blasting	
28	26-11-2021	hot bituminous works , scaffolds / platforms / ladder	
29	28-11-2021	form work and equipment operation	
30	29-11-2021	Storage of materials. Safety through legislation, safety campaign. Insurances	
31	30-11-2021	**Ethics :** Morals, values and ethics, integrity	
32	02-12-2021	trustworthiness , work ethics, need of engineering ethics,	
33	03-12-2021	Professional Duties, Professional and Individual Rights	
34	05-12-2021	Confidential and Proprietary Information, Conflict of Interest Confidentiality,	
35	06-12-2021	Gifts and Bribes, Price Fixing, Whistle Blowing.	

SUMMARY

Planned Date	**From : 16/11/2021**	**To: 06/12/2021**	
Actual classes taken	**From : 16/11/2021**	**To:**	
Number of classes	**Allocated : 15**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
36	06-12-2021	**Introduction to engineering economy:** Principles of engineering economics		
37	07-12-2021	concept on Micro and macro analysis, problem solving and decision making		
38	09-12-2021	**Interest and time value of money:** concept of simple and compound interest,		
39	10-12-2021	interest formula for: single payment, equal payment and uniform gradient series		
40	12-12-2021	Nominal and effective interest rates		
41	13-12-2021	deferred annuities, capitalized cost		
42	14-12-2021	**Comparison of alternatives:** Present worth		
43	20-12-2021	annual equivalent, capitalized and rate of return methods,		
44	21-12-2021	Minimum Cost analysis and break even analysis.		

SUMMARY

Planned Date	**From : 16/12/2021**	**To: 21/12/2021**	
Actual classes taken	**From : 16/12/2021**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
45	23-12-2021	**Entrepreneurship:** Evolution of the concept, functions of an entrepreneur,	
46	24-12-2021	concepts of entrepreneurship, stages in entrepreneurial process,	
47	26-12-2021	different sources of finance for entrepreneur, central and state level financial institutions. Micro,	
48	27-12-2021	Small & Medium Enterprises (MSME): definition, characteristics, objectives, scope, role of MSME in economic development, advantages of MSME,	
49	28-12-2021	Introduction to different schemes: TECKSOK, KIADB, KSSIDC, DIC, Single Window Agency: SISI, NSIC, SIDBI, KSFC.	
50	30-12-2021	**Business Planning Process:** Business planning process, marketing plan,	
51	31-12-2021	financial plan, project report and feasibility study,	
52	02-01-2022	guidelines for preparation of model project report for starting a new venture.	
53	03-01-2022	Introduction to international entrepreneurship opportunities,	
54	04-01-2022	entry into international business, exporting,	
55	06-01-2022	direct foreign investment, venture capital.	

SUMMARY

Planned Date	**From : 23/12/2021**	**To: 06/01/2022**	
Actual classes taken	**From : 23/12/2021**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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LESSON PLAN (October 2021 – Jan 2021) MACRO SCHEDULE

COURSE	CONSTRUCTION MANAGEMENT OF ENTERPRENUERSHIP	FACULTY NAME	Ms. Vanishree S
COURSE CODE	**18CV51**	SEMESTER	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to
1. Understand the concept of planning, scheduling, cost and quality control, safety during construction, organization and use of project information necessary for construction project.
2. Inculcate Human values to grow as responsible human beings with proper personality.
3. Keep up ethical conduct and discharge professional duties.

Course outcomes: After studying this course, students will be able to:
1. Prepare a project plan based on requirements and prepare schedule of a project by understanding the activities and their sequence.
2. Understand labour output, equipment efficiency to allocate resources required for an activity / project to achieve desired quality and safety.
3. Analyze the economics of alternatives and evaluate benefits and profits of a construction activity based on monetary value and time value.
4. Establish as an ethical entrepreneur and establish an enterprise utilizing the provisions offered by the federal agencies.

Sl No	Date	Module & Lesson Plan	Additional sources
01	10/10/2021 To 22/10/2021	**Module-1** **Management:** Characteristics of management, functions of management, importance and purpose of planning process, types of plans. **Construction Project Formulation:** Introduction to construction management, project organization, management functions, management styles. **Construction Planning and Scheduling:** Introduction, types of project plans, work breakdown structure, Grant Chart, preparation of network diagram- event and activity based and its critical path critical path method, PERT method, concept of activity on arrow and activity on node. **No. of Contact sessions: 10**	https://www.slideshare.net/Vinayvviet/module1introduction-to-construction-management-by-dr-vinay-kumar-b-m

02	25/10/2021 To 09/11/2021	**Module 2:** **Resource Management:** Basic concepts of resource management, class of lab our, Wages & statutory requirement, Labour Production rate or Productivity, Factors affecting labour output or productivity. **Construction Equipments:** classification of construction equipment, estimation of productivity for: excavator, dozer, compactors, graders and dumpers. Estimation of ownership cost, operational and maintenance cost of construction equipments. Selection of construction equipment and basic concept on equipment maintenance **Materials:** material management functions, inventory management. **No. of Contact sessions:09**	https://www.slideshare.net/Vinayvviet/module-2resource-managementconstruction-equipmentsmaterials-inventory-by-drvinay-kumar-b-m
03	16/11/2021 To 06/12/2021	**Module 3:** **Construction Quality , safety and Human Values:** Construction quality process, inspection, quality control and quality assurance, cost of quality, ISO standards. Introduction to concept of Total Quality Management **HSE:** Introduction to concepts of HSE as applicable to Construction. Importance of safety in construction , Safety measures to be taken during Excavation , Explosives , drilling and blasting , hot bituminous works , scaffolds / platforms / ladder , form work and equipment operation. Storage of materials. Safety through legislation, safety campaign. Insurances. **Ethics** : Morals, values and ethics, integrity, trustworthiness , work ethics, need of engineering ethics, Professional Duties, Professional and Individual Rights, Confidential and Proprietary Information, Conflict of Interest Confidentiality, Gifts and Bribes, Price Fixing, Whistle Blowing. **No. of Contact sessions: 14**	https://www.slideshare.net/praveenurd/m-e-notes-module-3-praveen
04	16/12/2021 To 21/12/2021	**Module 4:** **Introduction to engineering economy**: Principles of engineering economics, concept on Micro and macro analysis, problem solving and decision making. **Interest and time value of money:** concept of simple and compound interest, interest formula for: single payment, equal payment and uniform gradient series. Nominal and effective interest rates, deferred annuities, capitalized cost. **Comparison of alternatives:** Present worth, annual equivalent, capitalized and rate of return methods,	https://www.slideshare.net/dscjco/module-4-56906699

		Minimum Cost analysis and break even analysis. **No. of Contact sessions: 12**	
05	23/12/2021 To 06/01/2023	**Module 5:** **Entrepreneurship:** Evolution of the concept, functions of an entrepreneur, concepts of entrepreneurship, stages in entrepreneurial process, different sources of finance for entrepreneur, central and state level financial institutions. Micro, Small & Medium Enterprises (MSME): definition, characteristics, objectives, scope, role of MSME in economic development, advantages of MSME, Introduction to different schemes: TECKSOK, KIADB, KSSIDC, DIC, Single Window Agency: SISI, NSIC, SIDBI, KSFC. Business **Planning Process:** Business planning process, marketing plan, financial plan, project report and feasibility study, guidelines for preparation of model project report for starting a new venture. Introduction to international entrepreneurship opportunities, entry into international business, exporting, direct foreign investment, venture capital. **No. of Contact sessions: 10**	https://www.slideshare.net/Vinayvviet/module5entrepreneurshipmicro-small-medium-enterprises-msme-by-drvinay-kumar-b-m

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. P C Tripathi and P N Reddy, "Principles of Management", Tata McGraw-Hill Education
2. Chitkara, K.K, "Construction Project Management: Planning Scheduling and Control", Tata McGraw Hill Publishing Company, New Delhi.
3. Poornima M. Charantimath , "Entrepreneurship Development and Small Business Enterprise", Dorling Kindersley (India) Pvt. Ltd., Licensees of PearsonEducation
4. Dr. U.K. Shrivastava "Construction Planning and Management", Galgotia publications Pvt. Ltd. New Delhi. Bureau of Indian standards – IS 7272 (Part-1)- 1974 : Recommendations for labour output constant for building works:

Reference Books:

1. Robert L Peurifoy, Clifford J. Schexnayder, AviadShapira, Robert Schmitt, "Construction Planning, Equipment, and Methods (Civil Engineering), McGraw-HillEducation
2. Harold Koontz, Heinz Weihrich, "Essentials of Management: An International, Innovation, and Leadership perspective", T.M.H. Edition, NewDelhi

3. Frank Harris, Ronald McCaffer with Francis Edum-Fotwe, " Modern Construction Management", Wiley-Blackwell
4. Mike Martin, Roland Schinzinger, "Ethics in Engineering", McGraw-HillEducation
5. Chris Hendrickson and Tung Au, "Project Management for Construction - Fundamentals Concepts for Owners, Engineers, Architects and Builders", Prentice Hall,Pitsburgh
6. James L.Riggs, David D. Bedworth , Sabah U. Randhawa " Engineerng Economics" 4

Ms. Vanishree S
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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2021) MACRO SCHEDULE]

Course Title	**Analysis of Indeterminate Structures**	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV52*	*Sem /Sec*	*V*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/10/2021**	*Total contact Hours: 55*	*Duration of Exam*: **03 Hrs.**	*CREDITS: 03*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method
CO2. Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
CO3. Construct the bending moment diagram for beams and frames by Kani's method.
CO4. Construct the bending moment diagram for beams and frames using flexibility method.
CO5. Analyze the beams and indeterminate frames by system stiffness method.

Sl No	Date	Module Lesson Plan	Additional Sources
1	05/10/21 to 23/10/21	**Module 1: Slope Deflection Method:** Introduction, sign convention, development of slope deflection equation, analysis of continuous beams including settlements, Analysis of orthogonal rigid plane frames including sway frames with kinematic indeterminacy≤3. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/
2	26/10/2021 to 12/11/2021	**Module 2: Moment Distribution Method** Introduction, Definition of terms, Development of method, Analysis of continuous beams with support yielding, Analysis of orthogonal rigid plane frames including sway frames with kinematic indeterminacy ≤3. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2**	https://nptel.ac.in/courses/105/105/105105109/
3	13/11/2021 to 04/12/2021	**Module 3: Kani's Method:** Introduction, Concept, Relationships between bending momentand deformations, Analysis of continuous beams with and without settlements,	https://nptel.ac.in/courses/105/105/105105109/

		Analysis of frames with and without sway. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	
4	**07/12/2021 to 23/12/2021**	**Module 4: Matrix Method of Analysis (Flexibility Method):** Introduction, Axes and coordinates, Flexibility matrix, Analysis of continuous beams and plane trusses using system approach, Analysis of simple orthogonal rigid frames using system approach with static indeterminacy ≤3. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/
5	**24/12/2021 to 31/01/2022**	**Module 5: Matrix Method of Analysis (Stiffness Method):** Introduction, Stiffness matrix, Analysis of continuous beams and plane trusses using system approach, Analysis of simple orthogonal rigid frames using system approach with kinematic indeterminacy ≤3. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/

Text Books:

1. Hibbeler R C, " Structural Analysis", Pearson Publication
2. L S Negi and R S Jangid, "Structural Analysis", Tata McGraw-Hill Publishing Company Ltd.
3. D S PrakashRao, "Structural Analysis: A Unified Approach" , Universities Press
4. K.U. Muthu, H. Narendraetal, "Indeterminate Structural Analysis", IK International Publishing Pvt. Ltd.

Reference Books:

1. Reddy C S, "Basic Structural Analysis",Tata McGraw-Hill Publishing Company Ltd.
2. Gupta S P, G S Pundit and R Gupta, "Theory of Structures", Vol II, Tata McGraw Hill Publications company Ltd.
3. V N Vazirani and M MRatwani, "Analysis Of Structures " , Vol. 2, Khanna Publishers
4. Wang C K, "Intermediate Structural Analysis", McGraw Hill, International Students Edition.
5. S.Rajasekaran and G. Sankarasubramanian, "Computational Structural Mechanics", PHI Learning Pvt. Ltd.

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE]

Course Title	**Analysis of Indeterminate Structures**	***Course Instructor***	***Mr. Manogna H N***
Course Code	***18CV52***	***Sem /Sec***	***VIII***
IA Marks (CIE)	***40 (Average of three tests for 30 marks and 10 marks for assignment)***	***Maximum Exam Marks (SEE)***	***60***
***Date of commencement of semester:* 04/10/2021**	***Total contact Hours: 55***	***Duration of Exam*: 03 Hrs.**	***CREDITS: 04***

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Slope Deflection Method	
1	05/10/21	Introduction, Sign convention,	
2	07/10/21	Development of slope-deflection equations	
3	08/10/21	Analysis of Beams- problems	
4	09/10/21	Analysis of Beams- problems	
5	12/10/21	Analysis of Beams- problems	
6	16/10/21	Analysis of Beams- problems	
7	19/10/21	Analysis of Beams- problems	
8	21/10/21	Analysis of Beams- problems	
9	22/10/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
10	23/10/21	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	**From : 05/10/2021**	**To: 23/10/2021**	
Actual classes taken	**From : 05/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Moment Distribution Method	
11	26/10/21	Introduction, Definition of terms-Distribution factor, Carry over factor	
12	28/10/21	Development of method	
13	29/10/21	Analysis of Beams- problems	
14	30/10/21	Analysis of Beams- problems	
15	02/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
16	04/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
17	06/11/21	Analysis of rigid jointed plane frames by Moment Distribution Method	
18	09/11/21	Analysis of rigid jointed plane frames by Moment Distribution Method	
19	11/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
20	12/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	**From: 26/10/2021**	**To: 12/11/2021**	
Actual classes taken	**From : 26/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Kani's Methods	
21	13/11/21	Introduction, Definition of terms	
22	16/11/21	Analysis of Beams- problems	
23	23/11/21	Analysis of Beams- problems	
24	25/11/21	Analysis of Beams- problems	
25	26/11/21	Analysis of Beams- problems	
26	27/11/21	Analysis of Beams- problems	
27	30/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
28	02/12/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
29	03/12/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
30	04/12/21	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	**From : 13/11/2021**	**To: 04/12/2021**	
Actual classes taken	**From : 13/11/2021**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Matrix Method of Analysis (Flexibility Method)	
31	07/12/21	Development of flexibility matrix for plane truss element	
32	09/12/21	Development of flexibility matrix for plane truss element	
33	10/12/21	Development of flexibility matrix for plane truss element	
34	11/12/21	flexibility matrix for axially rigid plane framed structural elements	
35	14/12/22	flexibility matrix for axially rigid plane framed structural elements	
36	16/12/22	Analysis of plane truss	
37	17/12/22	Analysis of plane truss	
38	18/12/22	Analysis of axially rigid plane frames	
39	21/12/22	Analysis of axially rigid plane frames	
40	23/12/22	Analysis of axially rigid plane frames	

SUMMARY

Planned Date	**From : 07/12/2021**	**To: 23/12/2022**	
Actual classes taken	**From : 07/12/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Matrix Method of Analysis (Stiffness)	
41	24/12/22	Introduction, Development of flexibility matrix for plane truss element	
42	31/12/22	flexibility matrix for axially rigid plane framed structural elements	
43	01/01/22	flexibility matrix for axially rigid plane framed structural elements	
44	04/01/22	Problems on framed structure	
45	06/01/22	Problems on framed structure	
46	07/01/22	Problems on framed structure	
47	08/01/22	Problems on framed structure	
48	11/01/22	Analysis of plane truss	
49	13/01/22	Analysis of plane truss	
50	15/01/22	Analysis of plane truss	
51	18/01/22	Analysis of axially rigid plane frames	
52	25/01/22	Analysis of axially rigid plane frames	
53	27/01/22	Analysis of axially rigid plane frames	
54	28/01/22	Analysis of axially rigid plane frames	
55	29/01/22	Analysis of axially rigid plane frames	

SUMMARY

Planned Date	**From : 24/12/2022**	**To: 29/01/2022**	
Actual classes taken	**From : 24/12/2022**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE]

Course Title	**Analysis of Indeterminate Structures**	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV52*	*Sem /Sec*	*VIII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/10/2021**	*Total contact Hours: 55*	*Duration of Exam*: **03 Hrs.**	*CREDITS: 04*

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Slope Deflection Method	
1	05/10/21	Introduction, Sign convention,	
2	07/10/21	Development of slope-deflection equations	
3	08/10/21	Analysis of Beams- problems	
4	09/10/21	Analysis of Beams- problems	
5	12/10/21	Analysis of Beams- problems	
6	16/10/21	Analysis of Beams- problems	
7	19/10/21	Analysis of Beams- problems	
8	21/10/21	Analysis of Beams- problems	
9	22/10/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
10	23/10/21	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	From : 05/10/2021	To: 23/10/2021	
Actual classes taken	From : 05/10/2021	To:	
Number of classes	Allocated : 10	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Moment Distribution Method	
11	26/10/21	Introduction, Definition of terms-Distribution factor, Carry over factor	
12	28/10/21	Development of method	
13	29/10/21	Analysis of Beams- problems	
14	30/10/21	Analysis of Beams- problems	
15	02/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
16	04/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
17	06/11/21	Analysis of rigid jointed plane frames by Moment Distribution Method	
18	09/11/21	Analysis of rigid jointed plane frames by Moment Distribution Method	
19	11/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
20	12/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	From: 26/10/2021	To: 12/11/2021	
Actual classes taken	From : 26/10/2021	To:	
Number of classes	Allocated : 10	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Kani's Methods	
21	13/11/21	Introduction, Definition of terms	
22	16/11/21	Analysis of Beams- problems	
23	23/11/21	Analysis of Beams- problems	
24	25/11/21	Analysis of Beams- problems	
25	26/11/21	Analysis of Beams- problems	
26	27/11/21	Analysis of Beams- problems	
27	30/11/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
28	02/12/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
29	03/12/21	Analysis of Orthogonal Rigid jointed plane frames- problems	
30	04/12/21	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	**From : 13/11/2021**	**To: 04/12/2021**	
Actual classes taken	**From : 13/11/2021**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Matrix Method of Analysis (Flexibility Method)	
31	07/12/21	Development of flexibility matrix for plane truss element	
32	09/12/21	Development of flexibility matrix for plane truss element	
33	10/12/21	Development of flexibility matrix for plane truss element	
34	11/12/21	flexibility matrix for axially rigid plane framed structural elements	
35	14/12/22	flexibility matrix for axially rigid plane framed structural elements	
36	16/12/22	Analysis of plane truss	
37	17/12/22	Analysis of plane truss	
38	18/12/22	Analysis of axially rigid plane frames	
39	21/12/22	Analysis of axially rigid plane frames	
40	23/12/22	Analysis of axially rigid plane frames	

SUMMARY

Planned Date	**From : 07/12/2021**	**To: 23/12/2022**	
Actual classes taken	**From : 07/12/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Matrix Method of Analysis (Stiffness)	
41	24/12/22	Introduction, Development of flexibility matrix for plane truss element	
42	31/12/22	flexibility matrix for axially rigid plane framed structural elements	
43	01/01/22	flexibility matrix for axially rigid plane framed structural elements	
44	04/01/22	Problems on framed structure	
45	06/01/22	Problems on framed structure	
46	07/01/22	Problems on framed structure	
47	08/01/22	Problems on framed structure	
48	11/01/22	Analysis of plane truss	
49	13/01/22	Analysis of plane truss	
50	15/01/22	Analysis of plane truss	
51	18/01/22	Analysis of axially rigid plane frames	
52	25/01/22	Analysis of axially rigid plane frames	
53	27/01/22	Analysis of axially rigid plane frames	
54	28/01/22	Analysis of axially rigid plane frames	
55	29/01/22	Analysis of axially rigid plane frames	

SUMMARY

Planned Date	**From : 24/12/2022**	**To: 29/01/2022**	
Actual classes taken	**From : 24/12/2022**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2021) MACRO SCHEDULE]

Course Title	**Analysis of Indeterminate Structures**	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV52*	*Sem /Sec*	*V*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/10/2021**	*Total contact Hours: 55*	*Duration of Exam:* **03 Hrs.**	*CREDITS: 03*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

- **CO1.** Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method
- **CO2.** Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
- **CO3.** Construct the bending moment diagram for beams and frames by Kani's method.
- **CO4.** Construct the bending moment diagram for beams and frames using flexibility method.
- **CO5.** Analyze the beams and indeterminate frames by system stiffness method.

Sl No	Date	Module Lesson Plan	Additional Sources
1	05/10/21 to 23/10/21	**Module 1: Slope Deflection Method:** Introduction, sign convention, development of slope deflection equation, analysis of continuous beams including settlements, Analysis of orthogonal rigid plane frames including sway frames with kinematic indeterminacy≤3. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/
2	26/10/2021 to 12/11/2021	**Module 2: Moment Distribution Method** Introduction, Definition of terms, Development of method, Analysis of continuous beams with support yielding, Analysis of orthogonal rigid plane frames including sway frames with kinematic indeterminacy ≤3. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2**	https://nptel.ac.in/courses/105/105/105105109/
3	13/11/2021 to 04/12/2021	**Module 3: Kani's Method:** Introduction, Concept, Relationships between bending momentand deformations, Analysis of continuous beams with and without settlements,	https://nptel.ac.in/courses/105/105/105105109/

		Analysis of frames with and without sway. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	
4	**07/12/2021 to 23/12/2021**	**Module 4: Matrix Method of Analysis (Flexibility Method):** Introduction, Axes and coordinates, Flexibility matrix, Analysis of continuous beams and plane trusses using system approach, Analysis of simple orthogonal rigid frames using system approach with static indeterminacy ≤3. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/
5	**24/12/2021 to 31/01/2022**	**Module 5: Matrix Method of Analysis (Stiffness Method):** Introduction, Stiffness matrix, Analysis of continuous beams and plane trusses using system approach, Analysis of simple orthogonal rigid frames using system approach with kinematic indeterminacy ≤3. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/

Text Books:

1. Hibbeler R C, " Structural Analysis", Pearson Publication
2. L S Negi and R S Jangid, "Structural Analysis", Tata McGraw-Hill Publishing Company Ltd.
3. D S PrakashRao, "Structural Analysis: A Unified Approach" , Universities Press
4. K.U. Muthu, H. Narendraetal, "Indeterminate Structural Analysis", IK International Publishing Pvt. Ltd.

Reference Books:

1. Reddy C S, "Basic Structural Analysis",Tata McGraw-Hill Publishing Company Ltd.
2. Gupta S P, G S Pundit and R Gupta, "Theory of Structures", Vol II, Tata McGraw Hill Publications company Ltd.
3. V N Vazirani and M MRatwani, "Analysis Of Structures " , Vol. 2, Khanna Publishers
4. Wang C K, "Intermediate Structural Analysis", McGraw Hill, International Students Edition.
5. S.Rajasekaran and G. Sankarasubramanian, "Computational Structural Mechanics", PHI Learning Pvt. Ltd.

(Manogna H N)
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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE

COURSE	**Highway Engineering**	**FACULTY NAME**	PRAKASH J
COURSE CODE	**18CV56**	**SEM/SECTION**	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	**EXAM MARKS (SEE) 100**	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Principles of Transportation Engineering	
1	04/10/21	**Principles of Transportation Engineering:** Importance of transportation	
2	05/10/21	Different modes of transportation and comparison, Characteristics of road transport	
3	07/10/21	Jayakar committee recommendations, and implementation – Central Road Fund	
4	08/10/21	Indian Roads Congress, Central Road Research Institute	
5	11/10/21	**Highway Development and Planning:** Road types and classification, road patterns	
6	12/10/21	planning surveys, master plan – saturation system of road planning, phasing road development in India	
7	16/10/21	problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies	
8	19/10/21	Present scenario of road development in India (NHDP & PMGSY)	
9	23/10/21	and in Karnataka (KSHIP & KRDCL)	
10	25/10/21	Road development plan - vision 2021	

SUMMARY

Planned Date	**From : 04/10/2021**	**To: 25/10/2021**	
Actual classes taken	**From : 04/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Highway Alignment and Surveys	
11	26/10/21	**Highway Alignment and Surveys:** Ideal Alignment	
12	29/10/21	Factors affecting the alignment	
13	30/10/21	Engineering surveys-Map study	
14	01/11/21	Reconnaissance, Preliminary and Final location & detailed survey	
15	02/11/21	Reports and drawings for new and re-aligned projects	
16	05/11/21	**Highway Geometric Design:** Cross sectional elements–width, surface, camber,	
17	06/11/21	Sight distances–SSD, OSD, ISD, HSD	
18	08/11/21	Design of horizontal and vertical alignment–curves	
19	09/11/21	super-elevation, widening	
20	12/11/21	gradients, summit and valley curves	

SUMMARY

Planned Date	**From : 26/10/2021**	**To: 12/11/2021**	
Actual classes taken	**From : 26/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Pavement Materials	
21	13/11/21	**Pavement Materials:** Subgrade soil - desirable properties	
22	15/11/21	HRB soil classification-determination of CBR	
23	16/11/21	modulus of subgrade reaction with Problems	
24	19/11/21	Aggregates- Desirable properties and tests	
25	20/11/21	Bituminous materials- Explanation on Tar	
26	26/11/21	bitumen, cutback and emulsion	
27	27/11/21	tests on bituminous material	
28	29/11/21	**Pavement Design:** Pavement types, component parts of flexible	
29	30/11/21	Rigid pavements and their functions	
30	03/12/21	ESWL and its determination (Graphical method only)-Examples	

SUMMARY

Planned Date	**From : 13/11/2021**	**To: 03/12/2021**	
Actual classes taken	**From : 13/11/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Pavement Construction	
31	04/12/21	**Pavement Construction:** Design of soil aggregate mixes by Rothfuch's method	
32	06/12/21	Uses and properties of bituminous mixes	
33	07/12/21	cement concrete in pavement construction.	
34	10/12/21	Earthwork; cutting and Filling	
35	11/12/21	Preparation of subgrade, Specification	
36	13/12/21	construction of i) Granular Sub base, ii) WBM Base	
37	14/12/21	iii) WMM base, iv) Bituminous Macadam	
38	17/12/21	v) Dense Bituminous Macadam vi) Bituminous Concrete	
39	18/12/21	vii) Dry Lean Concrete sub base and PQC	
40	20/12/21	viii) concrete roads	

SUMMARY

Planned Date	**From : 04/12/2021**	**To: 20/12/2021**	
Actual classes taken	**From : 04/12/2021**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Highway Drainage	
41	21/12/21	**Highway Drainage:** Significance and requirements	
42	24/12/21	Surface drainage system and design-Examples	
43	27/12/21	sub surface drainage system, design of filter materials	
44	28/12/21	Types of cross drainage structures, their choice and location	
45	31/12/21	**Highway Economics:** Highway user benefits	
46	01/01/22	VOC using charts only-Examples	
47	03/01/22	Economic analysis - annual cost method	
48	04/01/22	Benefit Cost Ratio method-NPV-IRR methods- Examples	
49	07/01/22	Benefit Cost Ratio method-NPV-IRR methods- Examples	
50	08/01/22	Highway financing-BOT-BOOT concepts	
51	10/01/21	Highway financing-BOT-BOOT concepts	

SUMMARY

Planned Date	**From : 21/12/2021**	**To: 10/01/2022**	
Actual classes taken	**From : 21/12/2021**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MACRO SCHEDULE

COURSE	**Highway Engineering**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV56**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to:

1. Gain knowledge of different modes of transportation systems, history, development of highways and the organizations associated with research and development of the same in INDIA.
2. Understand Highway planning and development considering the essential criteria's (engineering and financial aspects, regulations and policies, socio economic impact).
3. Get insight to different aspects of geometric elements and train them to design geometric elements of a highway network.
4. Understand pavement and its components, pavement construction activities and its requirements.
5. Gain the skills of evaluating the highway economics by B/C, NPV, IRR methods and also introduce the students to highway financing concepts.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.
2. Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.
3. Design road geometrics, structural components of pavement and drainage.
4. Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.

Sl No	Date	Module& Lesson Plan	Additional sources
01	04/10/2021 To 25/10/2021	**Module-1** **Principles of Transportation Engineering**: Importance of transportation, Different modes of transportation and comparison, Characteristics of road transport Jayakar committee recommendations, and implementation – Central Road Fund, Indian Roads Congress, Central Road Research Institute. **Highway Development and Planning**: Road types and classification, road patterns, planning surveys, master plan – saturation system of road planning, phasing road development in India, problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies, Present scenario of road development in India (NHDP & PMGSY) and in Karnataka (KSHIP & KRDCL) Road development plan - vision 2021. **Highway Alignment and Surveys:** Ideal Alignment, Factors affecting the alignment, Engineering surveys,Map study, Reconnaissance, Preliminary and Final location & detailed survey, Reports and drawings for new and re-aligned projects. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1dyrX5JBsaA9PaefKgNQZPflfTkt6o8J_/view
02	26/10/2021 To 12/11/2021	**Module 2**: **Highway Geometric** Design of horizontal alignment elements: Cross sectional elements–width, surface, camber, Sight distances–SSD, OSD, ISD, HSD, Radius of curve, Transition curve, Design of horizontal and vertical alignment–curves, super-elevation, widening, gradients, summit and valley curves. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1dyrX5JBsaA9PaefKgNQZPflfTkt6o8J_/view
03	13/11/2021 To 03/12/2021	**Module 3:** **Pavement Materials**: Sub grade soil - desirable properties-HRB soil classification-determination of CBR and modulus of sub grade reaction with Problems Aggregates- Desirable properties and tests, Bituminous materials- Explanation on Tar, bitumen, cutback and emulsion-tests on bituminous material **Pavement Design**: Pavement types, component parts of flexible and rigid pavements and their functions, ESWL and its determination (Graphical method only)-Examples. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1rtMRRIcA1ttCqMV53qqayGEuIPQNpD06/view

04	04/12/2021 To 20/12/2021	**Module 4:** **Pavement Construction**: Design of soil aggregate mixes by Rothfuch's method. Uses and properties of bituminous mixes and cement concrete in pavement construction. Earthwork; cutting and Filling, Preparation of subgrade, Specification and construction of i) Granular Sub base, ii) WBM Base iii) WMM base,iv) Bituminous Macadam v) Dense Bituminous Macadam vi) Bituminous Concrete,vii) Dry Lean Concrete sub base and PQC viii) concrete roads. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1hq2KfybX5d5UJY-mvMtCoFY4SaDkXNmG/view
05	21/12/2021 To 10/01/2022	**Module 5:** **Highway Drainage**: Significance and requirements, Surface drainage system and design-Examples, sub surface drainage system, design of filter materials, Types of cross drainage structures, their choice and location. **Highway Economics**: Highway user benefits, VOC using charts only-Examples, Economic analysis - annual cost method-Benefit Cost Ratio method-NPV-IRR methods-Examples, Highway financing-BOT-BOOT concepts **No. of Contact sessions: 10**	https://drive.google.com/file/d/1ThqPKU6kdabrtR8kNyijPC0E97mX6AaI/view

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:
1. S K Khanna and C E G Justo, " Highway Engineering", Nem Chand Bros, Roorkee
2. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi.
3. R Srinivasa Kumar, "Highway Engineering", University Press.
4. K.P.subramanium, "Transportation Engineering", SciTech Publications, Chennai

Reference Books:
1. Relevant IRC Codes
2. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi.
3. C. JotinKhisty, B. Kent lal, "Transportation Engineering", PHI Learning Pvt. Ltd. New Delhi.

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE]

Course Title	*HYDROLOGY AND IRRIGATION ENGINEERING*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*17CV73*	*Sem /Sec*	*VIII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/10/2021**	*Total contact Hours: 50*	*Duration of Exam*: **03 Hrs.**	*CREDITS: 04*

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Hydrology	
1	04/10/21	**Hydrology:** Introduction, Importance of hydrology	
2	05/10/21	Global distribution of water and Indian water availability.	
3	07/10/21	Practical application of hydrology, Hydrologic cycle (Horton's) qualitative and engineering representation.	
4	08/10/21	**Precipitation:** Definition, Forms and types of precipitation.	
5	11/10/21	Measurement of rain fall using Symon's and Syphon type of rain gauges.	
6	12/10/21	Optimum number of rain gauge stations.	
7	18/10/21	Consistency of rainfall data (double mass curve method).	
8	22/10/21	Computation of mean rainfall estimation of missing data.	
9	23/10/21	Estimation of missing data, Moving average curve, Mass curve, Rainfall hyetographs	
10	25/10/21	Presentation of precipitation data	

SUMMARY

Planned Date	**From : 04/10/2021**	**To: 25/10/2021**	
Actual classes taken	**From : 04/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Losses	
11	26/10/21	**Losses**: Evaporation: Introduction, Process	
12	29/10/21	Factors affecting evaporation, measurement using IS class-A Pan	
13	30/10/21	Estimation using empirical formulae (Meyer's and Rohwer's equations)	
14	05/11/21	Reservoir evaporation and control.	
15	06/11/21	**Evapo-transpiration:** Introduction, Consumptive use	
16	08/11/21	AET, PET, Factors affecting, Measurement	
17	09/11/21	Estimation by Blaney-Criddle equation.	
18	13/11/21	**Infiltration:** Introduction, factors affecting infiltration capacity	
19	15/11/21	Measurement by double ring infiltrometer, Horton's infiltration equation, infiltration indices,	
20	16/11/21	Infiltration indices	

SUMMARY

Planned Date	**From: 26/10/2021**	**To: 16/11/2021**	
Actual classes taken	**From : 26/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Runoff	
21	17/11/21	**Runoff:** Definition, concept of catchment	
22	20/11/21	Factors affecting runoff, rainfall – runoff relationship using regression analysis.	
23	27/11/21	**Hydrographs:** Definition, components of hydrograph	
24	29/11/21	Base flow separation	
25	03/12/21	Unit hydrograph, assumption, application and limitations.	
26	04/12/21	Derivation from simple storm hydrographs, S curve and its computations, Conversion of UH of different durations.	
27	11/12/21	S curve and its computations	
28	13/12/21	S curve and its computations	
29	14/12/21	Conversion of UH of different durations.	
30	17/12/21	Conversion of UH of different durations.	

SUMMARY

Planned Date	**From : 17/11/2021**	**To: 17/12/2021**	
Actual classes taken	**From : 17/11/2021**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Irrigation	
31	18/12/21	**Irrigation:** Definition. Benefits and ill effects of irrigation.	
32	20/12/21	System of irrigation: surface and ground water.	
33	21/12/21	Flow irrigation.	
34	24/12/21	Lift irrigation	
35	01/01/22	Bandhara irrigation.	
36	03/01/22	**Water Requirements of Crops:** Duty, delta and base period	
37	04/01/22	Relationship between Duty, delta, and base period	
38	07/01/22	Factors affecting duty of water crops and crop seasons in India	
39	08/07/22	Irrigation efficiency	
40	09/01/22	Frequency of irrigation	

SUMMARY

Planned Date	**From : 18/12/2021**	**To: 09/01/2022**	
Actual classes taken	**From : 18/12/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Canals	
41	10/01/22	**Canals:** Types of canals.	
42	17/01/22	Alignment of canals.	
43	18/01/22	Definition of gross command area, cultural command area, intensity of irrigation, time factor, crop factor.	
44	18/01/22	Unlined and lined canals. Standard sections.	
45	20/01/22	Standard sections.	
46	24/01/22	Design of canals by Lacey's method	
47	25/01/22	Design of canals by Kennedy's method.	
48	25/01/22	**Reservoirs:** Definition, investigation for reservoir site.	
49	28/01/22	Storage zones, determination of storage capacity using mass curves.	
50	28/01/22	determination of storage capacity using mass curves	

SUMMARY

Planned Date	**From : 08/07/2022**	**To: 16/07/2022**	
Actual classes taken	**From : 08/07/2022**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MACRO SCHEDULE]

Course Title	*HYDROLOGY AND IRRIGATION ENGINEERING*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*17CV73*	*Sem /Sec*	*VIII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/10/2021**	*Total contact Hours: 50*	*Duration of Exam*: **03 Hrs.**	*CREDITS: 04*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Understand the importance of hydrology and its components.
CO2. Measure precipitation and analyze the data and analyze the losses in precipitation.
CO3. Estimate runoff and develop unit hydrographs
CO4. Find the benefits and ill-effects of irrigation.
CO5. Find the quantity of irrigation water and frequency of irrigation for various crops.
CO6. Find the canal capacity, design the canal and compute the reservoir capacity.

Sl No	Date	Module Lesson Plan	Additional Sources
1	04/10/2021 To 25/10/2021	**Module 1:** **Hydrology:** Introduction, Importance of hydrology, Global and Indian water availability, Practical application of hydrology, Hydrologic cycle (Horton' s) qualitative and engineering representation. **Precipitation:** Definition, Forms and types of precipitation, measurement of rain fall using Symon' s and Syphon type of rain gauges, optimum number of rain gauge stations, consistency of rainfall data (double mass curve method), computation of mean rainfall, estimation of missing data, presentation of precipitation data, moving average curve, mass curve, rainfall hyetographs. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/shafkatislam/group-presentation https://youtu.be/Vdx2dNGsuEM
2	26/10/2021 To 16/11/2021	**Module 2:** **Losses: Evaporation:** Introduction, Process, factors affecting evaporation, measurement using IS class-A Pan, estimation using empirical formulae (Meyer' s and Rohwer' s equations) Reservoir evaporation and control **Evapo-transpiration:** Introduction, Consumptive use, AET, PET, Factors affecting, Measurement, Estimation by Blaney-Criddle equation, **Infiltration:** Introduction, factors affecting infiltration capacity, measurement by double ring infiltrometer, Horton' s infiltration equation,	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/ManjuParanthaman/7 https://youtu.be/Oa75GTf2-h8

		infiltration indices. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L2,L3**	
3	17/11/2021 To 17/12/2021	**Module 3:** **Runoff:** Definition, concept of catchment, factors affecting runoff, rainfall - runoff relationship using regression analysis. **Hydrographs:** Definition, components of hydrograph, base flow separation, unit hydrograph, assumption, application and limitations, derivation from simple storm hydrographs, S curve and its computations, Conversion of UH of different durations **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L2,L4**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/QTRGn5vAprY
4	18/12/2021 To 09/01/2022	**Module 4:** **Irrigation:** Definition. Benefits and ill effects of irrigation. System of irrigation: surface and ground water, flow irrigation, lift irrigation, Bandhara irrigation. **Water Requirements of Crops:** Duty, delta and base period, relationship between them, factors affecting duty of water crops and crop seasons in India, irrigation efficiency, frequency of irrigation. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L2,L4**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/BIJTWBlguHs
5	10/01/2022 To 28/01/2022	**Module 5:** **Canals:** Types of canals. Alignment of canals. Definition of gross command area, cultural command area, intensity of irrigation, time factor, crop factor. Unlined and lined canals. Standard sections. Design of canals by Lacey's and Kennedy's method. **Reservoirs:** Definition, investigation for reservoir site, storage zones determination of storage capacity using mass curves, economical height of dam. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level:L2,L4**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/2qV4osntg6g

Text Books:

1. K. Subramanya, "Engineering Hydrology" , Tata McGraw Hill Publishers, New Delhi.
2. Jayarami Reddy, "A Text Book of Hydrology" , Lakshmi Publications, New Delhi.
3. Punmia and LalPandey, "Irrigation and Water Power Engineering" Lakshmi Publications, New Delhi.

Reference Books:

1. H.M. Raghunath, "Hydrology" , Wiley Eastern Publication, New Delhi.
2. Sharma R.K, "Irrigation Engineering and Hydraulics", Oxford & IBH Publishing Co., New Delhi.
3. VenTe Chow, "Applied Hydrology", Tata McGraw Hill Publishers, New Delhi.
4. Modi P.N "Water Resources and Water Power Engineering" - Standard book house, Delhi.
5. Garg S.K, "Irrigation Engineering and Hydraulic Structures" Khanna publications, New Delhi

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr Narendra Viswanath)
Principal

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE

COURSE	**Ground Water & Hydraulics**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV734**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction	
1	**18/11/21**	**Introduction:**	
2	**18/11/21**	Importance about Groundwater	
3	**19/11/21**	Importance about Groundwater	
4	**22/11/21**	Vertical distribution of subsurface water	
5	**23/11/21**	Occurrence in different types of rocks	
6	**25/11/21**	Occurrence in different types of soils	
7	**26/11/21**	About Aquifers and Aquifuge	
8	**29/11/21**	About Aquitard and Aquiclude	
9	**30/11/21**	Confinedaquifers	
10	**02/12/21**	Unconfined aquifers	

SUMMARY

Planned Date	**From : 18/11/2021**	**To: 02/12/2021**	
Actual classes taken	**From : 18/11/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Ms. Niranjani B
Course Coordinator

Dr. G Mahesh Kumar
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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Fundamentals of Ground Water Flow	
11	03/12/21	**Fundamentals of Ground Water Flow:**Introduction	
12	06/12/21	Aquifer parameters	
13	09/12/21	Specific yield and Specific retention	
14	09/12/21	Porosity, Storage coefficient	
15	10/12/21	Derivation of the expression	
16	10/12/21	Darcy's law, hydraulic conductivity	
17	13/12/21	Coefficient of permeability and Intrinsic permeability	
18	13/12/21	Transmissibility, Permeability in isotropic	
19	14/12/21	Unisotropic layered soils	
20	16/12/21	Steady one dimensional flow: cases with recharge	

SUMMARY

Planned Date	**From : 03/12/21**	**To: 16/12/21**	
Actual classes taken	**From : 03/12/21**	**To:**	
Number of classes	**Allocated : 12**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Well Hydraulics	
21	17/12/21	**Well Hydraulics:** Introduction	
22	17/12/21	Steady Flow	
23	20/12/21	Radial flow in confined and unconfined aquifers	
24	21/12/21	Pumping test Unsteady Flow, General equation	
25	21/12/21	Derivation; Thesis method	
26	23/12/21	Cooper and Jacob method	
27	23/12/21	Chow's method	
28	24/12/21	Solution of unsteady flow equations	
29	30/12/21	Leaky aquifers (only introduction)	
30	03/01/22	Interference of well, Image well theory	

SUMMARY

Planned Date	**From : 17/12/21**	**03/01/22**	
Actual classes taken	**From : 17/12/21**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Ground Water Exploration	
31	04/01/22	**Ground Water Exploration:** Introduction	
32	05/01/22	Seismic method	
33	06/01/22	Electrical resistively method	
34	10/01/22	Geophysical techniques	
35	11/01/22	Electrical logging	
36	14/01/22	Electrical logging	
37	14/01/22	Radioactive logging	
38	17/01/22	Induction logging	
39	18/01/22	Sonic logging	
40	04/01/22	Fluid logging	

SUMMARY

Planned Date	**From : 04/01/22**	**To: 04/01/22**	
Actual classes taken	**From : 04/01/22**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Ground Water Development	
41	20/01/22	**Ground Water Development:** Introduction	
42	20/01/22	Types of wells	
43	21/01/22	Methods of construction	
44	21/01/22	Tube well design	
45	25/01/22	Dug wells	
46	25/01/22	Pumps for lifting water	
47	28/01/22	Working principles, Power requirement	
48	28/01/22	Conjunctive use, Necessity	
49	29/01/22	Techniques and Economics	
50	29/01/22	**Ground Water Recharge:** Artificial recharge, Groundwater runoff	

SUMMARY

Planned Date	**From : 20/01/22**	**To: 29/01/22**	
Actual classes taken	**From : 20/01/22**	**To:**	
Number of classes	**Allocated :12**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MACRO SCHEDULE

COURSE	**Ground Water & Hydraulics**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV734**	SEMESTER	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to:

1. To characterize the properties of ground water and aquifers.
2. To quantify the ground water flow.
3. To locate occurrence of ground water and augment ground water resources.
4. To synthesize ground water development methods

Course outcomes: After a successful completion of the course, the student will be able to:

1. Select suitable materials for buildings and adopt suitable construction techniques.
2. Decide suitable type of foundation based on soil parameters
3. Supervise the construction of different building elements based on suitability
4. Exhibit the knowledge of building finishes and form work requirements

Sl No	Date	Module& Lesson Plan	Additional sources
01	18/11/21 to 02/12/21	**Module-1** Introduction: Importance, vertical distribution of subsurface water, occurrence in different types of rocks and soils, definitions-aquifers, aquifuge, aquitard, aquiclude, confined and Unconfined aquifers**No. of Contact sessions: 10**	http://203.201.63.46:8080/jspui/bitstream/123456789/6496/9/VTU%20Question%20Paper%20of%2018CV734%20Ground%20Water%20Hydraulics%20Feb-2022.pdf
02	03/12/21 to 16/12/21	**Module-2** **Fundamentals of Ground Water Flow:** Aquifer parameters, specific yield and specific retention, porosity, storage coefficient, derivation of the expression, Darcy's law, hydraulic conductivity, coefficient of permeability and intrinsic permeability, transmissibility, permeability in isotropic, anisotropic layered soils. **Contact sessions: 10**	https://drive.google.com/file/d/1ZHFCjocOHZM37TKYGGSri2DlVkfjt-GV/view
03	17/12/21 to 03/01/22	**Module-3** **Well Hydraulics:** Steady Flow, Radial flow in confined and unconfined aquifers, pumping test Unsteady Flow, General equation, derivation; thesis method, Cooper and Jacob method, Chow's method, solution of unsteady flow equations, leakyaquifers (only introduction), interference of well, image well theory. **Contact sessions: 10**	https://drive.google.com/file/d/1Xo0pivwEQWkJ7Wf3boZbC8VgGCFbmlj2/view

04	04/01/22 to 19/01/22	**Module 4:** **Ground Water Exploration**: Seismic method, electrical resistively method, Geo-physical techniques, electrical logging, radioactive logging, induction logging, sonic and fluid logging. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1ZHFCjocOHZM37TKYGGSri2DlVkfjt-GV/view
05	20/01/22 To 29/01/22	**Module 5:** **Ground Water Development**: Types of wells, methods of construction, tube well design, dug wells, pumps for lifting water, working principles, power requirement, Conjunctive use, necessity, techniques and economics. **Ground Water Recharge**: Artificial recharge, Rainwater harvesting for ground water recharge. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1Xo0pivwEQWkJ7Wf3boZbC8VgGCFbmIj2/view

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:
1. 1H.M. Raghunath, "Ground Water", Wiley Eastern Publication, New Delhi.
2. K. Todd, "Ground Water Hydrology", Wiley and Sons, New Delhi.
3. Bower. H., "Ground Water Hydrology" McGraw Hill, New Delhi

Reference Books:
1. Garg Satya Prakash, "Ground Water and Tube Wells", Oxford and IBH, New Delhi.
2. W. C. Walton, "Ground Water Resources and Evaluation" McGraw Hill, Delhi.
3. Michel, D. M., Khepar, S. D., Sondhi, S. K., "Water Wells and Pumps" McGraw Hill, Delhi

Ms. Niranjani B
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr. Narendra viswanath
Principal

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2020-2021*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MACRO SCHEDULE]

Course Title	*EARTHQUAKE ENGINEERING*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV741*	*Sem /Sec*	*VII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **05/04/2021**	*Total contact Hours: 56*	*Duration of Exam*: 03 Hrs.	*CREDITS: 03*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Fundamentals of engineering seismology.
CO2. Irregularities in building which are detrimental to its earthquake performance.
CO3. Different methods of computation seismic lateral forces for framed and masonry structures
CO4. Earthquake resistant design requirements for RCC and Masonry structures.
CO5. Relevant clauses of IS codes of practice pertinent to earthquake resistant design of structures.

Sl No	Date	Module Lesson Plan	Additional Sources
1	04/10/21 to 22/10/21	**Module 1: Engineering Seismology** Terminologies (Focus, Focal depth, Epicentre, etc.); Causes of Earthquakes; Theory of plate tectonics; Types and characteristics faults; Classification of Earthquakes; Major past earthquakes and their consequences; Types and characteristics of seismic waves; Magnitude and intensity of earthquakes; local site effects; Earthquake ground motion characteristics: Amplitude, frequency and duration; Seismic zoning map of India; (Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake) **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/
2	25/10/2021 to 15/11/2021	**Module 2: Response Spectrum** Basics of structural dynamics; Free and forced vibration of SDOF system; Effect of frequency of input motion and Resonance; Numerical evaluation of response of SDOF system (Linear acceleration method), Earthquake Response spectrum: Definition, construction, Characteristics and application; Elastic design spectrum. **No. of Contact Sessions: 14 Hours.**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/

		Revised Bloom's Taxonomy (RBT) Level: L1,L2	
3	**16/11/2021 to 06/12/2021**	**Module 3: Seismic Performance of Buildings and Over View of IS-1893 (Part-1):** Types of damages to building observed during past earthquakes; Plan irregularities; mass irregularity; stiffness irregularity; Concept of soft and weak storey; Torsional irregularity and its consequences; configuration problems; continuous load path; Architectural aspects of earthquake resistant buildings; Lateral load resistant systems. Seismic design philosophy; Structural modeling; Code based seismic design methods. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/
4	**07/12/2021 to 22/12/2021**	**Module 4: Determination of Design Lateral Forces:** Equivalent lateral force procedure and dynamic analysis procedure. Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method and response spectrum methods (maximum of 4 storeys and without infill walls). **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/
5	**24/12/2021 to 31/01/2022**	**Module 5: Earthquake Resistant Analysis and Design of RC Buildings: Earthquake Resistant Design of Masonry Buildings:** **Earthquake Resistant Analysis and Design of RC Buildings:** Typical failures of RC frame structures, Ductility in Reinforced Concrete, Design of Ductile Reinforced Concrete Beams, Seismic Design of Ductile Reinforced Concrete column, Concept of weak beam-strong column, Detailing of Beam-Column Joints to enhance ductility, Detailing as per IS-13920. Retrofitting of RC buildings **Earthquake Resistant Design of Masonry Buildings:** Performance of Unreinforced, Reinforced, Infill Masonry Walls, Box Action, Lintel and sill Bands, elastic properties of structural masonry, lateral load analysis, Recommendations for Improving performance of Masonry Buildings during earthquakes; Retrofitting of Masonry buildings. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/

Text Books:

1. Pankaj Agarwal and Manish Shrikande, "Earthquake resistant design of structures", PHI India
2. S.K. Duggal, "Earthquake Resistant Design of Structures", Oxford University Press
3. Anil K. Chopra, "Dynamics of Structures: Theory and Applications to Earthquake Engineering", Pearson Education, Inc.
4. T. K. Datta, "Seismic Analysis of Structures", John Wiley & Sons (Asia) Ltd.

Reference Books:

1. David Dowrick, "Earthquake resistant design and risk reduction" , John Wiley and Sons Ltd.
2. C. V. R. Murty, Rupen Goswami, A. R. Vijayanarayanan & Vipul V. Mehta, "Some Concepts in Earthquake Behaviour of Buildings" , Published by Gujarat State Disaster Management Authority, Government of Gujarat.
3. IS-13920 - 2016, Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces, BIS, New Delhi
4. IS-1893 - 2016, Indian Standard Criteria for Earthquake Resistant Design of Structures, Part-1, BIS, New Delhi
5. IS- 4326 - 2013, Earthquake Resistant Design and Construction of Buildings, BIS, New Delhi.
6. IS-13828 - 1993, Indian Standard Guidelines for Improving Earthquake Resistance of Low Strength Masonry Buildings, BIS, New Delhi.
7. IS-3935 - 1993, Repair and Seismic Strengthening of Buildings-Guidelines, BIS, New Delhi.

(Manogna H N)	(Dr. G Mahesh Kumar)	(Dr Narendra Viswanath)
Course Instructor	**HOD**	**Principal**

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DEPARTMENT OF CIVIL ENGINEERING

The following is the list of **Lesson plans** for the academic year 2021-22 (Even Semester).

SEM: IV

Subject with Code		Staff-in-charge	Lesson plan Submitted
18MAT41	Complex Analysis, Probability And Statistical Methods	Dr. Chetana C	
18CV42	Analysis of Determinate Structures	Mrs. Radhika T N	
18CV43	Applied Hydraulics	Ms. Niranjani B	
18CV44	Concrete Technology	Dr. C Nagaraja	
18CV45	Advanced Surveying	Mr. Prakash J	
18CV46	Water Supply & Treatment Engineering	Ms. Niranjani B	
18MATDIP41	Additional mathematics – II	Mrs. Chetana C	

SEM: VI

Subject with Code		Staff-in-charge	Lesson plan Submitted
18CV61	Design of Steel Structural Elements	Mr. Manogna H N	
18CV62	Applied Geotechnical Engineering	Dr. G Mahesh Kumar	
18CV63	Hydrology & Irrigation Engineering	Ms. Niranjani B	
18CV645	Railway, Harbours,Tunnelling & Airports	Mr. Prakash J	
18ME651	Non-Conventional Energy Sources	Mr. Thippeswamy J C	

SEM: VIII (2017)

Subject with Code		Staff-in-charge	Lesson plan Submitted
17CV81	Quantity Surveying and Contracts Management	Ms. Niranjani B	
17CV82	Design of Pre Stressed Concrete Elements	Mrs. Radhika T N	Same as 18CV81
17CV831	Earthquake Engineering	Mr. Manogna H N	

SEM: VIII (2018)

Subject with Code		Staff-in-charge	Lesson plan Submitted
18CV81	Design of Pre Stressed Concrete	Mrs. Radhika T N	
18CV824	Rehabilitation & Retrofitting	Dr. G Mahesh Kumar	

Faculty Received

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HOD

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LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE

COURSE	**Urban Transportation Planning**	FACULTY NAME	PRAKASH J
COURSE CODE	**17CV751**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Urban transport planning	
1	04/10/21	Urban transport planning: Urbanization, urban class groups	
2	05/10/21	transportation problems and identification, impacts of transportation	
3	07/10/21	Urban transport system planning process	
4	08/10/21	Modeling techniques in planning. Urban mass transportation systems: urban transit problems, travel demand, types of transit systems, public, private, para-transit transport	
5	11/10/21	Urban mass transportation systems: urban transit problems	
6	12/10/21	Travel demand, types of transit systems, public, private, para-transit transport	
7	18/10/21	public, private, para-transit transport	
8	22/10/21	mass and rapid transit systems	
9	23/10/21	BRTS and Metro rails, capacity	
10	25/10/21	merits and comparison of systems, coordination, types of coordination	

SUMMARY

Planned Date	**From : 04/10/2021**	**To: 25/10/2021**	
Actual classes taken	**From : 04/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mr. Prakash J
Course Coordinator

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Data Collection And Inventories	
11	26/10/21	Data Collection And Inventories: Collection of data.	
12	29/10/21	Organization of surveys and Analysis.	
13	30/10/21	Study Area, Zoning, Types and Sources of Data	
14	05/11/21	Road Side Interviews, Home Interview Surveys.	
15	06/11/21	Home Interview Surveys.	
16	08/11/21	Commercial Vehicle Surveys	
17	09/11/21	Sampling Techniques	
18	13/11/21	Expansion Factors	
19	15/11/21	Accuracy Checks, Use of Secondary Sources	
20	16/11/21	Economic data, Income, Population, Employment , Vehicle Owner Ship	

SUMMARY

Planned Date	**From:26/10/2021**	**To: 16/11/2021**	
Actual classes taken	**From : 26/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mr. Prakash J
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr. Narendra viswanath
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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Trip Generation & Distribution:	
21	17/11/21	Trip Generation & Distribution: UTPS Approach	
22	20/11/21	Trip Generation Analysis	
23	27/11/21	Zonal Models	
24	29/11/21	Category Analysis	
25	03/12/21	Household Models	
26	04/12/21	Trip Attraction models	
27	11/12/21	Commercial Trip Rates	
28	13/12/21	Trip Distribution by Growth Factor Methods.	
29	14/12/21	Problems	
30	17/12/21	Problems	

SUMMARY

Planned Date	**From : 17/11/2021**	**To: 17/12/2021**	
Actual classes taken	**From : 17/11/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Trip Distribution	
31	18/12/21	Trip Distribution	
32	20/12/21	Gravity Models, Opportunity Models	
33	21/12/21	Time Function Iteration Models.	
34	24/12/21	Travel demand modeling	
35	01/01/22	gravity model,	
36	03/01/22	opportunity models	
37	04/01/22	Desire line diagram.	
38	07/01/22	Modal split analysis.	
39	08/07/22	Problems	
40	09/01/22	Problems	

SUMMARY

Planned Date	From : 18/12/2021	To: 09/01/2022	
Actual classes taken	From : 18/12/2021	To:	
Number of classes	Allocated :10	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Traffic Assignment	
41	10/01/22	Traffic Assignment: Diversion Curves	
42	17/01/22	Basic Elements of Transport Networks.	
43	18/01/22	Coding, Route Properties	
44	18/01/22	Path Building Criteria.	
45	20/01/22	Skimming Tree, All-or-Nothing Assignment.	
46	24/01/22	Capacity Restraint Techniques	
47	25/01/22	Reallocation of Assigned Volumes.	
48	25/01/22	Equilibrium Assignment.	
49	28/01/22	Introduction to land use planning models.	
50	28/01/22	Land use and transportation interaction.	

SUMMARY

Planned Date	**From : 10/01/2022**	**To: 28/01/2022**	
Actual classes taken	**From : 10/01/2022**	**To:**	
Number of classes	**Allocated :09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE

COURSE	**Urban Transportation Planning**	FACULTY NAME	PRAKASH J
COURSE CODE	**17CV751**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to:

1. Understand and apply basic concepts and methods of urban transportation planning.
2. Apprise about the methods of designing, conducting and administering surveys to provide the data required for transportation planning.
3. Understand the process of developing an organized mathematical modelling approach to solve select urban transportation planning problem.
4. Excel in use of various types of models used for travel forecasting, prediction of future travel patterns.

Course outcomes: This course will enable students to:

1. Understand and apply basic concepts and methods of urban transportation planning.
2. Apprise about the methods of designing, conducting and administering surveys to provide the data required for transportation planning.
3. Understand the process of developing an organized mathematical modelling approach to solve select urban transportation planning problem.
4. Excel in use of various types of models used for travel forecasting, prediction of future travel patterns.

Sl No	Date	Module& Lesson Plan	Additional sources
01	04/10/2021 To 25/10/2021	**Module-1** **Urban transport planning:** Urbanization, urban class groups, transportation problems and identification, impacts of transportation, urban transport system planning process, modeling techniques in planning. Urban mass transportation systems: urban transit problems, travel	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406

		demand, types of transit systems, public, private, para-transit transport, mass and rapid transit systems, BRTS and Metro rails, capacity, merits and comparison of systems, coordination, types of coordination. **No. of Contact sessions: 10**	
02	26/10/2021 To16/11/2021	**Module 2:** **Data Collection And Inventories:** Collection of data – Organization of surveys and Analysis, Study Area, Zoning, Types and Sources of Data, Road Side Interviews, Home Interview Surveys, Commercial Vehicle Surveys, Sampling Techniques, Expansion Factors, Accuracy Checks, Use of Secondary Sources, Economic data – Income – Population – Employment – Vehicle Owner Ship. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406
03	17/11/2021 To 17/12/2021	**Module 3:** **Trip Generation & Distribution:** UTPS Approach, Trip Generation Analysis: Zonal Models, Category Analysis, Household Models, Trip Attraction models, Commercial Trip Rates; Trip Distribution by Growth Factor Methods. Problems on above. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406
04	18/12/2021 To 09/01/2022	**Module 4:** **Trip Distribution:** Gravity Models, Opportunity Models, Time Function Iteration Models. Travel demand modeling: gravity model, opportunity models, Desire line diagram. Modal split analysis. Problems on above. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406
05	10/01/2022 To 28/01/2022	**Module 5:** **Traffic Assignment:** Diversion Curves; Basic Elements of Transport Networks, Coding, Route Properties, Path Building Criteria, Skimming Tree, All-or-Nothing Assignment, Capacity Restraint Techniques, Reallocation of Assigned Volumes, Equilibrium Assignment. Numerical problems on Traffic Assignment. Introduction to land use planning models, land use and transportation interaction. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. Kadiyali.L.R., 'Traffic Engineering and Transportation Planning', Khanna Publishers, New Delhi.
2. Hutchinson, B.G, 'Introduction to Urban System Planning', McGraw Hill.
3. Khisty C.J., 'Transportation Engineering – An Introduction' Prentice Hall.
4. Papacostas, 'Fundamentals of Transportation Planning', Tata McGraw Hill.

Reference Books:

1. Mayer M and Miller E, 'Urban Transportation Planning: A decision oriented Approach', McGraw Hill.
2. Bruton M.J., 'Introduction to Transportation Planning', Hutchinson of London.
3. Dicky, J.W., 'Metropolitan Transportation Planning', Tata McGraw Hill.B.S. Ramaswamy " Contracts and their Management" 3ed , Lexis Nexis (a division of Reed Elsevier India Pvt Ltd)

Mr. Prakash J
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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE]

Course Title	*EARTHQUAKE ENGINEERING*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV741*	*Sem /Sec*	*VIII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/10/2021**	*Total contact Hours: 50*	*Duration of Exam*: 03 Hrs.	*CREDITS: 04*

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Engineering Seismology	
1	04/10/21	Terminologies (Focus, Focal depth, Epicentre, etc.);	
2	05/10/21	Causes of Earthquakes; Theory of plate tectonics;	
3	07/10/21	Types and characteristics faults; Classification of Earthquakes;	
4	08/10/21	Major past earthquakes and their consequences; Types and characteristics of seismic waves;	
5	11/10/21	Magnitude and intensity of earthquakes; local site effects;	
6	12/10/21	Earthquake ground motion characteristics: Amplitude, frequency	
7	18/10/21	duration; Seismic zoning mapof India;	
8	22/10/21	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	
9	23/10/21	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	
10	25/10/21	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	

SUMMARY

Planned Date	**From : 04/10/2021**	**To: 25/10/2021**	
Actual classes taken	**From : 04/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Response Spectrum	
11	26/10/21	Basics of structural dynamics;	
12	29/10/21	Free and forced vibration of SDOFsystem;	
13	30/10/21	Effect of frequency of input motion and Resonance;	
14	05/11/21	Numerical evaluation of response of SDOF system (Linear acceleration method),	
15	06/11/21	Numerical evaluation of response of SDOF system (Linear acceleration method),	
16	08/11/21	Earthquake Response spectrum: Definition,	
17	09/11/21	Earthquake Response spectrum construction,	
18	13/11/21	Earthquake Response spectrum Characteristics	
19	15/11/21	Earthquake Response spectrum application	
20	16/11/21	Elastic design spectrum.	

SUMMARY

Planned Date	**From: 26/10/2021**	**To: 16/11/2021**	
Actual classes taken	**From : 26/10/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Seismic Performance of Buildings and Over View of IS-1893 (Part-1):	
21	17/11/21	Types of damages to building observed during past earthquakes;	
22	20/11/21	Plan irregularities; mass irregularity; stiffness irregularity;	
23	27/11/21	Concept of soft and weak storey;	
24	29/11/21	Torsional irregularity and its consequences; configuration problems;	
25	03/12/21	continuous load path;	
26	04/12/21	Architectural aspects of earthquake resistant buildings;	
27	11/12/21	Lateral load resistant systems.	
28	13/12/21	Seismic design philosophy;	
29	14/12/21	Structural modeling;	
30	17/12/21	Code based seismic design methods	

SUMMARY

Planned Date	**From : 17/11/2021**	**To: 17/12/2021**	
Actual classes taken	**From : 17/11/2021**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Determination of Design Lateral Forces	
31	18/12/21	Equivalent lateral force procedure	
32	20/12/21	dynamic analysis procedure.	
33	21/12/21	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
34	24/12/21	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
35	01/01/22	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
36	03/01/22	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
37	04/01/22	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
38	07/01/22	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
39	08/07/22	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
40	09/01/22	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	

SUMMARY

Planned Date	**From : 18/12/2021**	**To: 09/01/2022**	
Actual classes taken	**From : 18/12/2021**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Earthquake Resistant Analysis and Design of RC Buildings: Earthquake Resistant Design of Masonry Buildings:	
41	10/01/22	**Earthquake Resistant Analysis and Design of RC Buildings:** Typical failures of RC frame structures	
42	17/01/22	Ductility in Reinforced Concrete, Design of Ductile Reinforced Concrete Beams,	
43	18/01/22	Seismic Design of Ductile Reinforced Concrete column,	
44	18/01/22	Concept of weak beam-strong column,	
45	20/01/22	Detailing of Beam-Column Joints to enhance ductility,	
46	24/01/22	Detailing as per IS-13920. Retrofitting of RC buildings	
47	25/01/22	**Earthquake Resistant Design of Masonry Buildings:** Performance of Unreinforced, Reinforced, Infill Masonry Walls,	
48	25/01/22	Box Action, Lintel and sill Bands, ,	
49	28/01/22	elastic properties of structural masonry, lateral load analysis	
50	28/01/22	Recommendations for Improving performance of Masonry Buildings during earthquakes; Retrofitting of Masonry buildings.	

SUMMARY

Planned Date	**From : 08/07/2022**	**To: 16/07/2022**	
Actual classes taken	**From : 08/07/2022**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MACRO SCHEDULE]

Course Title	*EARTHQUAKE ENGINEERING*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV741*	*Sem /Sec*	*VII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/10/2021**	*Total contact Hours: 56*	*Duration of Exam*: **03 Hrs.**	*CREDITS: 03*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Fundamentals of engineering seismology.
CO2. Irregularities in building which are detrimental to its earthquake performance.
CO3. Different methods of computation seismic lateral forces for framed and masonry structures
CO4. Earthquake resistant design requirements for RCC and Masonry structures.
CO5. Relevant clauses of IS codes of practice pertinent to earthquake resistant design of structures.

Sl No	Date	Module Lesson Plan	Additional Sources
1	04/10/21 to 22/10/21	**Module 1: Engineering Seismology** Terminologies (Focus, Focal depth, Epicentre, etc.); Causes of Earthquakes; Theory of plate tectonics; Types and characteristics faults; Classification of Earthquakes; Major past earthquakes and their consequences; Types and characteristics of seismic waves; Magnitude and intensity of earthquakes; local site effects; Earthquake ground motion characteristics: Amplitude, frequency and duration; Seismic zoning map of India; (Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake) **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/
2	25/10/2021 to 15/11/2021	**Module 2: Response Spectrum** Basics of structural dynamics; Free and forced vibration of SDOF system; Effect of frequency of input motion and Resonance; Numerical evaluation of response of SDOF system (Linear acceleration method), Earthquake Response spectrum: Definition, construction, Characteristics and application; Elastic design spectrum. **No. of Contact Sessions: 14 Hours.**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/

		Revised Bloom's Taxonomy (RBT) Level: L1,L2	
3	**16/11/2021 to 06/12/2021**	**Module 3: Seismic Performance of Buildings and Over View of IS-1893 (Part-1):** Types of damages to building observed during past earthquakes; Plan irregularities; mass irregularity; stiffness irregularity; Concept of soft and weak storey; Torsional irregularity and its consequences; configuration problems; continuous load path; Architectural aspects of earthquake resistant buildings; Lateral load resistant systems. Seismic design philosophy; Structural modeling; Code based seismic design methods. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/
4	**07/12/2021 to 22/12/2021**	**Module 4: Determination of Design Lateral Forces:** Equivalent lateral force procedure and dynamic analysis procedure. Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method and response spectrum methods (maximum of 4 storeys and without infill walls). **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/
5	**24/12/2021 to 31/01/2022**	**Module 5: Earthquake Resistant Analysis and Design of RC Buildings: Earthquake Resistant Design of Masonry Buildings:** **Earthquake Resistant Analysis and Design of RC Buildings:** Typical failures of RC frame structures, Ductility in Reinforced Concrete, Design of Ductile Reinforced Concrete Beams, Seismic Design of Ductile Reinforced Concrete column, Concept of weak beam-strong column, Detailing of Beam-Column Joints to enhance ductility, Detailing as per IS-13920. Retrofitting of RC buildings **Earthquake Resistant Design of Masonry Buildings:** Performance of Unreinforced, Reinforced, Infill Masonry Walls, Box Action, Lintel and sill Bands, elastic properties of structural masonry, lateral load analysis, Recommendations for Improving performance of Masonry Buildings during earthquakes; Retrofitting of Masonry buildings. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/108/105108076/ https://nptel.ac.in/courses/105/101/105101004/

Text Books:

1. Pankaj Agarwal and Manish Shrikande, "Earthquake resistant design of structures" , PHI India
2. S.K. Duggal, "Earthquake Resistant Design of Structures" , Oxford University Press
3. Anil K. Chopra, "Dynamics of Structures: Theory and Applications to Earthquake Engineering" , Pearson Education, Inc.
4. T. K. Datta, "Seismic Analysis of Structures" , John Wiley & Sons (Asia) Ltd.

Reference Books:

1. David Dowrick, "Earthquake resistant design and risk reduction" , John Wiley and Sons Ltd.
2. C. V. R. Murty, Rupen Goswami, A. R. Vijayanarayanan & Vipul V. Mehta, "Some Concepts in Earthquake Behaviour of Buildings" , Published by Gujarat State Disaster Management Authority, Government of Gujarat.
3. IS-13920 - 2016, Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces, BIS, New Delhi
4. IS-1893 - 2016, Indian Standard Criteria for Earthquake Resistant Design of Structures, Part-1, BIS, New Delhi
5. IS- 4326 - 2013, Earthquake Resistant Design and Construction of Buildings, BIS, New Delhi.
6. IS-13828 - 1993, Indian Standard Guidelines for Improving Earthquake Resistance of Low Strength Masonry Buildings, BIS, New Delhi.
7. IS-3935 - 1993, Repair and Seismic Strengthening of Buildings-Guidelines, BIS, New Delhi.

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN MACRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme and Outcome Based Education (OBE)]

Semester: IV **Year: 2020-21**

Course Title: **ADVANCED SURVEYING**	*Course Code:* **18CV45**
Course Instructor: **Mr. Prakash J**	*Date of commencement:* **19/04/2021**
Total contact Hours Planned: 50	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- 100	*Duration of Exam:* **03 Hrs**

Course Outcomes or COs:

After a successful completion of the course, the student will be able to:

CO1: Apply the knowledge of geometric principles to arrive at surveying problems

CO2: Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.

CO3: Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments;

CO4: Design and implement the different types of curves for deviating type of alignments.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Sl. No.	DATE	MODULE LESSON PLAN	ADDITIONAL SOURCES
1	19/04/21 to 04/05/21	**Module-1** **Theodolite Survey and Instrument Adjustment:** Theodolite and types, Fundamental axes and parts of Transit theodolite, uses of theodolite, Temporary adjustments of transit theodolite, measurement of horizontal and vertical angles, step by step procedure for obtaining permanent adjustment of Transit theodolite. **Trigonometric Levelling:** Trigonometric levelling (heights and distances-single plane and double plane methods).	https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/105104101/lec17.pdf https://www.scoop.it/topic/wauiwgs/p/4100951284/2118/08/23/theodolite-surveying-lecture-notes-pdf
2	05/05/21 to 20/05/21	**Module-2** **Tacheometry:** Basic principle, types of tacheometry, distance equation for horizontal and inclined line of sight in fixed hair method, problems. **Geodetic Surveying:** Principle and Classification of triangulation system, Selection of base line and stations, Orders of triangulation, Triangulation figures, Reduction to Centre, Selection and marking of stations.	https://aits-tpt.edu.in/wp-content/uploads/2118/08/tacheometric-surveying.pdf https://bmsit.ac.in/system/study_materials/documents/000/000/079/original/Module_II.pdf?1498038336
3	21/05/21 to 10/06/21	**Module-3** **Curve Surveying:** Curves – Necessity – Types, Simple curves, Elements , Designation of curves, Setting out simple curves by linear methods (numerical problems on offsets from long chord & chord produced method). Setting out curves by Rankines deflection angle method (Numerical problems). Compound curves, Elements, Design of compound curves, Setting out of compound curves (numerical problems). Reverse curve between two Parallel straights (numerical problems on Equal radius and unequal radius). Transition curves Characteristics, numerical problems on Length of Transition curve, Vertical curves & Types – (theory).	https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/105104101/lec36.pdf https://ujjvalsolanki.files.wordpress.com/2113/09/curves.pdf
4	11/07/21 to 04/07/21	**Module-4** **Aerial Photogrammetry** Introduction, Uses, Aerial photographs, Definitions, Scale of vertical and tilted photograph (simple problems), Ground Co-Ordinates (simple problems), Relief Displacements (Derivation), Ground control, Procedure of aerial survey, overlaps and mosaics, Stereoscopes, Derivation Parallax.	https://www.researchgate.net/publication/326988868_Aerial_Photography_and_Photogrammetary http://ncert.nic.in/textbook/pdf/kegy306.pdf
5	05/07/21 to 07/08/21	**Module-5** **Modern Surveying Instruments** Introduction, Electromagnetic spectrum, Electromagnetic distance measurement, Total station, Lidar scanners for topographical survey. **Remote Sensing:** Introduction, Principles of energy interaction in atmosphere and earth surface features, Image interpretation techniques, visual interpretation. Digital Image processing, Global Positioning system **Geographical Information System:** Definition of GIS, Key Components of GIS, Functions of GIS, Spatial data, spatial information system Geospatial analysis, Integration of Remote sensing and GIS and Applications in Civil Engineering(transportation, town planning).	https://www.slideshare.net/AdityaMistry4/modern-surveying-instruments-72052221 https://nptel.ac.in/courses/105108077/ https://nptel.ac.in/courses/105102015/

Text Books:

1. B.C. Punmia, "Surveying Vol.2", Laxmi Publications pvt. Ltd., New Delhi.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part 2, Pune Vidyarthi Griha Prakashan,
3. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi.
4. SateeshGopi, Global Positioning System, Tata McGraw Hill Publishing Co. Ltd. New Delhi.

Reference Books:

1. S.K. Duggal, "Surveying Vol. I & II", Tata McGraw Hill Publishing Co. Ltd. New Delhi.
2. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi.
3. David Clerk, Plane and Geodetic Surveying Vol1 and Vol2, CBSpublishers
4. B Bhatia, Remote Sensing and GIS, Oxford University Press, New Delhi.
5. T.M Lillesand, R.W Kiefer,. and J.W Chipman, Remote sensing and Image interpretation, 5th edition, John Wiley and SonsIndia
6. James M Anderson and Adward M Mikhail, Surveying theory and practice, 7th Edition, Tata McGraw HillPublication.
7. Kang-tsung Chang, Introduction to geographic information systems, McGraw Hill HigherEducation

Mr. Prakash J
Course Instructor

Dr. G Mahesh Kumar
HOD

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Sira Road, Tumakuru - 572 106, Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN MICRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme and Outcome Based Education (OBE]

Semester: IV **Year: 2020-21**

Course Title: **ADVANCED SURVEYING**	*Course Code:* **18CV45**
Course Instructor: **Mr. Prakash J**	*Date of commencement:* **19/04/2021**
Total contact Hours Planned: 53	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- 100	*Duration of Exam:* **03 Hrs**

MODULE - I

Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
1	19/04/21	MON	**Theodolite Survey and Instrument Adjustment:** Theodolite and types		
2	24/04/21	TUE	Fundamental axes and parts of Transit theodolite		
3	25/04/21	WED	uses of theodolite		
4	26/04/21	FRI	Temporary adjustments of transit theodolite		
5	28/04/21	MON	measurement of horizontal angles		
6	29/04/21	TUE	measurement of vertical angles		
7	30/04/21	WED	Step by step procedure for obtaining permanent adjustment of Transit theodolite.		
8	14/05/21	FRI	**Trigonometric Levelling:** Introduction		
9	17/05/21	MON	Distances-Single Plane		
10	18/05/21.	TUE	Double Plane Methods		

MODULE - II

Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
11	19/05/21	WED	**Tacheometry:** Basic principle		
12	24/05/21	MON	Types of tacheometry		
13	25/05/21	TUE	Distance equation for horizontal line of sight		
14	26/05/21	WED	inclined line of sight in fixed hair method		
15	28/05/21	FRI	Problems on above		

16	02/06/21	MON	Geodetic Surveying: Principle and Classification of triangulation system		
17	03/06/21	TUE	Selection of base line and stations		
18	04/06/21	WED	Orders of triangulation		
19	06/06/21	FRI	Triangulation figures		
20	09/06/21	MON	Reduction to Centre		
21	10/06/21	TUE	Selection and marking of stations		

MODULE – III : CURVE SURVEY					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
22	11/06/21	WED	Introduction: Curves – Necessity – Types, Simple curves		
23	17/06/21	TUE	Elements, Designation of curves, Setting out simple curves by linear methods		
24	18/06/21	WED	numerical problems on offsets from long chord & chord produced method		
25	20/06/21	FRI	Setting out curves by Rankines deflection angle method		
26	23/06/21	MON	Compound curves, Elements, Design of compound curves		
27	24/06/21	TUE	Setting out of compound curves		
28	27/06/21	FRI	numerical problems Setting out of compound curves, Reverse curve between two parallel		
29	30/06/21	MON	numerical problems on Equal radius and unequal radius		
30	31/06/21	TUE	Transition curves Characteristics, numerical problems on Length of Transition curve		
31	01/07/21	WED	Vertical curves –Types – (theory).		

MODULE – IV : AERIAL PHOTOGRAMMETRY					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
32	07/07/21	TUE	Introduction, Uses		
33	08/07/21	WED	Aerial photographs, Definitions,		
34	15/07/21	WED	Scale of vertical and tilted photograph		
35	17/07/21	FRI	Problems on Scale of vertical and tilted photograph		

36	20/07/21	MON	Ground Co-ordinates		
37	21/07/21	TUE	Simple problems on Ground Co-ordinates		
38	22/07/21	WED	Relief Displacements- Theory		
39	28/07/21	TUE	Ground control, Procedure of aerial survey, overlaps and mosaics		
40	29/07/21	WED	Stereoscopes		
41	30/07/21	MON	Derivation Parallax(Derivation)		

MODULE – V : MODERN SURVEYING INSTRUMENTS					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
42	31/07/21	TUE	Introduction, Electromagnetic spectrum ,Electromagnetic distance measurement		
43	01/08/21	WED	Total station		
44	02/08/21	FRI	LIDAR scanners for topographical survey		
45	03/08/21	MON	Remote Sensing: Introduction		
46	03/08/21	TUE	Principles of energy interaction in atmosphere and earth surface features		
47	05/08/21	WED	Image interpretation techniques, visual interpretation		
48	05/08/21	FRI	Digital image processing		
49	06/08/21	MON	Global Positioning system Geographical Information System: Definition of GIS,		
50	07/08/21	TUE	Key Components of GIS, Functions of GIS, Spatial data		

Mr Prakash J
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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2020-2021*

[LESSON PLAN (MARCH - JULY 2021) MACRO SCHEDULE]

Course Title	**Design of Steel Structural Elements**	*Course Instructor*	*Mr. Manogna H N*
Course Code	**18CV61**	*Sem /Sec*	*VI*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **19/04/2021**	*Total contact Hours: 52*	*Duration of Exam*: 03 Hrs.	*CREDITS: 04*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Possess knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel.
CO2. Understand the Concept of Bolted and Welded connections.
CO3. Understand the Concept of Design of compression members, built-up columns and columns splices
CO4. Understand the Concept of Design of tension members, simple slab base and gusseted base.
CO5. Understand the Concept of Design of laterally supported and un-supported steel beams.

Sl No	Date	Module Lesson Plan	Additional Sources
1	19/04/21 to 05/05/21	**Module 1:** **Introduction:** Advantages and Disadvantages of Steel Structures, Limit state method Limit State of Strength, Structural Stability, Serviceability Limit states, Failure Criteria of steel, Design Consideration, Loading and load combinations, IS code provisions, Specification and Section classification. **Plastic Behavior of Structural Steel:** Introduction, Plastic theory, Plastic Hinge Concept, Plastic collapse load, load factor, Shape factor, Theorem of plastic collapse, Methods of Plastic analysis, Plastic analysis of Continuous Beams. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/shafkatislaml https://youtu.be/Vdx2dNGsuEM
2	06/05/2021 to 30/05/2021	**Module 2:** **Bolted Connections:** Introduction, Types of Bolts, Behavior of bolted joints, Design of High Strength friction Grip (HSFG) bolts, Design of Simple bolted Connections (Lap and Butt joints)and bracket connections.	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/ManjuParan

		Welded Connections: Introduction, Types and properties of welds, Effective areas of welds, Weld Defects, Simple welded joints for truss member and bracket connections, Advantages and Disadvantages of Bolted and Welded Connections. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2**	thaman/ https://youtu.be/Oa75GTf2-h8
3	**31/05/2021 to 26/06/2021**	**Module 3:** **Design of Compression Members:** Introduction, Failure modes, Behavior of compression members, Sections used for compression members, Effective length of compression members, Design of compression members and built up Compression members, Design of Laced and Battened Systems. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/QTRGn5vAprY
4	**27/06/2021 to 18/07/2021**	**Module 4:** **Design of Tension Members:** Introduction, Types of Tension members, Slenderness ratio, Modes of Failure, Factors affecting the strength of tension members, Design of Tension members and Lug angles, Splices, Gussets. **Design of Column Bases:** Design of Simple Slab Base and Gusseted Base **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan https://youtu.be/BIJTWBlguHs
5	**21/07/2021 to 07/08/2021**	**Module 5:** **Design of Beams:** Introduction, Beam types, Lateral Stability of beams, factors affecting lateral stability, Behavior of Beams in Bending, Design strength of laterally supported beams in Bending, Design of Laterally unsupported Beams [No Numerical Problems], Shear Strength of Steel Beams. Beam to Beam Connections, Beam to Column Connection and Column Splices [No Numerical Problems]. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/2qV4osntg6g

Text Books:

1. N Subramanian., "Design of Steel Structures" (2016), Oxford University Press, New Delhi.
2. Duggal S K., "Limit State Method of Design of Steel Structures", Tata McGraw Hill, New Delhi.

Reference Books:

1. Dayarathnam P, "Design of Steel Structures", Scientific International Pvt. Ltd.
2. Kazim S M A and Jindal R S, "Design of Steel Structures", Prentice Hall of India, New Delhi.
3. IS 800-2007: General Construction in Steel Code Practice (Third revision), Bureau of Indian Standards, New Delhi.

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2020-2021*

[LESSON PLAN (MARCH - JULY 2021) MICRO SCHEDULE]

Course Title	**Design of Steel Structural Elements**	*Course Instructor*	*Mr. Manogna H N*
Course Code	**18CV61**	*Sem /Sec*	*VI*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/04/2022**	*Total contact Hours: 52*	*Duration of Exam*: 03 Hrs.	*CREDITS: 04*

Module 1: Introduction to steel structures and Plastic Behaviour of Structural Steel				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
1	19/04/21	Introduction to steel structures		
2	21/04/21	Advantages and Disadvantages of Steel structures		
3	24/04/21	Limit State Method (LSM) of design Limit state method		
4	29/04/21	Limit State of Strength, Structural Stability, Serviceability		
5	01/05/21	Design considerations, Loads and Load combinations,		
6	02/05/21	Failure criteria for steel, IS Code Provisions,		
7	03/05/21	Specifications, Section classification.		
8	05/05/21	Introduction to Plastic theory, Plastic hinge concept,		
9	05/05/21	Problems on plastic theory		
10	05/05/21	Problems on plastic theory		

SUMMARY

Planned Date	**From:** 19.04.2021	**To:** 05.04.2021	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 10	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 2: Bolted Connections and Welded Connections:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
11	06/05/21	Introduction, Types of bolts, Behaviour of Bolted joints,		
12	16/05/21	Design strength of ordinary Black Bolts		
13	17/05/21	Design strength of ordinary Black Bolts		
14	21/05/21	Design strength of High Strength Friction Grip bolts (HSFG)		
15	22/05/21	Introduction, Welding process, Welding electrodes,		
16	23/05/21	Types and Properties of Welds, Types of joints Weld symbols, Weld specifications,		
17	24/05/21	Effective areas of welds, Design of welds, Simple joints		
18	26/05/21	Disadvantages of Bolted and Welded connections		
19	29/05/21	Weld Defects, Advantages of Bolted and Welded connections Problems on welds		
20	30/05/21	Problems on welds		

SUMMARY

Planned Date	**From:** 06.05.2021	**To:** 30.05.2021	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 10	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 3: Design of Compression Members:				
Sl No	Date	Topics	Topics Covered	Remarks
21	31/05/21	Introduction, Failure modes,		
22	05/06/21	Behaviour of compression members		
23	12/06/21	Elastic buckling of slender compression members		
24	13/06/21	Sections used for compression members		
25	16/06/21	Effective length of compression members		
26	21/06/21	Design of compression members		
27	20/06/21	Design of compression members		
28	21/06/21	Built up compression members		
29	23/06/21	Design of Laced and Battened Systems.		
30	26/06/21	Design of Laced and Battened Systems.		

SUMMARY

Planned Date	**From:** 31.05.2021	**To:** 26.06.2021	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 10	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 4: Design of Tension Members and Design of Column Bases:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
31	27/06/21	Introduction, Types of tension members, Design of strands, Slenderness ratio,		
32	30/06/21	Behaviour of tension members Modes of failure,		
33	03/07/21	Factors affecting the strength of tension members		
34	04/07/21	Design of tension member		
35	05/07/21	Design of tension member		
36	07/07/21	Lug angles, Splices, Gussets		
37	07/07/21	Design of simple slab base - problems		
38	12/07/21	Design of simple slab base - problems		
39	17/07/21	Design of gusseted base - problems		
40	18/07/21	Design of gusseted base - problems		

SUMMARY

Planned Date	**From:** 27.06.2021		**To:** 18.07.2021
Actual Classes Taken	**From:**		**To:**
Number of Classes	**Allocated:** 10		**Taken:**
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 5: Design of Beams:				
Sl No	Date	Topics	Topics Covered	Remarks
41	21/07/21	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability		
42	21/07/21	Behaviour of simple and built-up beams in bending(without vertical stiffeners)		
43	24/07/21	Behaviour of simple and built-up beams in bending(without vertical stiffeners)		
44	25/07/21	Design strength of laterally supported beams in Bending-problems		
45	26/07/21	Design strength of laterally supported beams in Bending-problems		
46	28/07/21	Design strength of laterally supported beams in Bending-problems		
47	31/08/21	Design strength of laterally unsupported beams- problems		
48	02/08/21	Design strength of laterally unsupported beams		
49	04/08/21	Shear strength of steel beams, Maximum deflection		
50	03/08/21	Beam to Beam Connections,		
51	04/08/21	Beam to Beam Connections,		
52	05/08/21	Beam to Column Connection		

SUMMARY

Planned Date	**From:** 27.07.2021	**To:** 05.08.2021	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 12	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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DEPARTMENT OF CIVIL ENGINEERING

18CV54– BASIC GEOTECHNICAL ENGINEERING

LECTURE PLAN

Semester: V *Year:* 2020-21

Subject Title: **Basic Geotechnical Engineering**	*Subject Code:* **18CV54**
Total Contact Hours: **63**	*Duration of Exam:* **03Hrs**
Total exam marks: **100**	*Total I.A.marks:* **40**
Lesson Plan Author: **Dr. G. Mahesh Kumar**	*Date of Commencement of Semester:* **01.09.2020**
Checked by: **Dr. G. Mahesh Kumar**	

Course Learning Objectives:
This course will enable students to
1. Appreciate basic concepts of soil mechanics as an integral part in the knowledge of civil engineering.
2. Comprehend basic engineering and mechanical properties of different types of soil.
3. Become broadly familiar with geotechnical engineering problems such as, flow of water through soil medium and terminologies associated with geotechnical engineering.
4. Assesstheimprovementinmechanicalbehaviourbydensificationofsoildeposits using compaction.
5. Model and measure strength

-

deformation characteristics of soils.

Course outcomes:
On the completion of this course students are expected to attain the following outcomes;
1. Ability to plan and execute geotechnical site investigation program for different civil engineering projects
2. Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
3. Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
4. Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
5. Capable of estimating load carrying capacity of single and group of piles

Question paper pattern: · The question paper will have ten full questions carrying equal marks. · Each full question will be for 20 marks. · There will be two full questions (with a maximum of four sub- questions) from each module. · Each full question will have sub- question covering all the topics under a module. · The students will have to answer five full questions, selecting one full question from each module.

Materials and resources required

Text Books:

1. Gopal Ranjan and Rao A.S.R., **Basic and Applied Soil Mechanics- (2000)**, New Age International (P) Ltd., Newe Delhi.
2. Punmia B C, **Soil Mechanics and Foundation Engineering- (2012)** , Laxmi Pulications.
3. Murthy V.N.S., **Principles of Soil Mechanics and Foundation Engineering-** (1996), 4th Edition, UBS Publishers and Distributors, New Delhi.
4. Braja, M. Das, **Geotechnical Engineering-**(2002), Fifth Edition, Thomson Business Information India (P) Ltd., India

Reference Books:

1. T.W. Lambe and R.V. Whitman, **Soil Mechanics**, John Wiley & Sons, 1969.
2. Donold P Coduto, **Geotechnical Engineering-** Phi Learning Private Limited, New Delhi
3. Shashi K. Gulathi & Manoj Datta, **Geotechnical Engineering-**. (2009), "Tata Mc Graw Hill.
4. Narasimha Rao A. V. & Venkatrahmaiah C, **Numerical Problems, Examples and objective questions in Geotechnical Engineering-**. (2000), Universities Press., Hyderabad.
5. Muni Budhu ,**Soil Mechanics and Foundation Engg.-** (2010), 3rd Edition, John Wiely & Sons

DEPARTMENT OF CIVIL ENGINEERING

18CV54 – BASIC GEOTECHNICAL ENGINEERING

LECTURE PLAN

Sl. No.	DATE	TOPICS	Topics Covered	Remarks
		MODULE-1 INTRODUCTION		
1	01.09.20	Introduction, origin and formation of soil,.		
2	02.09.20	Phase Diagram, phase relationships,		
3	03.09.20	definitions and their inter relationships		
4	05.09.20	definitions and their inter relationships- continued		
5	08.09.20	Problems on inter relationships		
6	09.09.20	Determination of Index properties-Specific gravity, water content,		
7	10.09.20	in-situ density and particle size analysis (sieve and sedimentation analysis)		
8	12.09.20	particle size analysis (sieve and sedimentation analysis)-continued		
9	15.09.20	Atterberg's Limits, consistency indices,		
10	16.09.20	relative density, problems on Atterberg limits		
11	19.09.20	Activity of clay, Plasticity chart,		
12	22.09.20	unified and BIS soil classification		
13	23.09.20	Problems soil classification		
		MODULE-2 SOIL STRUCTURE AND CLAY MINERALOGY COMPACTION OF SOIL		
14	24.09.20	Single grained, honey combed, flocculent and dispersed structures,		
15	26.09.20	Valence bonds, Soil-Water system,		
16	29.09.20	Electrical diffuse double layer, adsorbed water, base-exchange capacity, Isomorphous substitution.		
17	30.09.20	Common clay minerals in soil and their structures- Kaolinite and their application in Engineering		
18	01.10.20	Illite and their application in Engineering		
19	03.10.20	Montmorillonite and their application in Engineering		
20	06.10.20	Compaction of Soils: Definition, Principle of		

		compaction,		
21	07.10.20	Standard and Modified proctor's compaction tests		
22	08.10.20	factors affecting compaction, effect of compaction on soil properties,		
23	10.10.20	Field compaction control - compactive effort & method of compaction, lift thickness and number of passes,		
24	15.10.20	Proctor's needle, Compacting equipments and their suitability.		
25	17.10.20	Problems on compaction		
26	20.10.20	Problems on compaction		
		MODULE-3 FLOW THROUGH SOILS		
27	21.10.20	Darcy's law- assumption and validity, coefficient of permeability and its determination (laboratory and field),		
28	22.10.20	factors affecting permeability, permeability of stratified soils,		
29	24.10.20	Seepage velocity, superficial velocity		
30	27.10.20	coefficient of percolation, Capillary Phenomena		
31	28.10.20	Seepage Analysis: Laplace equation, assumptions, limitations and its derivation. Flow nets- characteristics and applications.		
32	29.10.20	Flow nets for sheet piles and below the dam section.		
33	03.11.20	Unconfined flow, phreatic line (Casagrande's method –with and without toe filter), flow through dams, design of dam filters.		
34	04.11.20	Problems on flow through soil		
35	05.11.20	Effective Stress Analysis: Geostatic stresses,		
36	07.11.20	Effective stress concept-total stress, effective stress and		
37	10.11.20	Neutral stress and impact of the effective stress in construction of structures,		
38	11.11.20	quick sand phenomena		
39	12.11.20	Problems on effective stress, total stress and neutral stress		
		MODULE-4 CONSOLIDATION OF SOIL		
40	17.11.20	Definition, Mass-spring analogy		
41	18.11.20	Terzaghi's one dimensional consolidation theory - assumption and limitations.		
42	19.11.20	Derivation of Governing differential Equation Pre-consolidation pressure and its determination by Casagrande's method.		
43	21.11.20	Over consolidation ratio, normally consolidated, under consolidated and over consolidated soils.		

		Problems		
44	24.11.20	Consolidation characteristics of soil (Cc, av, mv and Cv.		
45	25.11.20	Laboratory one dimensional consolidation test, characteristics of e-log(σ') curve,		
46	01.12.20	Determination of consolidation characteristics of soils, compression index and coefficient of consolidation (square root of time fitting method,.		
47	02.12.20	logarithmic time fitting method). Primary and secondary consolidation. Problems		
		MODULE-5 SHEAR STRENGTH OF SOIL		
48	05.12.20	Concept of shear strength, Mohr–Coulomb Failure Criterion, Modified Mohr–Coulomb Criterion Concept of pore pressure,		
49	08.12.20	Total and effective shear strength parameters, factors affecting shear strength of soils.		
50	09.12.20	Thixotrophy and sensitivity, Problems		
51	10.12.20	Measurement of shear strength parameters - Direct shear test, unconfined compression test		
52	12.12.20	triaxial compression test and field Vane shear test		
53	15.12.20	Test under different drainage conditions. Total and effective stress paths.		
54	16.12.20	Problems on Module 5		
55	17.12.20	Problems on Module 1		
56	19.12.20	Problems on Module 2		
57	22.12.20	Problems on Module 3		
58	23.12.20	Problems on Module 4		
59	24.12.20	Problems on Module 5		
60	26.12.20	Revision		
61	29.12.20	Revision		
62	30.12.20	Previous Question Papers Discussion		
63	31.12.20	Previous Question Papers Discussion		

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN MACRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme]

Semester: VI **Year: 2020-21**

Course Title: **Highway Engineering**	*Subject Code:* **18CV63**
Lesson plan author: **Mr Prakash J**	*Date of commencement:* **01/09/2021**
Total contact Hours: ***50***	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
*Total Marks- **100***	*Duration of Exam:* **03 Hrs**

Course Outcomes or COs:

After a successful completion of the course, the student will be able to:

CO1: Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.

CO2: Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.

CO3: Design road geometrics, structural components of pavement and drainage.

CO4: Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Sl. No.	DATE	MODULE LESSON PLAN	ADDITIONAL SOURCES
1	04/09/20 to 20/09/20	**Module-1** **Principles of Transportation Engineering:** Importance of transportation, Different modes of transportation and comparison, Characteristics of road transport Jayakar committee recommendations, and implementation - Central Road Fund, Indian Roads Congress, Central Road Research Institute **Highway Development and Planning:** Road types and classification, road patterns, planning surveys, master plan - saturation system of road planning, phasing road development in India, problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies, Present scenario of road development in India (NHDP & PMGSY) and in Karnataka (KSHIP & KRDCL) Road development plan - vision 2021.	https://www.scribd.com/document/306191202/Principles-of-Transportation-Engineering-pdf https://www.slideshare.net/mohitkumarpanchal/highway-notes
2	22/09/20 to 10/10/20	**Module-2** **Highway Alignment and Surveys:** Ideal Alignment, Factors affecting the alignment, Engineering surveys-Map study, Reconnaissance, Preliminary and Final location & detailed survey, Reports and drawings for new and re-aligned projects **Highway Geometric Design:** Cross sectional elements-width, surface, camber, Sight distances-SSD, OSD, ISD, HSD, Design of horizontal and vertical alignment-curves, super-elevation, widening, gradients, summit and valley curves.	http://www.admissiongyan.com/einstein/wp-content/uploads/2019/02/Transportation-Engineering.pdf eep.iitb.ac.in/webpage_data/nptel/Civil%20Engineering/Transportation%20Engg%20I/72-homes/02-home.html
3	12/10/20 to 31/10/20	**Module-3** **Pavement Materials:** Subgrade soil - desirable properties-HRB soil classification determination of CBR and modulus of subgrade reaction with Problems Aggregates- Desirable properties and tests, Bituminous materials-Explanation on Tar, bitumen, cutback and emulsion-tests on bituminous material **Pavement Design:** Pavement types, component parts of flexible and rigid pavements and their functions, ESWL and its determination (Graphical method only)-Examples.	https://nptel.ac.in/content/storage2/courses/105101087/downloads/Lec-23.pdf https://nptel.ac.in/content/storage2/courses/105101087/downloads/Lec-19.pdf
4	02/11/20 to 30/11/20	**Module-4** **Pavement Construction:** Design of soil aggregate mixes by Rothfuch' s method. Uses and properties of bituminous mixes and cement concrete in pavement construction. Earthwork; cutting and Filling, Preparation of subgrade, Specification and construction of i) Granular Sub base, ii)WBM Base, iii) WMM base, iv) Bituminous Macadam, v)Dense Bituminous Macadam vi) Bituminous Concrete, vii)Dry Lean Concrete sub base and PQC viii) concrete roads	https://nptel.ac.in/content/storage2/courses/105101087/downloads/Lec-28.pdf https://nptel.ac.in/content/storage2/courses/105101087/downloads/Lec-29.pdf

5	02/12/20 to 30/12/20	**Module-5** **Highway Drainage:** Significance and requirements, Surface drainage system and design-Examples, sub surface drainage system, design of filter materials, Types of cross drainage structures, their choice and location. **Highway Economics:** Highway user benefits, VOC using charts only-Examples, Economic analysis - annual cost method-Benefit Cost Ratio method-NPV-IRR methods-Examples, Highway financing-BOT-BOOT concepts	http://www.engineeringenotes.com/highway-construction/highway-drainage-need-and-types-of-highway-drainage-system/48795 http://transportationengineering2012onwards.blogspot.com/2014/04/highway-economics-and-finance-part-3.html

Text Books:

1. S K Khanna and C E G Justo, " Highway Engineering", Nem Chand Bros, Roorkee
2. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi.
3. R Srinivasa Kumar, "Highway Engineering", University Press.
4. K.P.subramanium, "Transportation Engineering", SciTech Publications, Chennai

Reference Books:

1. Relevant IRC Codes
2. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi.
3. C. JotinKhisty, B. Kent lal, "Transportation Engineering", PHI Learning Pvt. Ltd. New Delhi.

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (FEB -JUNE 2020) MICRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme]

Semester: VI **Year: 2020-21**

Course Title: **Highway Engineering**	*Subject Code:* **17CV63**
Lesson plan author: **Mr. Prakash J**	*Date of commencement:* **01/09/2019**
Total contact Hours: 50	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- 100	*Duration of Exam:* **03 Hrs**

MODULE - I					
Sl. No.	**DATE**	**DAY**	**LESSON PLANNED**	**LESSON COVERED**	**REMARKS**
1	04/09/20	TUE	**Principles of Transportation Engineering:** Importance of transportation		
2	06/09/20	THU	Different modes of transportation and comparison, Characteristics of road transport		
3	07/09/20	FRI	Jayakar committee recommendations, and implementation – Central Road Fund		
4	08/09/20	SAT	Indian Roads Congress, Central Road Research Institute		
5	11/09/20	TUE	**Highway Development and Planning:** Road types and classification, road patterns		
6	13/09/20	THU	planning surveys, master plan – saturation system of road planning, phasing road development in India		
7	14/09/20	FRI	problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies		
8	15/09/20	SAT	Present scenario of road development in India (NHDP & PMGSY)		
9	18/09/20	TUE	and in Karnataka (KSHIP & KRDCL)		
10	20/09/20	THU	Road development plan - vision 2021		
MODULE - II					
Sl. No.	**DATE**	**DAY**	**LESSON PLANNED**	**LESSON COVERED**	**REMARKS**
11	25/09/20	TUE	**Highway Alignment and Surveys:** Ideal Alignment		
12	27/09/20	THU	Factors affecting the alignment		
13	28/09/20	FRI	Engineering surveys-Map study		

14	29/09/20	SAT	Reconnaissance, Preliminary and Final location & detailed survey		
15	03/10/20	TUE	Reports and drawings for new and re-aligned projects		
16	05/10/20	THU	**Highway Geometric Design:** Cross sectional elements–width, surface, camber,		
17	06/10/20	FRI	Sight distances–SSD, OSD, ISD, HSD		
18	07/10/20	SAT	Design of horizontal and vertical alignment–curves		
19	10/10/20	TUE	super-elevation, widening		
20	12/10/20	THU	gradients, summit and valley curves		

MODULE - III					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
21	17/10/20	TUE	**Pavement Materials:** Subgrade soil - desirable properties		
22	19/10/20	THU	HRB soil classification-determination of CBR		
23	20/10/20	FRI	modulus of subgrade reaction with Problems		
24	21/10/20	SAT	Aggregates- Desirable properties and tests		
25	24/10/20	TUE	Bituminous materials- Explanation on Tar		
26	26/10/20	THU	bitumen, cutback and emulsion		
27	27/10/20	FRI	tests on bituminous material		
28	28/10/20	SAT	**Pavement Design:** Pavement types, component parts of flexible		
29	31/10/20	TUE	Rigid pavements and their functions		
30	02/11/20	THU	ESWL and its determination (Graphical method only)-Examples		

MODULE - IV					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
31	07/11/20	TUE	**Pavement Construction:** Design of soil aggregate mixes by Rothfuch's method		
32	09/11/20	THU	Uses and properties of bituminous mixes		
33	16/11/20	THU	cement concrete in pavement construction.		

34	17/11/20	FRI	Earthwork; cutting and Filling		
35	18/11/20	SAT	Preparation of subgrade, Specification		
36	21/11/20	TUE	construction of i) Granular Sub base, ii) WBM Base		
37	23/11/20	THU	iii) WMM base, iv) Bituminous Macadam		
38	28/11/20	TUE	v) Dense Bituminous Macadam vi) Bituminous Concrete		
39	30/11/20	THU	vii) Dry Lean Concrete sub base and PQC		
40	05/12/20	TUE	viii) concrete roads		

MODULE - V					
Sl. No.	DATE	DAY	LESSON PLANNED	LESSON COVERED	REMARKS
41	07/12/20	THU	**Highway Drainage:** Significance and requirements		
42	08/12/20	FRI	Surface drainage system and design-Examples		
43	09/12/20	SAT	sub surface drainage system, design of filter materials		
44	12/12/20	TUE	Types of cross drainage structures, their choice and location		
45	14/12/20	THU	**Highway Economics:** Highway user benefits		
46	15/12/20	FRI	VOC using charts only-Examples		
47	16/12/20	SAT	Economic analysis - annual cost method		
48	19/12/20	TUE	Benefit Cost Ratio method-NPV-IRR methods-Examples		
49	29/12/20	FRI	Benefit Cost Ratio method-NPV-IRR methods-Examples		
50	30/12/20	SAT	Highway financing-BOT-BOOT concepts		

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VI [*As per Choice Based Credit System (CBCS) scheme*] **Year: 2020-21**

Course Title: **Railways, Harbour, Tunnelling and Airports**	*Subject Code:* **18CV645**
Total contact Hours: **53**	*Duration of Exam:* **03 Hrs.**
SEE Marks: **60**	*CIE marks:* **40**
Lesson plan author: **Mr. Prakash J**	*Date:* **19/04/2021**
Checked by: **Dr. G Mahesh Kumar**	*Credits:* ***03***

Course objectives:

This course will enable students to:

1. Understand the history and development, role of railways, railway planning and development based on essential criteria's.
2. Learn different types of structural components, engineering properties of the materials, to calculate the material quantities required for construction
3. Understand various aspects of geometric elements, points and crossings, significance of maintenance of tracks.
4. Design and plan airport layout, design facilities required for runway, taxiway and impart knowledge about visual aids
5. Apply design features of tunnels, harbours, dock and necessary navigational aids; also expose them to various methods of tunnelling and tunnel accessories.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Acquires capability of choosing alignment and also design geometric aspects of railway system, runway, taxiway.
2. Suggest and estimate the material quantity required for laying a railway track and also will be able to determine the hauling capacity of a locomotive.
3. Develop layout plan of airport, harbor, dock and will be able relate the gained knowledge to identify required type of visual and/or navigational aids for the same.
4. Apply the knowledge gained to conduct surveying, understand the tunnelling activities.

Question paper pattern:

- The question paper will have Ten questions, each full question carrying 16 marks.
- There will be two full questions (with a maximum Three sub divisions, if necessary) from each module.
- Each full question shall cover the topics under a module.
- The students shall answer Five full questions selecting one full question from each module.
- If more than one question is answered in modules, best answer will be considered for the award of marks limiting one full question answer in each module.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Saxena Subhash C and Satyapal Arora, "A Course in Railway Engineering", Dhanpat Rai and Sons, Delhi,

2. Satish Chandra and Agarwal M.M, "Railway Engineering", 2nd Edition, Oxford University Press, New Delhi,

3. Khanna S K, Arora M G and Jain S S, "Airport Planning and Design", Nemchand and Brothers, Roorkee,

4. C Venkatramaiah, " Transportation Engineering", Volume II: Railways, Airports, Docks and Harbours, Bridges and Tunnels, Universities Press

5. Bindra S P, "A Course in Docks and Harbour Engineering", Dhanpat Rai and Sons, New Delhi,

Reference Books:

1. Oza.H.P. and Oza.G.H., "A course in Docks & Harbour Engineering". Charotar Publishing Co.,

2. Mundrey J.S. "A course in Railway Track Engineering". Tata McGraw Hill,

3. Srinivasan R. Harbour, "Dock and Tunnel Engineering", 26th Edition 2013

Lesson Plan

Sl No	Date	Topics
		Module -1: Railway Planning
1	19/04/21	Significance of Road, Rail, Air and Water transports, creep in rails, defects in rails,
2	21/04/21	Coordination of all modes to achieve sustainability
3	24/04/21	Elements of permanent way – Rails, Sleepers, Ballast
4	29/04/21	rail fixtures and fastenings
5	01/05/21	Track Stress, coning of wheels
6	02/05/21	Route alignment surveys,
7	03/05/21	conventional and modern methods
8	05/05/21	Soil suitability analysis
9	05/05/21	Geometric design of railways
10	05/05/21	gradient, super elevation, widening of gauge on curves, Points and Crossings
		Module -2: Railway Construction and Maintenance
11	06/05/21	Earthwork
12	16/05/21	Stabilization of track on poor soil
13	17/05/21	Calculation of Materials required for track laying
14	21/05/21	Construction and maintenance of tracks-
15	22/05/21	Modern methods of construction
16	23/05/21	Track maintenance
17	24/05/21	Railway stations and yards
18	26/05/21	passenger amenities
21	29/05/21	Urban rail
20	30/05/21	Infrastructure for Metro, Mono, underground railways
		Module -3: Harbour and Tunnel Engineering
21	31/05/21	Definition of Basic Terms
22	05/06/21	Planning and Design of Harbours, Requirements, Classification
23	12/06/21	Location and Design Principles – Harbour Layout and Terminal Facilities
24	13/06/21	Coastal Structures, Inland Water Transport,
25	16/06/21	Wave action on Coastal Structures and Coastal Protection Works.
26	21/06/21	Tunnelling: Introduction, size and shape of the tunnel
27	20/06/21	tunnelling methods in soils,
28	21/06/21	tunnel lining, tunnel drainage,
29	23/06/21	tunnelling methods in soils
30	26/06/21	Tunnel ventilation
		Module -4: Airport Planning
31	27/06/21	Air transport characteristics,
32	30/06/21	airport classification
33	03/07/21	air port planning: objectives
34	04/07/21	Airport components

35	05/07/21	layout characteristics
36	07/07/21	layout characteristics
37	07/07/21	socio-economic characteristics of the catchment area
38	12/07/21	criteria for airport site selection
39	17/07/21	ICAO stipulations
40	18/07/21	typical airport layouts, typical airport layouts, Parking and circulation area
		Module -5: Airport Design
41	21/07/21	Runway Design: Orientation, Wind Rose Diagram,
42	21/07/21	Wind Rose Diagram continued,
43	24/07/21	Runway length,
44	25/07/21	Problems on basic and Actual Length
45	26/07/21	Geometric design of runways
46	28/07/21	Pavement Design Principles
47	31/08/21	Configuration and, Elements of Taxiway Design
48	02/08/21	Configuration and, Elements of Taxiway Design,
49	04/08/21	Passenger Facilities and Services
50	03/08/21	Passenger Facilities and Services
51	04/08/21	Airport Zones
52	05/08/21	Runway and Taxiway Markings
53	07/08/21	Runway and Taxiway lighting

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VI [*As per Choice Based Credit System (CBCS) scheme*] **Year: 2020-21**

Course Title: **Railways, Harbour, Tunnelling and Airports**	*Subject Code:* **18CV645**
Total contact Hours: **53**	*Duration of Exam*: **03 Hrs.**
SEE Marks: **60**	*CIE marks:* **40**
Lesson plan author: **Mr. Prakash J**	*Date:* **19/04/2021**
Checked by: **Dr. G Mahesh Kumar**	*Credits:* ***03***

Course objectives:

This course will enable students to:

1. Understand the history and development, role of railways, railway planning and development based on essential criteria's.
2. Learn different types of structural components, engineering properties of the materials, to calculate the material quantities required for construction
3. Understand various aspects of geometric elements, points and crossings, significance of maintenance of tracks.
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Course outcomes:

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1. Acquires capability of choosing alignment and also design geometric aspects of railway system, runway, taxiway.
2. Suggest and estimate the material quantity required for laying a railway track and also will be able to determine the hauling capacity of a locomotive.
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Question paper pattern:

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Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

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5. Bindra S P, "A Course in Docks and Harbour Engineering", Dhanpat Rai and Sons, New Delhi,

Reference Books:

1. Oza.H.P. and Oza.G.H., "A course in Docks & Harbour Engineering". Charotar Publishing Co.,

2. Mundrey J.S. "A course in Railway Track Engineering". Tata McGraw Hill,

3. Srinivasan R. Harbour, "Dock and Tunnel Engineering", 26th Edition 2013

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Sira Road, Tumakuru - 572 106. Karnataka.

Lesson Plan

Sl No	Date	Topics
		Module -1: Railway Planning
1	19/04/21	Significance of Road, Rail, Air and Water transports, creep in rails, defects in rails,
2	21/04/21	Coordination of all modes to achieve sustainability
3	24/04/21	Elements of permanent way – Rails, Sleepers, Ballast
4	29/04/21	rail fixtures and fastenings
5	01/05/21	Track Stress, coning of wheels
6	02/05/21	Route alignment surveys,
7	03/05/21	conventional and modern methods
8	05/05/21	Soil suitability analysis
9	05/05/21	Geometric design of railways
10	05/05/21	gradient, super elevation, widening of gauge on curves, Points and Crossings
		Module -2: Railway Construction and Maintenance
11	06/05/21	Earthwork
12	16/05/21	Stabilization of track on poor soil
13	17/05/21	Calculation of Materials required for track laying
14	21/05/21	Construction and maintenance of tracks-
15	22/05/21	Modern methods of construction
16	23/05/21	Track maintenance
17	24/05/21	Railway stations and yards
18	26/05/21	passenger amenities
21	29/05/21	Urban rail
20	30/05/21	Infrastructure for Metro, Mono, underground railways
		Module -3: Harbour and Tunnel Engineering
21	31/05/21	Definition of Basic Terms
22	05/06/21	Planning and Design of Harbours, Requirements, Classification
23	12/06/21	Location and Design Principles – Harbour Layout and Terminal Facilities
24	13/06/21	Coastal Structures, Inland Water Transport,
25	16/06/21	Wave action on Coastal Structures and Coastal Protection Works.
26	21/06/21	Tunnelling: Introduction, size and shape of the tunnel
27	20/06/21	tunnelling methods in soils,
28	21/06/21	tunnel lining, tunnel drainage,
29	23/06/21	tunnelling methods in soils
30	26/06/21	Tunnel ventilation
		Module -4: Airport Planning
31	27/06/21	Air transport characteristics,
32	30/06/21	airport classification
33	03/07/21	air port planning: objectives
34	04/07/21	Airport components

35	05/07/21	layout characteristics
36	07/07/21	layout characteristics
37	07/07/21	socio-economic characteristics of the catchment area
38	12/07/21	criteria for airport site selection
39	17/07/21	ICAO stipulations
40	18/07/21	typical airport layouts, typical airport layouts, Parking and circulation area
		Module -5: Airport Design
41	21/07/21	Runway Design: Orientation, Wind Rose Diagram,
42	21/07/21	Wind Rose Diagram continued,
43	24/07/21	Runway length,
44	25/07/21	Problems on basic and Actual Length
45	26/07/21	Geometric design of runways
46	28/07/21	Pavement Design Principles
47	31/08/21	Configuration and, Elements of Taxiway Design
48	02/08/21	Configuration and, Elements of Taxiway Design,
49	04/08/21	Passenger Facilities and Services
50	03/08/21	Passenger Facilities and Services
51	04/08/21	Airport Zones
52	05/08/21	Runway and Taxiway Markings
53	07/08/21	Runway and Taxiway lighting

Mr Prakash J
Course Instructor

Dr. G Mahesh Kumar
HOD

Dr. Narendra Viswanath
Principal
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Shridevi Institute of Engineering and Technology-Tumkur
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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VI** *Year: 2020-21*

Subject Title: **Environmental Engineering Laboratory**	*Subject Code:* **18CVL67**
Total contact Hours: ***48 (16 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **30/07/21**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to:

1. To learn different methods of water & waste water quality
2. To conduct experiments to determine the concentrations of water and waste water.
3. To determine the degree and type of treatment
4. To understand the environmental significance and application in environmental engineering practice.

Course outcomes:

After studying this course, students will be able to:

1. Acquire capability to conduct experiments and estimate the concentration of different parameters.
2. Compare the result with standards and discuss based on the purpose of analysis.
3. Determine type of treatment, degree of treatment for water and waste water.
4. Identify the parameter to be analyzed for the student project work in environmental stream.

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

1. Manual of Water and Wastewater Analysis – NEERI Publication.
2. Standard Methods for Examination of Water and Wastewater (1995), American Publication – Association, Water Pollution Control Federation, American Water Works Association, Washington DC.
3. IS Standards: 2490-1974, 3360-1974, 3307-1974. ISO 14001 Environmental Management, Regulatory Standards for Drinking Water and Sewage Disposal.
4. Clair Sawyer and Perry McCarty and Gene Parkin, "Chemistry for Environmental Engineering and Science" McGraw-Hill Series in Civil and Environmental Engineering.

3) **Question paper pattern:**

- Two experiments shall be asked from the above set
- One experiment to be conducted and for the other student should write detailed procedure.

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DEPARTMENT OF CIVIL ENGINEERING

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LECTURE PLAN-(B1)

Sl No	Date	Topics	Remark
1	30-07-2021	Introduction, Determination of pH , Acidity	
2	05-08-2021	Determination of Alkalinity	
3	19-08-2021	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2021	Determination of Dissolved Oxygen	
5	09-09-2021	Determination of BOD.	
6	16-09-2021	Determination of Chlorides	
7	23-09-2021	Determination of percentage of available chlorine in bleaching powder, Determination of Residual Chlorine	
8	30-09-2021	Determination of Solids in Sewage: I) Total Solids, II) Suspended Solids, III) Dissolved Solids, IV) Volatile Solids, Fixed Solids, V) Settle able Solids.	
9	21-10-2021	Determination of Turbidity by Nephelometer. Determination of Optimum Dosage of Alum using Jar Test apparatus	
10	28-10-2021	Determination of sodium and potassium by flame photometer	
11	04-11-2021	Determination Nitrates by spectrophotometer	
12	11-11-2021	Determination of Iron and Manganese	
13	18-11-2021	Determination of Fluorides SPANDS Method	
14	25-11-2021	Determination of COD.	
15	29-11-2021	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2021	Internals	

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr. Narendra Viswanath)
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LECTURE PLAN-(B2)

Sl No	Date	Topics	Remark
1	30-07-2021	Introduction, Determination of pH , Acidity	
2	05-08-2021	Determination of Alkalinity	
3	19-08-2021	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2021	Determination of Dissolved Oxygen	
5	09-09-2021	Determination of BOD.	
6	16-09-2021	Determination of Chlorides	
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15	29-11-2021	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2021	Internals	

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LECTURE PLAN-(B3)

Sl No	Date	Topics	Remark
1	30-07-2021	Introduction, Determination of pH , Acidity	
2	05-08-2021	Determination of Alkalinity	
3	19-08-2021	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2021	Determination of Dissolved Oxygen	
5	09-09-2021	Determination of BOD.	
6	16-09-2021	Determination of Chlorides	
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14	25-11-2021	Determination of COD.	
15	29-11-2021	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2021	Internals	

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DEPARTMENT OF CIVIL ENGINEERING

Semester: **VI** ***Year: 2020-21***

Subject Title: **Environmental Engineering Laboratory**	*Subject Code:* **18CVL67**
Total contact Hours: ***48 (16 Class x 3Hrs)***	*Duration of Exam:* **03 Hrs.**
Total exam marks: **60**	*Total I.A. marks:* **40**
Lesson plan author: **Mr. Manogna H N**	*Date of commencement of semester:* **30/07/21**
Checked by: **Dr. G Mahesh Kumar**	

Course objectives:

This course will enable students to:

1. To learn different methods of water & waste water quality
2. To conduct experiments to determine the concentrations of water and waste water.
3. To determine the degree and type of treatment
4. To understand the environmental significance and application in environmental engineering practice.

Course outcomes:

After studying this course, students will be able to:

1. Acquire capability to conduct experiments and estimate the concentration of different parameters.
2. Compare the result with standards and discuss based on the purpose of analysis.
3. Determine type of treatment, degree of treatment for water and waste water.
4. Identify the parameter to be analyzed for the student project work in environmental stream.

1) **Presentation:** Black board, Teaching charts, Models / OHP/ LCD presentation

2) **REFERENCE BOOKS::**

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4. Clair Sawyer and Perry McCarty and Gene Parkin, "Chemistry for Environmental Engineering and Science" McGraw-Hill Series in Civil and Environmental Engineering.

3) **Question paper pattern:**

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- One experiment to be conducted and for the other student should write detailed procedure.

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DEPARTMENT OF CIVIL ENGINEERING

LECTURE PLAN-(B1)

Sl No	Date	Topics	Remark
1	30-07-2021	Introduction, Determination of pH , Acidity	
2	05-08-2021	Determination of Alkalinity	
3	19-08-2021	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2021	Determination of Dissolved Oxygen	
5	09-09-2021	Determination of BOD.	
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9	21-10-2021	Determination of Turbidity by Nephelometer. Determination of Optimum Dosage of Alum using Jar Test apparatus	
10	28-10-2021	Determination of sodium and potassium by flame photometer	
11	04-11-2021	Determination Nitrates by spectrophotometer	
12	11-11-2021	Determination of Iron and Manganese	
13	18-11-2021	Determination of Fluorides SPANDS Method	
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15	29-11-2021	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2021	Internals	

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LECTURE PLAN-(B2)

Sl No	Date	Topics	Remark
1	30-07-2021	Introduction, Determination of pH , Acidity	
2	05-08-2021	Determination of Alkalinity	
3	19-08-2021	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2021	Determination of Dissolved Oxygen	
5	09-09-2021	Determination of BOD.	
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15	29-11-2021	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2021	Internals	

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LECTURE PLAN-(B3)

Sl No	Date	Topics	Remark
1	30-07-2021	Introduction, Determination of pH , Acidity	
2	05-08-2021	Determination of Alkalinity	
3	19-08-2021	Determination of Calcium, Magnesium and Total Hardness.	
4	26-08-2021	Determination of Dissolved Oxygen	
5	09-09-2021	Determination of BOD.	
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15	29-11-2021	Demonstration of Air Quality Monitoring and Sound by Sound level meter at different location.	
16	30-11-2021	Internals	

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2020-2021*

[LESSON PLAN (OCTOBER 2021 – JANUARY 2022) MICRO SCHEDULE]

Course Title	*EARTHQUAKE ENGINEERING*	*Course Instructor*	*Mr. Manogna H N*
Course Code	*15/17CV831*	*Sem /Sec*	*VIII*
IA Marks (CIE)	*20/40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*80/60*
Date of commencement of semester: **05/04/2021**	*Total contact Hours: 50*	*Duration of Exam*: 03 Hrs.	*CREDITS: 04*

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Engineering Seismology	
1	05/04/21	Terminologies (Focus, Focal depth, Epicentre, etc.);	
2	06/04/21	Causes of Earthquakes; Theory of plate tectonics;	
3	07/04/21	Types and characteristics faults; Classification of Earthquakes;	
4	08/04/21	Major past earthquakes and their consequences; Types and characteristics of seismic waves;	
5	12/04/21	Magnitude and intensity of earthquakes; local site effects;	
6	15/04/21	Earthquake ground motion characteristics: Amplitude, frequency	
7	19/04/21	duration; Seismic zoning mapof India;	
8	20/04/21	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	
9	21/04/21	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	
10	22/04/21	Problems on computation of wave velocities. Location of epicentre, Magnitude of earthquake	

SUMMARY

Planned Date	**From :** 05/04/21	**To:** 22/04/21	
Actual classes taken	**From :**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Response Spectrum	
11	26/04/21	Basics of structural dynamics;	
12	27/04/21	Free and forced vibration of SDOFsystem;	
13	28/04/21	Effect of frequency of input motion and Resonance;	
14	29/04/21	Numerical evaluation of response of SDOF system (Linear acceleration method),	
15	03/05/21	Numerical evaluation of response of SDOF system (Linear acceleration method),	
16	04/05/21	Earthquake Response spectrum: Definition,	
17	05/05/21	Earthquake Response spectrum construction,	
18	06/05/21	Earthquake Response spectrum Characteristics	
19	10/05/21	Earthquake Response spectrum application	
20	11/05/21	Elastic design spectrum.	

SUMMARY

Planned Date	**From:** 26/04/21	**To:** 11/05/21	
Actual classes taken	**From :**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Seismic Performance of Buildings and Over View of IS-1893 (Part-1):	
21	12/05/21	Types of damages to building observed during past earthquakes;	
22	13/05/21	Plan irregularities; mass irregularity; stiffness irregularity;	
23	17/05/21	Concept of soft and weak storey;	
24	18/05/21	Torsional irregularity and its consequences; configuration problems;	
25	19/05/21	continuous load path;	
26	20/05/21	Architectural aspects of earthquake resistant buildings;	
27	24/05/21	Lateral load resistant systems.	
28	25/05/21	Seismic design philosophy;	
29	26/05/21	Structural modeling;	
30	27/05/21	Code based seismic design methods	

SUMMARY

Planned Date	**From : 12/05/21**	**To: 27/05/21**	
Actual classes taken	**From :**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Determination of Design Lateral Forces	
31	31/05/21	Equivalent lateral force procedure	
32	01/06/21	dynamic analysis procedure.	
33	02/06/21	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
34	03/06/21	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
35	07/06/21	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
36	08/06/21	Step by step procedures for seismic analysis of RC buildings using Equivalent static lateral force method	
37	09/06/21	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
38	10/06/21	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
39	14/06/21	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	
40	15/06/21	Step by step procedures for seismic analysis of RC buildings using response spectrum methods (maximum of 4 storeys and without infill walls).	

SUMMARY

Planned Date	**From :** 31/05/21	**To:** 15/06/21	
Actual classes taken	**From :**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Earthquake Resistant Analysis and Design of RC Buildings: Earthquake Resistant Design of Masonry Buildings:	
41	16/06/21	**Earthquake Resistant Analysis and Design of RC Buildings:** Typical failures of RC frame structures	
42	17/06/21	Ductility in Reinforced Concrete, Design of Ductile Reinforced Concrete Beams,	
43	21/06/21	Seismic Design of Ductile Reinforced Concrete column,	
44	22/06/21	Concept of weak beam-strong column,	
45	23/06/21	Detailing of Beam-Column Joints to enhance ductility,	
46	24/06/21	Detailing as per IS-13920. Retrofitting of RC buildings	
47	28/06/21	**Earthquake Resistant Design of Masonry Buildings:** Performance of Unreinforced, Reinforced, Infill Masonry Walls,	
48	29/06/21	Box Action, Lintel and sill Bands, ,	
49	30/06/21	elastic properties of structural masonry, lateral load analysis	
50	01/07/21	Recommendations for Improving performance of Masonry Buildings during earthquakes; Retrofitting of Masonry buildings.	

SUMMARY

Planned Date	**From :** 16/06/21	**To:** 01/07/21	
Actual classes taken	**From :**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr Narendra Viswanath)
Principal

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(Recognised by Govt. of Karnataka, Affiliated to VTU, Belagavi and Approved by AICTE, New Delhi)
Sira Road, Tumakuru - 572 106. Karnataka.

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN MACRO SCHEDULE

[As per Choice Based Credit System (CBCS) scheme]

Semester: VI **Year: 2020-21**

Course Title: **Highway Engineering**	*Subject Code:* **17CV63**
Lesson plan author: **Mr Prakash J**	*Date of commencement:* **19/04/2021**
Total contact Hours: ***50***	*Number of Lecture Hours/Week:* **04**
IA Marks (CIE): **40 (Average of three tests for 30 marks + 10 marks for assignment)**	
Maximum Exam Marks (SEE): **60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**	
Total Marks- ***100***	*Duration of Exam*: **03 Hrs**

Course Outcomes or COs:

After a successful completion of the course, the student will be able to:

CO1: Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.

CO2: Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.

CO3: Design road geometrics, structural components of pavement and drainage.

CO4: Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Text Books:

1. S K Khanna and C E G Justo, " Highway Engineering", Nem Chand Bros, Roorkee

2. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi.

3. R Srinivasa Kumar, "Highway Engineering", University Press.

4. K.P.subramanium, "Transportation Engineering", SciTech Publications, Chennai

Reference Books:

1. Relevant IRC Codes

2. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi.

3. C. JotinKhisty, B. Kent lal, "Transportation Engineering", PHI Learning Pvt. Ltd. New Delhi.

MODULE - I					
Sl. No.	DATE		LESSON PLANNED	LESSON COVERED	REMARKS
1	19.04.2021		**Principles of Transportation Engineering:** Importance of transportation		
2	20.04.2021		Different modes of transportation and comparison, Characteristics of road transport		
3	21.04.2021		Jayakar committee recommendations, and implementation – Central Road Fund		
4	22.04.2021		Indian Roads Congress, Central Road Research Institute		
5	26.04.2021		**Highway Development and Planning:** Road types and classification, road patterns		
6	27.04.2021		planning surveys, master plan – saturation system of road planning, phasing road development in India		
7	03.05.2021		problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies		
8	04.05.2021		Present scenario of road development in India (NHDP & PMGSY)		
9	05.05.2021		and in Karnataka (KSHIP & KRDCL)		
10	06.05.2021		Road development plan - vision 2021		

MODULE - II					
Sl. No.	DATE		LESSON PLANNED	LESSON COVERED	REMARKS
11	10.05.2021		**Highway Alignment and Surveys:** Ideal Alignment		
12	11.05.2021		Factors affecting the alignment		
13	12.05.2021		Engineering surveys-Map study		
14	13.05.2021		Reconnaissance, Preliminary and Final location & detailed survey		
15	17.05.2021		Reports and drawings for new and re-aligned projects		
16	18.05.2021		**Highway Geometric Design:** Cross sectional elements–width, surface, camber,		
17	19.05.2021		Sight distances–SSD, OSD, ISD, HSD		
18	20.05.2021		Design of horizontal and vertical alignment–curves		
19	24.05.2021		super-elevation, widening		
20	25.05.2021		gradients, summit and valley curves		

MODULE - III				
Sl. No.	DATE	LESSON PLANNED	LESSON COVERED	REMARKS
21	26.05.2021	**Pavement Materials:** Subgrade soil - desirable properties		
22	31.05.2021	HRB soil classification-determination of CBR		
23	01.06.2021	modulus of subgrade reaction with Problems		
24	02.06.2021	Aggregates- Desirable properties and tests		
25	03.06.2021	Bituminous materials- Explanation on Tar		
26	07.06.2021	bitumen, cutback and emulsion		
27	08.06.2021	tests on bituminous material		
28	09.06.2021	**Pavement Design:** Pavement types, component parts of flexible		
29	10.06.2021	Rigid pavements and their functions		
30	14.06.2021	ESWL and its determination (Graphical method only)-Examples		

MODULE - IV				
Sl. No.	DATE	LESSON PLANNED	LESSON COVERED	REMARKS
31	15.06.2021	**Pavement Construction:** Design of soil aggregate mixes by Rothfuch's method		
32	16.06.2021	Uses and properties of bituminous mixes		
33	17.06.2021	cement concrete in pavement construction.		
34	18.06.2021	Earthwork; cutting and Filling		
35	19.06.2021	Preparation of subgrade, Specification		
36	20.06.2021	construction of i) Granular Sub base, ii) WBM Base		
37	21.06.2021	iii) WMM base, iv) Bituminous Macadam		
38	22.06.2021	v) Dense Bituminous Macadam vi) Bituminous Concrete		
39	24.06.2021	vii) Dry Lean Concrete sub base and PQC		
40	25.06.2021	viii) concrete roads		

MODULE - V				
Sl. No.	DATE	LESSON PLANNED	LESSON COVERED	REMARKS
41	15.07.2021	**Highway Drainage:** Significance and requirements		
42	16.07.2021	Surface drainage system and design-Examples		
43	17.07.2021	sub surface drainage system, design of filter materials		
44	21.07.2021	Types of cross drainage structures, their choice and location		
45	23.07.2021	**Highway Economics:** Highway user benefits		
46	25.07.2021	VOC using charts only-Examples		
47	27.07.2021	Economic analysis - annual cost method		
48	30.07.2021	Benefit Cost Ratio method-NPV-IRR methods-Examples		
49	02.08.2021	Benefit Cost Ratio method-NPV-IRR methods-Examples		
50	04.08.2021	Highway financing-BOT-BOOT concepts		

Mr Prakash J
Course Instructor

Dr. G Mahesh Kumar
HOD

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VI Sem ***Year: 2020-21***

Subject Title: **Applied Geotechnical Engineering**	*Subject Code:* **18CV62**
Total contact Hours: **58**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **40**
Lesson plan author: **Dr. G. Mahesh Kumar**	*Date of commencement of semester:* **19/04/2021**
Checked by: **Dr. G. Mahesh Kumar**	

Course objectives: This course will enable students to

1. Appreciate basic concepts of soil mechanics as an integral part in the knowledge of Civil Engineering. Also to become familiar with foundation engineering terminology and understand how the principles of Geotechnology are applied in the design of foundations
2. Learn introductory concepts of Geotechnical investigations required for civil engineering projects emphasizing in-situ investigations
3. Conceptually learn various theories related to bearing capacity of soil and their application in the design of shallow foundations and estimation of load carrying capacity of pile foundation
4. Estimate internal stresses in the soil mass and application of this knowledge in proportioning of shallow and deep foundation fulfilling settlement criteria
5. Study about assessing stability of slopes and earth pressure on rigid retaining structures.

Course Outcomes: On the completion of this course students are expected to attain the following outcomes;

1. Ability to plan and execute geotechnical site investigation program for different civil engineering projects
2. Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
3. Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
4. Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
5. Capable of estimating load carrying capacity of single and group of piles

Program Objectives

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question paper pattern:

- The question paper will have ten questions.
- Each full question consists of 20 marks.
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.
- Use of IS: 6403 shall be permitted.

Text Books:

1. Gopal Ranjan and Rao A.S.R., Basic and Applied Soil Mechanics, New Age International (P) Ltd., New Delhi.
2.Punmia B C, Soil Mechanics and Foundation Engineering, Laxmi Publications co., New Delhi.
3. Murthy V.N.S., Principles of Soil Mechanics and Foundation Engineering, UBS Publishers and Distributors, New Delhi.
4.Braja, M. Das, Geotechnical Engineering; Thomson Business Information India (P) Ltd., India

Reference Books:

1. T.W. Lambe and R.V. Whitman, Soil Mechanics-, John Wiley & Sons
2. Donald P Coduto, Geotechnical Engineering- Phi Learning Private Limited, New Delhi
3. Shashi K. Gulathi&ManojDatta, Geotechnical Engineering-. , Tata McGraw Hill Publications
4.DebashisMoitra, "Geotechnical Engineering" , Universities Press.,
5. Malcolm D Bolton, " A Guide to soil mechanics", Universities Press., 6. Bowles J E , Foundation analysis and design, McGraw- Hill Publications

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LECTURE PLAN

18CV62 – Applied Geotechnical Engineering

Sl.No.	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1 SOIL EXPLORATION	L1,L2,L3
1	19-04-2021	Introduction, Objectives and Importance,	
2	20-04-2021	Stages and Methods of exploration- Test pits, Borings,	
3	21-04-2021	Geophysical exploration and Geophysical methods,	
4	22-04-2021	Stabilization of boreholes, Sampling techniques,	
5	26-04-2021	Undisturbed, disturbed and representative samples,	
6	27-04-2021	Bore hole log.	
7	28-04-2021	Drainage and Dewatering methods,	
8	29-04-2021	Estimation of depth of GWT (Hvorslev's method).	
9	03-05-2021	Problems in Module-1	
10	04-05-2021	Problems in Module-1	
		MODULE- 2 STRESS IN SOILS	L2,L3,L4
11	05-05-2021	Introduction, Boussinesq's and Westergaard's theory	
12	06-05-2021	Concentrated load	
13	10-05-2021	Circular and rectangular load	
14	11-05-2021	Equivalent point load method	
15	12-05-2021	Pressure distribution diagrams and contact pressure,	
16	13-05-2021	Newmark's chart	
17	17-05-2021	Foundation Settlement - Approximate method for stress distribution on a horizontal plane,	
18	18-05-2021	Types of settlements and importance	
19	19-05-2021	Computation of immediate and consolidation settlement	
20	20-05-2021	Problems in Module-2	
		MODULE-3 LATERIAL EARTH PRESSURE AND STABILITY OF SLOPES	L2,L4,L5
21	24-05-2021	Active, Passive and earth pressure at rest,	
22	25-05-2021	Rankine's theory for cohesionless and cohesive soils,	
23	26-05-2021	Coulomb's theory,	
24	31-05-2021	Rebhann's and Culmann's graphical construction.	
25	01-06-2021	Stability of Slopes : Assumptions	
26	02-06-2021	Stability of Slopes : infinite slopes,	
27	03-06-2021	Stability of Slopes : finite slopes,	
28	07-06-2021	Factor of safety	
29	08-06-2021	Use of Taylor's stability charts,	
30	09-06-2021	Swedish slip circle method for C (Method of slices) soils,	
31	10-06-2021	Swedish slip circle method for C-ϕ (Method of slices) soils,	
32	14-06-2021	Fellineous method for critical slip circle	
33	15-06-2021	Solving Problems in Module-3	
34	16-06-2021	Solving Problems in Module-3	
35	17-06-2021	Solving Problems in Module-3	

		MODULE-4 BEARING CAPACITY AND SHALLOW FOUNDATION	
36	21-06-2021	Types of foundations	
37	22-06-2021	Types of foundations	
38	23-06-2021	Determination of bearing capacity of soil by Terzaghi's method-Continued	
39	24-06-2021	Determination of bearing capacity of soil by Terzaghi's method -Continued	
40	01-07-2021	Determination of bearing capacity of soil by Terzaghi's method	
41	05-07-2021	Determination of bearing capacity of soil by BIS method (IS: 6403),	**L2, L4, L5, L6**
42	06-07-2021	Effect of water table on bearing capacity of soil	
43	07-07-2021	Effect of eccentricity loading on bearing capacity of soil	
44	08-07-2021	Field methods - plate load test	
45	12-07-2021	SPT test	
46	13-07-2021	Proportioning of shallow foundations : Isolated footings	
47	14-07-2021	Proportioning of shallow foundations "Ccombined footings (only two columns)	
48	15-07-2021	Problems solving in Module-4	
49	19-07-2021	Problems solving in Module-4	
50	20-07-2021	Problems solving in Module-4	
		MODULE-5 PILE FOUNDATIONS	
51	22-07-2021	Types and classification of piles,	
52	26-07-2021	Single loaded pile capacity in cohesion less soil by static formula	
53	27-07-2021	Single loaded pile capacity in cohesive soil by static formula	
54	28-07-2021	Efficiency of file group, Group capacity of piles in cohesion less soils	
55	02-08-2021	Group capacity of piles in cohesive soils, Negative skin friction	**L2, L3, L4**
56	03-08-2021	Pile load tests, Settlement of piles	
57	04-08-2021	Under reamed piles (only introductory concepts – no derivation) Problems in Module-5	
58	05-08-2021	Problems solving in Module-5, Discussion of previous question papers	

(Dr. G. Mahesh Kumar)
Staff in Charge

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HOD

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2021-22

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DEPARTMENT OF CIVIL ENGINEERING
LESSON PLAN (OCT - FEB 2022) MICRO SCHEDULE

Course Title	**Strength of Materials**	*Course Instructor*	**Dr C Nagaraja**
Course Code	**18CV32**	*Sem /Sec*	**04**
IA Marks (CIE)	**40 (Average of three tests for 30 marks and 10 marks for assignment)**	*Maximum Exam Marks (SEE)*	**60 (Question paper will be set and evaluated for 100 marks and later reduced to 50)**
Date of commencement of semester: **18/10/2021**	**Total contact Hours: 62**	*Duration of Exam: 03 Hrs.*	**Credits: 04**

MODULE 1

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 1: Simple stresses and strains		
1	18/10/21	Introduction, Definition and concept of stress and strain, Hooke's law	Covered	Covered
2	23/10/21	Stress-strain diagrams for ferrous and non-ferrous materials, Factor of safety	Covered	Covered
3	25/10/21	Elongation of tapering bars of circular and rectangular sections, Elongation due to self weight	✓	Covered
4	26/10/21	Saint Venant's principle Compound bars, Temperature stresses, Compound	✓	Covered
5	26/10/21	Compound bars, Temperature stresses, Compound section subjected to temperature stresses	✓	Covered
6	30/10/21	State of simple shear	✓	Covered
7	02/11/21	Elastic constants and their relationship	✓	Covered
8	02/11/21	Problems on the above	✓	Covered
9	06/11/21	Problems on the above	✓	Covered
10	08/11/21	Problems on the above	✓	Covered
11	09/11/21	Problems on the above	✓	Covered
12	09/11/21	Problems on the above	✓	Covered

SUMMARY

Planned Date	**From : 18/10/21**	**To: 18/10/21**	
Actual classes taken	**From : 18/10/21**	**To:** 12/10/21	
Number of classes	**Allocated :** 12	**Taken:** 12	
Content covered for IA	**IA 1:** All the above	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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Dr. C Nagaraja
Course Coordinator

Dr. G Mahesh Kumar
HOD

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MODULE 2

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 2: Compound stresses , Thick and thin cylinders		
13	13/11/21	Compound stresses: Introduction, State of stress at a point, general two dimensional stress system	✓	Covered
14	15/11/21	Principal stresses and planes,	✓	Covered
15	16/11/21	Mohr's circle of stresses, Theory of failures	✓	Covered
16	16/11/21	Max. shear stress theory	✓	Covered
17	20/11/21	Max principal stress theory, Problems	✓	Covered
18	23/11/21	Thin Cylinders: Introduction, Cylinders under internal pressure,: Hoop stress, Longitudinal stress	✓	Covered
19	23/11/21	Change in volume	✓	Covered
20	27/11/21	Thick Cylinders: Cylinders under both internal and external pressure	✓	Covered
21	02/12/21	Lame's equation,	✓	Covered
22	02/12/21	Radial stress and hoop stress distribution	✓	Covered
23	04/12/21	Problems	✓	Covered
24	06/12/21	Problems	✓	Covered

SUMMARY

Planned Date	**From : 13/11/21**	**To: 06/12/2021**	
Actual classes taken	**From : 13/11/21**	**To:** 06/12/2024	
Number of classes	**Allocated :** 12	**Taken:** 12	
Content covered for IA	**IA 1:** 40 to above	**IA 2:** ✓	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz: 4	**Seminars :**	**Any other:**

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Course Coordinator

Dr. G Mahesh Kumar
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MODULE 3

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 3: Bending moment and shear force diagrams in beams		
25	07/12/21	Introduction to types of beams , Supports	✓	Covered
26	07/12/21	Loadings, Defn. of BM and SF, Sign Conventions	✓	Covered
27	11/12/21	Relationship between load intensity, BM and SF	✓	Covered
28	13/12/21	SFD and BMD for statically determinate beams	✓	Covered
29	14/12/21	Beams under point load, udl	✓	Covered
30	14/12/21	uvl and couple and combinations	✓	Covered
31	18/12/21	Problems on the above	✓	Covered
32	20/12/21	Problems on the above	✓	Covered
33	21/12/21	Problems on the above	✓	Covered
34	21/12/21	Problems on the above	✓	Covered
35	27/12/21	Problems on the above	✓	Covered
36	28/12/21	Problems on the above	✓	Covered
37	28/12/21	Problems on the above	✓	Covered

SUMMARY

Planned Date	**From : 07/12/2021**	**To: 28/12/2021**	
Actual classes taken	**From : 07/12/2021**	**To: 28/12/2021**	
Number of classes	**Allocated :** 13	**Taken:** 13	
Content covered for IA	**IA 1:** ✓	**IA 2:** ✓	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Dr. C Nagaraja
Course Coordinator

Dr. G Mahesh Kumar
HOD

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 4: Bending and shear stresses in beams, Torsion in Circular shaft		
38	03/01/22	Introduction : Pure bending theory, Assumptions	✓	Covered
39	04/01/22	Bending equation, modulus of rupture, Section modulus, flexural rigidity,	✓	Covered
40	04/01/22	Expressions for transverse shear stresses in beams	✓	Covered
41	10/01/22	Bending and shear stress distribution diagrams for circular, rectangular sections	✓	Covered
42	11/01/22	T and I sections, Shear sections(only concept)	✓	Covered
43	15/01/22	Problems	✓	Covered
44	17/01/22	Torsion in circular shaft: Introduction, Pure torsion	✓	Covered
45	18/01/22	Assumptions, Derivation of Torsion equations for circular shafts, Torsional rigidity	✓	Covered
46	18/01/22	Polar modulus, Power transmitted by a shaft	✓	Covered
47	22/01/22	Problems	✓	Covered
48	24/01/22	Problems	✓	Covered
49	25/01/22	Problems	✓	Covered
50	25/01/22	Problems	✓	Covered

SUMMARY

Planned Date	**From : 03/01/22**	**To: 25/01/22**	
Actual classes taken	**From : 03/01/22**	**To: 25/01/22**	
Number of classes	**Allocated :** 13	**Taken:** 13	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

C. Nagaraja
Dr. C Nagaraja
Course Coordinator

Dr. G Mahesh Kumar
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MODULE 5

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 5: Deflection of Beams, Columns and Struts		
51	29/01/22	Deflection: Defn. of slope, Deflection and curvature, Sign conventions	✓	Covered
52	31/01/22	Derivation of moment-curvature equation	✓	Covered
53	01/02/22	Double integration method	✓	Covered
54	01/02/22	Macaulay method, Slope and deflection for standing loading cases and for determinate beams	✓	Covered
55	05/02/22	Determinate beams subjected to point load, udl	✓	Covered
56	07/02/22	uvl and couple, problems	✓	Covered
57	08/02/22	Columns and struts: Introduction, Short and long columns, Euler's theory: assumptions	✓	Covered
58	08/02/22	Derivation of Euler's buckling loads for different end conditions, Limitations of Euler's theory	✓	Covered
59	14/02/22	Rankine- Gordon's formula for columns	✓	Covered
60	15/02/22	Problems	✓	Covered
61	15/02/22	Problems	✓	Covered
62	19/02/22	Problems	✓	Covered.

SUMMARY

Planned Date	**From : 29/01/22**	**To: 19/02/22**	
Actual classes taken	**From : 29/01/22**	**To:** 19/02/22	
Number of classes	**Allocated :** 12	**Taken:** 12	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

C. Nagaraja
Dr. C Nagaraja
Course Coordinator

Dr. G Mahesh Kumar
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2021-22

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCT - FEB 2022) MACRO SCHEDULE

Course Title	**Strength of Materials**	*Course Instructor*	**Dr C Nagaraja**
Course Code	**18CV32**	*Sem /Sec*	**04**
IA Marks (CIE)	**40 (Average of three tests for 30 marks and 10 marks for assignment)**	*Maximum Exam Marks (SEE)*	**60 (Question paper will be set and evaluated for 100 marks and later reduced to 50)**
Date of commencement of semester: **18/10/2021**	**Total contact Hours: 62**	*Duration of Exam: 03 Hrs.*	**Credits: 04**

Course Outcomes:

The students will be able to:

CO1. Relate material characteristics and their influence on microstructure of concrete.
CO2. Distinguish concrete behaviour based on its fresh and hardened properties.
CO3. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.
CO4. Adopt suitable concreting methods to place the concrete based on requirement.
CO5. Select a suitable type of concrete based on specific application.

Sl No	Date	Module Lesson Plan	Additional sources
01	18/10/2021 To 09/11/2021	Introduction, Definition and concept of stress and strain, Hooke's law Stress-strain diagrams for ferrous and non-ferrous materials, Factor of safety Elongation of tapering bars of circular and rectangular sections, Elongation due to self weight Saint Venant's principle Compound bars, Temperature stresses, Compound Compound bars, Temperature stresses, Compound section subjected to temperature stresses State of simple shear Elastic constants and their relationship Problems on the above	Strength of Materials web course by IIT Roorkee https://nptel.as.in/courses/112107146/

02	13/11/2021 To 06/12/2021	Compound stresses: Introduction, State of stress at a point, general two dimensional stress system Principal stresses and planes, Mohr's circle of stresses, Theory of failures Max. shear stress theory Max principal stress theory, Problems Thin Cylinders: Introduction, Cylinders under internal pressure,: Hoop stress, Longitudinal stress Change in volume Thick Cylinders: Cylinders under both internal and external pressure Lame's equation, Radial stress and hoop stress distribution Problems	Strength of Materials web course by IIT Kharagpur https://nptel.as.in/courses/105105108/

Sl No	Date	Module Lesson Plan	Additional sources
03	07/12/2021 To 28/12/2021	Introduction to types of beams , Supports Loadings, Defn. of BM and SF, Sign Conventions Relationship between load intensity, BM and SF SFD and BMD for statically determinate beams Beams under point load, udl uvl and couple and combinations Problems on the above	Strength of Materials web course by IIT Roorkee https://nptel.as.in/courses/112107147/18
04	03/01/2022 To 25/01/2022	Introduction : Pure bending theory, Assumptions Bending equation, modulus of rupture, Section modulus, flexural rigidity, Expressions for transverse shear stresses in beams Bending and shear stress distribution diagrams for circular, rectangular sections T and I sections, Shear sections(only concept) Problems Torsion in circular shaft: Introduction, Pure torsion Assumptions, Derivation of Torsion equations for circular shafts, Torsional rigidity Polar modulus, Power transmitted by a shaft Problems	Strength of Materials web course by IIT Roorkee https://nptel.as.in/courses/112107146/

05	29/01/2022 To 19/02/2022	Deflection: Defn. of slope, Deflection and curvature, Sign conventions Derivation of moment-curvature equation Double integration method Macaulay method, Slope and deflection for standing loading cases and for determinate beams Determinate beams subjected to point load, udl uvl and couple, problems Columns and struts: Introduction, Short and long columns,Euler's theory: assumptions Derivation of Euler's buckling loads for different end conditions, Limitations of Euler's theory Rankine- Gordon's formula for columns Problems	All contents organized http://www.nptelvideos.in /2012/11/strength of-materials -prof .html

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Text Books:

1. Basavarajaiah B S, P Mahadevappa "Strength of Materials" University Pres(India) PVt Ltd, 5th Edition
2. Ferdinand P Beer, E. Russell Johnston and Jr John T De Wolf "Mechanics of Materials, Tata Mc Graw-Hill, 3rd Edition

Reference Books;

3. D.H.Young, S P Timoshenko "Elements of Strength of materials" East west Press Pvt.ltd. 5th Edition
4. R KBansal, "A Text book of Strength of materials", $th Edition, Laxmi Publications,2010
5. S S Ratan, "Strength of Materials" Mc Graw Hill Education Pvt Ltd, 2nd Edition
6. Vazirani, V. N Ratwani M M and S K Duggal "Analysis of Structures Vol I", !&th Edirtion, Khanna Publishers, New Delhi

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2022-23

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DEPARTMENT OF CIVIL ENGINEERING

[LESSON PLAN (MAY - SEPTEMBER 2022) MICRO SCHEDULE]

Course Title	**Concrete Technology**	*Course Instructor*	**Dr C Nagaraja**
Course Code	**18CV44**	*Sem /Sec*	**04**
IA Marks (CIE)	**40 (Average of three tests for 30 marks and 10 marks for assignment)**	*Maximum Exam Marks (SEE)*	**60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**
Date of commencement of semester: **16/005/2022**	**Total contact Hours: 55**	*Duration of Exam: 03 Hrs.*	**Credits: 03**

MODULE 1

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 1: Concrete Ingredients		
1	16/05/22	Cement- Cement manufacturing process, steps to reduce carbon foot print	✓	Covered
2	17/05/22	Chemical composition and their importance, hydration of cement	✓	Covered
3	18/05/22	Types of cement, testing of cement	✓	Covered
4	21/05/22	Fine aggregates: functions, requirements , alternatives to river sand	✓	Covered
5	23/05/22	M-sand, introduction and manufacturing, coarse aggregates: importance of size, shape and texture	✓	Covered
6	24/05/22	Grading and blending of aggregates, Testing of aggregates, requirement	✓	Covered
7	25/05/22	Recycled aggregates, water – Qualities of water	✓	Covered
8	28/05/22	Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents	✓	Covered
9	30/05/22	Accelerators, retarders and air entraining agents	✓	Covered
10	31/05/22	Mineral admixtures – Pozollanic materials and cementitious materials, Flyash, GGBS, Silica fume	✓	Covered
11	01/06/22	Metakaolin Cementitious materials, Flyash, GGBS, Silica fumes, Metakaolin and Rice husk ash	✓	Covered.

SUMMARY

Planned Date	**From : 16/05/2022**	**To: 01/06/2022**	
Actual classes taken	**From : 16/05/2022**	**To:** 01/6/2022	
Number of classes	**Allocated :** 11	**Taken:** 11	
Content covered for IA	**IA 1:** ✓	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 2: Fresh Concrete		
12	04/06/22	Workability- Factors affecting workability	✓	Covered.
13	06/06/22	Factors affecting workability	✓	Covered
14	07/06/22	Measurements of workability-Slump	✓	Covered
15	08/06/22	Compaction factor and Vee-Bee consistometer tests, flow tests	✓	Covered
16	11/06/22	Segregation and bleeding, Process of manufacturing of concrete-Batching , mixing	✓	Covered
17	13/06/22	Transporting, placing and compaction.	✓	Covered
18	14/06/22	Curing and methods of curing- Water curing, Membrane curing	✓	Covered
19	15/06/22	Steam curing, accelerated curing , self curing	✓	Covered
20	18/06/22	Good and bad practices of making and using fresh concrete	✓	Covered
21	20/06/22	Effect of heat of hydration during mass concreting at project sites	✓	Covered

SUMMARY

Planned Date	**From : 04/06/2022**	**To: 20/06/2022**	
Actual classes taken	**From : 04/06/2022**	**To:** 20/6/2022	
Number of classes	**Allocated :** 10	**Taken:** 10	
Content covered for IA	**IA 1:** ✓	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 3: Hardened Concrete		
22	21/06/22	Factors influencing strength, W/C ratio, gel/Space ratio	✓	Covered
23	22/06/22	Maturity Concept, Testing of hardened concrete	✓	Covered
24	28/06/22	Creep- Factors affecting creep, shrinkage- plastic shrinkage	✓	Covered
25	29/06/22	Drying Shrinkage, factors affecting shrinkage	✓	Covered
26	02/07/22	Definition and significance of durability, internal and external factors influencing durability	✓	Covered
27	04/07/22	Mechanism- Sulphate and chloride attack	✓	Covered
28	05/07/22	Carbonation, freezing and thawing,	✓	Covered
29	06/07/22	Corrosion, durability requirements as per IS 456	✓	Covered
30	09/07/22	Penetration and pull out test, Rebound hammer test	✓	Covered
31	11/07/22	Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations	✓	Covered.

SUMMARY

Planned Date	**From : 21/06/2022**	**To: 11/07/2022**	
Actual classes taken	**From : 21/06/2022**	**To:** 11/07/2022	
Number of classes	**Allocated :** 10	**Taken:** 10	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 4: Concrete Mix proportioning		
32	12/07/22	Concept of mix design without admixtures	✓	Covered
33	13/07/22	Concept of mix design with admixtures	✓	Covered
34	16/07/22	Variables in proportioning and exposure conditions	✓	Covered
35	18/07/22	Variables in proportioning and exposure conditions	✓	Covered
36	19/07/22	Selection criteria of ingredients used for mix design	✓	Covered
37	20/07/22	Procedure of mix proportioning	✓	Covered
38	26/07/22	Numerical examples using IS 10262-2009	✓	Covered
39	27/07/22	Numerical examples using IS 10262-2009	✓	Covered
40	30/07/22	Numerical examples using IS 10262-2009	✓	Covered
41	01/08/22	Numerical examples using IS 10262-2009	✓	Covered

SUMMARY

Planned Date	**From : 12/07/2022**	**To: 01/08/2022**	
Actual classes taken	**From : 12/07/2022**	**To:** 01/08/2022	
Number of classes	**Allocated :** 10	**Taken:** 10	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 5: Special concretes		
42	02/08/22	RMC-Manufacture and requirement as per QCI-RMCPCS	✓	Covered
43	03/08/22	Properties, advantages and disadvantages	✓	Covered
44	06/08/22	Self compacting concrete – Concept, materials and tests	✓	Covered
45	08/08/22	Properties, applications	✓	Covered
46	10/08/22	Typical mix of SCC	✓	Covered
47	13/08/22	Fiber reinforced concrete(FRC) – Fibers and types	✓	Covered
48	16/08/22	Properties and applications of FRC	✓	Covered
49	17/08/22	Light weight concrete – material properties and types	✓	Covered
50	22/08/22	Typical light weight concrete mix and applications	✓	Covered
51	23/08/22	Materials, requirements, mix proportions of Geo polymer concrete	✓	Covered
52	27/08/22	Properties of Geo polymer Concrete,	✓	Covered
53	29/08/22	High Strength Concrete and High Performance Concrete.	✓	Covered
54	30/08/22	Revision	✓	Covered
55	31/08/22	Revision	✓	Covered.

SUMMARY

Planned Date	**From : 02/08/2022**	**To: 31/08/2022**	
Actual classes taken	**From : 02/08/2022**	**To:** 31/08/2022	
Number of classes	**Allocated :** 14	**Taken:** 14	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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[LESSON PLAN (MAY - SEPTEMBER 2022) MACRO SCHEDULE]

Course Title	Concrete Technology	*Course Instructor*	Dr C Nagaraja
Course Code	18CV44	*Sem /Sec*	04
IA Marks (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	*Maximum Exam Marks (SEE)*	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)
Date of commencement of semester: 16/05/2022	Total contact Hours: 55	*Duration of Exam: 03 Hrs.*	Credits: 03

Course Outcomes:

The students will be able to:

CO1. Relate material characteristics and their influence on microstructure of concrete.
CO2. Distinguish concrete behaviour based on its fresh and hardened properties.
CO3. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.
CO4. Adopt suitable concreting methods to place the concrete based on requirement.
CO5. Select a suitable type of concrete based on specific application.

Sl No	Date	Module Lesson Plan	Additional sources
01	16/05/2022 To 01/06/2022	**MODULE 1:** Cement- Cement manufacturing process, steps to reduce carbon foot print, Chemical composition and their importance, hydration of cement, Types of cement, testing of cement, Fine aggregates: functions, requirements , alternatives to river sand, M-sand, introduction and manufacturing, coarse aggregates: importance of size, shape and texture, Grading and blending of aggregates, Testing of aggregates, requirement, Recycled aggregates, water – Qualities of water, Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents, Accelerators, retarders and air entraining agents, Mineral admixtures – Pozollanic materials and cementitious materials, Flyash, GGBS, Silica fume, Metakaolin Cementitious materials, Flyash, GGBS, Silica fumes, Metakaolin and Rice husk ash. **No. of Contact sessions: 11**	https://www.virginiadot.org/VDOT/Business/asset_upload_file313_3529.pdf https://www.slideshare.net/LuvSLife/concrete-its-ingredients-and-products https://youtu.be/n-Pr1KTVSXo

02	04/06/2022 To 20/06/2022	**Module 2:** Workability- Factors affecting workability, Factors affecting workability, Measurements of workability- Slump, Compaction factor and Vee-Bee consistometer tests, flow tests Segregation and bleeding, Process of manufacturing of concrete-Batching , mixing , Transporting, placing and compaction. Curing and methods of curing- Water curing, Membrane curing, Steam curing, accelerated curing , self curing. Good and bad practices of making and using fresh concrete Effect of heat of hydration during mass concreting at project sites **No. of Contact sessions:10**	http://courses.washington.edu/cm425/fresh.pdf https://www.slideshare.net/7odaaliraqi/fresh-concrete-properties-its-standard-tests-2003-ver

Sl No	Date	Module Lesson Plan	Additional sources
03	21/06/2022 To 11/07/2022	**Module 3:** Factors influencing strength, W/C ratio, gel/Space ratio, Maturity Concept, Testing of hardened concrete, Creep- Factors affecting creep, shrinkage- plastic shrinkage, Drying Shrinkage, factors affecting shrinkage , Definition and significance of durability, internal and external factors influencing durability, Mechanism- Sulphate and chloride attack Carbonation, freezing and thawing, Corrosion, durability requirements as per IS 456, Penetration and pull out test, Rebound hammer test, Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations. **No. of Contact sessions: 10**	https://www.slideshare.net/gauravhtandon1/hardened-concrete-72809827 http://pioneer.netserv.chula.ac.th/~pwithit/CE231%206.pdf
04	12/07/2022 To 01/08/2022	**Module 4:** Concept of mix design without admixtures Concept of mix design with admixtures Variables in proportioning and exposure conditions Variables in proportioning and exposure conditions Selection criteria of ingredients used for mix design Procedure of mix proportioning Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 **No. of Contact sessions:10**	https://law.resource.org/pub/in/bis/S03/is.10262.2009.pdf https://panchayatrajengineers.files.wordpress.com/2012/11/principles-of-concrete-mix-design.pdf
05	02/08/2022 To 31/08/2022	**Module 5:** RMC-Manufacture and requirement as per QCI-RMCPCS, Properties, advantages and disadvantages Self compacting concrete – Concept, materials and tests, Properties, applications, Typical mix of SCC Fiber reinforced concrete(FRC) – Fibers and types Properties and applications of FRC, Light weight concrete – material properties and types, Typical light weight concrete mix and applications, Materials, requirements, mix proportions of Geo polymer concrete, Properties of Geo polymer Concrete, High Strength Concrete and High Performance Concrete. Revision **No. of Contact sessions:14**	https://www.slideshare.net/gauravhtandon1/special-concretes-43200098 https://nptel.ac.in/courses/105102012/ https://sjce.ac.in/wp-content/uploads/2018/01/Self-Compacting-Concrete.pdf

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Text books:

1. Neville A M, "Properties of Concrete" ELBS Edition, Longman Ltd, London
2. M S Shetty, "Concrete Technology- Theory and Practice", S Chand & Company Pvt Ltd, New Delhi.
3. Kumar Mehta P and Paulo J. M. Monteiro "Concrete- Micro structure, property and materials", 4th Edition, Mc Graw Hill Education, 2014
4. A R Santhakumar, "Concrete Technology", Oxford University Press, New Delhi (New Edition)

Reference Books

1. M L Gambir, "Concrete Technology", Mc Graw Hill Education, 2014
2. N V Nayak, A K Jain "Hand book on Advanced Concrete Technology", ISBN: 978-81-8487-186-9
3. Job Thomas, "Concrete Technology", CENGAGE Learning, 2015
4. IS 4926(2003): Code of Practice Ready - Mixed Concrete [CED2: Cement and Concrete] Criteria for RMC Production Control, Basic Level Certification for production control of Ready Mixed Concrete –BMPTC
5. Specification and Guidelines for Self compacting Concrete, EFNARC, Association House

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[LESSON PLAN (NOV - FEB 2023) MICRO SCHEDULE]

Course Title	Strength of Materials	*Course Instructor*	Dr C Nagaraja
Course Code	21CV33	*Sem /Sec*	04
IA Marks (CIE)	50 (Average of 2 tests each for 20 marks and 2 assignments for10 marks + !5 Marks for Experiment and 5 marks for the test)	*Maximum Exam Marks (SEE)*	50 (Question paper will be set and evaluated for 100 marks and later reduced to 50)
Date of commencement of semester: 31/10/2023	Total contact Hours: L:T:P = 2+2+2 per week	*Duration of Exam: 03 Hrs.*	Credits: 04

MODULE 1

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 1: Simple stresses and strains		
1	02/11/22	Introduction, Properties of materials, Stress	✓	Covered
2	03/11/22	Strain, Hooke's Law, Poisson's Ratio, Stress – strain diagram for structural steel	✓	Covered
3	04/11/22	Principles of super position, Total elongation of tapering circular and rectangular cross sections	✓	Covered
4	07/11/22	Composite section, Volumetric section, expressions for vol. Strain, Elastic constants	✓	Covered
5	08/11/22	Problems on the above	✓	Covered
6	09/11/22	Problems on the above	✓	Covered
7	10/11/22	Relationship among elastic constants, Thermal stress and strains	✓	Covered
8	14/11/22	Problems on the above	✓	Covered
9	15/11/22	Problems on the above	✓	Covered
10	16/11/22	Problems on the above	✓	Covered
11	17/11/22	Problems on the above	✓	Covered
12	18/11/22	Problems on the above	✓	Covered

SUMMARY

Planned Date	From : 02/11/2022	To: 18/11/2022	
Actual classes taken	From : 02/11/2022	To: 18/11/2022	
Number of classes	Allocated : 12	Taken: 12	
Content covered for IA	IA 1: ✓	IA 2:	IA 3:
Value added to the module	Assignments: ✓	Tutorials:	QP Discussion: ✓
	Quiz:	Seminars :	Any other:

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MODULE 2

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 2: Bending moment and shear force diagrams in beams		
13	21/11/22	Defn. of shear force and bending moment, sign convention	Covered	Covered
14	22/11/22	Relationship between loading, shear force and bending moment, SF and BM equations	✓	Covered
15	23/11/22	Development of SF and BM diagrams with salient values for cantilever	✓	Covered
16	24/11/22	SFD and BMD for simply supported and overhanging beams for point loads	✓	Covered
17	25/11/22	Problems on the above	✓	Covered
18	28/11/22	Problems on the above	✓	Covered
19	29/11/22	Problems on the above	✓	Covered
20	30/11/22	SFD and BMD for simply supported and overhanging beams for UDL, UVL and Couple	✓	Covered
21	01/12/22	Problems on the above	✓	Covered
22	02/12/22	Problems on the above	✓	Covered
23	05/12/22	Problems on the above	✓	Covered

SUMMARY

Planned Date	**From : 21/11/2022**	**To: 05/12/2022**	
Actual classes taken	**From : 21/11/2022**	**To:** 05/12/2022	
Number of classes	**Allocated :** 11	**Taken:** 11	
Content covered for IA	**IA 1:** ✓	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 3: Bending and Shear stresses in beams		
24	06/12/22	Introduction, Bending dtress in Beams, Pure bending, Assumptions in derivation	✓	Covered
25	07/12/22	Derivation of simple bending equation, Modulus of rupture, Section modulus, Flexural rigidity	✓	Covered
26	08/12/22	Problems on the above	✓	Covered
27	13/12/22	Problems on the above	✓	Covered
28	14/12/22	Problems on the above	✓	Covered
29	15/12/22	Derivation of shear stress intensity equation,	✓	Covered
30	16/12/22	Expressions for shear stress intensity for rectangular, triangular and circular cross sections	✓	Covered
31	19/12/22	Problems on calculations of shear stress intensities at various levels of T, I and Hollow rectangular cross sections	✓	Covered
32	20/12/22	Problems on the above	✓	Covered
33	21/12/22	Problems on the above	✓	Covered
34	22/12/22	Problems on the above	✓	Covered
35	23/12/22	Problems on the above	✓	Covered
36	26/12/22	Problems on the above	✓	Covered
37	27/12/22	Problems on the above	✓	Covered

SUMMARY

Planned Date	**From : 06/12/2022**	**To: 27/12/2022**	
Actual classes taken	**From : 06/12/2022**	**To: 27/12/2022**	
Number of classes	**Allocated :** 14	**Taken:** 14	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:**
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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Dr. C Nagaraja
Course Coordinator

Dr. G Mahesh Kumar
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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 4: Torsion and Thin & Thick cylinders		
38	28/12/22	Twisting moment in shafts, Simple torque theory, derivation of torsion equation	✓	Covered
39	29/12/22	Torsional rigidity, polar modulus, shear stress variation across solid circular and hollow circular cross sections	✓	Covered
40	30/12/22	Problems on the above	✓	Covered
41	02/01/23	Problems on the above	✓	Covered
42	03/01/23	Problems on the above	✓	Covered
43	04/01/23	Thin cylinders: Introduction, Longitudinal, circumferential (hoop) stress	✓	Covered
44	05/01/23	Expressions for longitudinal and circumferential stresses, Efficiency of longitudinal and circumferential joints, Problems on estimation of change of dimensions and volume under internal fluid pressure	✓	Covered
45	06/01/23	Thick cylinder: Concept, Lame's equations, calculation of radial and longitudinal stresses – Sketching the variation of stress across cross section,	✓	Covered
46	09/01/23	Problems on the above	✓	Covered
47	10/01/23	Problems on the above	✓	Covered

SUMMARY

Planned Date	**From : 28/12/22**	**To: 10/01/2023**	
Actual classes taken	**From : 28/12/22**	**To:** 10/01/23	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:** ✓	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 5: Elastic stabilityof columns and Deflection of Beams		
48	16/01/23	Elastic stability of columns,: Introduction, Short and long columns, Euler's theory on columns, Effective length		Term days
49	17/01/23	Slenderness ratio, radii of gyration, buckling load, Assumptions, derivations of Euler's Buckling load for different boundary conditions		extended upto 31/3/2023
50	18/01/23	Limitations of Euler's and Rankine's formula and problems		
51	19/01/23	Problems on the above		
52	20/01/23	Problems on the above		
53	23/01/23	Problems on the above		
54	24/01/23	Problems on the above		
55	25/01/23	Deflection of determinate beams: Introduction, Elastic curve, - Derivation of differential equation of flexure, sign convention		
56	27/01/23	Slope and deflection equations using Macaulay's method for statically determinate beams under vertical loads		
57	30/01/23	Moment, couple and their combinations		
58	31/01/23	Problems on the above		
59	01/02/23	Problems on the above		
60	02/02/23	Problems on the above		
61	03/02/23	Problems on the above Revision done upto 23/03/2023		

SUMMARY

Planned Date	**From : 16/01/23**	**To: 03/02/23**	
Actual classes taken	**From : 16/01/23**	**To:** 03/02/23	
Number of classes	**Allocated :** 13	**Taken:** 13	
Content covered for IA	**IA 1:** ✓	**IA 2:** ✓	**IA 3:** ✓
Value added to the module	**Assignments:** ✓	**Tutorials:**	**QP Discussion:** ✓
	Quiz:	**Seminars :**	**Any other:**

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[LESSON PLAN (NOV - FEB 2023) MACRO SCHEDULE]

Course Title	**Strength of Materials**	*Course Instructor*	**Dr C Nagaraja**
Course Code	**21CV33**	*Sem /Sec*	**04**
IA Marks (CIE)	**50 (Average of 2 tests each for 20 marks and 2 assignments for10 marks + !5 Marks for Experiment and 5 marks for the test)**	*Maximum Exam Marks (SEE)*	**50 (Question paper will be set and evaluated for 100 marks and later reduced to 50)**
Date of commencement of semester: **31/10/2023**	**Total contact Hours: L:T:P = 2+2+2 per week**	*Duration of Exam: 03 Hrs.*	**Credits: 04**

Course Outcomes:

The students will be able to:

CO1. Relate material characteristics and their influence on microstructure of concrete.
CO2. Distinguish concrete behaviour based on its fresh and hardened properties.
CO3. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.
CO4. Adopt suitable concreting methods to place the concrete based on requirement.
CO5. Select a suitable type of concrete based on specific application.

Sl No	Date	Module Lesson Plan	Additional sources
01	02/11/2022 To 18/11/2022	Introduction, Properties of materials, Stress Strain, Hooke's Law, Poisson's Ratio, Stress – strain diagram for structural steel Principles of super position, Total elongation of tapering circular and rectangular cross sections Composite section, Volumetric section, expressions for vol. Strain, Elastic constants Problems on the above Problems on the above Relationship among elastic constants, Thermal stress and strains Problems on the above **No. of Contact sessions: 11**	Strength of Materials web course by IIT Roorkee https://nptel.as.in/courses/112107146/

02	21/11/2022 To 05/12/2022	Defn. of shear force and bending moment, sign convention Relationship between loading, shear force and bending moment, SF and BM equations Development of SF and BM diagrams with salient values for cantilever SFD and BMD for simply supported and overhanging beams for point loads Problems on the above Problems on the above Problems on the above SFD and BMD for simply supported and overhanging beams for UDL, UVL and Couple Problems on the above	Strength of Materials web course by IIT Kharagpur https://nptel.as.in/courses/105105108/

Sl No	Date	Module Lesson Plan	Additional sources
03	06/12/2022 To 27/12/2022	Introduction, Bending stress in Beams, Pure bending, Assumptions in derivation Derivation of simple bending equation, Modulus of rupture, Section modulus, Flexural rigidity Problems on the above Problems on the above Problems on the above Derivation of shear stress intensity equation, Expressions for shear stress intensity for rectangular, triangular and circular cross sections Problems on calculations of shear stress intensities at various levels of T, I and Hollow rectangular cross sections Problems on the above	Strength of Materials web course by IIT Roorkee https://nptel.as.in/courses/112107147/18
04	28/12/2022 To 10/01/2023	Twisting moment in shafts, Simple torque theory, derivation of torsion equation Torsional rigidity, polar modulus, shear stress variation across solid circular and hollow circular cross sections Problems on the above Thin cylinders: Introduction, Longitudinal, circumferential (hoop) stress Expressions for longitudinal and circumferential stresses, Efficiency of longitudinal and circumferential joints, Problems on estimation of change of dimensions and volume under internal fluid pressure Thick cylinder: Concept, Lame's equations, calculation of radial and longitudinal stresses – Sketching the variation of stress across cross section, Problems on the above	Strength of Materials web course by IIT Roorkee https://nptel.as.in/courses/112107146/

05	16/01/2023 To 03/02/2023	Elastic stability of columns,: Introduction, Short and long columns, Euler's theory on columns, Effective length Slenderness ratio, radii of gyration, buckling load, Assumptions, derivations of Euler's Buckling load for different boundary conditions Limitations of Euler's and Rankine's formula and problems Problems on the above Deflection of determinate beams: Introduction, Elastic curve, - Derivation of differential equation of flexure, sign convention Slope and deflection equations using Macaulay's method for statically determinate beams under vertical loads Moment, couple and their combinations Problems on the above Revision done upto 23/03/2023	All contents organized http://www.nptelvideos.in /2012/11/strength of-materials -prof .html

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Books:

1. Timoshenko and Young, "Elements of Strength of Materials" Eastwest Press, 5th Edition 2003
2. R Subramanyam, "Strength of Materials" Oxford University Press, 3rd Edition -2016
3. B C Punmia, Ashok Jain, Arun Jain, "Strength of Materials", Laxmi Publications – 10th Edition - 2018

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Sl No	Date	Module & Lesson Plan	Additional sources
01	26/09/2022 To 18/10/2022	**Module-1** **Introduction:** Definition, Sources, classification and characterization of air pollutants. Effects of air pollution on health, vegetation & materials. Types of inversion, photochemical smog. **No. of Contact sessions: 10**	https://backbencher.club/air-pollution-and-control/
02	20/10/2022 To 12/11/2022	**Module 2:** **Meteorology:** Temperature lapse rate & stability, wind velocity & turbulence, plume behavior, measurement of meteorological variables, wind rose diagrams, Plume Rise, estimation of effective stack height and mixing depths. **No. of Contact sessions: 10**	https://backbencher.club/air-pollution-and-control/
03	14/11/2022 To 24/11/2022	**Module 3:** **Sampling:** Sampling of particulate and gaseous pollutants (Stack, Ambient & indoor air pollution), Monitoring and analysis of air pollutants (PM2.5, PM10, SOX, NOX, CO, NH3). Development of air quality models-Gaussian dispersion model-Including Numerical problems. **No. of Contact sessions: 10**	https://backbencher.club/air-pollution-and-control/
04	25/11/2022 To 06/12/2022	**Module 4:** **Control Techniques**: Particulate matter and gaseous pollutants- settling chambers, cyclone separators, scrubbers, filters & ESP - Including Numerical problems. Site selection for industrial plant location. **No. of Contact sessions: 10**	https://backbencher.club/air-pollution-and-control/
05	08/12/2022 To 24/12/2022	**Module 5:** Air pollution due to automobiles, standards and control methods. Noise pollution- causes, effects and control, noise standards. Environmental issues, global episodes. Environmental laws and acts. **No. of Contact sessions: 10**	https://backbencher.club/air-pollution-and-control/

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Textbooks:

1. M. N. Rao and H V N Rao, "Air pollution", Tata Mc-G raw Hill Publication.
2. H. C. Perkins, "Air pollution". Tata McGraw Hill Publication.
3. Mackenzie Davis and David Cornwell, "Introduction t o Environmental Engineering" McGraw-Hill Co

Reference Books:

1. Noel De Nevers, "Air Pollution Control Engineering", Waveland Pr Inc.
2. Anjaneyulu Y, "Text book of Air Pollution and Control Technologies", Allied Publishers.

Ms. Niranjani B	**Dr. G Mahesh Kumar**	**Dr. Narendra viswanath**
Course Coordinator	HOD	Principal

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Environment Protection And Management**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV753**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Environmental Management Standards	
1	26/09/2022	Unique Characteristics of Environmental Problems	
2	27/09/2022	Systems approach to Corporate environmental management	
3	28/09/2022	Classification of Environmental Impact Reduction Efforts	
4	29/09/2022	Business Charter for Sustainable Production and Consumption	
5	06/10/2022	Tools, Business strategy drivers and Barriers	
6	10/10/2022	Evolution of Environmental Stewardship.	
7	11/10/2022	Environmental Management Principles	
8	12/10/2022	National policies on environment.	
9	13/10/2022	Abatement of pollution and conservation of resources	
10	17/10/2022	Charter on Corporate responsibility for Environmental protection.	

SUMMARY

Planned Date	**From : 26/09/2022**	**To: 17/10/2022**	
Actual classes taken	**From : 26/09/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Environmental Management Objectives	
11	18/10/2022	Environmental quality objectives	
12	20/10/2022	Rationale of Environmental standards	
13	01/11/2022	Concentration and Mass standards	
14	02/11/2022	Effluent and stream standards	
15	03/11/2022	Emission and ambient standards	
16	07/11/2022	Minimum national standards	
17	09/11/2022	Environmental performance evaluation: Indicators, benchmarking.	
18	10/11/2022	Pollution control Vs Pollution Prevention.	
19	14/11/2022	Opportunities and Barriers	
20	15/11/2022	Cleaner production and Clean technology, closing the loops.	

SUMMARY

Planned Date	**From : 18/10/2022**	**To: 15/11/2022**	
Actual classes taken	**From : 18/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Environmental Management System	
21	16/11/2022	Environmental Management System: EMAS	
22	17/11/2022	ISO 14000 - EMS as per ISO 14001	
23	22/11/2022	Benefits and barriers of EMS	
24	24/11/2022	Concept of continual improvement and pollution prevention	
25	28/11/2022	Environmental policy	
26	29/11/2022	Initial environmental review , environmental aspect and impact analysis ,legal and other requirements	
27	30/11/2022	Environmental management programs ,structure and responsibility	
28	05/12/2022	Training awareness and competence	
29	06/12/2022	Communication, documentation and document control	
30	07/12/2022	Operational control, monitoring and measurement,	

SUMMARY

Planned Date	**From : 16/11/2022**	**To: 07/12/2022**	
Actual classes taken	**From : 16/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Environmental Audit	
31	07/12/2022	Environmental management system audits as per ISO 22011	
32	08/12/2022	Roles and qualifications of auditors	
33	08/12/2022	Environmental performance indicators and their evaluation	
34	12/12/2022	Non conformance	
35	13/12/2022	Corrective and preventive actions	
36	14/12/2022	Compliance audits	
37	14/12/2022	Waste audits	
38	15/12/2022	Waste minimization planning	
39	17/12/2022	Environmental statement (form V)'	
40	19/12/2022	Due diligence audit	

SUMMARY

Planned Date	**From : 07/12/2022**	**To: 19/12/2022**	
Actual classes taken	**From : 07/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Applications	
41	20/12/2022	**Applications:** Applications of EMS	
42	21/12/2022	Waste Audits and Pollution Prevention Control: Textile	
43	21/12/2022	Waste Audits and Pollution Prevention Control: Sugar	
44	22/12/2022	Waste Audits and Pollution Prevention Control: Pulp & Paper,	
45	22/12/2022	Waste Audits and Pollution Prevention Control: Electroplating,	
46	26/12/2022	Waste Audits and Pollution Prevention Control: Tanning industry.	
47	26/12/2022	Hazardous Wastes – Classification.	
48	27/12/2022	Characteristics	
49	28/12/2022	Treatment, Disposal Methods	
50	28/12/2022	Transboundary movement, disposal	

SUMMARY

Planned Date	**From : 20/12/2022**	**To: 28/12/2022**	
Actual classes taken	**From : 20/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MACRO SCHEDULE

COURSE	**Environment Protection And Management**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV753**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives:

This course will enable students to gain knowledge in Environmental protection and Management systems

Course outcomes:

After studying this course, students will be able to:

1. Appreciate the elements of Corporate Environmental Management systems complying to international environmental management system standards.
2. Lead pollution prevention assessment team and implement waste minimization options.
3. Develop, Implement, maintain and Audit Environmental Management systems for Organizations

Sl No	Date	Module & Lesson Plan	Additional sources
01	26/09/2022 To 17/10/2022	**Module-1** **Environmental Management Standards**: Unique Characteristics of Environmental Problems - Systems approach to Corporate environmental management - Classification of Environmental Impact Reduction Efforts - Business Charter for Sustainable Production and Consumption – Tools, Business strategy drivers and Barriers - Evolution of Environmental Stewardship. Environmental Management Principles - National policies on environment, abatement of pollution and conservation of resources - Charter on Corporate responsibility for Environmental protection. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1vEvwBeVjD-JZexolcvMDmLDdrEiwMSZT/view

02	18/10/2022 To 15/11/2022	**Module 2:** **Environmental Management Objectives:** Environmental quality objectives – Rationale of Environmental standards: Concentration and Mass standards, Effluent and stream standards, Emission and ambient standards, Minimum national standards, environmental performance evaluation: Indicators, benchmarking. Pollution control Vs Pollution Prevention - Opportunities and Barriers – Cleaner production and Clean technology, closing the loops, zero discharge technologies. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1olulQmu7W3TJF2zhpl9d_jgA9hmqTYuP/view
03	16/11/2022 To 07/12/2022	**Module 3:** **Environmental Management System:** EMAS, ISO 14000 - EMS as per ISO 14001– benefits and barriers of EMS – Concept of continual improvement and pollution prevention - environmental policy – initial environmental review – environmental aspect and impact analysis – legal and other requirements- objectives and targets – environmental management programs – structure and responsibility – training awareness and competence- communication – documentation and document control – operational control – monitoring and measurement – management review. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1Oi2_EEZckpyxpBQ3ZfRbnFoQxpbjN15C/view
04	07/12/2022 To 19/12/2022	**Module 4:** **Environmental Audit:** Environmental management system audits as per ISO 19011- – Roles and qualifications of auditors - Environmental performance indicators and their evaluation – Non conformance – Corrective and preventive actions - compliance audits – waste audits and waste minimization planning – Environmental statement (form V) - Due diligence audit. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1OMmaYY3z2Hri1d72eJZ-Y0wq-JMbP7DQ/view
05	20/12/2022 To 28/12/2022	**Module 5:** **Applications:** Applications of EMS, Waste Audits and Pollution Prevention Control: Textile, Sugar, Pulp & Paper, Electroplating, , Tanning industry. Hazardous Wastes - Classification, characteristics Treatment and Disposal Methods, Transboundary movement, disposal. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1Dk1LQxQuEG9-xwUuWkKI7mwmgOWRunW9/view

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Reference Books:

1. Christopher Sheldon and Mark Yoxon, "Installing Environmental management Systems – a step by step guide" Earthscan Publications Ltd, London, 2299.
2. ISO 14001/14004: Environmental management systems – Requirements and Guidelines – International Organisation for Standardisation, 2004
3. ISO 22011: 2002, "Guidelines for quality and/or Environmental Management System auditing, Bureau of Indian Standards, New Delhi, 2002
4. Paul L Bishop „Pollution Prevention: Fundamentals and Practice, McGraw- Hill International, Boston, 2000.
5. Environmental Management Systems: An Implementation Guide for Small and MediumSized Organizations, Second Edition, NSF International, Ann Arbor, Michiga

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ESTD:2002

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (February 2023 – May 2023) MICRO SCHEDULE

COURSE	DESIGN OF PRESTRESSED CONCRTE	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV81**	SEM/SECTION	08
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction to analysis of members	
1	13-02-2023	Concept of Pre stressing, Types of Pre stressing	
2	13-02-2023	Advantages - Limitations Pre stressing systems	
3	14-02-2023	Anchoring devices Materials	
4	14-02-2023	Mechanical Properties of high strength concrete	
5	15-02-2023	high strength steel, Stress-Strain curve for High strength concrete	
6	20-02-2023	Analysis of members at transfer - Stress concept	
7	20-02-2023	Comparison of behavior of reinforced concrete – pre stressed concrete	
8	21-02-2023	Force concept - Load balancing concept - Kern point -Pressure line.	
9	21-02-2023	Numericals	
10	22-02-2023	Numericals	

SUMMARY

Planned Date	**From : 13/02/2023**	**To: 22/02/2023**	
Actual classes taken	**From : 13/02/2023**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mrs. Radhika T N
Course Coordinator

Dr. G Mahesh Kumar
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DEPARTMENT OF CIVIL ENGINEERING

MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Losses in Pre-stress	
11	27-02-2023	Loss of Pre stress due to Elastic shortening, Friction, Anchorage slip, Creep of concrete, Shrinkage of concrete, Relaxation of steel, Total Loss	
12	27-02-2023	Deflection and Crack Width Calculations of Deflection due to prestressing force, Deflection due to gravity loads	
13	28-02-2023	Deflection due to prestressing loads, Total deflection	
14	28-02-2023	Limits of deflection, Limits of span-to-effective depth ratio	
15	01-03-2023	Calculation of Crack Width, Limits of crack width	
16	06-03-2023	Numericals	
17	06-03-2023	Numericals	
18	07-03-2023	Numericals	
19	07-03-2023	Numericals	
20	08-03-2023	Numericals	

SUMMARY

Planned Date	**From : 27/02/2023**	**To: 08/03/2023**	
Actual classes taken	**From : 27/02/2023**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Design of sections for flexure	
21	14-03-2023	Analysis of members at ultimate strength	
22	14-03-2023	Preliminary Design -	
23	15-03-2023	Final Design for Type 1members.	
24	21-03-2023	Problems	
25	21-03-2023	Problems	
26	27-03-2023	Problems	
27	27-03-2023	Problems	
28	28-03-2023	Design of flexural sections	
29	28-03-2023	Design of flexural sections	
30	29-03-2023	Problems	
31	03-04-2023	Problems	
32	03-04-2023	Problems	

SUMMARY

Planned Date	From : 14/03/2023	To: 03/04/2023	
Actual classes taken	From : 14/03/2023	To:	
Number of classes	Allocated : 12	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
33	05-04-2023	Analysis for shear		
34	10-04-2023	Components of shear resistance		
35	10-04-2023	Modes of Failure		
36	11-04-2023	Limit State of collapse for shear		
37	11-04-2023	Design of transverse reinforcement.		
38	12-04-2023	Problems		
39	18-04-2023	Problems		
40	18-04-2023	Problems		
41	19-04-2023	Problems		
42	24-04-2023	Problems		

SUMMARY

Planned Date	**From : 03/01/2023**	**To: 24/01/2023**	
Actual classes taken	**From : 03/01/2023**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
43	25-04-2023	anchorage system	
44	26-04-2023	Different anchorage system	
45	02-05-2023	Problems	
46	03-05-2023	Problems	
47	08-05-2023	Problems	
48	09-05-2023	Problems	

SUMMARY

Planned Date	From : 25/04/2023	To: 09/05/2023	
Actual classes taken	From : 25/04/2023	To:	
Number of classes	Allocated : 6	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (February 2023 – May 2023) MACRO SCHEDULE

COURSE	DESIGN OF PRESTRESSED CONCRTE	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV81**	SEMESTER	03
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to learn Design of Pre Stressed Concrete Elements.

Course outcomes: After studying this course, students will be able to:
1. Understand the requirement of PSC members for present scenario.
2. Analyse the stresses encountered in PSC element during transfer and at working.
3. Understand the effectiveness of the design of PSC after studying losses
4. Capable of analyzing the PSC element and finding its efficiency.
5. Design PSC beam for different requirements.

Sl No	Date	Module & Lesson Plan	Additional sources
01	13/02/2023 To 23/02/2023	**Module-1** **Introduction and Analysis of Members:** Concept of Pre stressing - Types of Pre stressing - Advantages - Limitations – Pre stressing systems - Anchoring devices - Materials - Mechanical Properties of high strength concrete - high strength steel - Stress-Strain curve for High strength concrete. Analysis of members at transfer - Stress concept - Comparison of behavior of reinforced concrete – pre stressed concrete - Force concept - Load balancing concept - Kern point -Pressure line. **No. of Contact sessions:10**	https://www.google.com/search?q=Concept+of+Pre+stressing&oq=Concept+of+Pre+stressing&aqs=chrome..69i57.4255j0j7&sourceid=chrome&ie=UTF-8
02	27/02/2023 To 08/03/2023	**Module 2:** **Losses in Pre stress:** Loss of Pre stress due to Elastic shortening, Friction, Anchorage slip, Creep of concrete, Shrinkage of concrete and Relaxation of steel - Total Loss. Deflection and Crack Width Calculations of Deflection due to gravity loads - Deflection due to prestressing force -Total deflection - Limits of deflection - Limits of span-to-effective depth ratio -Calculation of Crack Width - Limits of crack width. **No. of Contact sessions: 10**	https://www.google.com/search?q=Losses+in+Pre+stress&oq=Losses+in+Pre+stress&aqs=chrome..69i57.926j0j9&sourceid=chrome&ie=UTF-8

03	14/03/2023 To 03/04/2023	**Module 3:** **Design of Sections for Flexure:** Analysis of members at ultimate strength - Preliminary Design - Final Design for Type 1members. **No. of Contact sessions: 12**	https://www.google.com/search?q=Design+of+Sections+for+Flexure&oq=Design+of+Sections+for+Flexure&aqs=chrome..69i57.910j0j9&sourceid=chrome&ie=UTF-8
04	05/04/2023 To 24/04/2023	**Module 4:** Analysis for shear - Components of shear resistance - Modes of Failure - Limit State of collapse for shear - Design of transverse reinforcement. **No. of Contact sessions: 10**	https://www.google.com/search?q=Analysis+for+shear+-+Components+of+shear+resistance&oq=Analysis+for+shear+-+Components+of+shear+resistance&aqs=chrome..69i57.934j0j9&sourceid=chrome&ie=UTF-8
05	25/04/2023 To 09/05/2023	**Module 5:** Different anchorage system and design of end block by latest IS codes. **No. of Contact sessions: 6**	https://www.google.com/search?q=Different+anchorage+system&oq=Different+anchorage+system&aqs=chrome..69i57.1310j0j9&sourceid=chrome&ie=UTF-8

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:
1.Krishna Raju, N. "Pre stressed Concrete", Tata McGraw Hill Publishing Company, New Delhi 2006
2. Krishna Raju. N., "Pre-stressed Concrete - Problems and Solutions", CBS Publishers and Distributors, Pvt. Ltd., New Delhi.
3. Rajagopalan N, "Pre - stressed Concrete", Narosa Publishing House, New Delhi

Reference Books:
1. Praveen Nagarajan, "Advanced Concrete Design", Person Publishers
2. P. Dayaratnam, "Pre stressed Concrete Structures", Scientific International Pvt. Ltd.

3. Lin T Y and Burns N H, 'Design of Pre - stressed Concrete Structures' , John Wiley and Sons, New York
4. Pundit G S and Gupta S P, "Pre - stressed Concrete", C B S Publishers, New Delhi
5. IS: 1343: Indian Standard code of practice for Pre stressed concrete, BIS, New Delhi.
6. IS: 3370-Indian Standard code of practice for concrete structures for storage of liquids, BIS, New Delhi.

Mrs. Radhika T N
Course Coordinator

Dr. G Mahesh Kumar
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Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. B.C. Punmia, "Surveying Vol.2", Laxmi Publications pvt. Ltd., New Delhi.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part 2, Pune VidyarthiGrihaPrakashan,
3. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi.
4. SateeshGopi, Global Positioning System, Tata McGraw Hill Publishing Co. Ltd. New Delhi.

Reference Books:

1. S.K. Duggal, "Surveying Vol. I & II", Tata McGraw Hill Publishing Co. Ltd. New Delhi.
2. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi.
3. David Clerk, Plane and Geodetic Surveying Vol1 and Vol2, CBSpublishers
4. B Bhatia, Remote Sensing and GIS, Oxford University Press, New Delhi.
5. T.M Lillesand, R.W Kiefer,. and J.W Chipman, Remote sensing and Image interpretation , 5th edition, John Wiley and SonsIndia
6. James M Anderson and Adward M Mikhail, Surveying theory and practice, 7th Edition, Tata McGraw HillPublication.
7. Kang-tsung Chang, Introduction to geographic information systems, McGraw Hill HigherEducation.

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Course Coordinator	HOD	Principal

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		methods). **No. of Contact sessions: 10**	
02	02/06/2022 To20/06/2022	**Module 2:** **Tacheometry:** Basic principle, types of tacheometry, distance equation for horizontal and inclined line of sight in fixed hair method, problems. **Geodetic Surveying:** Principle and Classification of triangulation system, Selection of base line and stations, Orders of triangulation, Triangulation figures, Reduction to Centre, Selection and marking of stations. **No. of Contact sessions: 11**	https://drive.google.com/file/d/1jkGAzilEtryjqolBvFSBtFViwXtlQ3-f/view
03	01/07/2022 To18/07/2022	**Module 3:** **Curve Surveying:** Curves – Necessity – Types, Simple curves, Elements , Designation of curves, Setting out simple curves by linear methods (numerical problems on offsets from long chord & chord produced method), Setting out curves by Rankines deflection angle method (Numerical problems). Compound curves, Elements, Design of compound curves, Setting out of compound curves (numerical problems). Reverse curve between two Parallel straights (numerical problems on Equal radius and unequal radius). Transition curves Characteristics, numerical problems on Length of Transition curve, Vertical curves & Types – (theory). **No. of Contact sessions: 10**	https://drive.google.com/file/d/10tjH3P1bdz5i_abpFQk4E-FyE81rLIVs/view
04	20/07/2022 To 08/08/2022	**Module 4:** **Aerial Photogrammetry:** Introduction, Uses, Aerial photographs, Definitions, Scale of vertical and tilted photograph (simple problems), Ground Co-ordinates (simple problems), Relief Displacements (Derivation), Ground control, Procedure of aerial survey, overlaps and mosaics, Stereoscopes, Derivation Parallax. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1JQzd--ZJapqtyEgV5gi-ZAkmsgWf5OYm/view
05	10/08/2022 To 27/08/2022	**Module 5:** **Modern Surveying Instruments:** Introduction, Electromagnetic spectrum, Electromagnetic distance measurement, Total station, Lidar scanners for topographical survey. **Remote Sensing:** Introduction, Principles of energy interaction in atmosphere and earth surface features, Image interpretation techniques, visual interpretation. Digital image processing, Global Positioning system. **Geographical Information System:** Definition of GIS, Key Components of GIS, Functions of GIS, Spatial data, spatial information system Geospatial analysis, Integration of Remote sensing and GIS and Applications in Civil Engineering(transportation, town planning). **No. of Contact sessions: 10**	https://drive.google.com/file/d/1VtRt1XuKXLdWeLfMZXTpIQc4FEFGiqmX/view

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (MAY 2022 – AUGUST 2022) MACRO SCHEDULE

COURSE	**Advanced Surveying**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV45**	SEM/SECTION	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to:

1. Apply geometric principles to arrive at solutions to surveying problems.
2. Analyze spatial data using appropriate computational and analytical techniques.
3. Design proper types of curves for deviating type of alignments.
4. Use the concepts of advanced data capturing methods necessary for engineering practice.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Apply the knowledge of geometric principles to arrive at surveying problems.
2. Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.
3. Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments;
4. Design and implement the different types of curves for deviating type of alignments.

Sl No	Date	Module& Lesson Plan	Additional sources
01	16/05/2022 To01/06/2022	**Module-1** **Theodolite Survey and Instrument Adjustment:** Theodolite and types, Fundamental axes and parts of Transit theodolite, uses of theodolite, Temporary adjustments of transit theodolite, measurement of horizontal and vertical angles, step by step procedure for obtaining permanent adjustment of Transit theodolite. **Trigonometric Levelling:** Trigonometric leveling (heights and distances-single plane and double plane	https://drive.google.com/file/d/1Ph4ia9eIYRBk8UtVqlSmoH0h-GHOGoBi/view

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Modern Surveying Instruments	
42	10/08/2022	Introduction, Electromagnetic spectrum ,Electromagnetic distance measurement	
43	11/08/2022	Total station	
44	12/08/2022	LIDAR scanners for topographical survey	
45	17/08/2022	Remote Sensing: Introduction	
46	22/08/2022	Principles of energy interaction in atmosphere and earth surface features	
47	23/08/2022	Image interpretation techniques, visual interpretation	
48	23/08/2022	Global Positioning system, Geographical Information System: Definition of GIS, Key Components of GIS, Functions of GIS, Spatial data	
49	26/08/2022	spatial information system Geospatial analysis Integration of Remote sensing and GIS	
50	27/08/2022	Applications in Civil Engineering(transportation, town planning).	

SUMMARY

Planned Date	**From : 10/08/2022**	**To: 27/08/2022**	
Actual classes taken	**From : 10/08/2022**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Aerial photographs	
32	20/07/2022	Introduction, Uses	
33	21/07/2022	Aerial photographs, Definitions,	
34	27/07/2022	Scale of vertical and tilted photograph	
35	28/07/2022	Problems on Scale of vertical and tilted photograph	
36	29/07/2022	Ground Co-ordinates	
37	01/08/2022	Simple problems on Ground Co-ordinates	
38	03/08/2022	Relief Displacements- Theory	
39	04/08/2022	Ground control, Procedure of aerial survey, overlaps and mosaics	
40	05/08/2022	Stereoscopes	
41	08/08/2022	Derivation Parallax(Derivation)	

SUMMARY

Planned Date	**From : 20/07/2022**	**To: 08/08/2022**	
Actual classes taken	**From : 20/07/2022**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Curves	
22	01/07/2022	Introduction: Curves – Necessity – Types, Simple curves	
23	04/07/2022	Elements, Designation of curves, Setting out simple curves by linear methods	
24	06/07/2022	numerical problems on offsets from long chord & chord produced method	
25	07/07/2022	Setting out curves by Rankines deflection angle method	
26	08/07/2022	Compound curves, Elements, Design of compound curves	
27	11/072022	Setting out of compound curves	
28	1307/2022	numerical problemsSetting out of compound curves, Reverse curve between two parallel	
29	14/07/2022	numerical problems on Equal radius and unequal radius	
30	15/07/2022	Transition curves Characteristics, numerical problems on Length of Transition curve	
31	18/07/2022	Vertical curves –Types – (theory).	

SUMMARY

Planned Date	**From : 01/07/2022**	**To: 18/07/2022**	
Actual classes taken	**From : 01/07/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Highway Engineering**	FACULTY NAME	**Mr. PRAKASH .J**
COURSE CODE	**18CV56**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Principles of Transportation Engineering	
1	17/10/2022	Importance of transportation	
2	18/10/2022	Different modes of transportation and comparison, Characteristics of road transport	
3	19/10/2022	Jayakar committee recommendations, and implementation – Central Road Fund	
4	21/10/2022	Indian Roads Congress, Central Road Research Institute	
5	28/10/2022	**Highway Development and Planning:** Road types and classification, road patterns	
6	31/10/2022	planning surveys, master plan – saturation system of road planning, phasing road development in India	
7	02/11/2022	problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies	
8	04/11/2022	Present scenario of road development in India (NHDP & PMGSY)	
9	07/11/2022	and in Karnataka (KSHIP & KRDCL)	
10	08/12/2022	Road development plan - vision 2021	

SUMMARY

Planned Date	**From : 17/10/2022**	**To: 08/11/2022**	
Actual classes taken	**From : 17/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Highway Alignment and Surveys	
11	09/11/2022	Ideal Alignment	
12	15/11/2022	Factors affecting the alignment	
13	16/11/2022	Engineering surveys-Map study	
14	18/11/2022	Reconnaissance, Preliminary and Final location & detailed survey	
15	21/11/2022	Reports and drawings for new and re-aligned projects	
16	22/11/2022	**Highway Geometric Design:** Cross sectional elements–width, surface, camber,	
17	23/11/2022	Sight distances–SSD, OSD, ISD, HSD	
18	25/11/2022	Design of horizontal and vertical alignment–curves	
19	28/11/2022	super-elevation, widening	
20	29/11/2022	gradients, summit and valley curves	

SUMMARY

Planned Date	**From : 09/11/2022**	**To: 29/11/2022**	
Actual classes taken	**From : 09/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mr. Prakash J
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr Narendra viswanath
Principal

MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Pavement Materials	
21	30/11/2022	**Pavement Materials:** Subgrade soil - desirable properties	
22	02/12/2022	HRB soil classification-determination of CBR	
23	05/12/2022	Modulus of subgrade reaction	
24	06/12/2022	Problems	
25	07/12/2022	Aggregates- Desirable properties and tests	
26	09/12/2022	Bituminous materials- Explanation on Tar	
27	10/12/2022	bitumen, cutback and emulsion	
28	12/12/2022	tests on bituminous material	
29	13/12/2022	**Pavement Design:** Pavement types, component parts of flexible	
30	14/12/2022	Rigid pavements and their functions	
31	15/12/2022	ESWL and its determination (Graphical method only)- Examples	

SUMMARY

Planned Date	**From : 30/11/2022**	**To: 15/12/2022**	
Actual classes taken	**From : 30/11/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mr. Prakash J
Course Coordinator

Dr. G Mahesh Kumar
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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Pavement Construction	
32	20/12/2022	**Pavement Construction:** Design of soil aggregate mixes by Rothfuch's method	
33	21/12/2022	Uses and properties of bituminous mixes	
34	23/12/2022	cement concrete in pavement construction.	
35	26/12/2022	Earthwork; cutting and Filling	
36	27/12/2022	Preparation of subgrade, Specification	
37	28/12/2022	construction of i) Granular Sub base, ii) WBM Base	
38	30/12/2022	iii) WMM base, iv) Bituminous Macadam	
39	02/01/2023	v) Dense Bituminous Macadam	
40	03/01/2023	vi) Bituminous Concrete	
41	04/01/2023	vii) Dry Lean Concrete sub base and PQC	
42	06/01/2023	viii) concrete roads	

SUMMARY

Planned Date	**From : 20/12/2022**	**To: 06/01/2023**	
Actual classes taken	**From : 20/12/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Highway Drainage	
43	09/01/2023	**Highway Drainage:** Significance and requirements	
44	10/01/2023	Surface drainage system and design-Examples	
45	11/01/2023	sub surface drainage system, design of filter materials	
46	13/01/2023	Types of cross drainage structures, their choice and location	
47	20/01/2023	**Highway Economics:** Highway user benefits	
48	21/01/2023	VOC using charts only-Examples	
49	23/01/2023	Economic analysis - annual cost method	
50	24/01/2023	Benefit Cost Ratio method-NPV-IRR methods- Examples	
51	25/01/2023	Benefit Cost Ratio method-NPV-IRR methods- Examples	
52	26/01/2023	Highway financing-BOT-BOOT concepts	
53	27/01/2023	Highway financing-BOT-BOOT concepts	

SUMMARY

Planned Date	**From : 09/01/2023**	**To: 27/01/2023**	
Actual classes taken	**From : 09/01/2023**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Email: info@shrideviengineering.org, principal@shridevengineering.org | Website: www.shridevengineering.org
(Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka and Affiliated to Visvesvaraya Technological University, Belagavi)

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022– JANUARY 2023) MACRO SCHEDULE

COURSE	**Highway Engineering**	FACULTY NAME	**Mr. PRAKASH J**
COURSE CODE	**18CV56**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives:

This course will enable students to:

1. Gain knowledge of different modes of transportation systems, history, development of highways and the organizations associated with research and development of the same in INDIA.
2. Understand Highway planning and development considering the essential criteria's (engineering and financial aspects, regulations and policies, socio economic impact).
3. Get insight to different aspects of geometric elements and train them to design geometric elements of a highway network.
4. Understand pavement and its components, pavement construction activities and its requirements.
5. Gain the skills of evaluating the highway economics by B/C, NPV, IRR methods and also introduce the students to highway financing concepts.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.
2. Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.
3. Design road geometrics, structural components of pavement and drainage.
4. Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.

Sl No	Date	Module & Lesson Plan	Additional sources
01	17/10/2022 To 08/11/2022	**Module-1** **Principles of Transportation Engineering**: Importance of transportation, Different modes of transportation and comparison, Characteristics of road transport Jayakar committee recommendations, and implementation – Central Road Fund, Indian Roads Congress, Central Road Research Institute. **Highway Development and Planning**: Road types and classification, road patterns, planning surveys, master plan – saturation system of road planning, phasing road development in India, problems on best alignment among alternate proposals Salient Features of 3rd and 4thtwenty year road development plans and Policies, Present scenario of road development in India (NHDP & PMGSY) and in Karnataka (KSHIP & KRDCL) Road development plan - vision 2021. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1dyrX5JBsaA9PaefKgNQZPflfTkt6o8J_/view
02	09/11/2022 To 29/11/2022	**Module 2:** **Highway Alignment and Surveys:** Ideal Alignment, Factors affecting the alignment, Engineering surveys, Map study, Reconnaissance, Preliminary and Final location & detailed survey, Reports and drawings for new and re-aligned projects. **Highway Geometric** Design of horizontal alignment elements: Cross sectional elements–width, surface, camber, Sight distances–SSD, OSD, ISD, HSD, Radius of curve, Transition curve, Design of horizontal and vertical alignment–curves, super-elevation, widening, gradients, summit and valley curves. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1dyrX5JBsaA9PaefKgNQZPflfTkt6o8J_/view
03	30/11/2022 To 15/12/2022	**Module 3:** **Pavement Materials**: Sub grade soil - desirable properties-HRB soil classification-determination of CBR and modulus of sub grade reaction with Problems Aggregates- Desirable properties and tests, Bituminous materials- Explanation on Tar, bitumen, cutback and emulsion-tests on bituminous material **Pavement Design**: Pavement types, component parts of flexible and rigid pavements and their functions, ESWL and its determination (Graphical method	https://drive.google.com/file/d/1rtMRRIcA1ttCqMV53qqayGEuIPQNpD06/view

		only)-Examples. **No. of Contact sessions: 11**	
04	20/12/2022 To 06/01/2023	**Module 4:** **Pavement Construction**: Design of soil aggregate mixes by Rothfuch's method. Uses and properties of bituminous mixes and cement concrete in pavement construction. Earthwork; cutting and Filling, Preparation of subgrade, Specification and construction of i) Granular Sub base, ii) WBM Base iii) WMM base,iv) Bituminous Macadam v) Dense Bituminous Macadam vi) Bituminous Concrete,vii) Dry Lean Concrete sub base and PQC viii) concrete roads. **No. of Contact sessions: 11**	https://drive.google.com/file/d/1hq2KfybX5d5UJY-mvMtCoFY4SaDkXNmG/view
05	09/01/2023 To 27/01/2023	**Module 5:** **Highway Drainage**: Significance and requirements, Surface drainage system and design-Examples, sub surface drainage system, design of filter materials, Types of cross drainage structures, their choice and location. **Highway Economics**: Highway user benefits, VOC using charts only-Examples, Economic analysis - annual cost method-Benefit Cost Ratio method-NPV-IRR methods- Examples, Highway financing-BOT-BOOT concepts **No. of Contact sessions: 11**	https://drive.google.com/file/d/1ThqPKU6kdabrtR8kNvijPC0E97mX6AaI/view

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

1. The question paper will have ten full questions carrying equal marks.
2. Each full question will be for 20 marks.
3. There will be two full questions (with a maximum of four sub- questions) from each module.
4. Each full question will have sub- question covering all the topics under a module.

Text Books:

1. S K Khanna and C E G Justo, " Highway Engineering", Nem Chand Bros, Roorkee
2. L R Kadiyali, "Highway Engineering", Khanna Publishers, New Delhi.
3. R Srinivasa Kumar, "Highway Engineering", University Press.
4. K.P.subramanium, "Transportation Engineering", SciTech Publications, Chennai

Reference Books:

1. Relevant IRC Codes
2. Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi.
3. C. JotinKhisty, B. Kent lal, "Transportation Engineering", PHI Learning Pvt. Ltd. New Delhi.

Mr. Prakash J	**Dr. G Mahesh Kumar**	**Dr Narendra viswanath**
Course Coordinator	HOD	Principal

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ESTD:2002

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Urban Transportation Planning**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV745**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Urban transport planning	
1	26/09/2022	Urban transport planning: Urbanization, urban class groups	
2	27/09/2022	transportation problems and identification, impacts of transportation	
3	28/09/2022	Urban transport system planning process	
4	29/09/2022	Modeling techniques in planning. Urban mass transportation systems: urban transit problems, travel demand, types of transit systems, public, private, para-transit transport	
5	06/10/2022	Urban mass transportation systems: urban transit problems	
6	10/10/2022	Travel demand, types of transit systems, public, private, para-transit transport	
7	11/10/2022	public, private, para-transit transport	
8	12/10/2022	mass and rapid transit systems	
9	20/10/2022	BRTS and Metro rails, capacity	
10	31/10/2022	merits and comparison of systems, coordination, types of coordination	

SUMMARY

Planned Date	**From : 26/09/2022**	**To: 31/10/2022**	
Actual classes taken	**From : 26/09/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Data Collection And Inventories	
11	31/10/2022	Data Collection And Inventories: Collection of data.	
12	02/11/2022	Organization of surveys and Analysis.	
13	03/11/2022	Study Area, Zoning, Types and Sources of Data	
14	03/11/2022	Road Side Interviews, Home Interview Surveys.	
15	04/11/2022	Home Interview Surveys.	
16	05/11/2022	Commercial Vehicle Surveys	
17	07/11/2022	Sampling Techniques	
18	07/11/2022	Expansion Factors	
19	08/11/2022	Accuracy Checks, Use of Secondary Sources	
20	08/11/2022	Economic data, Income, Population, Employment , Vehicle Owner Ship	

SUMMARY

Planned Date	**From: 31/10/2022**	**To: 08/11/2022**	
Actual classes taken	**From : 31/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Trip Generation & Distribution:	
21	09/11/2022	Trip Generation & Distribution: UTPS Approach	
22	09/11/2022	Trip Generation Analysis	
23	10/11/2022	Zonal Models	
24	14/11/2022	Category Analysis	
25	15/11/2022	Household Models	
26	16/11/2022	Trip Attraction models	
27	17/11/2022	Commercial Trip Rates	
28	19/11/2022	Trip Distribution by Growth Factor Methods.	
29	21/11/2022	Problems	
30	22/11/2022	Problems	

SUMMARY

Planned Date	**From : 09/11/2022**	**To: 22/11/2022**	
Actual classes taken	**From : 09/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Trip Distribution	
31	23/11/2022	Trip Distribution	
32	24/11/2022	Gravity Models, Opportunity Models	
33	26/11/2022	Time Function Iteration Models.	
34	28/11/2022	Travel demand modeling	
35	29/11/2022	gravity model,	
36	30/11/2022	opportunity models	
37	05/12/2022	Desire line diagram.	
38	06/12/2022	Modal split analysis.	
39	07/12/2022	Problems	
40	08/12/2022	Problems	

SUMMARY

Planned Date	**From : 23/11/2022**	**To: 08/12/2022**	
Actual classes taken	**From : 23/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Traffic Assignment	
41	12/12/2022	Traffic Assignment: Diversion Curves	
42	13/12/2022	Basic Elements of Transport Networks.	
43	14/12/2022	Coding, Route Properties	
44	15/12/2022	Path Building Criteria.	
45	19/12/2022	Skimming Tree, All-or-Nothing Assignment.	
46	20/12/2022	Capacity Restraint Techniques	
47	21/12/2022	Reallocation of Assigned Volumes.	
48	22/12/2022	Equilibrium Assignment.	
49	26/12/2022	Introduction to land use planning models.	
50	26/12/2022	Land use and transportation interaction.	

SUMMARY

Planned Date	**From : 10/01/2022**	**To: 26/12/2022**	
Actual classes taken	**From : 10/01/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Urban Transportation Planning**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV745**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to:

1. Understand and apply basic concepts and methods of urban transportation planning.
2. Apprise about the methods of designing, conducting and administering surveys to provide the data required for transportation planning.
3. Understand the process of developing an organized mathematical modelling approach to solve select urban transportation planning problem.
4. Excel in use of various types of models used for travel forecasting, prediction of future travel patterns.

Course outcomes: This course will enable students to:

1. Understand and apply basic concepts and methods of urban transportation planning.
2. Apprise about the methods of designing, conducting and administering surveys to provide the data required for transportation planning.
3. Understand the process of developing an organized mathematical modelling approach to solve select urban transportation planning problem.
4. Excel in use of various types of models used for travel forecasting, prediction of future travel patterns.

Sl No	Date	Module & Lesson Plan	Additional sources
01	26/09/2022 To 31/10/2022	**Module-1** **Urban transport planning:** Urbanization, urban class groups, transportation problems and identification, impacts of transportation, urban transport system planning process, modeling techniques in planning. Urban mass transportation systems: urban transit problems, travel demand, types of transit systems, public, private, para-transit transport, mass and rapid transit systems, BRTS and Metro rails, capacity, merits and comparison of systems, coordination, types of coordination. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406
02	31/10/2022 To 08/11/2022	**Module 2:** **Data Collection And Inventories:** Collection of data – Organization of surveys and Analysis, Study Area, Zoning, Types and Sources of Data, Road Side Interviews, Home Interview Surveys, Commercial Vehicle Surveys, Sampling Techniques, Expansion Factors, Accuracy Checks, Use of Secondary Sources, Economic data – Income – Population – Employment – Vehicle Owner Ship. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406
03	09/11/2022 To 22/11/2022	**Module 3:** **Trip Generation & Distribution:** UTPS Approach, Trip Generation Analysis: Zonal Models, Category Analysis, Household Models, Trip Attraction models, Commercial Trip Rates; Trip Distribution by Growth Factor Methods. Problems on above. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406
04	23/11/2022 To 08/12/2022	**Module 4:** **Trip Distribution:** Gravity Models, Opportunity Models, Time Function Iteration Models. Travel demand modeling: gravity model, opportunity models, Desire line diagram. Modal split analysis. Problems on above. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406
05	12/12/2022 To 26/12/2022	**Module 5:** **Traffic Assignment:** Diversion Curves; Basic Elements of Transport Networks, Coding, Route Properties, Path Building Criteria, Skimming Tree, All-or-Nothing Assignment, Capacity Restraint Techniques, Reallocation of Assigned Volumes, Equilibrium Assignment. Numerical problems on Traffic Assignment. Introduction to land use planning models, land use and transportation interaction. **No. of Contact sessions: 10**	https://www.coursehero.com/register/?reg_only=1&get_doc=80736406

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. Kadiyali.L.R., 'Traffic Engineering and Transportation Planning', Khanna Publishers, New Delhi.
2. Hutchinson, B.G, 'Introduction to Urban System Planning', McGraw Hill.
3. Khisty C.J., 'Transportation Engineering – An Introduction' Prentice Hall.
4. Papacostas, 'Fundamentals of Transportation Planning', Tata McGraw Hill.

Reference Books:

1. Mayer M and Miller E, 'Urban Transportation Planning: A decision oriented Approach', McGraw Hill.
2. Bruton M.J., 'Introduction to Transportation Planning', Hutchinson of London.
3. Dicky, J.W., 'Metropolitan Transportation Planning', Tata McGraw Hill.B.S. Ramaswamy " Contracts and their Management" 3ed , Lexis Nexis (a division of Reed Elsevier India Pvt Ltd)

Mr. Prakash J
Course Coordinator

Dr. G Mahesh Kumar
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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (MAY 2022 – AUGUST 2022) MICRO SCHEDULE

COURSE	**Water Supply and Treatment Engineering**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV46**	SEM/SECTION	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction	
1	17/05/2022	Introduction, Need for protected water supply	
2	18/05/2022	Demand of Water	
3	19/05/2022	Types of water demands	
4	20/05/2022	Domestic demand& Industrial demand	
5	24/05/2022	Institutional and Commercial demand	
6	25/05/2022	Public use demand & Fire demand	
7	26/05/2022	Factors affecting per capita demand	
8	27/05/2022	Variations in demand of water, Peak factor	
9	31/05/2022	Design period and factors governing design period	
10	01/06/2022	Different methods of population forecasting	
11	02/06/2022	Numerical Problems	
12	03/06/2022	Numerical Problems	
13	07/06/2022	Numerical Problems	

SUMMARY

Planned Date	**From : 17/05/2022**	**To: 07/06/2022**	
Actual classes taken	**From : 17/05/2022**	**To:**	
Number of classes	**Allocated : 13**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Ms. Niranjani B
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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Water Treatment	
14	08/06/2022	Introduction, Objectives	
15	09/06/2022	Treatment flow chart – Significance of each unit Sources and Characteristics	
16	10/06/2022	Treatment flow chart – Significance of each unit Sources and Characteristics	
17	14/06/2022	Surface sources -Suitability with regard to quality and quantity	
18	15/06/2022	Subsurface sources -Suitability with regard to quality and quantity	
19	16/06/2022	Sampling - Objectives	
20	17/06/2022	Sampling - Methods	
21	21/06/2022	Sampling - Preservation techniques	
22	22/06/2022	Water quality characteristics: Physical	
23	23/06/2022	Water quality characteristics: Chemical	
24	28/06/2022	Water quality characteristics: Microbiological	
25	29/06/2022	Intake structures – types. Factors to be considered in selection of site for intake structures. Aeration process, limitations, types and two film theory	
26	30/06/2022	Aeration process, limitations, types and two film theory	

SUMMARY

Planned Date	**From : 08/06/2022**	**To: 30/06/2022**	
Actual classes taken	**From : 08/06/2022**	**To:**	
Number of classes	**Allocated : 13**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Ms. Niranjani B
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr Narendra viswanath
Principal

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Sedimentation and Filtration	
27	01/07/2022	Sedimentation -theory, settling tanks, types and design.	
28	05/07/2022	Coagulation and flocculation	
29	06/07/2022	Clarriflocculators (circular and rectangular).	
30	07/07/2022	Theory, types of coagulants	
31	08/07/2022	Coagulant feeding devices.	
32	12/07/2022	Jar test apparatus and estimation of coagulants.	
33	13/07/2022	Filtration: mechanism	
34	14/07/2022	Theory of filtration	
35	15/07/2022	Types of filters: slow sand, rapid sand and pressure filters. Operation, cleaning.	
36	19/07/2022	Operational problems in filters.	
37	20/07/2022	Design of slow and rapid sand filter without under drainage system	

SUMMARY

Planned Date	**From : 01/07/2022**	**To: 20/07/2022**	
Actual classes taken	**From : 01/07/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Disinfection and Softing	
38	21/07/2022	Disinfection: Theory of disinfection.	
39	26/07/2022	Methods of disinfection with merits and demerits.	
40	27/07/2022	Chlorination: Break point chlorination	
41	28/07/2022	Determination of chlorine demand.	
42	29/07/2022	Estimation of quantity bleaching powder.	
43	02/08/2022	Miscellaneous treatment Process: Softening: Lime soda and Zeolite process.	
44	03/08/2022	Estimation of Hardness..	
45	04/08/2022	Fluoridation and De-fluoridation	
46	05/08/2022	Nalgonda Technique.	
47	10/08/2022	RO and Nano filtration process with merits and demerits.	

SUMMARY

Planned Date	**From : 21/07/2022**	**To: 10/08/2022**	
Actual classes taken	**From : 21/07/2022**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Collection and Conveyance of water	
48	11/08/2022	Collection and Conveyance of water: Types of pumps with working principles and numerical Problems.	
49	12/08/2022	Design of the economical diameter for the rising main.	
50	16/08/2022	Pipe appurtenances	
51	17/08/2022	Valves, Fire hydrants and different Pipe materials with their advantages and disadvantages.	
52	22/08/2022	Factors affecting selection of pipe material.	
53	22/08/2022	Distribution system: Methods: Gravity, Pumping system.	
54	23/08/2022	Combined gravity and pumping system.	
55	26/08/2022	Types of Distribution system.	
56	27/08/2022	Service reservoirs and their capacity determination plant units.	

SUMMARY

Planned Date	**From : 11/08/2022**	**To: 27/08/2022**	
Actual classes taken	**From : 11/08/2022**	**To:**	
Number of classes	**Allocated :09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

Dr. G Mahesh Kumar
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LESSON PLAN (MAY 2022 – AUGUST 2022) MACRO SCHEDULE

COURSE	**Water Supply and Treatment Engineering**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV46**	SEM/SECTION	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives This course will enable students to learn:

1. Analyze the variation of water demand and to estimate water requirement for a community.
2. Evaluate the sources and conveyance systems for raw and treated water.
3. Study drinking water quality standards and to illustrate qualitative analysis of water.
4. Design physical, chemical and biological treatment methods to ensure safe and potable water Supply.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Estimate average and peak water demand for a community.
2. Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.
3. Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.
4. Design a comprehensive water treatment and distribution system to purify and distribute water to the required quality standards.

Sl No	Date	Module& Lesson Plan	Additional sources
01	17/05/2022 To 07/06/2022	**Module-1** **Introduction:** Need for protected water supply. Demand of Water: Types of water demands -domestic demand, industrial, institutional and commercial, public use, fire demand estimation, factors affecting per capita demand,	https://drive.google.com/file/d/1EXOJ4aRl037VvxW1tARPUAWPGyfY6Qpq/view

		Variations in demand of water, Peak factor. **Design period** and factors governing design period. Methods of population forecasting and numerical problems. **No. of Contact sessions: 13**	
02	**08/06/2022 To30/06/2022**	**Module 2:** **Water Treatment**: Objectives, Unit flow diagrams – significance of each unit: Sources and Characteristics of surface and subsurface sources and Suitability. Sampling : Objectives, methods and preservation techniques. Drinking water quality standards as per BIS. Effect of water quality parameters. **Intake structures** – types. Factors to be considered in selection of site for intake structures. Aeration process, limitations, types and two film theory **No. of Contact sessions: 13**	https://drive.google.com/file/d/1DfRlt6bVpTu3NlWXfLlt1KsoEBeW4xBn/view
03	**01/07/2022 To 20/07/2022**	**Module 3:** **Sedimentation** -theory, settling tanks, types and design. Coagulation and flocculation, Clarriflocculators (circular and rectangular). theory, types of coagulants, coagulant feeding devices. Jar test apparatus and estimation of coagulants. **Filtration:** mechanism, theory of filtration, types of filters: slow sand, rapid sand and pressure filters. Operation, cleaning. Operational problems in filters. Design of slow and rapid sand filter without under drainage system **No. of Contact sessions: 10**	https://drive.google.com/file/d/1CWlW2paEiHN8cLEBbpVAeoFx1zf01TJh/view
04	**21/07/2022 To 10/08/2022**	**Module 4:** **Disinfection:** Theory of disinfection. Methods of disinfection with merits and demerits. Chlorination: Break point chlorination and determination of chlorine demand. Estimation of quantity bleaching powder. Miscellaneous treatment Process: **Softening:** Lime soda and Zeolite process. Estimation of Hardness. Fluoridation and De-fluoridation, Nalagonda Technique. RO and Nano filtration process with merits and demerits. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1ukDmsGd_cR70pD42FPXtDJ-dpseJK8Zt/view
05	**11/08/2022 To 27/08/2022**	**Module 5:** **Collection and Conveyance of water:** Types of pumps with working principles and numerical Problems. Design of the economical diameter for the rising main. Pipe appurtenances, Valves, Fire hydrants and different Pipe materials with their advantages and disadvantages. Factors affecting selection of pipe material. **Distribution system:** Methods: Gravity, Pumping and Combined gravity and pumping system. Types of Distribution system. Service reservoirs and their capacity determination plant units and distribution system with	https://drive.google.com/file/d/1pplAIcaD0ViszEeOKFMeA4aTU7rfboB5/view

		population forecasting for the given city. **No. of Contact sessions: 09**	

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. Howard S. Peavy, Donald R. Rowe, George T , Environmental Engineering - McGraw Hill International Edition. New York,2000
2. S. K. Garg, Environmental Engineering vol-I, Water supply Engineering – M/s Khanna Publishers, New Delhi2010
3. B.C. Punmia and Ashok Jain, Environmental Engineering I-Water Supply Engineering, Laxmi Publications (P) Ltd., New Delhi2010.

Reference Books:

1. CPHEEO Manual on water supply and treatment engineering, Ministry of Urban Development, Government of India, New Delhi.
2. Mark.J Hammer, Water & Waste Water Technology, John Wiley & Sons Inc., New York,2008.

Ms. Niranjani B Course Coordinator	**Dr. G Mahesh Kumar** HOD	**Dr Narendra viswanath** Principal

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (April – July 2021) MICRO SCHEDULE]

Course Title	**Design of Steel Structural Elements**		*Course Instructor*	*Mr. Manogna H N*
Course Code	**18CV61**		*Sem /Sec*	*VI*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*		*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/04/2022**	*Total contact Hours: 50*	*Duration of Exam*: **03 Hrs.**		*CREDITS: 04*

Module 1: Introduction to steel structures and Plastic Behaviour of Structural Steel				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
1	04-04-22	Introduction to steel structures		
2	05-04-22	Advantages and Disadvantages of Steel structures		
3	06-04-22	Limit State Method (LSM) of design Limit state method		
4	07-04-22	Limit State of Strength, Structural Stability, Serviceability		
5	08-04-22	Design considerations, Loads and Load combinations,		
6	11-04-22	Failure criteria for steel, IS Code Provisions,		
7	13-04-22	Specifications, Section classification.		
8	14-04-22	Introduction to Plastic theory, Plastic hinge concept,		

SUMMARY

Planned Date	**From:** 4.04.2022		**To:** 14.04.2022	
Actual Classes Taken	**From:**		**To:**	
Number of Classes	**Allocated:** 8		**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**		**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**		**QP Discussion:**
	Quiz:	**Seminars:**		**Any Other:**

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Course Instructor

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Module 2: Bolted Connections and Welded Connections:				
Sl No	Date	Topics	Topics Covered	Remarks
9	15-04-22	Introduction, Types of bolts, Behaviour of Bolted joints,		
10	18-04-22	Design strength of ordinary Black Bolts		
11	20-04-22	Design strength of ordinary Black Bolts		
12	21-04-22	Design strength of High Strength Friction Grip bolts (HSFG)		
13	22-04-22	Introduction, Welding process, Welding electrodes,		
14	25-04-22	Types and Properties of Welds, Types of joints Weld symbols, Weld specifications,		
15	27-04-22	Effective areas of welds, Design of welds, Simple joints		
16	28-04-22	Disadvantages of Bolted and Welded connections		
17	01-05-22	Weld Defects, Advantages of Bolted and Welded connections Problems on welds		

SUMMARY

Planned Date	**From:** 15.04.2022	**To:** 1.05.2022	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 9	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 3: Design of Compression Members:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
18	01-05-22	Introduction, Failure modes,		
19	06-05-22	Behaviour of compression members		
20	07-05-22	Elastic buckling of slender compression members		
21	08-05-22	Sections used for compression members		
22	11-05-22	Effective length of compression members		
23	13-05-22	Design of compression members		
24	18-05-22	Design of compression members		
25	20-05-22	Design of compression members		
26	21-05-22	Built up compression members		
27	22-05-22	Design of Laced and Battened Systems.		
28	25-05-22	Design of Laced and Battened Systems.		

SUMMARY

Planned Date	**From:** 1.05.2022	**To:** 25.05.2022	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 11	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 4: Design of Tension Members and Design of Column Bases:				
Sl No	Date	Topics	Topics Covered	Remarks
29	27-05-22	Introduction, Types of tension members, Design of strands, Slenderness ratio,		
30	28-05-22	Behaviour of tension members Modes of failure,		
31	01-06-22	Factors affecting the strength of tension members		
32	03-06-22	Design of tension member		
33	04-06-22	Design of tension member		
34	05-06-22	Lug angles, Splices, Gussets		
35	08-06-22	Design of simple slab base - problems		
36	10-06-22	Design of simple slab base - problems		
37	11-06-22	Design of gusseted base - problems		
38	12-06-22	Design of gusseted base - problems		

SUMMARY

Planned Date	**From:** 27.05.2022	**To:** 12.05.2022	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 10	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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Module 5: Design of Beams:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
39	22-06-22	Introduction, Beam types, , Lateral stability of beams, factors affecting lateral stability		
40	24-06-22	Behaviour of simple and built-up beams in bending(without vertical stiffeners)		
41	25-06-22	Behaviour of simple and built-up beams in bending(without vertical stiffeners)		
42	26-06-22	Design strength of laterally supported beams in Bending-problems		
43	29-06-22	Design strength of laterally supported beams in Bending-problems		
44	01-07-22	Design strength of laterally supported beams in Bending-problems		
45	03-07-22	Design strength of laterally unsupported beams- problems		
46	05-07-22	Design strength of laterally unsupported beams		
47	06-07-22	Shear strength of steel beams, Maximum deflection		
48	07-07-22	Beam to Beam Connections,		
49	11-07-22	Beam to Beam Connections,		
50	12-07-22	Beam to Column Connection		

SUMMARY

Planned Date	**From:** 22.06.2022	**To:** 12.07.2022	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 12	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2021-2022*

[LESSON PLAN (April – July 2021) MACRO SCHEDULE]

Course Title	**Design of Steel Structural Elements**		*Course Instructor*	*Mr. Manogna H N*
Course Code	**18CV61**		*Sem /Sec*	*VI*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*		*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **04/04/2022**	*Total contact Hours: 50*	*Duration of Exam*: **03 Hrs.**		*CREDITS: 04*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Possess knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel.
CO2. Understand the Concept of Bolted and Welded connections.
CO3. Understand the Concept of Design of compression members, built-up columns and columns splices
CO4. Understand the Concept of Design of tension members, simple slab base and gusseted base.
CO5. Understand the Concept of Design of laterally supported and un-supported steel beams.

Sl No	Date	Module Lesson Plan	Additional Sources
1	04/04/22 to 14/04/22	**Module 1:** **Introduction:** Advantages and Disadvantages of Steel Structures, Limit state method Limit State of Strength, Structural Stability, Serviceability Limit states, Failure Criteria of steel, Design Consideration, Loading and load combinations, IS code provisions, Specification and Section classification. **Plastic Behavior of Structural Steel:** Introduction, Plastic theory, Plastic Hinge Concept, Plastic collapse load, load factor, Shape factor, Theorem of plastic collapse, Methods of Plastic analysis, Plastic analysis of Continuous Beams. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/shafkatislaml https://youtu.be/Vdx2dNGsuEM
2	15/04/2022 to 01/05/2022	**Module 2:** **Bolted Connections:** Introduction, Types of Bolts, Behavior of bolted joints, Design of High Strength friction Grip (HSFG) bolts, Design of Simple bolted Connections (Lap and Butt joints)and bracket connections.	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/ManjuParan

		Welded Connections: Introduction, Types and properties of welds, Effective areas of welds, Weld Defects, Simple welded joints for truss member and bracket connections, Advantages and Disadvantages of Bolted and Welded Connections. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2**	thaman/ https://youtu.be/Oa75GTf2-h8
3	**01/05/2022 to 25/05/2022**	**Module 3:** **Design of Compression Members:** Introduction, Failure modes, Behavior of compression members, Sections used for compression members, Effective length of compression members, Design of compression members and built up Compression members, Design of Laced and Battened Systems. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/QTRGn5vAprY
4	**27/05/2022 to 12/06/2022**	**Module 4:** **Design of Tension Members:** Introduction, Types of Tension members, Slenderness ratio, Modes of Failure, Factors affecting the strength of tension members, Design of Tension members and Lug angles, Splices, Gussets. **Design of Column Bases:** Design of Simple Slab Base and Gusseted Base **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan https://youtu.be/BIJTWBlguHs
5	**22/06/2022 to 12/07/2022**	**Module 5:** **Design of Beams:** Introduction, Beam types, Lateral Stability of beams, factors affecting lateral stability, Behavior of Beams in Bending, Design strength of laterally supported beams in Bending, Design of Laterally unsupported Beams [No Numerical Problems], Shear Strength of Steel Beams. Beam to Beam Connections, Beam to Column Connection and Column Splices [No Numerical Problems]. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105106117/ https://www.slideshare.net/gunasekarkrishnan/ https://youtu.be/2qV4osntg6g

Text Books:

1. N Subramanian., "Design of Steel Structures" (2016), Oxford University Press, New Delhi.
2. Duggal S K., "Limit State Method of Design of Steel Structures", Tata McGraw Hill, New Delhi.

Reference Books:

1. Dayarathnam P, "Design of Steel Structures", Scientific International Pvt. Ltd.
2. Kazim S M A and Jindal R S, "Design of Steel Structures", Prentice Hall of India, New Delhi.
3. IS 800-2007: General Construction in Steel Code Practice (Third revision), Bureau of Indian Standards, New Delhi.

(Manogna H N)	(Dr. G Mahesh Kumar)	(Dr Narendra Viswanath)
Course Instructor	**HOD**	**Principal**

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DEPARTMENT OF CIVIL ENGINEERING

Semester: VI Sem ***Year: 2021-22***

Subject Title: **Applied Geotechnical Engineering**	*Subject Code:* **18CV62**
Total contact Hours: **40**	*Duration of Exam:* **03 Hrs.**
Total exam marks: **100**	*Total I.A. marks:* **40**
Lesson plan author: **Dr. G. Mahesh Kumar**	*Date of commencement of semester:* **04/04/2022**
Checked by: **Dr. G. Mahesh Kumar**	

Course objectives: This course will enable students to

1. Appreciate basic concepts of soil mechanics as an integral part in the knowledge of Civil Engineering. Also to become familiar with foundation engineering terminology and understand how the principles of Geotechnology are applied in the design of foundations
2. Learn introductory concepts of Geotechnical investigations required for civil engineering projects emphasizing in-situ investigations
3. Conceptually learn various theories related to bearing capacity of soil and their application in the design of shallow foundations and estimation of load carrying capacity of pile foundation
4. Estimate internal stresses in the soil mass and application of this knowledge in proportioning of shallow and deep foundation fulfilling settlement criteria
5. Study about assessing stability of slopes and earth pressure on rigid retaining structures.

Course Outcomes: On the completion of this course students are expected to attain the following outcomes;

1. Ability to plan and execute geotechnical site investigation program for different civil engineering projects
2. Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
3. Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
4. Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
5. Capable of estimating load carrying capacity of single and group of piles

Program Objectives

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question paper pattern:

- The question paper will have ten questions.
- Each full question consists of 20 marks.
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.
- Use of IS: 6403 shall be permitted.

Text Books:

1. Gopal Ranjan and Rao A.S.R., Basic and Applied Soil Mechanics, New Age International (P) Ltd., New Delhi.
2.Punmia B C, Soil Mechanics and Foundation Engineering, Laxmi Publications co., New Delhi.
3. Murthy V.N.S., Principles of Soil Mechanics and Foundation Engineering, UBS Publishers and Distributors, New Delhi.
4.Braja, M. Das, Geotechnical Engineering; Thomson Business Information India (P) Ltd., India

Reference Books:

1. T.W. Lambe and R.V. Whitman, Soil Mechanics-, John Wiley & Sons
2. Donald P Coduto, Geotechnical Engineering- Phi Learning Private Limited, New Delhi
3. Shashi K. Gulathi&ManojDatta, Geotechnical Engineering-. , Tata McGraw Hill Publications
4.DebashisMoitra, "Geotechnical Engineering" , Universities Press.,
5. Malcolm D Bolton, " A Guide to soil mechanics", Universities Press., 6. Bowles J E , Foundation analysis and design, McGraw- Hill Publications

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LECTURE PLAN

18CV62 – Applied Geotechnical Engineering

Sl.No.	Date	Topics	Revised Bloom's Taxonomy (RBT) Level
		PART – A	
		MODULE- 1 SOIL EXPLORATION	
1	25-04-2022	Introduction, Objectives and Importance, Stages and Methods of exploration- Test pits, Borings, Geophysical exploration and Geophysical methods,	
2	26-04-2022	Stabilization of boreholes, Sampling techniques, Undisturbed, disturbed and representative samples, Bore hole log.	
3	27-04-2022	Drainage and Dewatering methods, Estimation of depth of GWT (Hvorslev's method). Problems in Module-1	
		MODULE- 2 STRESS IN SOILS	
4	30-04-2022	Introduction, Boussinesq's and Westergaard's theory,Concentrated load, Circular and rectangular load, Equivalent point load method	L1,L2,L3
5	02-05-2022	Pressure distribution diagrams and contact pressure, Newmark's chart,	
6	04-05-2022	Foundation Settlement - Approximate method for stress distribution on a horizontal plane,	
7	07-05-2022	Types of settlements and importance, Computation of immediate and consolidation settlement	
8	09-05-2022	Problems in Module-2	
		MODULE-3 LATERIAL EARTH PRESSURE AND STABILITY OF SLOPES	
9	10-05-2022	Active, Passive and earth pressure at rest, Rankine's theory for cohesionless and cohesive soils,	
10	11-05-2022	Coulomb's theory, Rebhann's and Culmann's graphical construction.	
11	14-05-2022	Stability of Slopes : Assumptions, Stability of Slopes : infinite slopes	
12	16-05-2022	Stability of Slopes : finite slopes, Factor of safety	L2,L3,L4
13	18-05-2022	Use of Taylor's stability charts,	
14	24-05-2022	Swedish slip circle method for C (Method of slices) soils,	
15	25-05-2022	Swedish slip circle method for C-ϕ (Method of slices) soils,	
16	28-05-2022	Fellineous method for critical slip circle	
17	30-05-2022	Solving Problems in Module-3	
18	31-05-2022	Solving Problems in Module-3	
19	01-06-2022	Solving Problems in Module-3	
		MODULE-4 BEARING CAPACITY AND SHALLOW FOUNDATION	
20	04-06-2022	Types of foundations	
21	06-06-2022	Determination of bearing capacity of soil by Terzaghi's method	L2,L4,L5
22	07-06-2022	Determination of bearing capacity of soil by BIS method (IS: 6403),	
23	08-06-2022	Effect of water table on bearing capacity of soil	

24	11-06-2022	Effect of eccentricity loading on bearing capacity of soil	
25	13-06-2022	Field methods - plate load test	
26	14-06-2022	SPT test	
27	15-06-2022	Proportioning of shallow foundations : Isolated footings	
28	20-06-2022	Proportioning of shallow foundations "Ccombined footings (only two columns)	
29	21-06-2022	Problems solving in Module-4	
30	22-06-2022	Problems solving in Module-4	
31	28-06-2022	Problems solving in Module-4	
		MODULE-5 PILE FOUNDATIONS	
32	29-06-2021	Types and classification of piles,	
33	02-07-2022	Single loaded pile capacity in cohesion less soil by static formula	
34	04-07-2022	Single loaded pile capacity in cohesive soil by static formula	**L2, L4, L5, L6**
35	05-07-2022	Efficiency of file group, Group capacity of piles in cohesion less soils	
36	06-07-2022	Group capacity of piles in cohesive soils, Negative skin friction	
37	11-07-2022	Pile load tests, Settlement of piles	
38	12-07-2022	Under reamed piles (only introductory concepts – no derivation) Problems in Module-5	
39	16-07-2022	Problems solving in Module-5, Discussion of previous question papers	
40	16-07-2022	Problems solving in Module-5, Discussion of previous question papers	

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Staff in Charge

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (APRIL2022 – AUGUST 2022) MICRO SCHEDULE

COURSE	**Hydrology and Irrigation Engineering**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV63**	SEM/SECTION	06
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Hydrology	
1	25/04/2022	**Hydrology:** Introduction, Importance of hydrology	
2	27/04/2022	Global distribution of water and Indian water availability.	
3	29/04/2022	Practical application of hydrology, Hydrologic cycle (Horton's) qualitative and engineering representation.	
4	30/04/2022	**Precipitation:** Definition, Forms and types of precipitation.	
5	02/05/2022	Measurement of rain fall using Symon's and Syphon type of rain gauges.	
6	04/05/2022	Optimum number of rain gauge stations.	
7	06/05/2022	Consistency of rainfall data (double mass curve method).	
8	07/05/2022	Computation of mean rainfall estimation of missing data.	
9	09/05/2022	Estimation of missing data, Moving average curve, Mass curve, Rainfall hyetographs	
10	10/05/2022	Presentation of precipitation data	

SUMMARY

Planned Date	**From : 25/04/2022**	**To: 10/05/2022**	
Actual classes taken	**From : 25/04/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Losses	
11	13/05/2022	**Losses**: Evaporation: Introduction, Process	
12	14/05/2022	Factors affecting evaporation, measurement using IS class-A Pan	
13	16/05/2022	Estimation using empirical formulae (Meyer's and Rohwer's equations)	
14	18/05/2022	Reservoir evaporation and control.	
15	25/05/2022	**Evapo-transpiration:** Introduction, Consumptive use	
16	27/05/2022	AET, PET, Factors affecting, Measurement	
17	28/05/2022	Estimation by Blaney-Criddle equation.	
18	30/05/2022	**Infiltration:** Introduction, factors affecting infiltration capacity	
19	01/06/2022	Measurement by double ring infiltrometer, Horton's infiltration equation, infiltration indices,	
20	03/06/2022	Infiltration indices	

SUMMARY

Planned Date	**From : 13/05/2022**	**To: 03/06/2022**	
Actual classes taken	**From : 13/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Runoff	
21	04/06/2022	**Runoff:** Definition, concept of catchment	
22	06/06/2022	Factors affecting runoff, rainfall – runoff relationship using regression analysis.	
23	08/06/2022	**Hydrographs:** Definition, components of hydrograph	
24	10/06/2022	Base flow separation	
25	11/06/2022	Unit hydrograph, assumption, application and limitations.	
26	13/06/2022	Derivation from simple storm hydrographs, S curve and its computations, Conversion of UH of different durations.	
27	15/06/2022	S curve and its computations	
28	17/06/2022	S curve and its computations	
29	18/06/2022	Conversion of UH of different durations.	
30	20/06/2022	Conversion of UH of different durations.	

SUMMARY

Planned Date	**From : 04/06/2022**	**To: 20/06/2022**	
Actual classes taken	**From : 04/06/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Irrigation	
31	22/06/2022	**Irrigation:** Definition. Benefits and ill effects of irrigation.	
32	29/06/2022	System of irrigation: surface and ground water.	
33	30/06/2022	Flow irrigation.	
34	01/07/2022	Lift irrigation	
35	01/07/2022	Bandhara irrigation.	
36	02/07/2022	**Water Requirements of Crops:** Duty, delta and base period	
37	02/07/2022	Relationship between Duty, delta, and base period	
38	04/07/2022	Factors affecting duty of water crops and crop seasons in India	
39	06/07/2022	Irrigation efficiency	
40	06/07/2022	Frequency of irrigation	

SUMMARY

Planned Date	**From : 22/06/2022**	**To: 06/07/2022**	
Actual classes taken	**From : 22/06/2022**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Canals	
41	08/07/2022	**Canals:** Types of canals.	
42	08/07/2022	Alignment of canals.	
43	09/07/2022	Definition of gross command area, cultural command area, intensity of irrigation, time factor, crop factor.	
44	09/07/2022	Unlined and lined canals. Standard sections.	
45	11/07/2022	Standard sections.	
46	11/07/2022	Design of canals by Lacey's method	
47	12/07/2022	Design of canals by Kennedy's method.	
48	12/07/2022	**Reservoirs:** Definition, investigation for reservoir site.	
49	16/07/2022	Storage zones, determination of storage capacity using mass curves.	

SUMMARY

Planned Date	**From : 08/07/2022**	**To: 16/07/2022**	
Actual classes taken	**From : 08/07/2022**	**To:**	
Number of classes	**Allocated :09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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LESSON PLAN (APRIL 2022 – AUGUST 2022) MACRO SCHEDULE

COURSE	**Hydrology and Irrigation Engineering**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV63**	SEM/SECTION	06
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to:

1. Understand the concept of hydrology and components of hydrologic cycle such as precipitation, infiltration, evaporation and transpiration.
2. Quantify runoff and use concept of unit hydrograph.
3. Demonstrate different methods of irrigation, methods of application of water and irrigation procedure.
4. Design canals and canal network based on the water requirement of various crops.
5. Determine the reservoir capacity.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Understand the importance of hydrology and its components.
2. Measure precipitation and analyze the data and analyze the losses in precipitation.
3. Estimate runoff and develop unit hydrographs.
4. Find the benefits and ill-effects of irrigation.
5. Find the quantity of irrigation water and frequency of irrigation for various crops.
6. Find the canal capacity, design the canal and compute the reservoir capacity.

Sl No	Date	Module& Lesson Plan	Additional sources
01	25/04/2022 To 10/05/2022	**Module-1** **Hydrology:** Introduction, Importance of hydrology, Global distribution of water and Indian water availability, Practical application of hydrology, Hydrologic cycle (Horton's) qualitative and engineering representation. **Precipitation:** Definition, Forms and types of precipitation, measurement of rain fall using Symon's and	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606

		Syphon type of rain gauges, optimum number of rain gauge stations, consistency of rainfall data (double mass curve method), computation of mean rainfall, estimation of missing data, presentation of precipitation data, moving average curve, mass curve, rainfall hyetographs. **No. of Contact sessions: 10**	
02	13/05/2022 To03/06/2022	**Module 2**: **Losses:** Evaporation: Introduction, Process, factors affecting evaporation, measurement using IS class-A Pan, estimation using empirical formulae (Meyer's and Rohwer's equations) Reservoir evaporation and control. **Evapo-transpiration:** Introduction, Consumptive use, AET, PET, Factors affecting, Measurement, Estimation by Blaney-Criddle equation. Infiltration: Introduction, factors affecting infiltration capacity, measurement by double ring infiltrometer, Horton's infiltration equation, infiltration indices. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606
03	04/06/2022 To 20/06/2022	**Module 3:** **Runoff:** Definition, concept of catchment, factors affecting runoff, rainfall – runoff relationship using regression analysis. **Hydrographs:** Definition, components of hydrograph, base flow separation, unit hydrograph, assumption, application and limitations, derivation from simple storm hydrographs, S curve and its computations, Conversion of UH of different durations. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606
04	22/06/2022 To 06/07/2022	**Module 4**: **Irrigation:** Definition. Benefits and ill effects of irrigation. System of irrigation: surface and ground water, flow irrigation, lift irrigation, Bandhara irrigation. **Water Requirements of Crops:** Duty, delta and base period, relationship between them, factors affecting duty of water crops and crop seasons in India, irrigation efficiency, frequency of irrigation. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606
05	08/07/2022 To 16/07/2022	**Module 5:** **Canals:** Types of canals. Alignment of canals. Definition of gross command area, cultural command area, intensity of irrigation, time factor, crop factor. Unlined and lined canals. Standard sections. Design of canals by Lacey's and Kennedy's method. **Reservoirs:** Definition, investigation for reservoir site, storage zones determination of storage capacity using mass curves, economical height of dam. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

		Syphon type of rain gauges, optimum number of rain gauge stations, consistency of rainfall data (double mass curve method), computation of mean rainfall, estimation of missing data, presentation of precipitation data, moving average curve, mass curve, rainfall hyetographs. **No. of Contact sessions: 10**	
02	13/05/2022 To03/06/2022	**Module 2:** **Losses:** Evaporation: Introduction, Process, factors affecting evaporation, measurement using IS class-A Pan, estimation using empirical formulae (Meyer's and Rohwer's equations) Reservoir evaporation and control. **Evapo-transpiration:** Introduction, Consumptive use, AET, PET, Factors affecting, Measurement, Estimation by Blaney-Criddle equation. Infiltration: Introduction, factors affecting infiltration capacity, measurement by double ring infiltrometer, Horton's infiltration equation, infiltration indices. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606
03	04/06/2022 To 20/06/2022	**Module 3:** **Runoff:** Definition, concept of catchment, factors affecting runoff, rainfall – runoff relationship using regression analysis. **Hydrographs:** Definition, components of hydrograph, base flow separation, unit hydrograph, assumption, application and limitations, derivation from simple storm hydrographs, S curve and its computations, Conversion of UH of different durations. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606
04	22/06/2022 To 06/07/2022	**Module 4:** **Irrigation:** Definition. Benefits and ill effects of irrigation. System of irrigation: surface and ground water, flow irrigation, lift irrigation, Bandhara irrigation. **Water Requirements of Crops:** Duty, delta and base period, relationship between them, factors affecting duty of water crops and crop seasons in India, irrigation efficiency, frequency of irrigation. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606
05	08/07/2022 To 16/07/2022	**Module 5:** **Canals:** Types of canals. Alignment of canals. Definition of gross command area, cultural command area, intensity of irrigation, time factor, crop factor. Unlined and lined canals. Standard sections. Design of canals by Lacey's and Kennedy's method. **Reservoirs:** Definition, investigation for reservoir site, storage zones determination of storage capacity using mass curves, economical height of dam. **No. of Contact sessions: 10**	https://www.studocu.com/in/document/visvesvaraya-technological-university/civil-engineering/hydrology-and-irrigation-e-full-notes-15cv73/16884606

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. K. Subramanya, "Engineering Hydrology", Tata McGraw Hill Publishers, New Delhi.
2. Jayarami Reddy, "A Text Book of Hydrology", Lakshmi Publications, New Delhi.
3. Punmia and LalPandey, "Irrigation and Water Power Engineering" Lakshmi Publications, New Delhi.

Reference Books:

1. H.M. Raghunath, "Hydrology", Wiley Eastern Publication, New Delhi.
2. Sharma R.K., "Irrigation Engineering and Hydraulics", Oxford & IBH Publishing Co., New Delhi.
3. Ven Te Chow, "Applied Hydrology", Tata McGraw Hill Publishers, New Delhi.
4. Modi P.N "Water Resources and Water Power Engineering"-. Standard book house, Delhi.
5. Garg S.K, "Irrigation Engineering and Hydraulic Structures" Khanna publications, New Delhi.

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LESSON PLAN (APRIL2022 – AUGUST 2022) MICRO SCHEDULE

COURSE	**Railways, Harbour, Tunnelling and Airports**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV645**	SEM/SECTION	06
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Railway Planning	
1	26/04/2022	Significance of Road, Rail, Air and Water transports, creep in rails, defects in rails,	
2	28/04/2022	Coordination of all modes to achieve sustainability	
3	29/04/2022	Elements of permanent way – Rails, Sleepers, Ballast	
4	30/04/2022	rail fixtures and fastenings	
5	04/05/2022	Track Stress, coning of wheels	
6	05/05/2022	Route alignment surveys,	
7	06/05/2022	conventional and modern methods, Soil suitability analysis	
8	07/05/2022	Geometric design of railways, gradient, super elevation	
9	10/05/2022	widening of gauge on curves	
10	12/05/2022	Points and Crossings	

SUMMARY

Planned Date	**From : 26/04/2022**	**To: 12/05/2022**	
Actual classes taken	**From : 26/04/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Railway Construction and Maintenance	
11	13/05/2022	Earthwork	
12	14/05/2022	Stabilization of track on poor soil	
13	17/05/2022	Calculation of Materials required for track laying	
14	19/05/2022	Construction and maintenance of tracks-	
15	24/05/2022	Modern methods of construction	
16	25/05/2022	Track maintenance	
17	26/05/2022	Railway stations and yards	
18	2705/2022	passenger amenities	
19	28/05/2022	Urban rail, Infrastructure for Metro, Mono rails	
20	31/05/2022	underground railways	

SUMMARY

Planned Date	**From : 13/05/2022**	**To: 31/05/2022**	
Actual classes taken	**From : 13/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Harbour and Tunnel Engineering	
21	01/06/2022	Definition of Basic Terms	
22	02/06/2022	Planning and Design of Harbours	
23	03/06/2022	Requirements, Classification	
24	04/06/2022	Location and Design Principles – Harbour Layout and Terminal Facilities	
25	07/06/2022	Coastal Structures, Inland Water Transport,	
26	09/06/2022	Wave action on Coastal Structures and Coastal Protection Works.	
27	10/06/2022	Tunnelling: Introduction	
28	11/06/2022	size and shape of the tunnel	
29	14/06/2022	tunnelling methods in soils	
30	15/06/2022	tunnel lining, tunnel drainage, Tunnelventilation	

SUMMARY

Planned Date	**From : 01/06/2022**	**To: 15/06/2022**	
Actual classes taken	**From : 01/06/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Airport Planning	
31	16/06/2022	Air transport characteristics,	
32	17/06/2022	airport classification	
33	21/06/2022	air port planning: objectives	
34	22/06/2022	Airport components	
35	23/06/2022	layout characteristics	
36	28/06/2022	layout characteristics	
37	29/06/2022	socio-economic characteristics of the catchment area	
38	30/06/2022	criteria for airport site selection	
39	01/07/2022	ICAO stipulations	
40	02/07/2022	typical airport layouts, Parking and circulation area	

SUMMARY

Planned Date	**From : 16/06/2022**	**To: 02/07/2022**	
Actual classes taken	**From : 16/06/2022**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mr. Prakash J
Course Coordinator

Dr. G Mahesh Kumar
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Dr. Narendra viswanath
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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Airport Design	
41	03/07/2022	Runway Design: Orientation, Wind Rose Diagram,	
42	03/07/2022	Wind Rose Diagram continued,	
43	05/07/2022	Runway length,	
44	05/07/2022	Problems on basic and Actual Length	
45	06/07/2022	Geometric design of runways	
46	06/07/2022	Pavement Design Principles	
47	08/07/2022	Configuration and, Elements of Taxiway Design Airport Zones	
48	11/07/2022	Passenger Facilities and Services	
49	12/07/2022	Runway and Taxiway Markings	
50	16/07/2022	Runway and Taxiway lighting	

SUMMARY

Planned Date	**From : 03/07/2022**	**To: 16/07/2022**	
Actual classes taken	**From : 03/07/2022**	**To:**	
Number of classes	**Allocated :09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (ARPIL 2022 – AUGUST 2022) MACRO SCHEDULE

COURSE	**Railways, Harbour, Tunnelling and Airports**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV645**	SEM/SECTION	06
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to:

1. Understand the history and development, role of railways, railway planning and development based on essential criteria's.
2. Learn different types of structural components, engineering properties of the materials, to calculate the material quantities required for construction
3. Understand various aspects of geometric elements, points and crossings, significance of maintenance of tracks.
4. Design and plan airport layout, design facilities required for runway, taxiway and impart knowledge about visual aids
5. Apply design features of tunnels, harbours, and dock and necessary navigational aids; also expose them to various methods of tunnelling and tunnel accessories.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Acquires capability of choosing alignment and also design geometric aspects of railway system, runway, and taxiway.
2. Suggest and estimate the material quantity required for laying a railway track and also will be able to determine the hauling capacity of a locomotive.
3. Develop layout plan of airport, harbour, dock and will be able relate the gained knowledge to identify required type of visual and/or navigational aids for the same.
4. Apply the knowledge gained to conduct surveying, understand the tunnelling activities.

Sl No	Date	Module& Lesson Plan	Additional sources
01	24/05/2022 To 12/05/2022	**Module-1** **Railway Planning:** Significance of Road, Rail, Air and Water transports – Coordination of all modes to achieve sustainability – Elements of permanent way – Rails, Sleepers, Ballast, rail fixtures and fastenings, – Track Stress, coning of wheels, creep in rails, defects in rails – Route alignment surveys, conventional and modern methods- – Soil suitability analysis – Geometric design of railways, gradient, super elevation, widening of gauge on curves- Points and Crossings(Explanation & Sketches of Right and Left hand turnouts only). **No. of Contact sessions: 10**	https://drive.google.com/file/d/1Luez_9cKId_ezspR9INIZTsa8vM1UHVZ/view
02	13/05/2022 To 30/05/2022	**Module 2:** **Railway Construction and Maintenance:** Earthwork – Stabilization of track on poor soil, Calculation of Materials required for track laying – Construction and maintenance of tracks – Modern methods of construct ion & maintenance – Railway stations and yards and passenger amenities- Urban rail – Infrastructure for Metro, Mono and underground railways. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1-0K_aLddFWXCajgBsY8VzxxnJZCfw6nH/view
03	01/06/2022 To 15/06/2022	**Module 3:** **Harbour and Tunnel Engineering:** Definition of Basic Terms: Planning and Design of Harbours: Requirements, Classification, Location and Design Principles – Harbour Layout and Terminal Facilities , Coastal Structures, Inland Water Transport – Wave action on Coastal Structures and Coastal Protection Works. **Tunneling:** Introduction, size and shape of the tunnel, tunneling methods in soils, tunnel lining, tunnel drainage and ventilation. **No. of Contact sessions: 10**	https://backbencher.club/railways-harbour-tunnelling-and-airports/
04	16/06/2022 To 02/07/2022	**Module 4:** **Airport Planning:** Air transport characteristics, airport classification, airport planning: objectives, components, layout characteristics, and socio-economic characteristics of the catchment area, criteria for airport site selection and ICAO stipulations, typical airport layouts, Parking and circulation area. **No. of Contact sessions: 10**	https://backbencher.club/railways-harbour-tunnelling-and-airports/
05	03/07/2022 To 16/07/2022	**Module 5:** **Airport Design:** Runway Design: Orientation, Wind Rose Diagram, Runway length, Problems on basic and Actual Length, Geometric design of runways, Configuration and Pavement Design Principles, Elements ofTaxiway Design, Airport Zones, Passenger Facilities and Services, Runway and Taxiway Markings and lighting. **No. of Contact sessions: 10**	https://drive.google.com/file/d/12DTAG3DG6iTdjxXc-k48nCvuf8rkoEk8/view

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. SaxenaSubhash C and Satyapal Arora, "A Course in Railway Engineering", Dhanpat Rai and Sons, Delhi,
2. Satish Chandra and Agarwal M.M, "Railway Engineering", 2nd Edition, Oxford University Press, New Delhi,
3. Khanna S K, Arora M G and Jain S S, "Airport Planning and Design", Nemchand and Brothers, Roorkee,
4. C Venkatramaiah, " Transportation Engineering", Volume II: Railways, Airports, Docks and Harbours, Bridges and Tunnels, Universities Press
5. Bindra S P, "A Course in Docks and Harbour Engineering", Dhanpat Rai and Sons, New Delhi,

Reference Books:

1. Oza.H.P. and Oza.G.H., "A course in Docks & Harbour Engineering". Charotar Publishing Co.,
2. Mundrey J.S. "A course in Railway Track Engineering". Tata McGraw Hill,
3. Srinivasan R. Harbour, "Dock and Tunnel Engineering", 26th Edition 2013

Mr. Prakash J
Course Coordinator

Dr. G Mahesh Kumar
HOD

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (November 2022 – Febraury 2023) MICRO SCHEDULE

COURSE	EARTH RESOURCES AND ENGINEERING	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	21CV34	SEM/SECTION	07
IA MARKS (CIE)	50 (Average of three tests for 30 marks, 10 marks for quiz or seminars and 10 marks for assignment)	EXAM MARKS (SEE) 100	50 (Question paper will be set and evaluated for 100 marks and later reduced to 50)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction, scope of earth science in Engineering, Geohazards and disasters, Mitigation and management	
1	02-11-2022	Earths internal dynamics ,Plate tectonics	
2	03-11-2022	Earth quakes types, causes iso-seismal line,	
3	07-11-2022	seismic zonation map, seismic proof structures,	
4	08-11-2022	Numerical problems on location of epicenter	
5	09-11-2022	volcanic eruption, types, causes	
6	10-11-2022	landslides, causes types, preventive measures;	
7	15-11-2022	tsunamis causes consequences,	
8	16-11-2022	mitigation cyclones, causes management	

SUMMARY

Planned Date	**From : 02/11/2022**	**To:16/11/2022**	
Actual classes taken	**From : 02/11/2022**	**To:**	
Number of classes	**Allocated : 8**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Earth Resources	
9	17-11-2022	Minerals -Industrial, rock forming and ore minerals	
10	21-11-2022	Physical properties, composition and uses Rocks as a construction materials	
11	22-11-2022	physical properties, texture, composition, applications for aggregate	
12	23-11-2022	physical properties, texture, composition, applications for aggregate	
13	24-11-2022	decorative (facing/polishing), railway ballast,	
14	25-11-2022	rocks for masonry work, monumental/architecture,	
15	28-11-2022	rocks as aquifers, water bearing aquifers	
16	29-11-2022	properties igneous, sedimentary rocks	

SUMMARY

Planned Date	From : 17/11/2022	To: 29/11/2022	
Actual classes taken	From : 17/11/2022	To:	
Number of classes	Allocated : 8	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Surface investigation for Civil Engineering projects	
17	05-12-2022	Weathering, type, causes, soil insitu, drifted soil, Effects of weathering on monumental rocks	
18	06-12-2022	Soil profile, soil mineralogy and structure	
19	07-12-2022	types of soil, Black cotton soil v/s Lateritic soil	
20	13-12-2022	River morphology and basin investigation for engineering Projects like earthen dam, gravity dam, arch dam	
21	14-12-2022	Features of river erosion, deposition and their influences on river valley projects	
22	15-12-2022	morphometric analysis of river basin, selection of site for artificial recharge	
23	19-12-2022	interlinking of river basins, coastal process and landforms	
24	20-12-2022	sedimentation /siltation, erosion.	

SUMMARY

Planned Date	**From : 05/12/2022**	**To: 05/12/2022**	
Actual classes taken	**From : 20/12/2022**	**To:**	
Number of classes	**Allocated : 8**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Subsurface investigation for deep foundation		
25	21-12-2022	Borehole data(and problems)		
26	22-12-2022	Dip and strike, and outcrop problems (numerical problem geometrical/ simple trigonometry based)		
27	26-12-2022	Electrical Resistivity meter		
28	27-12-2022	depth of water table (numerical problems)		
29	28-12-2022	seismic studies, faults, folds,		
30	29-12-2022	unconformity , joints types, recognition		
31	02-01-2023	their significance in Civil engineering projects like tunnel project, dam project		
32	03-01-2023	Ground improvements like rock bolting, rock jointing, grouting		

SUMMARY

Planned Date	**From : 21/12/2022**	**To: 21/01/2022**	
Actual classes taken	**From : 03/01/2023**	**To:**	
Number of classes	**Allocated : 8**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (February 2023 – May 2023) MACRO SCHEDULE

COURSE	EARTH RESOURCES AND ENGONEERING	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**21CV34**	SEMESTER	03
IA MARKS (CIE)	50 (Average of three tests for 30 marks, 10 marks for quiz or seminar and 10 marks for assignment)	EXAM MARKS (SEE) 100	50 (Question paper will be set and evaluated for 100 marks and later reduced to 50)

Course Learning Objectives: This course will enable students to learn Design of Pre Stressed Concrete Elements.

Course outcomes: After studying this course, students will be able to:
1. Apply geological knowledge in different civil engineering practice.
2. Students will acquire knowledge on durability and competence of foundation rocks, and confidence enough to use the best building materials.
3. competent enough to provide services for the safety, stability, economy and life of the structures that they construct .
4. Able to solve various issues related to ground water exploration, build up dams, bridges, tunnels which are often confronted with ground water problems .
5. Intelligent enough to apply GIS, GPS and remote sensing as a latest tool in different civil engineering for safe and solid construction.

Sl No	Date	Module & Lesson Plan	Additional sources
01	02/11/2022 To 16/11/2022	**Module-1** **Introduction, scope of earth science in Engineering, Geohazards and disasters, Mitigation and management** Earths internal dynamics ,Plate tectonics, Earth quakes types, causes iso-seismal line, seismic zonation map, seismic proof structures, Numerical problems on location of epicenter volcanic eruption, types, causes landslides, causes types, preventive measures; tsunamis causes consequences, mitigation cyclones, causes management **No. of Contact sessions:8**	https://www.youtube.com/watch?v=OQEUHlt95d0&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX https://www.youtube.com/watch?v=8zRv4wm2M5Q&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=6
02	17/11/2022 To 29/11/2022	**Module 2:** **Earth Resources** Minerals -Industrial, rock forming and ore minerals. Physical properties, composition and uses Rocks as a construction materials- physical properties, texture,	https://www.youtube.com/watch?v=y8D9ueK3Q7g&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=7

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Geo-tools and techniques for civil Engineering Applications	
33	16-01-2023	Toposheets, Remote sensing and GIS	
34	17-01-2023	Photogrammetry (scale, flight planning, overlap)	
35	23-01-2023	Photogrammetry (elevation effects, interpretation keys)	
36	24-01-2023	numericals on flight, planning scale	
37	31-01-2023	elevation, flying height	
38	01-02-2023	GPS Ground Penetrating Radar (GPR)	
39	02-02-2023	Drone, and their applications	

SUMMARY

Planned Date	**From : 16/01/2023**	**To: 16/01/2023**	
Actual classes taken	**From : 02/02/2023**	**To:**	
Number of classes	**Allocated : 7**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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02	17/11/2022 To 29/11/2022	**Module 2:** **Earth Resources** Minerals -Industrial, rock forming and ore minerals. Physical properties, composition and uses Rocks as a construction materials- physical properties, texture, composition, applications for aggregate, decorative (facing/polishing), railway ballast, rocks for masonry work, monumental/architecture, rocks as aquifers, water bearing properties igneous, sedimentary **No. of Contact sessions: 8**	https://www.youtube.com/watch?v=y8D9ueK3Q7g&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=7 https://www.youtube.com/watch?v=aqbbOqfm2w0&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=19
03	05/12/2022 To 20/12/2022	**Module 3:** **Surface investigation for Civil Engineering projects** Weathering, type, causes, soil insitu, drifted soil Soil profile, soil mineralogy , structure, types of soil, Black cotton soil v/s Lateritic soil. Effects of weathering on monumental rocks River morphology and basin investigation for engineering Projects like earthen dam, gravity dam, arch dam. Features of river erosion, deposition and their influences on river valley projects. morphometric analysis of river basin, selection of site for artificial recharge, interlinking of river basins, coastal process and landforms, sedimentation /siltation, erosion. **No. of Contact sessions: 8**	https://www.youtube.com/watch?v=WEDktKJIPos&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=20 https://www.youtube.com/watch?v=Xj4O0U58sEQ&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=24
04	21/12/2022 To 03/01/2023	**Module 4:** **Subsurface investigation for deep foundation** Borehole data(and problems) Dip and strike, and outcrop problems (numerical problem geometrical/ simple trigonometry based) Electrical Resistivity meter, depth of water table, (numerical problems). seismic studies, faults, folds, unconformity, joints types, recognition and their significance in Civil engineering projects like tunnel project, dam project, Ground improvements like rock bolting, rock jointing, grouting. **No. of Contact sessions: 8**	https://www.youtube.com/watch?v=3haxqD7wkLU&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=25 https://www.youtube.com/watch?v=p3JfPFoXJ-o&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=31
05	16/01/2023 To 02/02/2023	**Module 5:** **Geo-tools and techniques for civil Engineering Applications** Toposheets, Remote sensing and GIS. Photogrammetry (scale, flight planning, overlap, elevation effects, interpretation keys, numericals on flight, planning scale , elevation, flying height, ...) GPS Ground Penetrating Radar (GPR), Drone, and their applications **No. of Contact sessions: 7**	https://www.youtube.com/watch?v=H2PS2wNiG24&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=32 https://www.youtube.com/watch?v=nRsITHJG_RY&list=PLcwp2fRcIXJWJmR3nde2U6VT8OdY43mDX&index=36

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:
- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. P.K. Mukerjee, "A Text Book of Geology", World Press Pvt., Ltd. Kolkatta.
2. Parbin Singh, "Text Book of Engineering and General Geology", Published by S.K. Kataria and Sons, New Dehli

Reference Books:

1. Earthquake Tips - Learning Earthquake Design and Construction - C V R Murthy Published by National Information Centre of Earthquake Engineering, Indian Institute of Technology, Kanpur.
2. Dimitri P Krynine and William R Judd, "Principles of Engineering Geology and Geotechnics", CBS Publishers and Distributors, New Delhi. 3. K V G K Gokhale, "Principles of Engineering Geology", BS Publications, Hyderabad.
3. M Anji Reddy, "Text book of Remote Sensing and Geographical Information System", BS Publications, Hyderabad.
4. Ground water Assessment, development and Management by K.R. Karanth, Tata Mc Graw Hills
5. K. Todd, "Groundwater Hydrology", Tata Mac Grow Hill, New Delhi.
6. D. Venkata Reddy, "Engineering Geology", New Age International Publications, New Delhi.
7. S.K Duggal, H.K Pandey and N Rawal, "Engineering Geology", McGraw Hill Education (India) Pvt, Ltd. New Delhi.
8. **Introduction to Environmental Geology by Edward A Keller, Pearson publications.**
9. **Engineering Geology and Rock Mechanics B. P. Verma, Khanna publishers**
10. Principles of Engineering Geology and Geotechnics, Krynine and Judd, CBS Publications

List of URLs, Text Books, Notes, Multimedia Content, etc.

https://www.youtube.com/watch?v=aTVDiRtRook&list=PLDF5162B475DD915F
https://www.youtube.com/watch?v=EBiLLJAxBuU&index=2&list=PLDF5162B475DD915F
https://nptel.ac.in/courses
https://youtu.be/fvoYHzAhvVM
https://youtu.be/aTVDiRtRook

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ESTD:2002

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (Oct 2022 – Jan 2023) MICRO SCHEDULE

COURSE	CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV51**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
1	10-10-2022	**Management:** Characteristics of management, functions of management	
2	11-10-2022	Importance and purpose of planning process, types of plans.	
3	12-10-2022	**Construction Project Formulation:** Introduction to construction management,	
4	14-10-2022	project organization, management functions	
5	15-10-2022	management st	
6	17-10-2022	**Construction Planning and Scheduling:** Introduction, types of project plans,	
7	18-10-2022	work breakdown structure, Grant Chart,	
8	19-10-2022	preparation of network diagram- event and activity based and its critical path critical path method,	
9	21-10-2022	preparation of network diagram- event and activity based and its critical path critical path method, PERT method,	
10	22-10-2022	concept of activity on arrow and activity on node.	

SUMMARY

Planned Date	**From : 10/10/2022**	**To: 22/10/2022**	
Actual classes taken	**From : 10/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

Mrs. Radhika T N
Course Coordinator

Dr. G Mahesh Kumar
HOD

Dr Narendra Viswanath
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MODULE 2

Sl No	Date	Lesson Planned	Remarks
11	25-10-2022	**Resource Management:** Basic concepts of resource management, class of lab our,	
12	28-10-2022	Wages & statutory requirement,	
13	29-10-2022	Labour Production rate or Productivity,	
14	31-10-2022	Factors affecting labour output or productivity.	
15	02-11-2022	**Construction Equipments:** classification of construction equipment,	
16	04-11-2022	estimation of productivity for: excavator, dozer, compactors, graders and dumpers.	
17	05-11-2022	Estimation of ownership cost, operational and maintenance cost of construction equipments.	
18	07-11-2022	Selection of construction equipment and basic concept on equipment maintenance	
19	08-11-2022	**Materials:** material management functions	
20	09-11-2022	inventory management.	

SUMMARY

Planned Date	**From : 25/10/2022**	**To: 09/11/2022**	
Actual classes taken	**From : 25/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

Dr. G Mahesh Kumar
HOD

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 3

Sl No	Date	Lesson Planned	Remarks
21	16-11-2022	**Construction Quality , safety and Human Values:** Construction quality process, inspection,	
22	18-11-2022	quality control and quality assurance, cost of quality	
23	19-11-2022	ISO standards. Introduction to concept of Total Quality Management	
24	21-11-2022	**HSE:** Introduction to concepts of HSE as applicable to Construction.	
25	22-11-2022	Importance of safety in construction	
26	23-11-2022	Safety measures to be taken during Excavation	
27	25-11-2022	, Explosives , drilling and blasting	
28	26-11-2022	hot bituminous works , scaffolds / platforms / ladder	
29	28-11-2022	form work and equipment operation	
30	29-11-2022	Storage of materials. Safety through legislation, safety campaign. Insurances	
31	30-11-2022	**Ethics :** Morals, values and ethics, integrity	
32	02-12-2022	trustworthiness , work ethics, need of engineering ethics,	
33	03-12-2022	Professional Duties, Professional and Individual Rights	
34	05-12-2022	Confidential and Proprietary Information, Conflict of Interest Confidentiality,	
35	06-12-2022	Gifts and Bribes, Price Fixing, Whistle Blowing.	

SUMMARY

Planned Date	**From : 16/11/2022**	**To: 06/12/2022**	
Actual classes taken	**From : 16/11/2022**	**To:**	
Number of classes	**Allocated : 15**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
36	06-12-2022	**Introduction to engineering economy:** Principles of engineering economics		
37	07-12-2022	concept on Micro and macro analysis, problem solving and decision making		
38	09-12-2022	**Interest and time value of money:** concept of simple and compound interest,		
39	10-12-2022	interest formula for: single payment, equal payment and uniform gradient series		
40	12-12-2022	Nominal and effective interest rates		
41	13-12-2022	deferred annuities, capitalized cost		
42	14-12-2022	**Comparison of alternatives:** Present worth		
43	20-12-2022	annual equivalent, capitalized and rate of return methods,		
44	21-12-2022	Minimum Cost analysis and break even analysis.		

SUMMARY

Planned Date	**From : 16/12/2022**	**To: 21/12/2022**	
Actual classes taken	**From : 16/12/2022**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
45	23-12-2022	**Entrepreneurship:** Evolution of the concept, functions of an entrepreneur,	
46	24-12-2022	concepts of entrepreneurship, stages in entrepreneurial process,	
47	26-12-2022	different sources of finance for entrepreneur, central and state level financial institutions. Micro,	
48	27-12-2022	Small & Medium Enterprises (MSME): definition, characteristics, objectives, scope, role of MSME in economic development, advantages of MSME,	
49	28-12-2022	Introduction to different schemes: TECKSOK, KIADB, KSSIDC, DIC, Single Window Agency: SISI, NSIC, SIDBI, KSFC.	
50	30-12-2022	**Business Planning Process:** Business planning process, marketing plan,	
51	31-12-2022	financial plan, project report and feasibility study,	
52	02-01-2023	guidelines for preparation of model project report for starting a new venture.	
53	03-01-2023	Introduction to international entrepreneurship opportunities,	
54	04-01-2023	entry into international business, exporting,	
55	06-01-2023	direct foreign investment, venture capital.	

SUMMARY

Planned Date	**From : 23/12/2022**	**To: 06/01/2023**	
Actual classes taken	**From : 23/12/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (October 2022 – Jan 2022) MACRO SCHEDULE

COURSE	CONSTRUCTION MANAGEMENT OF ENTERPRENUERSHIP	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV51**	SEMESTER	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to
1. Understand the concept of planning, scheduling, cost and quality control, safety during construction, organization and use of project information necessary for construction project.
2. Inculcate Human values to grow as responsible human beings with proper personality.
3. Keep up ethical conduct and discharge professional duties.

Course outcomes: After studying this course, students will be able to:
1. Prepare a project plan based on requirements and prepare schedule of a project by understanding the activities and their sequence.
2. Understand labour output, equipment efficiency to allocate resources required for an activity / project to achieve desired quality and safety.
3. Analyze the economics of alternatives and evaluate benefits and profits of a construction activity based on monetary value and time value.
4. Establish as an ethical entrepreneur and establish an enterprise utilizing the provisions offered by the federal agencies.

Sl No	Date	Module & Lesson Plan	Additional sources
01	10/10/2022 To 22/10/2022	**Module-1** **Management:** Characteristics of management, functions of management, importance and purpose of planning process, types of plans. **Construction Project Formulation:** Introduction to construction management, project organization, management functions, management styles. **Construction Planning and Scheduling:** Introduction, types of project plans, work breakdown structure, Grant Chart, preparation of network diagram- event and activity based and its critical path critical path method, PERT method, concept of	https://www.google.com/search?q=Construction+Planning+and+Scheduling&oq=Construction+Planning+and+Scheduling&aqs=chrome..69i57.743j0j9&sourceid=chrome&ie=UTF-8

		activity on arrow and activity on node. **No. of Contact sessions: 10**	
02	25/10/2022 To 09/11/2022	**Module 2:** **Resource Management:** Basic concepts of resource management, class of lab our, Wages & statutory requirement, Labour Production rate or Productivity, Factors affecting labour output or productivity. **Construction Equipments:** classification of construction equipment, estimation of productivity for: excavator, dozer, compactors, graders and dumpers. Estimation of ownership cost, operational and maintenance cost of construction equipments. Selection of construction equipment and basic concept on equipment maintenance **Materials:** material management functions, inventory management. **No. of Contact sessions:09**	https://www.google.com/search?q=Construction+Equipments&oq=Construction+Equipments&aqs=chrome..69i57.854j0j9&sourceid=chrome&ie=UTF-8
03	16/11/2022 To 06/12/2022	**Module 3:** **Construction Quality , safety and Human Values:** Construction quality process, inspection, quality control and quality assurance, cost of quality, ISO standards. Introduction to concept of Total Quality Management **HSE:** Introduction to concepts of HSE as applicable to Construction. Importance of safety in construction , Safety measures to be taken during Excavation , Explosives , drilling and blasting , hot bituminous works , scaffolds / platforms / ladder , form work and equipment operation. Storage of materials. Safety through legislation, safety campaign. Insurances. **Ethics** : Morals, values and ethics, integrity, trustworthiness , work ethics, need of engineering ethics, Professional Duties, Professional and Individual Rights, Confidential and Proprietary Information, Conflict of Interest Confidentiality, Gifts and Bribes, Price Fixing, Whistle Blowing. **No. of Contact sessions: 14**	https://www.google.com/search?q=Construction+Quality+%2C+safety+and+Human+Values&oq=Construction+Quality+%2C+safety+and+Human+Values&aqs=chrome..69i57.926j0j9&sourceid=chrome&ie=UTF-8
04	16/12/2022 To 21/12/2022	**Module 4:** **Introduction to engineering economy**: Principles of engineering economics, concept on Micro and macro analysis, problem solving and decision making. **Interest and time value of money:** concept of simple and compound interest, interest formula for: single payment, equal payment and uniform gradient series. Nominal and effective interest rates, deferred annuities, capitalized cost.	https://www.google.com/search?q=Introduction+to+engineering+economy&oq=Introduction+to+engineering+economy&aqs=chrome..69i57.783j0j9&sourceid=chrome&ie=UTF-8

		Comparison of alternatives: Present worth, annual equivalent, capitalized and rate of return methods, Minimum Cost analysis and break even analysis. **No. of Contact sessions: 12**	
05	23/12/2022 To 06/01/2023	**Module 5:** **Entrepreneurship:** Evolution of the concept, functions of an entrepreneur, concepts of entrepreneurship, stages in entrepreneurial process, different sources of finance for entrepreneur, central and state level financial institutions. Micro, Small & Medium Enterprises (MSME): definition, characteristics, objectives, scope, role of MSME in economic development, advantages of MSME, Introduction to different schemes: TECKSOK, KIADB, KSSIDC, DIC, Single Window Agency: SISI, NSIC, SIDBI, KSFC. Business **Planning Process:** Business planning process, marketing plan, financial plan, project report and feasibility study, guidelines for preparation of model project report for starting a new venture. Introduction to international entrepreneurship opportunities, entry into international business, exporting, direct foreign investment, venture capital. **No. of Contact sessions: 10**	https://www.google.com/search?q=Entrepreneurship%3A&oq=Entrepreneurship%3A&aqs=chrome..69i57j69i58.822j0j9&sourceid=chrome&ie=UTF-8

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. P C Tripathi and P N Reddy, "Principles of Management", Tata McGraw-Hill Education
2. Chitkara, K.K, "Construction Project Management: Planning Scheduling and Control", Tata McGraw Hill Publishing Company, New Delhi.
3. Poornima M. Charantimath , "Entrepreneurship Development and Small Business Enterprise", Dorling Kindersley (India) Pvt. Ltd., Licensees of PearsonEducation
4. Dr. U.K. Shrivastava "Construction Planning and Management", Galgotia publications Pvt. Ltd. New Delhi. Bureau of Indian standards – IS 7272 (Part-1)- 1974 : Recommendations for labour output constant for building works:

Reference Books:

1. Robert L Peurifoy, Clifford J. Schexnayder, AviadShapira, Robert Schmitt, "Construction Planning, Equipment, and Methods (Civil Engineering), McGraw-HillEducation

2. Harold Koontz, Heinz Weihrich, "Essentials of Management: An International, Innovation, and Leadership perspective", T.M.H. Edition, NewDelhi
3. Frank Harris, Ronald McCaffer with Francis Edum-Fotwe, " Modern Construction Management", Wiley-Blackwell
4. Mike Martin, Roland Schinzinger, "Ethics in Engineering", McGraw-HillEducation
5. Chris Hendrickson and Tung Au, "Project Management for Construction - Fundamentals Concepts for Owners, Engineers, Architects and Builders", Prentice Hall,Pitsburgh
6. James L.Riggs, David D. Bedworth , Sabah U. Randhawa " Engineerng Economics" 4

Mrs. Radhika T N
Course Coordinator

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2022-2023*

[LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MACRO SCHEDULE]

Course Title	**Analysis of Indeterminate Structures**	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV52*	*Sem /Sec*	*V*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **10/10/2022**	*Total contact Hours: 56*	*Duration of Exam*: 03 Hrs.	*CREDITS: 03*

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method
CO2. Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
CO3. Construct the bending moment diagram for beams and frames by Kani's method.
CO4. Construct the bending moment diagram for beams and frames using flexibility method.
CO5. Analyze the beams and indeterminate frames by system stiffness method.

Sl No	Date	Module Lesson Plan	Additional Sources
1	**10/10/22 to 27/10/22**	**Module 1: Slope Deflection Method:** Introduction, sign convention, development of slope deflection equation, analysis of continuous beams including settlements, Analysis of orthogonal rigid plane frames including sway frames with kinematic indeterminacy≤3. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/
2	**31/10/2022 to 17/11/2022**	**Module 2: Moment Distribution Method** Introduction, Definition of terms, Development of method, Analysis of continuous beams with support yielding, Analysis of orthogonal rigid plane frames including sway frames with kinematic indeterminacy ≤3. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2**	https://nptel.ac.in/courses/105/105/105105109/
3	**21/11/2022 to 06/12/2022**	**Module 3: Kani's Method:** Introduction, Concept, Relationships between bending momentand deformations, Analysis of continuous beams with and without settlements,	https://nptel.ac.in/courses/105/105/105105109/

		Analysis of frames with and without sway. **No. of Contact Sessions: 15 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	
4	**07/12/2022 to 26/12/2022**	**Module 4: Matrix Method of Analysis (Flexibility Method):** Introduction, Axes and coordinates, Flexibility matrix, Analysis of continuous beams and plane trusses using system approach, Analysis of simple orthogonal rigid frames using system approach with static indeterminacy ≤3. **No. of Contact Sessions: 14 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/
5	**27/12/2022 to 27/01/2023**	**Module 5: Matrix Method of Analysis (Stiffness Method):** Introduction, Stiffness matrix, Analysis of continuous beams and plane trusses using system approach, Analysis of simple orthogonal rigid frames using system approach with kinematic indeterminacy ≤3. **No. of Contact Sessions: 13 Hours.** **Revised Bloom's Taxonomy (RBT) Level: L1,L2,L3**	https://nptel.ac.in/courses/105/105/105105109/

Text Books:

1. Hibbeler R C, " Structural Analysis", Pearson Publication
2. L S Negi and R S Jangid, "Structural Analysis", Tata McGraw-Hill Publishing Company Ltd.
3. D S PrakashRao, "Structural Analysis: A Unified Approach" , Universities Press
4. K.U. Muthu, H. Narendraetal, "Indeterminate Structural Analysis", IK International Publishing Pvt. Ltd.

Reference Books:

1. Reddy C S, "Basic Structural Analysis",Tata McGraw-Hill Publishing Company Ltd.
2. Gupta S P, G S Pundit and R Gupta, "Theory of Structures", Vol II, Tata McGraw Hill Publications company Ltd.
3. V N Vazirani and M MRatwani, "Analysis Of Structures " , Vol. 2, Khanna Publishers
4. Wang C K, "Intermediate Structural Analysis", McGraw Hill, International Students Edition.
5. S.Rajasekaran and G. Sankarasubramanian, "Computational Structural Mechanics", PHI Learning Pvt. Ltd.

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2022-2023*

[LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE]

Course Title	**Analysis of Indeterminate Structures**	*Course Instructor*	*Mr. Manogna H N*
Course Code	*18CV52*	*Sem /Sec*	*VIII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: **10/10/2022**	*Total contact Hours: 56*	*Duration of Exam*: 03 Hrs.	*CREDITS: 04*

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Slope Deflection Method	
1	10/10/22	Introduction, Sign convention,	
2	11/10/22	Development of slope-deflection equations	
3	12/10/22	Analysis of Beams- problems	
4	13/10/22	Analysis of Beams- problems	
5	17/10/22	Analysis of Beams- problems	
6	18/10/22	Analysis of Beams- problems	
7	19/10/22	Analysis of Beams- problems	
8	20/10/22	Analysis of Beams- problems	
9	25/10/22	Analysis of Orthogonal Rigid jointed plane frames- problems	
10	27/10/22	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	**From : 10/10/2022**	**To: 27/10/2022**	
Actual classes taken	**From : 10/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Moment Distribution Method	
11	31/10/22	Introduction, Definition of terms-Distribution factor, Carry over factor	
12	01/11/22	Development of method	
13	02/11/22	Analysis of Beams- problems	
14	03/11/22	Analysis of Beams- problems	
15	07/11/22	Analysis of Orthogonal Rigid jointed plane frames- problems	
16	08/11/22	Analysis of Orthogonal Rigid jointed plane frames- problems	
17	09/11/22	Analysis of rigid jointed plane frames by Moment Distribution Method	
18	15/11/22	Analysis of rigid jointed plane frames by Moment Distribution Method	
19	16/11/22	Analysis of Orthogonal Rigid jointed plane frames- problems	
20	17/11/22	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	**From: 31/10/2022**	**To: 17/11/2022**	
Actual classes taken	**From : 31/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Kani's Methods	
21	21/11/22	Introduction, Definition of terms	
22	22/11/22	Analysis of Beams- problems	
23	23/11/22	Analysis of Beams- problems	
24	24/11/22	Analysis of Beams- problems	
25	28/11/22	Analysis of Beams- problems	
26	29/11/22	Analysis of Beams- problems	
27	30/11/22	Analysis of Orthogonal Rigid jointed plane frames- problems	
28	01/12/22	Analysis of Orthogonal Rigid jointed plane frames- problems	
29	05/12/22	Analysis of Orthogonal Rigid jointed plane frames- problems	
30	06/12/22	Analysis of Orthogonal Rigid jointed plane frames- problems	

SUMMARY

Planned Date	**From : 21/11/2022**	**To: 06/12/2022**	
Actual classes taken	**From : 21/11/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

(Manogna H N)
Course Instructor

(Dr. G Mahesh Kumar)
HOD

(Dr Narendra Viswanath)
Principal

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Matrix Method of Analysis (Flexibility Method)	
31	07/12/22	Development of flexibility matrix for plane truss element	
32	08/12/22	Development of flexibility matrix for plane truss element	
33	12/12/22	Development of flexibility matrix for plane truss element	
34	13/12/22	flexibility matrix for axially rigid plane framed structural elements	
35	14/12/22	flexibility matrix for axially rigid plane framed structural elements	
36	15/12/22	Analysis of plane truss	
37	20/12/22	Analysis of plane truss	
38	21/12/22	Analysis of axially rigid plane frames	
39	22/12/22	Analysis of axially rigid plane frames	
40	26/12/22	Analysis of axially rigid plane frames	

SUMMARY

Planned Date	**From : 07/12/2022**	**To: 26/12/2022**	
Actual classes taken	**From : 07/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Matrix Method of Analysis (Stiffness)	
41	27/12/22	Introduction, Development of flexibility matrix for plane truss element	
42	28/12/22	flexibility matrix for axially rigid plane framed structural elements	
43	29/12/22	flexibility matrix for axially rigid plane framed structural elements	
44	02/01/23	Problems on framed structure	
45	03/01/23	Problems on framed structure	
46	04/01/23	Problems on framed structure	
47	05/01/23	Problems on framed structure	
48	09/01/23	Analysis of plane truss	
49	10/01/23	Analysis of plane truss	
50	11/01/23	Analysis of plane truss	
51	12/01/23	Analysis of axially rigid plane frames	
52	19/01/23	Analysis of axially rigid plane frames	
53	23/01/23	Analysis of axially rigid plane frames	
54	24/01/23	Analysis of axially rigid plane frames	
55	25/01/23	Analysis of axially rigid plane frames	
56	27/01/23	Analysis of axially rigid plane frames	

SUMMARY

Planned Date	**From : 27/12/2022**	**To: 29/01/2022**	
Actual classes taken	**From : 27/01/2023**	**To:**	
Number of classes	**Allocated : 09**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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LESSON PLAN (Oct 2022 – Jan 2023) MICRO SCHEDULE

COURSE	DESIGN OF RC STRUCTURAL ELEMENTS	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV53**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction to working stress and limit State Design:	
1	10-10-2022	Introduction to working stress method, Difference between Working stress and Limit State Method of design	
2	13-10-2022	Modular Ratio and Factor of Safety and evaluation of design constants for working stress method.	
3	13-10-2022	Philosophy and principle of limit state design with assumptions	
4	14-10-2022	Partial Safety factors, Characteristic load and strength	
5	17-10-2022	Stress block parameters	
6	20-10-2022	concept of balanced section, under reinforced and over reinforced section.	
7	20-10-2022	Limiting deflection	
8	21-10-2022	short term deflection, long term deflection, Calculation of deflection of singly reinforced beam only	
9	27-10-2022	Cracking in reinforced concrete members, calculation of crack width of singly reinforced beam	
10	27-10-2022	Side face reinforcement, slender limits of beams for stability	

SUMMARY

Planned Date	**From : 10/10/2022**	**To: 27/10/2022**	
Actual classes taken	**From : 10/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Limit State Analysis of Beams:	
11	28-10-2022	Analysis of singly reinforced beams	
12	31-10-2022	Analysis of singly reinforced beams	
13	03-11-2022	Analysis of singly reinforced beams	
14	03-11-2022	Analysis of doubly reinforced beams	
15	04-11-2022	Analysis of doubly reinforced beams	
16	07-11-2022	Analysis of doubly reinforced beams	
17	17-11-2022	Analysis of flanged beams for flexure and shear	
18	17-11-2022	Analysis of flanged beams for flexure and shear	
19	18-11-2022	Analysis of flanged beams for flexure and shear	
20	21-11-2022	Analysis of flanged beams for flexure and shear	

SUMMARY

Planned Date	**From : 28/10/2022**	**To: 21/11/2022**	
Actual classes taken	**From : 28/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Limit State Design of Beams:,	
21	24-11-2022	Design of singly reinforced beams	
22	24-11-2022	Design of singly reinforced beams	
23	25-11-2022	Design of singly reinforced beams	
24	28-11-2022	Design of doubly reinforced beams	
25	01-12-2022	Design of doubly reinforced beams	
26	01-12-2022	Design of doubly reinforced beams	
27	02-12-2022	Design of flanged beams	
28	05-12-2022	Design of flanged beams	
29	08-12-2022	Design of flanged beams	
30	08-12-2022	design for combined bending, shear and torsion as per IS 456	
31	09-12-2022	design for combined bending, shear and torsion as per IS 456	
32	12-12-2022	design for combined bending, shear and torsion as per IS 456	
33	15-12-2022	design for combined bending, shear and torsion as per IS 456	

SUMMARY

Planned Date	**From : 24/11/2022**	**To: 15/12/2022**	
Actual classes taken	**From : 24/11/2022**	**To:**	
Number of classes	**Allocated : 13**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Limit State Design of Slabs and Stairs:		
34	15-12-2022	Introduction to one way and two way slabs		
35	22-12-2022	Design of cantilever slab		
36	22-12-2022	Design of cantilever slab		
37	23-12-2022	Design of simply supported slab		
38	26-12-2022	Design of simply supported slab		
39	29-12-2022	Design of one way continuous slab		
40	29-12-2022	Design of one way continuous slab		
41	30-12-2022	Design of two way slabs for different boundary conditions		
42	02-01-2023	Design of two way slabs for different boundary conditions		
43	05-01-2023	Design of dog legged staircase		
44	05-01-2023	Design of open well staircases		
45	06-01-2023	Importance of bond, anchorage length and lap length		

SUMMARY

Planned Date	**From : 15/12/2022**	**To: 06/01/2023**	
Actual classes taken	**From : 15/12/2022**	**To:**	
Number of classes	**Allocated : 12**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Limit State Deign of Columns and Footings:. and,	
46	09 -01-2023	Analysis and design of short axially loaded RC column	
47	12-01-2023	Analysis and design of short axially loaded RC column	
48	12-01-2023	Design of columns with uniaxial moments	
49	13-01-2023	Design of columns with uniaxial moments	
50	19-01-2023	Design of columns with biaxial moments	
51	19-01-2023	Design of columns with biaxial moments	
52	20-01-2023	Design concepts of the footings.	
53	23-01-2023	Design of Rectangular column footings with axial load	
54	26-01-2023	Design of Rectangular column footings with axial load & moment.	
55	26-01-2023	Design of square column footings with axial load	
56	27-01-2023	Design of square column footings with axial load & moment.	

SUMMARY

Planned Date	**From : 09/01/2023**	**To: 27/01/2023**	
Actual classes taken	**From : 09/01/2023**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (May 2022 – August 2022) MACRO SCHEDULE

COURSE	OF DETERMINATE STRUCTURES	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV42**	SEMESTER	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to
1. Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
2. Follow a procedural knowledge in designing various structural RC elements.
3. Impart the usage of codes for strength, serviceability and durability.
4. Provide knowledge in analysis and design of RC elements.

Course outcomes: After studying this course, students will be able to:
1. Understand the design philosophy and principles.
2. Solve engineering problems of RC elements subjected to flexure, shear and torsion.
3. Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings.
4. Owns professional and ethical responsibility.

Sl No	Date	Module & Lesson Plan	Additional sources
01	10/10/2022 To 22/10/2022	**Module-1** **Introduction to working stress and limit State Design:** Introduction to working stress method, Difference between Working stress and Limit State Method of design, Modular Ratio and Factor of Safety and evaluation of design constants for working stress method. Philosophy and principle of limit state design with assumptions. Partial Safety factors, Characteristic load and strength. Stress block parameters, concept of balanced section, under reinforced and over reinforced section. Limiting deflection, short term deflection, long term deflection, Calculation of deflection of singly reinforced beam only. Cracking in reinforced concrete members, calculation of crack width of	https://www.google.com/search?q=Introduction+to+working+stress+and+limit+State+Design%3A&oq=Introduction+to+working+stress+and+limit+State+Design%3A&aqs=chrome..69i57.694j0j9&sourceid=chrome&ie=UTF-8

		singly reinforced beam. Side face reinforcement, slender limits of beams for stability. **No. of Contact sessions: 10**	
02	25/10/2022 To 09/11/2022	**Module 2:** **Limit State Analysis of Beams:** Analysis of singly reinforced, doubly reinforced and flanged beams for flexure and shear. **No. of Contact sessions:09**	https://www.google.com/search?q=Limit+State+Analysis+of+Beams&oq=Limit+State+Analysis+of+Beams&aqs=chrome..69i57.1214j0j9&sourceid=chrome&ie=UTF-8
03	16/11/2022 To 06/12/2022	**Module 3:** **Limit State Design of Beams:** Design of singly and doubly reinforced beams, Design of flanged beams, design for combined bending, shear and torsion as per IS-456. **No. of Contact sessions: 14**	https://www.google.com/search?q=Limit+State+Design+of+Beams&oq=Limit+State+Design+of+Beams&aqs=chrome..69i57.646j0j9&sourceid=chrome&ie=UTF-8
04	16/12/2022 To 21/12/2022	**Module 4:** **Limit State Design of Slabs and Stairs:** Introduction to one way and two way slabs, Design of cantilever, simply supported and one way continuous slab. Design of two way slabs for different boundary conditions. Design of dog legged and open well staircases. Importance of bond, anchorage length and lap length. **No. of Contact sessions: 12**	https://www.google.com/search?q=Limit+State+Design+of+Slabs+and+Stairs&oq=Limit+State+Design+of+Slabs+and+Stairs&aqs=chrome..69i57.719j0j9&sourceid=chrome&ie=UTF-8
05	23/12/2022 To 06/01/2023	**Module 5:** **Limit State Deign of Columns and Footings:** Analysis and design of short axially loaded RC column. Design of columns with uniaxial and biaxial moments, Design concepts of the footings. Design of Rectangular and square column footings with axial load and also for axial load & moment. **No. of Contact sessions: 10**	https://www.google.com/search?q=Limit+State+Deign+of+Columns+and+Footings&oq=Limit+State+Deign+of+Columns+and+Footings&aqs=chrome..69i57.854j0j9&sourceid=chrome&ie=UTF-8

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

- The students will have to answer five full questions, selecting one full question from each module.

Text Books:

1. Unnikrishnan Pillai and Devdas Menon, " Reinforced Concrete Design" , McGraw Hill, New Delhi
2. Subramanian, " Design of Concrete Structures" , Oxford university Press
3. H J Shah, "Reinforced Concrete Vol. 1 (Elementary Reinforced Concrete)" , Charotar Publishing House Pvt. Ltd.

Reference Books:

1. 1. P C Varghese, "Limit State design of reinforced concrete" , PHI, New Delhi.
2. W H Mosley, R Husle, J H Bungey, "Reinforced Concrete Design", MacMillan Education, Palgrave publishers.
3. Kong and Evans, "Reinforced and Pre-Stressed Concrete", Springer Publications.
4. A W Beeby and Narayan R S, "Introduction to Design for Civil Engineers", CRC Press.
5. Robert Park and Thomas Paulay, "Reinforced Concrete Structures", John Wiley & Sons, Inc.

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LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Municipal Wastewater Engineering**	FACULTY NAME	**Ms. NIRANJANI B**
COURSE CODE	**18CV55**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction	
1	17/10/2022	Need for sanitation, methods of sewage disposal	
2	19/10/2022	Types of sewerage systems, dry weather flow, wet weather flow	
3	21/10/2022	Factors effecting dry and wet weather flow on design of sewerage system	
4	22/10/2022	Estimation of storm water flow	
5	28/10/2022	Time of concentration flow, numericals.	
6	29/10/2022	**Sewer appurtenances**: Manholes,	
7	30/10/2022	Catch basins, Oil and grease traps. P, Q and S traps	
8	02/11/2022	Material of sewers, shape of sewers	
9	04/11/2022	Laying and testing of sewers	
10	05/11/2022	Ventilation of sewers basic principles of house drainage	

SUMMARY

Planned Date	**From : 17/10/2022**	**To: 05/11/2022**	
Actual classes taken	**From : 17/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Design of sewers	
11	07/11/2022	**Design of sewers:** Hydraulic formula to determine velocity and discharge.	
12	09/11/2022	Self-cleansing and non-scouring velocity	
13	15/11/2022	Problems	
14	16/11/2022	Design of hydraulic elements for circular sewers for full flow and half flow conditions.	
15	18/11/2022	Problems	
16	19/11/2022	**Waste water characteristics:** sampling, significance and techniques	
17	21/11/2022	Physical, chemical and biological characteristics	
18	24/11/2022	Flow diagram for municipal waste water.	
19	25/11/2022	Treatment unit operations and process. Estimation of BOD.	
20	26/11/2022	Reaction kinetics (zero order, 1st order and 2nd order).	

SUMMARY

Planned Date	**From : 07/11/2022**	**To: 26/11/2022**	
Actual classes taken	**From : 07/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Treatment of municipal waste water	
21	28/11/2022	Screens: types, disposal.	
22	30/11/2022	Grit chamber, oil and grease removal.	
23	03/12/2022	Primary and secondary settling tanks.	
24	04/12/2022	Problems	
25	05/12/2022	**Disposal of effluents:** Dilution, self-purification phenomenon	
26	07/12/2022	oxygen sag curve, zones of purification	
27	09/12/2022	sewage farming	
28	10/12/2022	sewage sickness	
29	12/12/2022	Numerical problems on disposal of effluents.	
30	14/12/2022	Streeter-Phelps equation.	

SUMMARY

Planned Date	**From : 28/11/2022**	**To: 14/12/2022**	
Actual classes taken	**From : 28/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Biological Treatment Process	
31	21/12/2022	**Suspended growth system** - conventional activated sludge process	
32	23/12/2022	its modifications	
33	24/12/2022	**Attached growth system** – trickling filter.	
34	26/12/2022	Problems	
35	28/12/2022	Bio-towers	
36	30/12/2022	Rotating biological contactors.	
37	31/12/2022	Principle of stabilization ponds, oxidation ditch	
38	02/01/2023	Sludge digesters (aerobic and anaerobic),	
39	04/01/2023	Equalization	
40	06/01/2023	Thickeners and drying beds	

SUMMARY

Planned Date	**From : 21/12/2022**	**To: 06/01/2023**	
Actual classes taken	**From : 21/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Course Coordinator

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Advanced Wastewater Treatment	
41	07/01/2023	Need and technologies used.	
42	09/01/2023	Nitrification and Denitrification Processes	
43	11/01/2023	Phosphorous removal	
44	13/01/2023	Advance oxidation processes (AOPs)	
45	14/01/2023	Advance oxidation processes (AOPs)	
46	20/01/2023	Electro coagulation	
47	21/01/2023	**Rural sanitation:** Low cost treatment process	
48	23/01/2023	Working principal and design of septic tanks for small community in rural and urban areas	
49	25/01/2023	two-pit latrines	
50	25/01/2023	eco-toilet and soak pits	

SUMMARY

Planned Date	**From : 07/01/2023**	**To: 25/01/2023**	
Actual classes taken	**From : 07/01/2023**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MACRO SCHEDULE

COURSE	**Municipal Wastewater Engineering**	FACULTY NAME	**Ms. NIRANJANI B**
COURSE CODE	**18CV55**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives:

This course will enable students to:

1. Understand the various water demands and population forecasting methods.
2. Understand and design different unit operations and unit process in involved in wastewater treatment process.
3. Understand the concept and design of various physicochemical treatment units.
4. Understand the concept and design of various biological treatment units.
5. Understand the concept of various advance waste water and low cost treatment processes for rural areas.

Course outcomes:

After a successful completion of the course, the student will be able to:

1. Select the appropriate sewer appurtenances and materials in sewer network.
2. Design the sewers network and understand the self-purification process in flowing water.
3. Design the varies physic- chemical treatment units.
4. Design the various biological treatment units.
5. Design various AOPs and low cost treatment units.

Sl No	Date	Module & Lesson Plan	Additional sources
01	17/10/2022 To 05/11/2022	**Module-1** **Introduction:** Need for sanitation, methods of sewage disposal, types of sewerage systems, dry weather flow, wet weather flow, factors effecting dry and wet weather flow on design of sewerage system, estimation of storm water flow, time of concentration flow, numericals. **Sewer appurtenances:** Manholes catch basins, oil and grease traps. P, Q and S traps. Material of sewers, shape of sewers, laying and testing of sewers, ventilation of sewers basic principles of house drainage **No. of Contact sessions: 10**	https//www.youtube.com/channel/UCeJdH2Kc0ljqW2eluEPpp3w https://backbencher.club/municipal-wastewater-engineering/
02	07/11/2022 To 26/11/2022	**Module 2:** **Design of sewers:** Hydraulic formula to determine velocity and discharge. Self-cleansing and non-scouring velocity. Design of hydraulic elements for circular sewers for full flow and half flow conditions. **Waste water characteristics:** sampling, significance and techniques, physical, chemical and biological characteristics, flow diagram for municipal waste water. Treatment unit operations and process. Estimation of BOD. Reaction kinetics (zero order, 1st order and 2nd order). **No. of Contact sessions: 10**	https://backbencher.club/municipal-wastewater-engineering/
03	28/11/2022 To 14/12/2022	**Module 3:** **Treatment of municipal waste water:** Screens: types, disposal. Grit chamber, oil and grease removal. Primary and secondary settling tanks. **Disposal of effluents:** Dilution, self-purification phenomenon, oxygen sag curve, zones of purification, sewage farming, sewage sickness, numerical problems on disposal of effluents. Streeter-Phelps equation. **No. of Contact sessions: 10**	https://backbencher.club/municipal-wastewater-engineering/

04	21/12/2022 To 04/01/2023	**Module 4:** **Biological Treatment Process:** Suspended growth system - conventional activated sludge process and its modifications. Attached growth system – trickling filter, bio-towers and rotating biological contactors. Principle of stabilization ponds, oxidation ditch, Sludge digesters (aerobic and anaerobic), Equalization. Thickeners and drying beds. **No. of Contact sessions: 10**	https://backbencher.club/municipal-wastewater-engineering/
05	07/01/2023 To 25/01/2023	**Module 5:** **Advanced Wastewater Treatment:** Need and technologies used. Nitrification and Denitrification Processes, Phosphorous removal. Advance oxidation processes (AOPs), Electro coagulation. **Rural sanitation:** Low cost treatment process: Working principal and design of septic tanks for small community in rural and urban areas, two-pit latrines, eco-toilet and soak pits. **No. of Contact sessions: 10**	https://backbencher.club/municipal-wastewater-engineering/

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Text Books:

1. Howard S. Peavy, Donald R. Rowe, George T, "Environmental Engineering" - Tata McGraw Hill, New York, Indian Edition, 2013
2. B C Punmia, "Environmental Engineering vol-II", Laxmi Publications 2nd, 2016
3. Karia G.L., and Christian R.A, "Wastewater Treatment Concepts and Design Approach", Prentice Hall of India Pvt. Ltd., New Delhi. 3rd, Edition, 2017
4. S.K.Garg, "Environmental Engineering vol-II, Water supply Engineering", Khanna Publishers, – New Delhi, 28th edition and 2017

Reference Books:

1. CPHEEO manual on sewage treatment, Ministry of Urban Development, Government of India, New Delhi, 1999
2. Mark J Hammer, "Water & Waste Water Technology" John Wiley & Sons Inc., New York, 2008
3. Benefield R.D., and Randal C.W, "Biological Process Design for Wastewater Treatment", Prentice Hall, Englewood Chiffs, New Jersey 2012
4. Metcalf and Eddy Inc, "Wastewater Engineering - Treatment and Reuse", Publishing Co. Ltd., New Delhi, 4th Edition, 2009.

Ms. Niranjani B	**Dr. G Mahesh Kumar**	**Dr. Narendra viswanath**
Course Coordinator	HOD	Principal

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Environmental Studies**	FACULTY NAME	**Ms. NIRANJANI. B**
COURSE CODE	**18CIV59**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl. No	Date	Lesson Planned	Remarks
		Ecosystems	
1	13/10/2022	**Ecosystems (Structure and Function):** Forest, Desert, Wetlands, Reverie, Oceanic and Lake.	
2	20/10/2022	**Biodiversity:** Types, Value; Hot-spots; Threats and Conservation of biodiversity	
3	27/10/2022	Forest Wealth, and Deforestation	

Planned Date	**From : 13/10/2022**	**To: 27/10/2022**	
Actual classes taken	**From : 13/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -2

Sl. No	Date	Lesson Planned	Remarks
		Advances in Energy Systems	
1	27/10/2022	**Advances in Energy Systems** (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.	
2	03/11/2022	**Natural Resource Management** (Concept and case-studies): Disaster Management, Sustainable Mining	
3	03/11/2022	Cloud Seeding, and Carbon Trading	

Planned Date	**From : 27/10/2022**	**To: 03/11/2022**	
Actual classes taken	**From : 27/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -3

Sl. No	Date	Lesson Planned	Remarks
		Environmental Pollution	
1	17/11/2022	**Environmental Pollution** (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts,	
2	24/11/2022	**Case-studies):** Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.	
3	01/12/2022	**Waste Management & Public Health Aspects:** Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.	

Planned Date	**From : 17/11/2022**	**To: 01/12/2022**	
Actual classes taken	**From : 17/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -4

Sl. No	Date	Lesson Planned	Remarks
		Global Environmental Concerns	
1	08/12/2022	**Global Environmental Concerns (Concept, policies and case-studies):** Ground water depletion/recharging,	
2	15/12/2022	Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water	
3	22/12/2022	Resettlement and rehabilitation of people, Environmental Toxicology	

Planned Date	**From : 08/12/2022**	**To: 22/12/2022**	
Actual classes taken	**From : 08/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -5

Sl. No	Date	Lesson Planned	Remarks
		Latest Developments in Environmental Pollution	
1	29/12/2022	Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications): G.I.S. & Remote Sensing,	
2	05/01/2023	Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs.	
3	12/01/2023	Field work: Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.	

Planned Date	**From : 29/12/2022**	**To: 12/01/2023**	
Actual classes taken	**From : 29/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MACRO SCHEDULE

COURSE	**Environmental Studies**	FACULTY NAME	**Ms. NIRANJANI. B**
COURSE CODE	**18CIV59**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course objectives:

1. Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
2. Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale

Course outcomes:

After a successful completion of the course, the student will be able to:

CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,

CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.

CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.

CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

Question paper pattern:

The Question paper will have 100 objective questions.

- Each question will be for 01 marks
- Student will have to answer all the questions in an OMR Sheet.
- The Duration of Exam will be 2 hours.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text books and Reference books.

Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
Textbook/s				
1	Environmental Studies	Benny Joseph	Tata Mc Graw – Hill.	2nd Edition, 2012
2.	Environmental Studies	S M Prakash	Pristine Publishing House, Mangalore	3rd Edition 2018
3	Environmental Studies – From Crisis to Cure	R Rajagopalan	Oxford Publisher	2005
Reference Books				
1	Principals of Environmental Science and Engineering	Raman Sivakumar	Cengage learning, Singapur.	2nd Edition, 2005
2	Environmental Science – working with the Earth	G.Tyler Miller Jr.	Thomson Brooks /Cole,	11th Edition, 2006
3	Text Book of Environmental and Ecology	Pratiba Sing, AnoopSingh& PiyushMalaviya	Acme Learning Pvt. Ltd. New Delhi.	1st Edition

Lesson Plan (Computer Science and Information Science)

Sl. No.	Date	Module & Lesson Plan	Additional sources
		Module -1	
1	13/10/2022 To 27/10/2022	**Ecosystems (Structure and Function):** Forest, Desert, Wetlands, Reverie, Oceanic and Lake. **Biodiversity:** Types, Value; Hot-spots; Threats and Conservation of biodiversity Forest Wealth, and Deforestation	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html
		Module -2	
2	27/10/2022 To 03/11/2022	**Advances in Energy Systems** (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind. **Natural Resource Management** (Concept and case-studies): Disaster Management, Sustainable, Mining Cloud Seeding, and Carbon Trading	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html

		Module -3	
3	17/11/2022 To 01/12/2022	**Environmental Pollution** (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, **Case-studies):** Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution. **Waste Management & Public Health Aspects:** Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html
		Module -4	
4	08/12/2022 To 22/12/2022	**Global Environmental Concerns (Concept, policies and case-studies):** Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water, Resettlement and rehabilitation of people, Environmental Toxicology	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html
		Module -5	
5	29/12/2022 To 12/01/2023	**Latest Developments in Environmental Pollution Mitigation Tools** (Concept and Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs. **Field work:** Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Environmental Studies**	FACULTY NAME	**Ms. NIRANJANI. B**
COURSE CODE	**18CIV59**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Module -1

Sl. No	Date	Lesson Planned	Remarks
		Ecosystems	
1	14/10/2022	**Ecosystems (Structure and Function):** Forest, Desert, Wetlands, Reverie, Oceanic and Lake.	
2	14/10/2022	**Biodiversity:** Types, Value; Hot-spots; Threats and Conservation of biodiversity	
3	21/10/2022	Forest Wealth, and Deforestation	

Planned Date	**From : 14/10/2022**	**To: 21/10/2022**	
Actual classes taken	**From : 14/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -2

Sl. No	Date	Lesson Planned	Remarks
		Advances in Energy Systems	
1	21/10/2022	**Advances in Energy Systems** (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.	
2	28/10/2022	**Natural Resource Management** (Concept and case-studies): Disaster Management, Sustainable Mining	
3	28/10/2022	Cloud Seeding, and Carbon Trading	

Planned Date	**From : 21/10/2022**	**To: 28/10/2022**	
Actual classes taken	**From : 21/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -3

Sl. No	Date	Lesson Planned	Remarks
		Environmental Pollution	
1	04/11/2022	**Environmental Pollution** (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts,	
2	18/11/2022	**Case-studies):** Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.	
3	25/11/2022	**Waste Management & Public Health Aspects:** Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.	

Planned Date	**From : 04/11/2022**	**To: 25/11/2022**	
Actual classes taken	**From : 04/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -4

Sl. No	Date	Lesson Planned	Remarks
		Global Environmental Concerns	
1	02/12/2022	**Global Environmental Concerns (Concept, policies and case-studies):** Ground water depletion/recharging,	
2	09/12/2022	Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water	
3	23/12/2022	Resettlement and rehabilitation of people, Environmental Toxicology	

Planned Date	**From : 02/12/2022**	**To: 23/12/2022**	
Actual classes taken	**From : 02/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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Module -5

Sl. No	Date	Lesson Planned	Remarks
		Latest Developments in Environmental Pollution	
1	30/12/2022	Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications): G.I.S. & Remote Sensing,	
2	06/01/2023	Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs,	
3	13/01/2023	Field work: Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.	

Planned Date	**From : 30/12/2022**	**To: 13/01/2023**	
Actual classes taken	**From : 30/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MACRO SCHEDULE

COURSE	**Environmental Studies**	FACULTY NAME	**Ms. NIRANJANI. B**
COURSE CODE	**18CIV59**	SEM/SECTION	05
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course objectives:

1. Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
2. Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale

Course outcomes:

After a successful completion of the course, the student will be able to:

CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,

CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.

CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.

CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

Question paper pattern:

The Question paper will have 100 objective questions.

- Each question will be for 01 marks
- Student will have to answer all the questions in an OMR Sheet.
- The Duration of Exam will be 2 hours.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text books and Reference books.

Sl. No.	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
Textbook/s				
1	Environmental Studies	Benny Joseph	Tata Mc Graw – Hill.	2nd Edition, 2012
2	Environmental Studies	S M Prakash	Pristine Publishing House, Mangalore	3rd Edition 2018
3	Environmental Studies – From Crisis to Cure	R Rajagopalan	Oxford Publisher	2005
Reference Books				
1	Principals of Environmental Science and Engineering	Raman Sivakumar	Cengage learning, Singapur.	2nd Edition, 2005
2	Environmental Science – working with the Earth	G.Tyler Miller Jr.	Thomson Brooks /Cole,	11th Edition, 2006
3	Text Book of Environmental and Ecology	Pratiba Sing, AnoopSingh& PiyushMalaviya	Acme Learning Pvt. Ltd. New Delhi.	1st Edition

Lesson Plan (Civil Engineering, E&C, ME and EEE)

Sl. No.	Date	Module & Lesson Plan	Additional sources
		Module -1	
1	14/10/2022 To 21/10/2022	**Ecosystems (Structure and Function):** Forest, Desert, Wetlands, Reverie, Oceanic and Lake. **Biodiversity:** Types, Value; Hot-spots; Threats and Conservation of biodiversity Forest Wealth, and Deforestation.	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html
		Module -2	
2	21/10/2022 To 28/10/2022	**Advances in Energy Systems** (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind. **Natural Resource Management** (Concept and case-studies): Disaster Management, Sustainable, Mining Cloud Seeding,	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html

		and Carbon Trading	
		Module -3	
3	04/11/2022 To 25/11/2022	**Environmental Pollution** (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, **Case-studies):** Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution. **Waste Management & Public Health Aspects:** Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html
		Module -4	
4	02/12/2022 To 23/12/2022	**Global Environmental Concerns (Concept, policies and case-studies):** Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water, Resettlement and rehabilitation of people, Environmental Toxicology	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html
		Module -5	
5	30/12/2022 To 13/01/2023	**Latest Developments in Environmental Pollution Mitigation Tools** (Concept and Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs. **Field work:** Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process and its brief documentation.	https://www.azdocuments.in/2021/02/environmental-studies-18civ59-module-1.html

Ms. Niranjani B
Course Instructor

Dr. G Mahesh Kumar
HOD

Dr. Narendra Viswanath
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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (Oct 2022 – Jan 2023) MICRO SCHEDULE

COURSE	QUANTITY SURVEYING AND CONTRACT MANAGEMENT	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV71**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Quantity Estimation for Building:	
1	10-10-2022	study of various drawing attached with estimates	
2	13-10-2022	important terms,	
3	13-10-2022	units of measurements, abstract	
4	14-10-2022	Types of estimates.	
5	17-10-2022	Estimation of building by Short wall and long wall method	
6	20-10-2022	Estimation of building by centre line method	
7	20-10-2022	Estimate of R.C.C structures - Slab	
8	21-10-2022	Estimate of R.C.C structures - beam	
9	27-10-2022	Estimate of R.C.C structures - column	
10	27-10-2022	Estimate of R.C.C structures - footings.	

SUMMARY

Planned Date	**From : 10/10/2022**	**To: 27/10/2022**	
Actual classes taken	**From : 10/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Quantity Estimation for Roads:	
11	28-10-2022	Estimate of Steel truss	
12	31-10-2022	Estimate of manhole	
13	03-11-2022	Estimate of septic tanks	
14	03-11-2022	Estimate of slab culvert	
15	04-11-2022	Computation of volume of earthwork fully in banking	
16	07-11-2022	Computation of volume of earthwork fully in cutting	
17	17-11-2022	Computation of volume of earthwork fully in partly cutting and partly filling	
18	17-11-2022	Computation of volume of earthwork fully in partly cutting and partly filling	
19	18-11-2022	Filling by mid-section, trapezoidal and Prismoidal Methods.	

SUMMARY

Planned Date	**From : 28/10/2022**	**To: 18/11/2022**	
Actual classes taken	**From : 28/10/2022**	**To:**	
Number of classes	**Allocated :9**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MICRO SCHEDULE

COURSE	**Air Pollution and Control**	FACULTY NAME	**Ms. NIRANJANI. B**
COURSE CODE	**18CV732**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction	
1	26/09/2022	**Introduction:** Definition, Sources	
2	27/09/2022	classification	
3	29/09/2022	characterization of air pollutants	
4	01/10/2022	characterization of air pollutants	
5	08/10/2022	Effects of air pollution on health	
6	10/10/2022	Effects of air pollution on health	
7	11/10/2022	Effects of air pollution on vegetation	
8	15/10/2022	Effects of air pollution on materials.	
9	17/10/2022	Types of inversion,	
10	18/10/2022	Photochemical smog.	

SUMMARY

Planned Date	**From : 26/09/2022**	**To: 18/10/2022**	
Actual classes taken	**From : 26/09/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Meteorology	
11	20/10/2022	**Meteorology:** Temperature lapse rate & stability	
12	22/10/2022	wind velocity	
13	31/10/2022	Turbulence	
14	02/11/2022	plume behavior	
15	04/11/2022	measurement of meteorological variables	
16	05/11/2022	wind rose diagrams	
17	07/11/2022	Plume Rise.	
18	09/11/2022	Estimation of effective stack height	
19	10/11/2022	Estimation of effective mixing depths.	
20	12/11/2022	Problems	

SUMMARY

Planned Date	**From : 20/10/2022**	**To: 12/11/2022**	
Actual classes taken	**From : 20/10/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Sampling	
21	14/11/2022	**Sampling:** Sampling of particulate and gaseous pollutants (Stack, Ambient & indoor air pollution),	
22	15/11/2022	Monitoring and analysis of air pollutants (PM2.5)	
23	16/11/2022	Monitoring and analysis of air pollutants (PM10)	
24	17/11/2022	Monitoring and analysis of air pollutants (SOX)	
25	18/11/2022	Monitoring and analysis of air pollutants (NOX)	
26	19/11/2022	Monitoring and analysis of air pollutants (CO)	
27	21/11/2022	Monitoring and analysis of air pollutants (NH3)	
28	22/11/2022	Development of air quality models	
29	23/11/2022	Gaussian dispersion model	
30	24/11/2022	Numerical problems	

SUMMARY

Planned Date	**From : 14/11/2022**	**To: 24/11/2022**	
Actual classes taken	**From : 14/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Control Techniques	
31	25/11/2022	**Control Techniques**: Particulate matter	
32	26/11/2022	gaseous pollutants	
33	28/11/2022	settling chambers	
34	28/11/2022	cyclone separators,	
35	29/11/2022	scrubbers,	
36	29/11/2022	filters	
37	30/11/2022	ESP	
38	30/11/2022	Numerical problems.	
39	05/12/2022	Numerical problems.	
40	06/12/2022	Site selection for industrial plant location.	

SUMMARY

Planned Date	**From : 25/11/2022**	**To: 08/12/2022**	
Actual classes taken	**From : 25/11/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Noise pollution	
41	08/12/2022	Air pollution due to automobiles,	
42	10/12/2022	standards and control methods	
43	12/12/2022	Noise pollution- causes, effects and control	
44	13/12/2022	Noise standards.	
45	15/12/2022	Environmental issues	
46	17/12/2022	Environmental issues	
47	19/12/2022	global episodes	
48	20/12/2022	global episodes	
49	22/12/2022	Environmental laws and acts.	
50	24/12/2022	Environmental laws and acts.	

SUMMARY

Planned Date	**From : 08/12/2022**	**To: 24/12/2022**	
Actual classes taken	**From : 10/12/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (OCTOBER 2022 – JANUARY 2023) MACRO SCHEDULE

COURSE	**Air Pollution and Control**	FACULTY NAME	Ms. NIRANJANI B
COURSE CODE	**18CV732**	SEM/SECTION	07
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to

1. Study the sources and effects of air pollution.
2. Learn the meteorological factors influencing air pollution.
3. Analyze air pollutant dispersion models.
4. Illustrate particular and gaseous pollution control methods.

Course outcomes: After studying this course, students will be able to:

1. Identify the major sources of air pollution and understand their effects on health and environment.
2. Evaluate the dispersion of air pollutants in the atmosphere and to develop air quality models.
3. Ascertain and evaluate sampling techniques for atmospheric and stack pollutants.
4. Choose and design control techniques for particulate and gaseous emissions.

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2022-2023*

Module 2: Design of Steel Structures:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
6	03/10/22	**Roof Truss:** Design of roof truss for different cases of loading, forces in members to be given.		
7	07/10/22			
8	07/10/22			
9	08/10/22			
10	10/10/22			
11	12/10/22	**Roof Truss:** Design of roof truss for different cases of loading, forces in members to be given.		
12	14/10/22			
13	14/10/22			
14	15/10/22			
15	17/10/22			
26	09/11/22	**Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks		
27	12/11/22			
28	14/11/22			
29	16/11/22			
30	18/11/22			
31	18/11/22	**Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks		
32	19/11/22			
33	21/11/22			
34	23/11/22			
35	25/11/22			
45	14/12/22	**Gantry Girder:** Design of gantry girder with all necessary checks		
46	16/12/22			
47	16/12/22			
48	17/12/22			
49	19/12/22			

SUMMARY

Planned Date	**From:** 03/10/22	**To:** 19/12/22	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 25	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2022-2023*

[LESSON PLAN (APRIL - AUGUST 2022) MICRO SCHEDULE]

Course Title	*DESIGN OF RCC AND STEEL STRUCTURES*	*Course Instructor*	*Mr. Manogna H N*
Course Code	18CV72	*Sem / Sec*	*VII*
IA Marks (CIE)	*40 (Average of three tests for 30 marks and 10 marks for assignment)*	*Maximum Exam Marks (SEE)*	*60*
Date of commencement of semester: 19/09/2022	*Total contact Hours: 60*	*Duration of Exam*: 03 Hrs.	*CREDITS: 04*

Module 1: Design of RC Structures:				
Sl No	**Date**	**Topics**	**Topics Covered**	**Remarks**
1	26/09/22	**Footings:** Design of rectangular slab type combined footing		
2	28/09/22			
3	30/09/22			
4	30/09/22			
5	01/10/22			
16	19/10/22	**Footings:** Design of cantilever Retaining wall		
17	21/10/22			
18	21/10/22			
19	22/10/22			
20	31/10/22			
21	02/11/22	**Retaining Walls:** Design of counter fort Retaining wall		
22	04/11/22			
23	04/11/22			
24	05/11/22			
25	07/11/22			
36	25/11/22	**Water Tanks:** Design of circular water tanks resting on ground (Rigid base).		
37	28/11/22			
38	30/11/22			
39	05/12/22			
40	07/12/22	**Water Tanks:** Design of circular water tanks resting on ground (Flexible base)		
41	09/12/22			
42	09/12/22			
43	10/12/22			
44	12/12/22			

50	21/12/22	**Portal Frames:** Design of portal frames with fixed and hinged based support		
51	23/12/22			
52	23/12/22			
53	24/12/22			
54	26/12/22			

SUMMARY

Planned Date	**From:** 26/09/22	**To:** 26/12/22	
Actual Classes Taken	**From:**	**To:**	
Number of Classes	**Allocated:** 29	**Taken:**	
Content Covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value Addition to the Module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars:**	**Any Other:**

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DEPARTMENT OF CIVIL ENGINEERING

Academic *Year: 2020-2021*

[LESSON PLAN (APRIL - AUGUST 2021) MACRO SCHEDULE]

Course Title	***DESIGN OF RCC AND STEEL STRUCTURES***	***Course Instructor***	***Mr. Manogna H N***
Course Code	**18CV72**	***Sem /Sec***	***VII***
IA Marks (CIE)	***40 (Average of three tests for 30 marks and 10 marks for assignment)***	***Maximum Exam Marks (SEE)***	***60***
***Date of commencement of semester:* 19/09/2022**	***Total contact Hours: 60***	***Duration of Exam*: 03 Hrs.**	***CREDITS: 04***

Course Outcomes [CO'S]:

After studying this course, students will be able to:

CO1. Students will acquire the basic knowledge in design of RCC and Steel Structures.
CO2. Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe RC and Steel members.

Sl No	Date	Module Lesson Plan	Additional Sources
1	26/09/2022 to 26/12/2022	**Module 1: Design of RC Structures:** **Footings:** Design of rectangular slab type combined footing.. **Retaining Walls:** Design of cantilever Retaining wall **Retaining Walls**: Design of counter fort Retaining wall **Water Tanks:** Design of circular water tanks resting on ground (Rigid base). **Water Tanks**: Design of circular water tanks resting on ground (Flexible base) **Portal Frames:** Design of portal frames with fixed based support **Portal Frames**: Design of portal frames with hinged based supports	https://nptel.ac.in/courses/105105162/ https://nptel.ac.in/courses/105106112/
2	26/09/2022 to 26/12/2022	**Module 2: Design of Steel Structures:** **Roof Truss:** Design of roof truss for different cases of loading, forces in members to given. **Plate Girder:** Design of welded plate girder with intermediate stiffener, bearing stiffener and necessary checks. **Gantry Girder:** Design of gantry girder with all necessary checks	https://nptel.ac.in/courses/105105162/

Text Books:

- N.Subramanian, **Design of Steel Structures,** Oxford, 2008
- K S Duggal, **Limit State Design of Steel Structures,** Tata Mc Graw Hill Publishers 2010
- N Krishna Raju, **Structural Design and Drawing of Reinforced Concrete and Steel,** University Press

Reference Books:

- Charles E Salman, Johnson & Mathas, **"Steel Structure Design and Behaviour"**, Pearson Publications
- Nether Cot, et.al, **"Behaviour and Design of Steel Structures to EC -III"**, CRC Press
- P C Verghese, **"Limit State Design of Reinforced Concrete"**, PHI Publications, New Delhi
- S N Sinha, **"Reinforced Concrete Design"**, McGraw Hill Publication

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02	25/10/2022 To 09/11/2022	**Module 2:** Estimate of Steel truss, manhole and septic tanks and slab culvert. **Quantity Estimation for Roads:** Computation of volume of earthwork fully in banking, cutting, partly cutting and partly Filling by mid-section, trapezoidal and Prismoidal Methods. **No. of Contact sessions:09**	http://www.constructioncivilengineering.com/road-construction-estimation-sheet.html
03	16/11/2022 To 06/12/2022	**Module 3:** **Specification for Civil Engineering Works:** Objective of writing specifications essentials in specifications, general and detail specifications of different items of works in buildings and roads. **Analysis of Rates :** Factors Affecting Cost of Civil Works , Concept of Direct Cost , Indirect Cost and Project Cost Rate analysis and preparation of bills, Data analysis of rates for various items of Works, Sub-structure components, Rate analysis for R.C.C. slabs, columns and beams. **No. of Contact sessions: 14**	https://nationalfertilizers.com/NFL/admin_tender/upload/20190309103831_715-TECH.%20SPECIFICATIONS.pdf
04	16/12/2022 To 21/12/2022	**Module 4:** **Contract Management-Tender and its Process:** Invitation to tender, Prequalification, administrative approval & Technical sanction. Bid submission and Evaluation process. Contract Formulation: Letter of intent, Award of contract, letter of acceptance and notice to proceed. Features / elements of standard Tender document (source: PWD / CPWD / International Competitive Bidding – NHAI / NHEPC / NPC). Law of Contract as per Indian Contract act 1872, Types of Contract, Joint venture. **Contract Forms:** FIDIC contract Forms, CPWD, NHAI, NTPC, NHEPC. **No. of Contact sessions: 12**	https://www.slideshare.net/anandsubramaniam/contract-management-1364634
05	23/12/2022 To 06/01/2023	**Module 5:** **Contract Management-Post award** :Basic understanding on definitions, Performance security, Mobilization and equipment advances, Secured Advance, Suspension of work, Time limit for completion, Liquidated damages and bonus, measurement and payment, additions and alterations or variations and deviations, breach of contract, Escalation, settlement of account or final payment, claims, Delay's and Compensation,	https://www.google.com/search?q=Contract+Management-Post+award&oq=Contract+Management-Post+award&aqs=chrome..69i57j0i22i30l5j0i390l4.2296j0j4&sourceid=chrome&ie=UTF-8

		Disputes & its resolution mechanism, Contract management and administration. **Valuation:** Definitions of terms used in valuation process, Purpose of valuation, Cost, Estimate, Value and its relationship, Capitalized value. Freehold and lease hold and easement, Sinking fund, depreciation– methods of estimating depreciation, Outgoings, Process and methods of valuation: Rent fixation, valuation for mortgage, valuation of land. **No. of Contact sessions: 10**	

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Text Books:

1. Unnikrishnan Pillai and Devdas Menon, " Reinforced Concrete Design" , McGraw Hill, New Delhi
2. Subramanian, " Design of Concrete Structures" , Oxford university Press
3. H J Shah, "Reinforced Concrete Vol. 1 (Elementary Reinforced Concrete)" , Charotar Publishing House Pvt. Ltd.

Reference Books:

1. 1. P C Varghese, "Limit State design of reinforced concrete" , PHI, New Delhi.
2. W H Mosley, R Husle, J H Bungey, "Reinforced Concrete Design", MacMillan Education, Palgrave publishers.
3. Kong and Evans, "Reinforced and Pre-Stressed Concrete", Springer Publications.
4. A W Beeby and Narayan R S, "Introduction to Design for Civil Engineers", CRC Press.
5. Robert Park and Thomas Paulay, "Reinforced Concrete Structures", John Wiley & Sons, Inc.

Mrs. Radhika T N
Course Coordinator

Dr. G Mahesh Kumar
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LESSON PLAN (MAY 2022 – AUGUST 2022) MICRO SCHEDULE

COURSE	**Advanced Surveying**	FACULTY NAME	PRAKASH J
COURSE CODE	**18CV45**	SEM/SECTION	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Theodolite Survey and Instrument Adjustment	
1	16/05/2022	**Theodolite Survey and Instrument Adjustment:** Theodolite and types	
2	18/05/2022	Fundamental axes and parts of Transit theodolite	
3	19/05/2022	uses of theodolite	
4	20/05/2022	Temporary adjustments of transit theodolite	
5	23/05/2022	measurement of horizontal angles	
6	25/05/2022	measurement of vertical angles	
7	26/05/2022	Step by step procedure for obtaining permanent adjustment of Transit theodolite.	
8	27/05/2022	**Trigonometric Levelling:** Introduction	
9	30/05/2022	Distances-Single Plane	
10	01/06/2022	Double Plane Methods	

SUMMARY

Planned Date	**From : 16/05/2022**	**To: 01/06/2022**	
Actual classes taken	**From : 16/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Tacheometry	
11	02/06/2022	**Tacheometry:** Basic principle	
12	03/06/2022	Types of tacheometry	
13	06/06/2022	Distance equation for horizontal line of sight	
14	08/06/2022	inclined line of sight in fixed hair method	
15	09/06/2022	Problems on above	
16	10/06/2022	**Geodetic Surveying:** Principle and Classification of triangulation system	
17	13/06/2022	Selection of base line and stations	
18	15/06/2022	Orders of triangulation	
19	16/06/2022	Triangulation figures	
20	17/06/2022	Reduction to Centre	
21	20/06/2022	Selection and marking of stations	

SUMMARY

Planned Date	**From : 02/06/2022**	**To: 20/06/2022**	
Actual classes taken	**From : 02/06/2022**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
20	24-11-2022	**Specification for Civil Engineering Works:** Objective of writing specifications essentials in specifications	
21	24-11-2022	general and detail specifications of different items of works in buildings	
22	25-11-2022	general and detail specifications of different items of works in roads.	
23	28-11-2022	**Analysis of Rates :** Factors Affecting Cost of Civil Works	
24	01-12-2022	Concept of Direct Cost	
25	01-12-2022	Indirect Cost and Project Cost	
26	02-12-2022	Rate analysis and preparation of bills	
27	05-12-2022	analysis of rates for various items of Works data	
28	08-12-2022	Sub-structure components,	
29	08-12-2022	Rate analysis for R.C.C. slabs	
30	09-12-2022	Rate analysis for R.C.C. columns.	
31	12-12-2022	Rate analysis for R.C.C. beams.	

SUMMARY

Planned Date	**From : 24/11/2022**	**To: 12/12/2022**	
Actual classes taken	**From : 24/11/2022**	**To:**	
Number of classes	**Allocated : 13**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Contract Management-Tender and its Process:..		
32	15-12-2022	Invitation to tender		
33	22-12-2022	Prequalification		
34	22-12-2022	administrative approval & Technical sanction		
35	23-12-2022	Bid submission and Evaluation process		
36	26-12-2022	Contract Formulation: Letter of intent, Award of contract		
37	29-12-2022	letter of acceptance and notice to proceed.		
38	29-12-2022	Features / elements of standard Tender document (source: PWD / CPWD / International Competitive).		
39	30-12-2022	Features / elements of standard Tender document (source: Bidding – NHAI / NHEPC / NPC).		
40	02-01-2023	Law of Contract as per Indian Contract act 1872,		
41	05-01-2023	Types of Contract, Joint venture.		
42	05-01-2023	**Contract Forms:** FIDIC contract Forms, CPWD,		
43	06-01-2023	NHAI, NTPC, NHEPC.		

SUMMARY

Planned Date	**From : 15/12/2022**	**To: 06/01/2023**	
Actual classes taken	**From : 15/12/2022**	**To:**	
Number of classes	**Allocated : 12**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
44	09 -01-2023	**Contract Management-Post award :**Basic understanding on definitions, Performance security, Mobilization and equipment advances	
45	12-01-2023	Secured Advance, Suspension of work, Time limit for completion	
46	12-01-2023	Liquidated damages and bonus, measurement and payment, additions and alterations or variations and deviations,	
47	13-01-2023	breach of contract, Escalation, settlement of account or final payment, claims, Delay's and Compensation,	
48	19-01-2023	**Disputes & its resolution mechanism,** Contract management and administration	
49	19-01-2023	**Valuation:** Definitions of terms used in valuation process, Purpose of valuation,	
50	20-01-2023	Cost, Estimate, Value and its relationship	
51	23-01-2023	Capitalized value. Freehold and lease hold and easement	
52	26-01-2023	fund, depreciation–methods of estimating depreciation	
53	26-01-2023	Sinking Outgoings, Process and methods of valuation	
54	27-01-2023	Rent fixation, valuation for mortgage, valuation of land	

SUMMARY

Planned Date	**From : 09/01/2023**	**To: 27/01/2023**	
Actual classes taken	**From : 09/01/2023**	**To:**	
Number of classes	**Allocated : 11**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN (May 2022 – August 2022) MACRO SCHEDULE

COURSE	OF DETERMINATE STRUCTURES	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV42**	SEMESTER	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to
1. Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
2. Follow a procedural knowledge in designing various structural RC elements.
3. Impart the usage of codes for strength, serviceability and durability.
4. Provide knowledge in analysis and design of RC elements.

Course outcomes: After studying this course, students will be able to:
1. Understand the design philosophy and principles.
2. Solve engineering problems of RC elements subjected to flexure, shear and torsion.
3. Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings.
4. Owns professional and ethical responsibility.

Sl No	Date	Module & Lesson Plan	Additional sources
01	10/10/2022 To 22/10/2022	**Module-1** **Quantity Estimation for Building:** study of various drawing attached with estimates, important terms, units of measurements, abstract, Types of estimates. Estimation of building by Short wall and long wall method - centre line method. Estimate of R.C.C structures including Slab, beam, column, footings. **No. of Contact sessions: 10**	https://basiccivilengineering.com/2018/07/types-estimate-types-estimates-prepared-various-stages-project.html

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LESSON PLAN (May 2021 – August 2022) MICRO SCHEDULE

COURSE	ANALYSIS OF DETERMINATE STRUCTURES	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	**18CV42**	SEM/SECTION	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Introduction and Analysis of Plane Trusses	
1	18-05-2022	Structural forms	
2	19-05-2022	Conditions of equilibrium	
3	20-05-2022	Compatibility conditions	
4	21-05-2022	Degree of freedom	
5	25-05-2022	Linear and non linear analysis	
6	26-05-2022	Static and kinematic indeterminacies of structural systems	
7	27-05-2022	Concepts of influence lines	
8	28-05-2022	ILD for reactions, SF and BM for determinate beams	
9	01-06-2022	ILD for axial forces in determinate trusses	
10	02-06-2022	numerical problems	

SUMMARY

Planned Date	**From : 18/05/2022**	**To: 02/06/2022**	
Actual classes taken	**From : 18/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Moving Loads:	
11	03-06-2022	Reactions, BM and SF in determinate beams	
12	04-06-2022	axial forces in determinate trusses for rolling loads using ILD	
13	08-06-2022	Calculation of maximum values for beams subjected to point loads	
14	09-06-2022	Calculation of absolute maximum values for beams subjected to point loads	
15	10-06-2022	Calculation of maximum values for beams subjected to UDL	
16	11-05-2022	Calculation of absolute maximum values for beams subjected to UDL	
17	15-06-2022	Numericals	
18	16-06-2022	Numericals	
19	17-06-2022	Numericals	

SUMMARY

Planned Date	**From : 03/06/2022**	**To: 17/06/2022**	
Actual classes taken	**From : 03/06/2022**	**To:**	
Number of classes	**Allocated : 9**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Deflection of Beams	
20	17-06-2022	Moment area method: Derivation, Mohr's theorems, Sign conventions	
21	22-06-2022	Application of moment area method for determinate prismatic beams	
22	23-06-2022	Application of moment area method for determinate prismatic beams	
23	29-06-2022	Application of moment area method for determinate Beams of varying section	
24	30-06-2022	Application of moment area method for determinate Beams of varying section	
25	01-07-2022	Use of moment diagram by parts	
26	02-07-2022	Conjugate beam method: Real beam and conjugate beam	
27	06-07-2022	conjugate beam theorems	
28	07-07-2022	Application of conjugate beam method of determinate beams of variable cross sections	
29	08-07-2022	Application of conjugate beam method of determinate beams of variable cross sections	
30	09-07-2022	Numericals	
31	13-07-2022	Numericals	
32	14-07-2022	Numericals	
33	15-07-2022	Numericals	

SUMMARY

Planned Date	**From : 17/06/2022**	**To: 15/07/2022**	
Actual classes taken	**From : 17/06/2022**	**To:**	
Number of classes	**Allocated : 14**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Energy Principles and Energy Theorems:		
34	16-07-2022	Principle of virtual displacements		
35	20-07-2022	Principle of virtual forces		
36	21-07-2022	Strain energy and complimentary energy		
37	27-07-2022	Strain energy due to axial force		
38	28-07-2022	bending, shear and torsion		
39	29-07-2022	Deflection of determinate beams and trusses using total strain energy		
40	30-07-2022	Deflection at the point of application of single load		
41	03-08-2022	Castig liano's theorems and its application to estimate the deflections of trusses,		
42	04-08-2022	bent frames,.		
43	05-08-2022	Special applications-Dummy unit load method		
44	06-08-2022	Numericals		
45	10-08-2022	Numericals		

SUMMARY

Planned Date	**From : 16/07/2022**	**To: 10/08/2022**	
Actual classes taken	**From : 16/07/2022**	**To:**	
Number of classes	**Allocated : 12**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Arches and Cable Structures:	
46	06-08-2022	Three hinged parabolic and circular arches with supports at the same and different levels	
47	10-08-2022	Determination of normal thrust, radial shear and bending moment	
48	11-08-2022	Analysis of cables under point loads and UDL	
49	12-08-2022	Length of cables for supports at same and at different levels	
50	13-08-2022	Stiffening trusses for suspension cables	
51	17-08-2022	Numericals	
52	24-08-2022	Numericals	
53	25-06-2022	Numericals	
54	26-08-2022	Numericals	
55	27-08-2022	Numericals	

SUMMARY

Planned Date	From : 06/08/2022	To: 27/08/2022	
Actual classes taken	From : 06/08/2022	To:	
Number of classes	Allocated : 10	Taken:	
Content covered for IA	IA 1:	IA 2:	IA 3:
Value added to the module	Assignments:	Tutorials:	QP Discussion:
	Quiz:	Seminars :	Any other:

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LESSON PLAN (May 2022 – August 2022) MACRO SCHEDULE

COURSE	OF DETERMINATE STRUCTURES	FACULTY NAME	Mrs. Radhika T N
COURSE CODE	18CV42	SEMESTER	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: This course will enable students to

1. To understand different forms of structural systems.
2. To understand concept of ILD and moving loads.
3. To determine slopes and deflections of beams and trusses.
4. To analyse arches and cables.

Course outcomes: After studying this course, students will be able to:

1. Identify different forms of structural systems.
2. Construct ILD and analyse the beams and trusses subjected to moving loads
3. Understand the energy principles and energy theorems and its applications to determine the deflections of trusses and beams.
4. Determine the stress resultants in arches and cables.

Sl No	Date	Module & Lesson Plan	Additional sources
01	18/05/2022 To 02/06/2022	**Module-1** **Introduction and Analysis of Plane Trusses:** Structural forms, Conditions of equilibrium, Compatibility conditions, Degree of freedom, Linear and non linear analysis, Static and kinematic indeterminacies of structural systems. **Influence Lines:** Concepts of influence lines-ILD for reactions, SF and BM for determinate beams-ILD for axial forces in determinate trusses and numerical problems. **No. of Contact sessions: 10**	https://www.slideshare.net/parimaljha90/analysis-of-plane-truss-unit-5-234877160 https://eng.libretexts.org/Bookshelves/Civil_Engineering/Book%3A_Structural_Analysis_(Udoeyo)/01%3A_Chapters/1.09%3A_Influence_Lines_for_Statically_Determinate_Structures

02	03/06/2022 To 17/06/2022	**Module 2:** **Moving Loads:** Reactions, BM and SF in determinate beams, axial forces in determinate trusses for rolling loads using ILD (Max. values and absolute max. values for beams subjected to multiple loads). **No. of Contact sessions:09**	https://thangapandik.files.wordpress.com/2016/06/unit-ii-moving-loads-influence-lines-diagram.pdf http://www.gcekjr.ac.in/pdf/lectures/2020/9760IV_4th%20Semester_Civil%20Engineering.pdf
03	17/06/2022 To 15/07/2022	**Module 3:** **Deflection of Beams:** Moment area method: Derivation, Mohr's theorems, Sign conventions, Application of moment area method for determinate prismatic beams, Beams of varying section, Use of moment diagram by parts. Conjugate beam method: Real beam and conjugate beam, conjugate beam theorems, Application of conjugate beam method of determinate beams of variable cross sections **No. of Contact sessions: 14**	https://en.wikipedia.org/wiki/Deflection_(engineering) https://eng.libretexts.org/Bookshelves/Civil_Engineering/Book%3A_Structural_Analysis_(Udoeyo)/01%3A_Chapters/1.07%3A_Deflection_of_Beams-_Geometric_Methods
04	16/07/2022 To 10/08/2022	**Module 4:** **Energy Principles and Energy Theorems:** Principle of virtual displacements, Principle of virtual forces, Strain energy and complimentary energy, Strain energy due to axial force, bending, shear and torsion, Deflection of determinate beams and trusses using total strain energy, Deflection at the point of application of single load, Castig liano's theorems and its application to estimate the deflections of trusses, bent frames, Special applications-Dummy unit load method. **No. of Contact sessions: 12**	https://en.wikipedia.org/wiki/Energy_principles_in_structural_mechanics https://www.slideshare.net/nagmamodi1/energy-principle-in-structure-analysis-in-civil-engineering
05	06/08/2022 To 27/08/2022	**Module 5:** **Arches and Cable Structures:** Three hinged parabolic and circular arches with supports at the same and different levels. Determination of normal thrust, radial shear and bending moment. Analysis of cables under point loads and UDL. Length of cables for supports at same and at different levels- Stiffening trusses for suspension cables. **No. of Contact sessions: 10**	https://eng.libretexts.org/Bookshelves/Civil_Engineering/Book%3A_Structural_Analysis_(Udoeyo)/01%3A_Chapters/1.06%3A_Arches_and_Cables https://www.slideshare.net/nejib/chapter-5cables-and-arches

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. Reddy C S, Basic Structural Analysis, Tata McGraw Hill, New Delhi.
2. Muthu K U. etal, Basic Structural Analysis, 2nd edition, IK International Pvt. Ltd., NewDelhi,2015.
3. Bhavikatti, Structual Analysis, Vikas Publishing House Pvt. Ltd, New Delhi,2002.

Reference Books:

1. Hibbeler R C, Structural Analysis, Prentice Hall, 9th edition,2014.
2. Devadoss Menon, Structural Analysis, Narosa Publishing House, New Delhi,2008.
3. Prakash Rao D S, Structural Analysis, University Press Pvt. Ltd,2007.

Mrs. Radhika T N
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LESSON PLAN (MAY 2022 – AUGUST 2022) MICRO SCHEDULE

COURSE	**Applied Hydraulics**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV43**	SEM/SECTION	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

MODULE 1

Sl No	Date	Lesson Planned	Remarks
		Dimensional analysis:	
1	17/05/2022	Dimensional analysis and similitude: Dimensional homogeneity	
2	18/05/2022	Non Dimensional parameter, Rayleigh methods and Buckingham e theorem,	
3	19/05/2022	dimensional analysis, choice of variables, examples on various applications	
4	21/05/2022	**Model analysis:** Model analysis, similitude, types of similarities, force ratios	
5	24/05/2022	similarity laws, model classification, Reynolds model, Froude's model	
6	25/05/2022	Euler's Model, Webber's model, Mach model, scale effects, Distorted models	
7	26/05/2022	Numerical problems on Reynolds's, and Froude's Model.	
8	28/05/2022	**Buoyancy and Flotation:** Buoyancy, Force and Centre of Buoyancy	
9	31/05/2022	Metacentre and Metacentric height, Stability of submerged and floating bodies	
10	01/06/2022	Determination of Metacentric height, Experimental and theoretical method, Numerical problems	

SUMMARY

Planned Date	**From : 17/05/2022**	**To: 01/06/2022**	
Actual classes taken	**From : 17/05/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Remarks
		Open Channel Flow Hydraulics:	
11	02/06/2022	Uniform Flow: Introduction	
12	04/06/2022	Classification of flow through channels	
13	07/06/2022	Chezy's and Manning's equation for flow through open channel	
14	08/06/2022	Most economical channel sections, Uniform flow through Open channels	
15	09/06/2022	Numerical Problems. Specific Energy and Specific energy curve	
16	11/06/2022	Critical flow and corresponding critical parameters	
17	14/06/2022	Metering flumes	
18	15/06/2022	Numerical Problems	
19	16/06/2022	Numerical Problems	
20	18/06/2022	Numerical Problems	

SUMMARY

Planned Date	**From : 02/06/2022**	**To: 18/06/2022**	
Actual classes taken	**From : 02/06/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Remarks
		Non-Uniform Flow:	
21	21/06/2022	Hydraulic Jump	
22	21/06/2022	Expressions for conjugate depths and Energy loss.	
23	22/06/2022	Numerical Problems Gradually varied flow, Equation	
24	23/06/2022	Back water curve and afflux,	
25	28/06/2022	Description of water curves or profiles, Mild, steep	
26	29/06/2022	critical, horizontal and adverse slope profiles	
27	36/06/2022	Numerical problems, Control sections	
28	02/07/2022	Numerical problems	
29	05/07/2022	Numerical problems	
30	06/07/2022	Numerical problems	

SUMMARY

Planned Date	**From : 21/06/2022**	**To: 06/07/2022**	
Actual classes taken	**From : 21/06/2022**	**To:**	
Number of classes	**Allocated : 10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Remarks
		Hydraulic Machines:	
31	07/07/2022	Introduction, Impulse-Momentum equation	
32	09/07/2022	Direct impact of a jet on a stationary and moving curved vanes	
33	12/07/2022	Introduction to concept of velocity triangles impact of jet on a series of curved vanes- Problems	
34	13/07/2022	**Turbines – Impulse Turbines:** Introduction to turbines	
35	14/07/2022	General lay out of a hydroelectric plant, Heads and Efficiencies	
36	16/06/2022	Classification of turbines. Pelton wheel components	
37	19/07/2022	working principle and velocity triangles	
38	20/07/2022	Maximum power, efficiency working proportions	
39	21/07/2022	Numerical problems	
40	26/07/2022	Numerical problems	

SUMMARY

Planned Date	**From : 07/07/2022**	**To: 26/07/2022**	
Actual classes taken	**From : 07/07/2022**	**To:**	
Number of classes	**Allocated :10**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Remarks
		Module -5:Reaction Turbines and Pumps:	
41	27/07/2022	Radial flow reaction turbines	
42	28/07/2022	(i) Francis turbine-Descriptions, working proportions and design, Numerical problems	
43	30/07/2022	(ii) Kaplan turbine- Descriptions, working proportions and design, Numerical problems	
44	02/08/2022	Draft tube theory and unit quantities. (No problems)	
45	03/08/2022	Centrifugal pumps: Components and Working of centrifugal pumps	
46	04/08/2022	Types of centrifugal pumps, Work done by the impeller	
47	06/08/2022	Heads and Efficiencies, Minimum starting speed of centrifugal pump	
48	10/08/2022	Numerical problems, Multi-stage pumps	
49	11/08/2022	Numerical problems	
50	13/08/2022	Numerical problems	
51	16/08/2022	Revision	
52	17/08/2022	Revision	
53	23/08/2022	Revision	

SUMMARY

Planned Date	**From : 27/07/2022**	**To: 23/08/2022**	
Actual classes taken	**From : 27/07/2022**	**To:**	
Number of classes	**Allocated :13**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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LESSON PLAN (MAY 2022 – AUGUST 2022) MACRO SCHEDULE

COURSE	**Applied Hydraulics**	FACULTY NAME	NIRANJANI B
COURSE CODE	**18CV43**	SEM/SECTION	04
IA MARKS (CIE)	40 (Average of three tests for 30 marks and 10 marks for assignment)	EXAM MARKS (SEE) 100	60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)

Course Learning Objectives: The objectives of this course are to make students to learn:

1. Principles of dimensional analysis to design hydraulic models and Design of various models.
2. Design the open channels of various cross sections including design of economical sections.
3. Energy concepts of fluid in open channel, Energy dissipation, Water surface profiles at different conditions.
4. The working principles of the hydraulic machines for the given data and analyzing the performance of Turbines for various design data.

Course outcomes: After a successful completion of the course, the student will be able to:

1. Apply dimensional analysis to develop mathematical modeling and compute the parametric values in prototype by analyzing the corresponding model parameters
2. Design the open channels of various cross sections including economical channel sections
3. Apply Energy concepts to flow in open channel sections, Calculate Energy dissipation,
4. Compute water surface profiles at different conditions
5. Design turbines for the given data, and to know their operation characteristics under different operating conditions.

Sl No	Date	Module& Lesson Plan	Additional sources
01	17/05/2022 To 01/06/2022	**Module-1** **Dimensional analysis:** Dimensional analysis and similitude: Dimensional homogeneity, Non Dimensional parameter, Rayleigh methods and Buckingham δ theorem, dimensional analysis, choice of variables, examples on various applications. **Model analysis:** Model analysis, similitude, types of similarities, force ratios, similarity laws, model classification, Reynolds model, Froude's model, Euler's Model, Webber's model, Mach model, scale effects, Distorted models. Numerical problems on Reynolds's, and Froude's Model Buoyancy and Flotation: Buoyancy, Force and Centre of Buoyancy, Meta centre and Meta centric height, Stability of submerged and floating bodies, Determination of Meta centric height, Experimental and theoretical method, Numerical problems. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1hT-mFXELFLeHVdecYtZMDDNpwt1ms7P4/view
02	02/06/2022 To 18/06/2022	**Module 2:** **Open Channel Flow Hydraulics:** Uniform Flow: Introduction, Classification of flow through channels, Chezy's and Manning's equation for flow through open channel, Most economical channel sections, Uniform flow through Open channels, Numerical Problems. Specific Energy and Specific energy curve, Critical flow and corresponding critical parameters, Numerical Problems **No. of Contact sessions: 10**	https://drive.google.com/file/d/1ZxC411hS88z_siI9uS3LYoQ1QE9ha5Xq/view
03	21/06/2022 To 06/07/2022	**Module 3:** **Non-Uniform Flow:** Hydraulic Jump, Expressions for conjugate depths and Energy loss, Numerical Problems Gradually varied flow, Equation, Back water curve and afflux, Description of water curves or profiles, Mild, steep, critical, horizontal and adverse slope profiles, Numerical problems on identifying the flow profiles **No. of Contact sessions: 10**	https://drive.google.com/file/d/16skDMvARzrLBYrv4_otNHGG9dzgtd-Yl/view
04	13/07/2022 To 26/07/2022	**Module 4:** **Impact of jet on Curved vanes:** Introduction, Impulse-Momentum equation. Direct impact of a jet on stationary and moving curved vanes, Introduction to concept of velocity triangles, impact of jet on a series of curved vanes- Problems. **Turbines** – Impulse Turbines: Introduction to turbines, General lay out of a hydro- electric plant, Heads and Efficiencies, classification of turbines. Pelton wheel-components, working principle and velocity triangles. Maximum power, efficiency, working proportions – Numerical problems. **No. of Contact sessions: 10**	https://drive.google.com/file/d/1r1r5W35iJyvVLEoInslqLQn-mxHlWDml/view

05	27/07/2022 To 23/08/2022	**Module 5:** **Reaction Turbines and Pumps:** Radial flow reaction turbines: (i) Francis turbine- Descriptions, working proportions and design, Numerical problems. (ii) Kaplan turbine- Descriptions, working proportions and design, Numerical problems. Draft tube theory and unit quantities. (No problems) **Centrifugal pumps:** Components and Working of centrifugal pumps, Types of centrifugal pumps, Work done by the impeller, Heads and Efficiencies, Minimum starting speed of centrifugal pump, Numerical problems, Multi-stage pumps. **No. of Contact sessions: 13**	https://drive.google.com/file/d/1XGm4GfdeWlUjuGjRHhG9qTn2qUbd5t9j/view

Materials and resources required:
Presentation: Black board, Teaching charts, Models / LCD presentations

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.

Text Books:

1. P N Modi and S M Seth, "Hydraulics and Fluid Mechan ics, including Hydraulic Machines", 20th edition, 2015, Standard Book House, New Delhi
2. R.K. Bansal, "A Text book of Fluid Mechanics and Hy draulic Machines", Laxmi Publications, New Delhi
3. S K SOM and G Biswas, "Introduction to Fluid Mechan ics and Fluid Machines", Tata McGraw Hill,New Delhi

Reference Books:

1. K Subramanya, "Fluid Mechanics and Hydraulic Machin es", Tata McGraw Hill Publishing Co. Ltd.
2. Mohd. Kaleem Khan, "Fluid Mechanics and Machinery", Oxford University Press
3. C.S.P. Ojha, R. Berndtsson, and P.N. Chandramouli, "Fluid Mechanics and Machinery", Oxford University Publication – 2010
4. J.B. Evett, and C. Liu, "Fluid Mechanics and Hydraulics ", McGraw-Hill Book Company.-2009.

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[LESSON PLAN (MAY - SEPTEMBER 2022) MICRO SCHEDULE]

Course Title	**Concrete Technology**	*Course Instructor*	**Dr C Nagaraja**
Course Code	**18CV44**	*Sem /Sec*	**04**
IA Marks (CIE)	**40 (Average of three tests for 30 marks and 10 marks for assignment)**	*Maximum Exam Marks (SEE)*	**60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**
Date of commencement of semester: **16/05/2022**	**Total contact Hours: 55**	*Duration of Exam: 03 Hrs.*	**Credits: 03**

MODULE 1

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 1: Concrete Ingredients		
1	16/05/22	Cement- Cement manufacturing process, steps to reduce carbon foot print		
2	17/05/22	Chemical composition and their importance, hydration of cement		
3	18/05/22	Types of cement, testing of cement		
4	21/05/22	Fine aggregates: functions, requirements , alternatives to river sand		
5	23/05/22	M-sand, introduction and manufacturing, coarse aggregates: importance of size, shape and texture		
6	24/05/22	Grading and blending of aggregates, Testing of aggregates, requirement		
7	25/05/22	Recycled aggregates, water – Qualities of water		
8	28/05/22	Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents		
9	30/05/22	Accelerators, retarders and air entraining agents		
10	31/05/22	Mineral admixtures – Pozollanic materials and cementitious materials, Flyash, GGBS, Silica fume		
11	01/06/22	Metakaolin Cementitious materials, Flyash, GGBS, Silica fumes, Metakaolin and Rice husk ash		

SUMMARY

Planned Date	**From : 16/05/2022**	**To: 01/06/2022**	
Actual classes taken	**From : 16/05/2022**	**To:**	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 2

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 2: Fresh Concrete		
12	04/06/22	Workability- Factors affecting workability		
13	06/06/22	Factors affecting workability		
14	07/06/22	Measurements of workability-Slump		
15	08/06/22	Compaction factor and Vee-Bee consistometer tests, flow tests		
16	11/06/22	Segregation and bleeding, Process of manufacturing of concrete-Batching , mixing		
17	13/06/22	Transporting, placing and compaction.		
18	14/06/22	Curing and methods of curing- Water curing, Membrane curing		
19	15/06/22	Steam curing, accelerated curing , self curing		
20	18/06/22	Good and bad practices of making and using fresh concrete		
21	20/06/22	Effect of heat of hydration during mass concreting at project sites		

SUMMARY

Planned Date	**From : 04/06/2022**	**To: 20/06/2022**	
Actual classes taken	**From : 03/02/2020**	**To:**	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 3

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 3: Hardened Concrete		
22	21/06/22	Factors influencing strength, W/C ratio, gel/Space ratio		
23	22/06/22	Maturity Concept, Testing of hardened concrete		
24	28/06/22	Creep- Factors affecting creep, shrinkage- plastic shrinkage		
25	29/06/22	Drying Shrinkage, factors affecting shrinkage		
26	02/07/22	Definition and significance of durability, internal and external factors influencing durability		
27	04/07/22	Mechanism- Sulphate and chloride attack		
28	05/07/22	Carbonation, freezing and thawing,		
29	06/07/22	Corrosion, durability requirements as per IS 456		
30	09/07/22	Penetration and pull out test, Rebound hammer test		
31	11/07/22	Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations		

SUMMARY

Planned Date	**From : 21/06/2022**	**To: 11/07/2022**	
Actual classes taken	**From : 21/06/2022**	**To:**	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 4

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 4: Concrete Mix proportioning		
32	12/07/22	Concept of mix design without admixtures		
33	13/07/22	Concept of mix design with admixtures		
34	16/07/22	Variables in proportioning and exposure conditions		
35	18/07/22	Variables in proportioning and exposure conditions		
36	19/07/22	Selection criteria of ingredients used for mix design		
37	20/07/22	Procedure of mix proportioning		
38	26/07/22	Numerical examples using IS 10262-2009		
39	27/07/22	Numerical examples using IS 10262-2009		
40	30/07/22	Numerical examples using IS 10262-2009		
41	01/08/22	Numerical examples using IS 10262-2009		

SUMMARY

Planned Date	**From : 12/07/2022**	**To: 01/08/2022**	
Actual classes taken	**From : 12/07/2022**	**To:**	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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MODULE 5

Sl No	Date	Lesson Planned	Lesson Covered	Remarks
		Module 5: Special concretes		
42	02/08/22	RMC-Manufacture and requirement as per QCI-RMCPCS		
43	03/08/22	Properties, advantages and disadvantages		
44	06/08/22	Self compacting concrete – Concept, materials and tests		
45	08/08/22	Properties, applications		
46	10/08/22	Typical mix of SCC		
47	13/08/22	Fiber reinforced concrete(FRC) – Fibers and types		
48	16/08/22	Properties and applications of FRC		
49	17/08/22	Light weight concrete – material properties and types		
50	22/08/22	Typical light weight concrete mix and applications		
51	23/08/22	Materials, requirements, mix proportions of Geo polymer concrete		
52	27/08/22	Properties of Geo polymer Concrete,		
53	29/08/22	High Strength Concrete and High Performance Concrete.		
54	30/08/22	Revision		
55	31/08/22	Revision		

SUMMARY

Planned Date	**From : 02/08/2022**	**To: 01/06/2020**	
Actual classes taken	**From : 02/08/2022**	**To:**	
Number of classes	**Allocated :**	**Taken:**	
Content covered for IA	**IA 1:**	**IA 2:**	**IA 3:**
Value added to the module	**Assignments:**	**Tutorials:**	**QP Discussion:**
	Quiz:	**Seminars :**	**Any other:**

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[LESSON PLAN (MAY - SEPTEMBER 2022) MACRO SCHEDULE]

Course Title	**Concrete Technology**	*Course Instructor*	**Dr C Nagaraja**
Course Code	**18CV44**	*Sem /Sec*	**04**
IA Marks (CIE)	**40 (Average of three tests for 30 marks and 10 marks for assignment)**	*Maximum Exam Marks (SEE)*	**60 (Question paper will be set and evaluated for 100 marks and later reduced to 60)**
Date of commencement of semester: **16/05/2022**	**Total contact Hours: 55**	*Duration of Exam: 03 Hrs.*	**Credits: 03**

Course Outcomes:

The students will be able to:

CO1. Relate material characteristics and their influence on microstructure of concrete.
CO2. Distinguish concrete behaviour based on its fresh and hardened properties.
CO3. Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.
CO4. Adopt suitable concreting methods to place the concrete based on requirement.
CO5. Select a suitable type of concrete based on specific application.

Sl No	Date	Module Lesson Plan	Additional sources
01	16/05/2022 To 01/06/2022	**MODULE 1:** Cement- Cement manufacturing process, steps to reduce carbon foot print, Chemical composition and their importance, hydration of cement, Types of cement, testing of cement, Fine aggregates: functions, requirements , alternatives to river sand, M-sand, introduction and manufacturing, coarse aggregates: importance of size, shape and texture, Grading and blending of aggregates, Testing of aggregates, requirement, Recycled aggregates, water – Qual ities of water, Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents, Accelerators, retarders and air entraining agents, Mineral admixtures – Pozollanic materials and cementitious materials, Flyash, GGBS, Silica fume, Metakaolin Cementitious materials, Flyash, GGBS, Silica fumes, Metakaolin and Rice husk ash. **No. of Contact sessions: 11**	https://www.virginiadot.org/VDOT/Business/asset_upload_file313_3529.pdf https://www.slideshare.net/LuvSLife/concrete-its-ingredients-and-products https://youtu.be/n-Pr1KTVSXo

02	04/06/2022 To 20/06/2022	**Module 2:** Workability- Factors affecting workability, Factors affecting workability, Measurements of workability- Slump, Compaction factor and Vee-Bee consistometer tests, flow tests Segregation and bleeding, Process of manufacturing of concrete-Batching , mixing , Transporting, placing and compaction. Curing and methods of curing- Water curing, Membrane curing, Steam curing, accelerated curing , self curing. Good and bad practices of making and using fresh concrete Effect of heat of hydration during mass concreting at project sites **No. of Contact sessions:10**	http://courses.washington.edu/cm425/fresh.pdf https://www.slideshare.net/7odaaliraqi/fresh-concrete-properties-its-standard-tests-2003-ver

Sl No	Date	Module Lesson Plan	Additional sources
03	21/06/2022 To 11/07/2022	**Module 3:** Factors influencing strength, W/C ratio, gel/Space ratio, Maturity Concept, Testing of hardened concrete, Creep- Factors affecting creep, shrinkage- plasti c shrinkage, Drying Shrinkage, factors affecting shrinkage , Definition and significance of durability, internal and external factors influencing durability, Mechanism- Sulphate and chloride attack Carbonation, freezing and thawing, Corrosion, durability requirements as per IS 456, Penetration and pull out test, Rebound hammer test, Ultrasonic pulse velocity test, Core extraction, Principle, applications and limitations. **No. of Contact sessions: 10**	https://www.slideshare.net/gauravhtandon1/hardened-concrete-72809827 http://pioneer.netserv.chula.ac.th/~pwithit/CE231%206.pdf
04	12/07/2022 To 01/08/2022	**Module 4:** Concept of mix design without admixtures Concept of mix design with admixtures Variables in proportioning and exposure conditions Variables in proportioning and exposure conditions Selection criteria of ingredients used for mix design Procedure of mix proportioning Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 Numerical examples using IS 10262-2009 **No. of Contact sessions:10**	https://law.resource.org/pub/in/bis/S03/is.10262.2009.pdf https://panchayatrajengineers.files.wordpress.com/2012/11/principles-of-concrete-mix-design.pdf
05	02/08/2022 To 31/08/2022	**Module 5:** RMC-Manufacture and requirement as per QCI-RMCPCS, Properties, advantages and disadvantages Self compacting concrete – Concept, materials and tests, Properties, applications, Typical mix of SCC Fiber reinforced concrete(FRC) – Fibers and types Properties and applications of FRC, Light weight concrete – material properties and types, Typical light weight concrete mix and applications, Materials, requirements, mix proportions of Geo polymer concrete, Properties of Geo polymer Concrete, High Strength Concrete and High Performance Concrete. Revision **No. of Contact sessions:14**	https://www.slideshare.net/gauravhtandon1/special-concretes-43200098 https://nptel.ac.in/courses/105102012/ https://sjce.ac.in/wp-content/uploads/2018/01/Self-Compacting-Concrete.pdf

Materials and resources required:

Presentation: Black board, Teaching charts, Models / LCD presentations

Text books:

1. Neville A M, "Properties of Concrete" ELBS Edition, Longman Ltd, London
2. M S Shetty, "Concrete Technology- Theory and Practice", S Chand & Company Pvt Ltd, New Delhi.
3. Kumar Mehta P and Paulo J. M. Monteiro "Concrete- Micro structure, property and materials", 4th Edition, Mc Graw Hill Education, 2014
4. A R Santhakumar, "Concrete Technology", Oxford University Press, New Delhi (New Edition)

Reference Books

1. M L Gambir, "Concrete Technology", Mc Graw Hill Education, 2014
2. N V Nayak, A K Jain "Hand book on Advanced Concrete Technology", ISBN: 978-81-8487-186-9
3. Job Thomas, "Concrete Technology", CENGAGE Learning, 2015
4. IS 4926(2003): Code of Practice Ready - Mixed Concrete [CED2: Cement and Concrete] Criteria for RMC Production Control, Basic Level Certification for production control of Ready Mixed Concrete –BMPTC
5. Specification and Guidelines for Self compacting Concrete, EFNARC, Association House

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Course Coordinator	HOD	Principal

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