



SRI SIDDHARTHA INSTITUTE OF TECHNOLOGY- TUMAKURU
(A constituent College of Siddhartha Academy of Higher Education, Tumakuru)
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME OF TEACHING AND EXAMINATION FOR BE DEGREE COURSE
(Effective from the academic year 2020-21)



III SEMESTER B.E.

III Semester B.E. (Common to all UG programs) (Subjects and Syllabus as per AICTE-Model Curriculum for UG Course in Eng. & Tech.- Jan. 2018)							Examination			
Sl No.	Course Code		Course Title	Teaching dept.	Board of Exam.	Credits	CIE	SEE	Total Marks	Exam Hours
01	BS	MA3TH1	Integral Transform and Numerical Methods	MA	MA	4	50	50	100	3
02	PC	CE3TH2	Applied Mechanics	-	-	3	50	50	100	3
03	PC	CE3TH3	Engineering Geology	-	-	3	50	50	100	3
04	PC	CE3TH4	Fluid Mechanics	-	-	3	50	50	100	3
05	PC	CE3TH5	Building Planning and Drawing	-	-	3	50	50	100	3
06	ES/ MA	CE3TH6/ MA3DP6	Surveying theory/ DIP Mathematics	-/ MA	-/ MA	3	50	50	100	3
07	PC	CE3LB1	Hydraulics and Hydraulic Machines Lab	--	--	1.5	50	50	100	3
08	PC	CE3LB2	Surveying Practice - I	--	--	1.5	50	50	100	3
09	PC	CE3LB3	Auto CAD Lab	--	--	1.5	50	50	100	3
10	HS	SK3DP1	Skill Development-I	HS	HS	1	50	-	50	-
Total						24.5	500	450	950	-
CIE-Continuous Internal Evaluation, SEE-Semester End Examination										

Note: MA3DP6: DIP Mathematics for Lateral Entry students only.

There is no SEE for Skill Development-I course.

However, all the students should maintain a minimum 85% of attendance and 40% of CIE to get pass in the subject.



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IV SEMESTER B.E.

IV Semester B.E. (Common to all UG programs) (Subjects and Syllabus as per AICTE-Model Curriculum for UG Course in Eng. & Tech.- Jan. 2018)							Examination			
SI No	Course and Course Code		Course Title	Teaching dept.	Board of Exam.	Credits	CIE	SEE	Total Marks	Exam Hrs.
01	BS	MA4TH1	Probability and Calculus of Variations	MA	MA	3	50	50	100	3
02	PC	CE4TH2	Strength of Materials	**	**	3	50	50	100	3
03	PC	CE4TH3	Concrete Technology	**	**	3	50	50	100	3
04	PC	CE4TH4	Hydraulics and Hydraulic Machines	**	**	3	50	50	100	3
05	PC	CE4TH5	Building materials and construction management	**	**	3	50	50	100	3
06	PC	CE4TH6	Basic Geotechnical Engineering	**	**	3	50	50	100	3
07	PC	CE4LB1	Basic Material Testing Lab	**	**	1.5	50	50	100	3
08	PC	CE4LB2	Surveying practice - II	**	**	1.5	50	50	100	3
09	PC	CE4LB3	Engineering Geology Lab	**	**	1.5	50	50	100	3
10	HS	SK4DP2	Skill Development-II	HS	HS	1	50	-	50	-
Total						23.5	500	450	850	-
CIE-Continuous Internal Evaluation, SEE-Semester End Examination										

Note: MA4**1: Engineering mathematics-IV is not common for all Branches (Syllabus is based on Department request).

There is no SEE for Skill Development-II course. However, all the students should maintain a minimum 85% of attendance and 40% of CIE to get pass in the subject.



Syllabus for the Academic Year:2021 – 2022

Common to: CV, EC, EE, ET, IM, ME, ML

Department: Mathematics

Semester: III

Subject Name: Integral Transforms and Numerical Techniques L-T-P-C: 4-0-0-4

Subject Code: MA3TH1

Total Contact Hours: 52

Course Objectives:

	Course Objectives
1	Introduce the concept of Laplace Transform and problems on periodic function.
2	Introduce the concept of Fourier series and problems arising up in engineering problems.
3	Introduce the concept of Fourier transform and Z-transform.
4	To develop the proficiency in Numerical techniques and solving Ordinary Differential Equations arising in engineering applications.

Course Outcomes

Course outcome	Description
CO1	Understand the basic concepts of Laplace transforms, Inverse Laplace transform, Fourier series, Integral transforms and Numerical methods.
CO2	Apply the concepts of Laplace transform, inverse Laplace transform, Fourier series to solve problems in network analysis.
CO3	Demonstrate Fourier series and Integral transforms to study behavior of periodic functions arising problems in engineering.
CO4	Analyze and apply Z- transforms and Numerical methods in engineering fields.

UNIT	Description	Hours
I	Numerical solution of ordinary differential equations of first order and first degree: Taylor's series method, Modified Euler's method, Runge-Kutta method of fourth order, Milne's and Adams-Bashforth Predictor and Corrector methods (No derivation of formulae) problems. Numerical Integration: Simpson's $1/3^{rd}$, $3/8^{th}$ rule, Weddle's rule, (without proof), problems.	10
II	Laplace Transforms: Definition, Laplace transforms of elementary functions.(Statement only). Derivations: Laplace transform of t^n , Laplace transform of division by t, Laplace transform of $\int_0^t f(t)dt$.Laplace transforms of Periodic function (Statement only) and problems on square wave, saw-tooth wave, triangular wave, full and half wave rectified form, Unit step functions -problems.	10



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III	Inverse Laplace transforms: Definition, properties, evaluation using different methods. Convolution theorem (without proof), evaluation of $L^{-1}\{F(s)\}$ using convolution theorem. Application to solve ordinary linear differential equations by Laplace transforms method.	10
IV	Fourier Series: Periodic function, Dirichlet's conditions. Fourier series of even and odd functions. Fourier series of periodic functions with period 2π and with arbitrary period $2l$. Applications to Engineering problems: Fourier series for Periodic square wave, Half wave rectified form, Full wave rectified form, Saw-tooth wave with graphical representation. Half range Fourier series, Practical harmonic analysis.	12
V	Fourier Transforms: Infinite Fourier transforms. Fourier Sine and Cosine transforms. Inverse Fourier transforms, and simple problems. Z-Transforms: Basic definitions of Z-transform, Standard Z-transforms, Damping rule, Shifting rule, Initial value and Final value theorems (without proof), problems, Inverse Z-transform, problems. Applications-solutions of difference equations using Z-transforms.	10

Text Books:

Sl No	Title	Author(s)	Edition, Publisher, Year, ISBN
1	Higher Engineering Mathematics	B.S.Grewal	43 rd Edition Khanna Publications, 2015. ISBN:9788174091956
2	Higher Engineering Mathematics	B.V.Ramana	1 st Edition, Tata McGraw-Hill, 2006. ISBN:9780070634190

Reference Books:

Sl No	Title	Author(s)	Edition, Publisher, Year, ISBN
1	Advanced Engineering Mathematics	E.Kreyszig	10 th Edition Jon Wiley & Sons, 2015. ISBN:9780470913611
2	Higher Engineering Mathematics	H.K.Das and Er.Rajnish Verma	1 st Edition, Chand publishing, 2011. ISBN:9788121938907

Mapping course outcomes and program outcomes

Course outcomes	Program Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	3	3										
2	3	3	2									
3	3	3	2									
4	3	3	2									1



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: III

Subject Name: Applied Mechanics

Subject Code: CE3TH2

L-T-P-C: 3-0-0-3

Course Objectives

Sl No	Course Objectives
1	The Course Provides a Exposure to basic concepts of Non-Concurrent Force System and analysis of Coplanar Non Concurrent systems
2	The Course Provides a Exposure to Equilibrium of concurrent force system and Equilibrium of non-concurrent force system
3	The Course Provides a Exposure to concepts of Centroid and Moment of Inertia
4	The Course Provides an Exposure to friction and their applications in Engineering field.

UNIT	Description	Hours
I	Non-Concurrent Force System: Couple and its Characteristics, Introduction to coplanar non concurrent system, Varignon's theorem, Numerical problems.	08
II	Equilibrium of Concurrent Force System: Equilibrium of coplanar concurrent system of forces, free body diagram, Conditions of equilibrium. Definition of Equilibrant, Numerical problems on equilibrium of coplanar concurrent force systems.	07
III	Equilibrium of Non-concurrent Force System: Equilibrium of non-concurrent system of forces, Types of loads, supports for beam, statically determinate and indeterminate beams, Numerical problems on statically determinate beams subjected to concentrated load, Uniformly distributed load, Uniformly Varying Load and their combinations Problems on equilibrium of different force systems.	08
IV	Moment of Inertia: Concept of Moment of inertia, perpendicular axis theorem, parallel axis theorem, and moment of inertia of Rectangular, Circular, Semicircular, Quadrant of circle Triangular sections by method of integration. Numerical Problems on moment of inertia of composite section.	08
V	Friction: Definition of Friction and its applications, angle of friction, angle of repose, coefficient of friction. Types of Friction, laws of static friction, Description and application of friction on blocks on horizontal and inclined planes. Ladder friction and problems.	08



Course Outcomes

Course outcome	Descriptions
CO1	Students will be able to analyze coplanar non-concurrent force systems.
CO2	To analyze equilibrium of concurrent force system and equilibrium of non-concurrent force system.
CO3	To compute the moment of inertia of plane figures.
CO4	To apply friction laws to analyze the problems on friction.

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	'Elements of Civil Engineering and Engg. Mechanics'	M.N SheshaPrakash, Ganesh B. Mogaveer	3rd edition, 2014
2	'Elements of Civil Engineering and Engineering Mechanics'	B.K Kolhapure	3rd edition, 2018

Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	'Engineering Mechanics'	Stephen Timoshenko & D H Young, J.V.Rao	5th edition, 2017.
2	'Engineering Mechanics-Statics and Dynamics'	A Nelson	1st edition, 2009



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: III

Subject Name: Engineering Geology

Subject Code: CE3TH3

L-T-P-C: 3-0-0-3

Course objectives:

Sl no	Course objectives
1.	To understand the internal structure and composition of earth.
2.	To comprehend the engineering properties, occurrence and uses of minerals in various industries.
3.	To focus on geomorphological agents and their processes in land forms along with the concept of ground water including the effects on civil engineering projects.
4.	To gain the knowledge of structural features of rocks underneath and their consideration in the selection of sites for civil engineering projects.

UNITs	Description	Hours
I	Introduction: Application of Earth Science in Civil Engineering Practices, Understanding the earth, internal structure and composition. Mineralogy: Mineral properties, composition and their use in the manufacture of construction materials – Quartz Group (Glass); Feldspar Group (Ceramic wares and Flooring tiles); Kaolin (Paper, paint and textile); Asbestos (AC sheets); Carbonate Group: Calcite, Dolomite (Cement); Gypsum (POP, gypsum sheets, cement); Mica Group (Electrical industries); Ore minerals - Iron ores (Steel); Chromites (Alloy); Bauxite (aluminum); Chalcopyrite (copper), Iron Pyrite.	08
II	Petrology: Formation, Classification and Mineral composition and Engineering Properties of rocks. Igneous Rocks - Granite, Diorite, Gabbro, Dunite, Dolerite, Porphyries, Basalt, Pegmatite, Sedimentary rocks – Conglomerates, Breccias, Sandstone, Shale, Limestone, Laterite; Metamorphic rocks - Gneiss, Schists, Quartzite, Marble, Slate, Charnockite: Rock as a material in construction of foundations, Concrete Aggregate, Road metal, Railway ballast with reference to Engineering properties.	08



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III	Structural and Engineering Geology:- Outcrops, Dip and Strike, Compass Clinometer and its uses;Description of folds Faults ,Joints and Unconformities and their types; Recognition of folds, faults in the field and its consideration in Civil Engineering projects; Geological site investigation: Surface and subsurface explorations by Geo-Physical investigations; Selection of site for Dams and reservoirs, Tunneling, Bridges, Road and Highway sites;	08
IV	Geomorphology and Geodynamics: Geological agents and their processes in Land forms, Rock weathering and its types, Geological work of rivers, Formation of Soil, classification, profile, erosion and conservation methods. Geological hazards such as earthquakes and landslides- Causes, Effects, Slope stabilization. Tsunami – causes and effects. Concept of Plate tectonics,	07
V	Hydrogeology and Geoinformatics: Hydrological cycle, Occurrence of Groundwater in different terrains- Weathered, Hard and Stratified rocks, Groundwater Exploration by Electrical Resistivity method, Resistivity curves, Water Bearing Formations, Aquifer types and parameters, Artificial Recharging of Groundwater by different methods, Effect of ground water on various Civil Engineering structures. Study of Topographic maps and Contour maps; Remote Sensing – Concept, Application and its Limitations; Geographic Information System (GIS) and Global Positioning System (GPS).	08

Course Outcomes:

Course outcome	Descriptions
CO1	After successful completion this course students will be able to: Describe index properties of earth dynamics and justify geological hazards.
CO2	Determine minerals and rock mass properties and its suitability in engineering projects.
CO3	Estimate and evaluate the ground behaviour and conditions of rocks.
CO4	Delineate the interactions between groundwater systems and change detection of thematic layers through geo-informatics techniques.



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Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Text book of Engineering and General Geology.	Parbin Singh.	Katson publishing house, Ludhiana, 2009.
2	Text book of Geology	Mukerjee, P. K	World Press Pvt. Ltd., Kolkatta

Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Textbook of Engineering Geology	Kesavulu, C	Macmillan India Ltd, 1993, NewDelhi
2	Structural Geology	Billings, M.P	Prentice-Hall India, 1974, New Delhi
3	Geology for Engineers	Blyth, F.G.H and de Freitas, M.H	ELBS, 1974 London
4	Experiments in Engineering Geology	Gokhale, KVG.K and Rao, D.M	Tata-McGrawHill, 1981, New Delhi
5	Remote sensing and Image Interpretation	Lilesand, T.M. and Ralph W. Keifer	John Wiley & Sons, 1987, New York.
6	Groundwater Hydrology	Todd, D.K	John Wiley & Sons, 1980, New York
7	Text book of Remote Sensing and Geographical Information System	M Anji Reddy,	BS Publications, Hyderabad
8	Ground water Assessment, development and Management	K.R. Karanth,	Tata McGraw Hills



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: III

Subject Name: Fluid mechanics

Subject Code: CE3TH4

L-T-P-C: 3-0-0-3

Course objectives :

Sl no	Course objectives
1	To introduce the concepts of fluid mechanics useful in civil engineering applications
2	To provide basic exposure to fluid statics and kinematics
3	To provide an exposure to dynamics and measurement of pressure
4	To provides exposure to computations of hydrostatic forces on structural components

UNIT	Description	Hours
I	INTRODUCTION AND FLUID PROPERTIES Definition of Fluid, Distinction between solids & fluids, fluid continuum. Mass density, specific volume, Specific Weight, Relative density or Specific Gravity Viscosity, Newton's law of viscosity, Newtonian and Non-Newtonian Fluids, Ideal and Real fluids, Surface tension, Capilarity Problems, Newton's law of viscosity, surface tension, hollow and solid bubble	8
II	FLUID PRESSURE AND ITS MEASUREMENT Definition of pressure, Pascal's law, Hydrostatic pressure law, Absolute and Gauge pressure, Simple and Differential Manometer theory and problems, HYDROSTATICS Definition of total pressure, derivation of center of pressure, Equation for hydrostatic force , Problems on hydrostatic force on vertically submerged surfaces,Description of fluid flow, Ideal, Rotational and irrotational flow	8
III	KINEMATICS OF FLUIDS Derivation of continuity equation in three dimensions in differential form, Definition of velocity potential, stream functions, stream line, equipotential line, Relation between velocity potential and stream function, Laplace equation. Problems on stream function and velocity potential	8



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IV	DYNAMICS OF FLUID FLOW Derivation of Euler's equation and Bernoulli's equation (2 dimensional) with assumption and limitation, Modification of Bernoulli's equation, Venturimeter, Momentum equation(no problem) FLOW THROUGH PIPES Flow through pipes, Major loss equation for head loss due to friction (Darcy-Weishbach equation), Minor losses equation for head loss due to sudden expansion and contraction. Problems on Bernoullis Equation	8
V	FLOW MEASUREMENTS Flow through Orifices; classification, Hydraulic co-efficients of an Orifice and relation between them, Equation for co-efficient of velocity. Flow over notches, classification, Equation for discharge over rectangular and V-notches (Velocity of approach and end contractions not included) Types of Nappe, Ventilation of weirs, Broad crested weirs, Problems on weirs and notches	8

Course Outcomes

Course outcome	Descriptions
CO1	The student will possess knowledge of fundamental properties of fluids, fluid pressure, flow kinematics and flow dynamics, pipe flow and open channel flow.
CO2	be able to compute and solve problems on fluid properties, fluid pressure measurement fluid statics and kinematics
CO3	be able to compute and solve problems on fluid dynamics and flow measurement
CO4	be able to compute discharge through pipes and over notches and weirs

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Hydraulics and Fluid Mechanics Including Hydraulic Machines	P.N. Modi and S.M. Seth	20th Edition- 2015
2	A textbook of Fluid Mechanics and Hydraulic Machines	R K Bansal	9th Edition -2017



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Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Fluid mechanics and Hydraulic Machines	K A Subramanya,	3rd Edition -2008
2	Elementary Hydraulics	Cruise, J.F., Singh, V.P. and Sherif, M.M.	1st Edition -2007
3	Fluid Mechanics	Douglas, J.F., Gasoriek, J.M., Swaffield, J. and Jack L.	5 th Edition -2006
4	Fluid Mechanics	Streeter V.L., and Wylie,E.B.	8th Edition 1985



Syllabus for the Academic Year - 2020 - 2021

Department: CIVIL ENGINEERING

Semester: III

Subject Name: BUILDING PLANNING AND DRAWING

Subject Code: CE3TH5

L-T-P-C: 1-0-2-3

Sl. No	Course Objectives
1	Introduction to bye-laws of different town, city and metropolitan cities.
2	To provide the concepts of planning of different types of buildings.
3	To provide the concepts of water supply, sanitary and electrical layout details of residential and public buildings.
4	To Provide the concepts of Layout plan of Rainwater recharging and harvesting system

Description	Hours
<p style="text-align: center;">PART-A</p> <p>Introduction: Importance of drawing, Drawing tools & Scale. Building planning as per local building bye laws. Symbols used in Civil Engineering Drawing. Development of plan, elevation, section and schedule of openings from the given line diagram of</p> <ol style="list-style-type: none">1) Residential buildings (G, G+1)2) Office building3) Health care centre4) School building	25
<p style="text-align: center;">PART-B</p> <p>For a given single line diagram, Preparation of water supply, sanitary and Electrical layouts. Layout plan of Rainwater recharging and harvesting system in Residential building.</p>	14



Course Outcomes

Sl. No	Course outcomes
CO1	Students will have the knowledge of bye-laws and other details of building construction through the drawings.
CO2	Students will have the knowledge of planning, designing of residential and public buildings.
CO3	Students will be able to draw water supply, sanitary and electrical layout details of residential and public buildings .
CO4	Students will be able to draw Layout plan of Rainwater recharging and harvesting system in Residential building.

Question paper Pattern:

<p>1. Two questions to be answered compulsorily in PART –A for 90 Marks</p> <p>Plan with Schedule of opening- 25 Marks</p> <p>Elevation- 10 Marks</p> <p>Section- 10 M</p> <p>Each question will carry 45 marks (2 x 45) = 90 Marks.</p> <p>2. One question to be answered from part B for 10 Marks</p> <p>3. CIE -50 Marks</p> <p>CIE conduction of Test -20 Marks</p> <p>Submission of Manual Drawing - 30 Marks</p> <p>Note: No theory questions shall be asked from any chapter</p>
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Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Building Drawing, Tata McGraw Hill Publishers , New Delhi	Shah M.H and Kale C.M,	4 th Edition, 2017
2	Civil Engineering Drawing And Design, C B S Publishers, New Delhi	D N Ghose	2 nd Edition, 2017



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Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Reference book on Computer Aided Design Laboratory, Laxmi Publications, New delhi	M N SheshaPrakash, Dr. G S Suresh	1 ST Edition, 2006
2	Building Planning And Drawing, I K International publishing house, New Delhi	S SBhavikatti and M V Chitawadgi	1 st Edition, 2019
3	Civil Engineering Drawing And Design, Charotar Publishers, New Delhi	B C Rangawala	3 rd Edition 2017
4	National Building Code (IS 1962:1989)	BIS	New Delhi



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: III

Subject Name: Surveying

Subject Code: CE3TH06

L-T-P-C: 3-0-0-3

Course objectives:

Sl No	Course objectives
1	To understand the fundamentals of surveying and the usage of basic surveying instruments.
2	To determine the reduced levels and elevation of objects by different levelling instruments.
3	To know the usage of plane table in developing maps and to compute the capacity of reservoirs by contouring.
4	To know the usage of modern surveying instruments in various field applications.

UNIT	Description	Hours
I	Introduction to chain and compass surveying: Definition of Surveying, Classification of Surveying, Basic Principles of Surveying, types of Chains and Tapes, Ranging of lines and its types, Measurement of distances over sloping ground. Introduction to compass surveying- Accessories used, Principle involved Meridians, bearings and their types. Numerical problems on computations of bearings and included angles for a closed traverse.	8
II	Levelling: Principles and basic definitions of levelling, parts of Dumpy level, Temporary adjustments, Methods of Levelling- simple, differential, fly, fly-back, profile and cross sectioning. Booking of levels- height of instrument method and rise and fall method. Arithmetic checks. Numerical problems on above.	8



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III	Theodolite survey: Theodolite and its types, Temporary adjustments of theodolite. Measurement of horizontal angles by Method of repetitions and reiterations. Measurement of vertical angles. Trigonometric levelling: Determination of elevation of objects when the base is accessible and inaccessible by single plane method.	7
IV	Plane table survey: Introduction, accessories, advantages and limitations, Orientations and methods of orientation. Methodology of plotting-radiation, intersection, traversing and resection methods. Contouring: Introduction to contouring, characteristics, methods of contouring- direct and indirect methods. Capacity of contours and Uses of contours. Simple problems on above.	8
V	Modern surveying instruments: Introduction to EDM, fundamental principles of measurement-Pulse method, phase difference method, classification of EDM instruments. Total station and its accessories, fundamental measurements, types of total station instruments, advantages and disadvantages.	8

Course Outcomes

Course outcome	Descriptions
CO1	Knowledge of using basic surveying instruments in obtaining the field measurements.
CO2	To measure the elevation of ground and angular measurements by different levelling instruments.
CO3	To prepare maps by plane table and to arrive the storage capacity of reservoir by different methods.
CO4	To utilize the modern instruments in assessing the field data required for preparing drawings of engineering importance.



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Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	“Surveying”, Laxmi Publications, New Delhi	B C Punmia, Ashok kumar Jain and Arunkumar Jain	Volume 1, 16 th Edition, 2016
2	“Surveying”, Laxmi Publications, New Delhi	B C Punmia, Ashok kumar Jain and Arunkumar Jain	Volume 2, 17 th Edition, 2016

Reference Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	“Surveying and levelling”, Standard Book House, New Delhi	K R Arora	Volume 1, 11 th Edition, 2015
2	“Engineering Surveying”, Tata McGraw-Hill publications, New Delhi	S K Duggal	Volume 1, 3 rd Edition, 2009
3	“Surveying and levelling”, Tata McGraw-Hill publications, New Delhi	N NBasak	2 nd Edition, 2014
4	“Elementary surveying-An introduction to Geoinformatics”, Prentice Hall publications, USA.	Charles D Ghilani and Paul R Wolf	13 th Edition, 2012



Syllabus for the Academic Year : 2021-22

Common to all (Lateral entry students)

Department: Mathematics

Semester: III

Subject Name: Fundamental Mathematics

Total Hours: 40

Subject Code: MA3DP6

L-T-P-C: 3-0-0-3

Course Objectives:

Sl. No	Course Objectives
1	To develop mathematical skill so that student are able to apply mathematical method and principals in solving problem from engineering field.
2	Introduce the concept of differential calculus.
3	Introduce concept of Integral Calculus.
4	Study the concept of probability.

Course outcomes	Descriptions
CO1	To understand concept of probability, polar curves, differential equations and Vectors calculus.
CO2	Apply analytical techniques to compute solutions of first and higher order ordinary differential equations.
CO3	Apply concepts of double and triple integrals in engineering field.
CO4	Use partial differentiation and multiple integral to solve the problems in engineering.

UNIT	Description	Hours
I	Probability: Introduction, Sample space and events. Axioms of probability. Addition and multiplication theorems, Conditional probability-illustrative examples. Baye's theorem-problems.	8
II	Differential Calculus: List of standard derivatives including hyperbolic functions, rules of differentiation. Polar curves: Polar coordinates, angle between radius vector and tangent, angle between two polar curves – Problems.	8
III	Series: Taylor's and Maclaurin's series expansions of one variable. Integral Calculus: List of standard integrals, integration by parts. Definite integrals – problems. Statement of reduction formulae for $\int_0^{\frac{\pi}{2}} \sin^n x dx, \int_0^{\frac{\pi}{2}} \cos^n x dx$ and $\int_0^{\frac{\pi}{2}} \sin^m x \cos^n x dx$, simple problems. Multiple integrals-Simple problems.	7



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IV	Differential equations: Introduction to first order ordinary differential equations. Variables separable, Linear equation. Exact differential equation - Problems. Ordinary differential equations with constant coefficients: Homogeneous differential equations, non-homogeneous differential equations – Particular integral for functions of the type $f(x) = e^{ax}$, $\sin(ax)$, $\cos(ax)$, x^n and simple problems.	8
V	Vector calculus and Partial differentiation: Del operator, gradient-directional derivative, divergence, curl - problems. Introduction to Partial differentiation - Illustrative examples. Differentiation of composite functions. Jacobians (without proof) – Simple Problems.	9

Question paper Pattern:

From each unit, two questions of 20 marks each have to be prepared, the student has to answer one full question of his/her choice.

Text Books:

Sl No	Title	Author(s)	Edition, Publisher, Year, ISBN
1	Higher Engineering Mathematics	B.S.Grewal	43 rd Edition Khanna Publications, 2015. ISBN:9788174091956

Reference Books:

Sl No	Title	Author(s)	Edition, Publisher, Year, ISBN
2	Advanced Engineering Mathematics	E.Kreyszig	10 th Edition Jon Wiley & Sons, 2015. ISBN:9780470913611
2	Higher Engineering Mathematics	B.V.Ramana	1st Edition, Tata McGraw-Hill, 2006. ISBN:9780070634190

Mapping Course Outcomes With Program Outcomes

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	3	2									
CO 2	3	3										
CO 3	3	3										
CO 4	3	3										



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: III

Subject Name: HYDRAULICS AND HYDRAULIC MACHINESLABORATORY

Subject Code: CE3LB1

L-T-P-C: 0-0-3-1.5

Course objectives :

Sl no	Course objectives
1	To calibrate Flow Measuring Devices
2	To calibrate the different types of vanes
3	To determine the performance characteristics of Rotodynamic machines
4	To determine the performance characteristics of centrifugal pumps

UNIT	Description	Hours
I	1. Experiments on Free Surface Flow a. Calibration of V-notch. b. Calibration of Rectangular Notch c. Calibration of Ogee Weir. d. Calibration of Broad Crested Weir.	15



II	2. Experiments on Closed Conduit Flow a. Calibration of Venturimeter. b. Determination of Darcy's Friction Factor for a Straight Pipe. c. Determination of Minor Loss Constants (Bend, Sudden Contraction, Sudden Expansion) d. Determination of Hydraulic Coefficient of a Vertical Orifice. e. Determination of Vane Coefficient for Flat, Inclined and Hemispherical vanes	15
III	3. Experiments on Performance of Rotodynamic Machines a. Performance Tests on a Single Stage/ Multi Stage Centrifugal Pump b. Performance Tests on Pelton Wheel. c. Performance Tests on Francis Turbine. d. Demonstration of Kaplan Turbine.	10

Course Outcomes

Course outcome	Descriptions
CO1	Able to use the various instruments for fluid flow measurement
CO2	Able to determine performance characteristics of hydraulic turbines
CO3	Able to determine performance characteristics of centrifugal pumps
CO4	Able to use the notches and weirs for fluid flow measurements



Syllabus for the Academic Year - 2021 - 2022

Department: Civil Engineering

Semester: III

Subject Name: SURVEYINGPRACTICE - I

Subject Code: CE3LB2

L-T-P-C: 0-0-3-1.5

Sl. No	Course Objectives
1	To use basic survey instruments.
2	To set out regular geometrical figures using chain and compass.
3	To use plane table to locate points in the horizontal plane.
4	To use the dumpy level to find the difference between two points and plotting the longitudinal and cross-sections.

Expt no.	Experiments
	Survey by using Chain/Tape/Compass
1	Measurements of distances using tape along with horizontal planes and slopes, direct ranging.
2	Setting of geometrical figures using prismatic compass.
	Survey by using Plane table
3	To locate points using radiation of plane table
4	To locate points using intersection method of plane table
5	To locate plane table station by using 2 point and 3 point problem.
	Survey by using Dumpy level/auto level
6	Determination of reduced levels of points using dumpy level/auto level by simple levelling (HI and Rise-Fall method)
7	Determination of reduced levels of points using dumpy level/auto level (differential levelling).
8	To determine the difference in elevation between two points using Reciprocal leveling and to determine the collimation error.
9	To conduct profile leveling, cross sectioning. Plotting profile and cross sectioning in excel.
10	Contouring- direct and indirect methods.



Course Outcomes: Students will be capable of

Course outcome	Descriptions
CO1	The student will be capable of marking the geometric shapes on the ground using chain and prismatic compass.
CO2	To prepare maps of an area using plane table.
CO3	To know the difference in elevation between any two points of reference.
CO4	To create l/s and c/s profile of the ground.

Question paper Pattern:

1. All experiments are to be included in the examination except demonstration exercises.
2. Candidate to perform experiment assigned to the students.

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Surveying	B CPunmia, Ashok kumar Jain and Arunkumar Jain	Volume 1, 17th Edition, 2016
2	Engineering Surveying	S K Duggal	Volume 1, 3rd Edition, 2009
3	Surveying	B CPunmia, Ashok kumar Jain and Arunkumar Jain	Volume 2, 17th Edition, 2016

Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Basics of Remote Sensing and GIS	S Kumar	3 rd Edition, 2019
2	Remote Sensing and Geographical Information Systems	M Anji Reddy	Volume 1, 4 th Edition, 2019
3	Surveying and levelling	K R Arora	Volume 1, 11 th Edition, 2015
4	Plane Surveying	A M Chandra	Volume 1, 2 nd Edition, 2016



Syllabus for the Academic Year - 2020 - 2021

Department: CIVIL ENGINEERING

Semester: III

Subject Name: Auto CAD LABORATORY

Subject Code: CE3LB3

L-T-P-C: 0-0-3-1.5

Course Objectives:

	Course Objectives
1	This course aims to teach students the basic commands and tools necessary for professional 2D drafting using Auto CAD.
2	Creating the plan, section, and elevation of residential buildings and public buildings.
3	Creating the plan and elevation of a staircase.
4	Creating the draw layouts of water supply, sanitary and electrical works.

Course Outcomes

Course outcome	Descriptions
CO1	Able to understand Drawing tools of Auto CAD.
CO2	To draw the plan, section, and elevation of residential buildings and public buildings.
CO3	students will be able to draw a plan and elevation of a staircase.
CO4	students will be able to draw layouts of water supply, sanitary and electrical works.

UNIT	Description	Hours
1	Basic tools of Auto CAD.	6
2	Single storey residential building plan, elevation, and section.	6



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3	Two storey residential building in cross site plan, elevation and section.	6
4	Public health centre, plan elevation and section.	3
5	Dog legged stair case plan and elevation.	3
6	Preparation of water supply and sanitation layout.	3
7	Preparation of electrical layout.	3

Question paper Pattern:

Examination will be conducted for 50 marks

1. Problem identification and procedure writing :15 marks
2. Drawing Execution:25 marks
3. Viva voce :10 marks

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Working with AUTOCAD	Singh Ajit	2002
2	Building Drawing	Shah, M.G Kale	2002

Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Civil Engineering Drawing	Malik & Mayo	2009
2	A to Z Building Constructions	Mantri, Sandip	2015
3	Building Planning and Drawing	Swamy, Rao	2015
4	Building Construction	Bhavikatti S S	2005



Syllabus for the Academic Year: 2021 – 2022

Common to: CV, ME and IEM

Department: Mathematics

Semester: IV

Subject Name: Probability and Calculus of Variations

L-T-P-C: 3-0-0-3

Subject Code: MA4TH1

Total Contact Hours:40 Course Objectives:

Sl.No	Course Objectives
1	Understand the least square method to fit a curve for the given data and evaluate the correlation coefficient and regression lines for the data.
2	To develop probability distribution of discrete and continuous random variables.
3	Study the concept of joint probability distribution and Calculus of Variations.
4	To learn the concept on complex analysis.

Course Outcomes

Course outcome	Descriptions
CO1	Understand the concept of statistics, probability distributions and calculus of variations.
CO2	Use the concept of analytic function and variational problems in Engineering field.
CO3	Apply probability distributions and its generating functions in Engineering fields.
CO4	Make use of Correlation, regression analysis and complex analysis to solve the problems in real life and in Engineering fields.

UNIT	Description	Hours
I	Statistics: Correlation and regression- Karl Pearson's coefficient of Correlation, problems. Regression analysis- lines of regression (without proof) problems. Curve Fitting: Curve fitting by the method of least square- Fitting of the curves: Linear, polynomial, exponential function of the form $y=ab^x$.	8
II	Probability Distributions: Review of basic probability theory. Random variables (Discrete and Continuous), Probability of mass/density functions. Binomial distribution, Poisson's distribution, exponential distribution and Normal distribution (without derivations) and problems.	7
III	Moments: Moments, central moments, characteristic functions, probability generating and moment generating functions-illustrations. Joint probability distribution: Joint probability distribution for two discrete random variables, Marginal distributions, Expectation, Co-variance, Correlation coefficient.	7



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IV	Complex Analysis: Review of function of a complex variables, limits, continuity, and differentiability. Analytic functions, Cauchy-Riemann equations in Cartesian and polar forms (without proof). Construction of analytic functions by Milne-Thompson Method-problems. Bilinear Transformations.	9
V	Calculus of Variations: Functional, Euler's Equation (Without derivations) standard variation problems, Minimal surface of revolution, Hanging chain problem, Brachistochrone problem	8

Text Books:

Sl No	Title	Author(s)	Edition, Publisher, Year, ISBN
1	Higher Engineering Mathematics	B.S.Grewal	43 rd Edition Khanna Publications, 2015. ISBN:9788174091956
2	An Introduction to Probability Theory and its Applications	W.Feller	3 rd Edition, John Wiley & Sons, Inc, 2008, ISBN 9788126518050

Reference Books:

Sl No	Title	Author(s)	Edition, Publisher, Year, ISBN
1	A First Course in Probability	S.Ross	8 th Edition, Pearson, 2010, ISBN:9780136033134
2	Higher Engineering Mathematics	B.V.Ramana	1st Edition, Tata McGraw-Hill, 2006. ISBN:9780070634190

Mapping Course Outcomes with Program Outcomes

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3										
CO2	3	3	2									
CO3	3	3	2									1
CO4	3	3	3									1



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Syllabus for the Academic Year - 2021 - 2022

Department: CIVIL ENGINEERING

Semester:

IV Subject Name: STRENGTH OF MATERIALS

Subject Code: CE4TH2

L-T-P-C: 3-0-0-3

Sl. No	Course Objectives
1	To determine the Mechanical behavior of the body by determining the stresses, strains produced by the application of load.
2	To apply the fundamentals of simple stresses and strains principal stresses and strains.
3	To facilitate the concept of bending and its theoretical analysis.
4	To apply fundamental concepts related to deformation, moment of inertia, load carrying capacity, shear forces, bending moments, torsional moments, column and struts, principal stresses and strains.

UNIT	Description	Hours
I	Simple Stresses and Strain: Introduction, Definition and concept and 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 cross sections, Elongation due to self-weight. Saint Venant's principle, Compound bars, Temperature stresses, Compound sections subjected to temperature stresses, state of simple shear, Elastic constants and their relationship.	08
II	Compound Stresses: Introduction, state of stress at a point, General two dimensional stress system, Principal stresses and principal planes. Mohr's circle of stresses. Analysis of Trusses: Introduction, assumptions, analysis of pin jointed plane determinate trusses using method of joints and sections.	08



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III	Shear Force and Bending Moment in Beams: Introduction to types of beams, supports and loadings. Definition of bending moment and shear force, Sign conventions, relationship between load intensity, bending moment and shear force. Shear force and bending moment diagrams for statically determinate beams subjected to point load, uniformly distributed loads, uniformly varying loads, couple and their combinations.	08
IV	Bending and Shear Stresses in Beams: Introduction, pure bending theory, Assumptions, derivation of bending equation, modulus of rupture, section modulus, flexural rigidity. Expression for transverse shear stress in beams, Bending and shear stress distribution diagrams for circular, rectangular, I and T sections.	07
V	Torsion in Circular Shaft: Introduction, pure torsion, Assumptions, derivation of torsion equation for circular shafts, torsional rigidity and polar modulus Power transmitted by shaft, combined bending and torsion. Columns and Struts: Introduction, short and long columns. Euler's theory; Assumptions, Derivation for Euler's Buckling load for different end conditions, Limitations of Euler's theory. Rankine-Gordon's formula for columns.	08

Course outcome	Students will be able to
CO1	To understand the strength of various structural elements, internal forces such as compression, tension, shear, bending and torsion.
CO2	To understand the basic concept of analysis of various structural elements.
CO3	To apply the knowledge to select suitable material for the construction.
CO4	To analyze various structural elements subjected to various kinds of loads.



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TextBooks:

Sl No	TextBooktitle	Author	VolumeandYear ofEdition
1	StrengthofMaterials	B.S. Basavarajaiah,P.M ahadevappa	University Press (India)Pvt.Ltd.,3rdEdition, 2010
2	MechanicsofMaterials	FerdinandP.Beer,E.RussellJohnston andJr.John T. DeWolf	Tata McGraw-Hill,Third Edition, SI Units

ReferenceBook:

Sl No	TextBooktitle	Author	VolumeandYearofEdition
1	ElementsofStrengthofMaterials	D.H.Young,S.P. Timoshenko	EastWestPressPvt.Ltd.,5th Edition(Reprint2014)
2	StrengthofMaterials	RKBansal	4th Edition, Laxmi Publications,2010
3	StrengthofMaterials	S.S.Rattan	McGrawHillEducation(India) Pvt. Ltd., 2nd Edition(Sixthreprint 2013)
4	AnalysisofStructures	Vazirani, V N,RatwaniMM.andS KDuggal	Vol.I,17thEdition,KhannaPublishers,NewDelhi.



Syllabus for the Academic Year - 2021 - 2022

Department: Civil Engineering

Semester: IV

Subject Name: Concrete Technology

Subject Code:CE4TH3

L-T-P-C: 3-0-0-3

Sl.No	Course Objectives
1	Outline the manufacturing and types of cements and concrete and its application.
2	Assess the methods of measuring properties of concrete
3	Describe various strength of concretes and enhancing the properties of concrete using admixtures
4	Analyze the methods of mix proportion and importance of ready mix concrete

UNIT	Description	Hours
I	Concrete Ingredients: Cement – Cement manufacturing process(Wet & Dry Process), chemical composition and their importance, hydration of cement, types of cement. Testing of cement. Fine aggregate: Functions, application, Alternatives to River sand, Coarse aggregate: Importance of size, shape and texture. Grading and blending of aggregate. Testing on aggregate, application. Qualities of water.	8
II	Concrete: Workability, Factors affecting workability, Measurement by various tests, Manufacturing Concrete: Mixing, Transporting, Placing, Compaction and Curing, Importance of Curing and Methods of Curing, Segregation, Bleeding. Special Concrete: Properties and applications on High Strength concrete, High Performance Concrete, Self-Compacting Concrete, Fibre Reinforced Concrete and Geo-polymer Concrete.	8
III	Admixtures: Chemical admixtures–plasticizers, accelerators, retarders and air entraining agents. Mineral admixtures – Pozzolanic and cementitious materials, Fly ash, GGBS, silica fumes, Metakaolin and rice huskash. Durability- definition, significance, permeability, sulphate attack, chloride attack, carbonation, freezing and thawing.	7
IV	Hardened concrete: Factors influencing strength, W/C ratio, gel/space ratio, Maturity concept, Testing of hardened concrete – Compressive strength test , Split tensile test, Flexural Strength Test, Creep –factors affecting creep. Shrinkage of concrete – plastic shrinking and drying shrinkage, Factors affecting shrinkage.	8



V	Mix design: Introduction, variables in proportioning exposure conditions, Procedure of mix design as per IS 10262-2009. Numerical examples of mix design. Non Destructive testing of concrete: Importance of Non-destructive tests, Rebound hammer test, Ultra sonic pulse velocity test. Procedure to conduct tests – Penetration and pull out test.	8
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Course outcome	Descriptions
CO1	Understand the various ingredients of concrete and their properties, types of cement and their uses.
CO2	Able to understand the various tests on fresh concrete and Hardened concrete
CO3	Able to do the mix design as per IS code specification
CO4	Gain knowledge of non-destructive tests on concrete.

Question paper Pattern:

<ol style="list-style-type: none">1. The question paper will have 5 units comprising of ten questions. Each full question carrying 20 marks.2. The students shall answer five full questions, selecting one full question from each unit.
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Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Concrete Technology	Neville A M	Volume 1,2 nd Edition,2019
2	Concrete Technology,	Gambhir M L	Volume 1,5 th Edition,2017



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Reference Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Concrete Technology	M S Shetty	Jan 2018
2	Concrete technology,	Shanthakumar.A.R	Apr 2018, Oxford University Press, New Delhi, ISBN-13: 978-0199458523
3	Concrete Mix Design	N. Krishna Raju	Volume 1,3 rd Edition 2010
4	Concrete Mix proportioning guidelines	IS 10262	2009



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: IV

Subject Name: Hydraulics And Hydraulic Machines

Subject Code: CE4TH4

L-T-P-C: 3-0-0-3

Course objectives :

Sl no	Course objectives
1	To introduce the students to the principles of fluid flow problems associated with pipe flows, open channel flows and to solve practical fluid flow problems.
2	To provide an exposure to the principles of dimensional analysis
3	To provides an exposure to the impact of jet on different types of vanes
4	To provides an exposure to the working principles and performance characteristics of hydraulic machines.

UNIT	Description	Hours
I	Flow In Open Channels: Definition Of Open Channels, Classification, Difference Between Pipe Flow & Open Channel Flow, Types Of Flow, Geometric Properties Of Open Channels, Uniform Flow In Open Channels, Chezy's And Manning's Formulae, Problems On Uniform Flow. Specific Energy, Definitions, Specific Energy Curve, Conditions For Minimum Specific Energy And Maximum Discharge, Critical Flow In Rectangular Channels, Problems, Hydraulic Jump In Rectangular Channels, Froude Number Concept, Problems On Hydraulic Jump.	10
II	Dimensional Analysis & Model Similitude: Introduction To Dimensional Analysis, Units & Dimensions, Table Of Dimensions, Dimensional Homogeneity, Methods Of Analysis (Rayleigh's & Buckingham's Method), Problems On Rayleigh's & Buckingham's Methods, Model Studies, Introduction, Comparison With Dimensional Analysis, Similitude, Dimensionless Parameters.	07
III	Impact Of Jet On Flat And Curved Vanes: Introduction To Impulse Momentum Equation And Its Applications, Force Exerted By A Jet On A Fixed vane, Derivations, Force Exerted By A Jet On A Moving Target, Derivations. Force Exerted By A Jet On A Curved Vane, Concept Of Velocity Triangles (no problems).	07



IV	Turbines: Hydropower generation, Turbines- classification, description of Pelton wheel turbine and Francis turbine. Unit quantities, specific speed, problems, characteristic curves of turbine. General layout of hydroelectric plant.	07
V	Centrifugal Pumps: Definition Of Pump, Classification, Description & General Principle Of Working, Priming & Methods, Work Done & Efficiencies Of A Centrifugal Pump, Minimum Starting Speed, Cavitation In Centrifugal Pumps, Multistage Pumps, Problems On Centrifugal Pumps.	08

Course Outcomes

Course outcome	Descriptions
CO1	Able to explain open channel flow and energy concepts in open channel flow.
CO2	Able to solve practical fluid flow problems, to apply dimensional analysis.
CO3	Able to apply the principles of impulse momentum equation to study impact of jet on different types of vanes.
CO4	To design the sections of open channels and to choose turbine and pumps for various conditions by performance characteristics

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Hydraulics and Fluid Mechanics Including Hydraulic Machines	P.N. Modi and S.M. Seth	20th Edition- 2015
2	A textbook of Fluid Mechanics and Hydraulic Machines	R K Bansal	9th Edition -2017

Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Fluid Mechanics and Hydraulics	J.B. Evett, and C.Liu	3rd Edition- 2009
2	Elementary Hydraulics	Cruise, J.F., Singh, V.P. and Sherif, M.M.	1st Edition -2007
3	Fluid mechanics and Hydraulic Machines	K Subramanya	3rd Edition -2009



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: IV

Subject Name: Building materials and construction management

Subject Code: CE4TH05

L-T-P-C: 3-0-0-3

Course objectives:

Sl No	Description
1	To comprehend the properties of masonry walls and its behaviour under different conditions of loading.
2	To be familiar with the different types of alternative building materials.
3	To gain the knowledge of alternatives to conventional masonry walls and roofs.
4	To understand the role of management in entrepreneurship and the concept of scheduling in construction projects.

UNIT	Description	Hours
I	Masonry and its properties: Introduction, Types of walls-load bearing and non- load bearing walls, types of loading on walls, Strength of masonry in compression and tension, factors affecting the compressive strength, Stress-strain properties of masonry. Design of footing for masonry wall for axial loading only.	7
II	Alternative Building Materials: Types of structural units, characteristics of building blocks-bricks, laterite blocks, concrete blocks, Fal-G blocks, stabilized mud blocks, steam cured blocks. Selection of good building blocks for construction. Fibre reinforced cement composites- materials, fibres, filler materials and additives, applications.	7
III	Alternative Building Technologies: Alternatives for wall constructions-composite masonry, confined masonry, cavity walls, rammed earth. Ferro cement and ferroconcrete building components- construction methods, properties and applications. Top down construction, Mivan Construction Technique. Alternative Roofing Systems-Concepts, Filler slabs, Composite beam panel roofs.	8



IV	Construction management and scheduling process: Introduction to management, Meaning, Characteristics, Scope, Functional Areas, Roles and Levels of Management. Introduction to Scheduling, Net Work Analysis-Types of Networks, CPM, PERT, Differences between CPM and PERT. CPM Network (A-O-A Network)- Terms and Definition, Calculation of Floats, Related Problems.	9
V	Construction equipment and entrepreneurship: Introduction to construction equipments –Earth Moving Equipments, Hoisting Equipments, Equipments For Highway Construction, Factors For Selecting Equipments. Meaning of Entrepreneur, Types of Entrepreneur, Concept, Evolution and Development of Entrepreneurship, Stages in Entrepreneurial Process, Role of Entrepreneurs in Economic Development.	8

Course Outcomes

Course outcome	Descriptions
CO1	To describe the different types of loading and its effect on masonry walls.
CO2	To characterize the building blocks by their properties to use in construction.
CO3	To differentiate the alternative construction techniques with the conventional methods.
CO4	To utilize the concept of network analysis in scheduling a construction project and to develop managerial skills in entrepreneurship.

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	“Building Materials”, New Age International publishers, New Delhi	S K Duggal	Volume 1, 3 rd Edition,
2	“Alternative Building Material and Technologies”, Laxmi Publications, New Age International publishers, New Delhi	K S Jagadish, B V Venkataramana Reddy and K S NanjundaRao	2 nd Edition, 2017



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Reference Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	“Brick and Reinforced Brick Structures”, Medtech Scientific publishers, New Delhi	P Dayaratnam	2 rd Edition, 2018
2	“Construction Planning and Management”, Galgotia publications, New Delhi	U K Srivastava	1 st Edition, 2016
3	“Construction Engineering and Management”, Umesh publications, New Delhi	S Seetharaman	5 th Edition, 2015
4	“Project Planning and Control with PERT and CPM”, Galgotia publications, New Delhi	B C Punmia and K Khandelwal	4 th Edition, 2006



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: IV

Subject Name: Basic Geotechnical Engineering

Subject Code: CE4TH06

L-T-P-C: 3-0-0-3

Course objectives:

Sl no	Description
1	To understand basic concepts of soil mechanics as an integral part in the knowledge of civil engineering.
2	To comprehend the engineering properties of different types of soil and to be familiar with the mechanical behaviour of soils.
3	To be broadly familiar with geotechnical engineering problems such as flow of water and terminologies associated with soil mechanics.
4	To assess the strength-deformation and consolidation characteristics of soils

UNIT	Description	Hours
I	Index properties: History of soil mechanics, Definition, origin and formation of soil, Phase Diagram with inter relationships between index properties, Laboratory determination of Moisture content, Specific gravity, Relative Density, Consistency limits and indices, in-situ density, Particle size distribution by sieve analysis and IS Plasticity chart, Soil structure, Common clay minerals- Montmorillonite, kaolinite, halloysite and illite, Soil-Water system- Electrical diffuse double layer, adsorbed water, base-exchange capacity, Isomorphous substitution.	8
II	Flow of water: Darcy's law with assumptions, coefficient of permeability and its determination, factors affecting permeability, seepage velocity, superficial velocity, permeability of stratified soils, concept of total stress, effective stress and pore stress, Quick sand phenomena and capillary phenomena. Numerical problems on permeability.	7



III	Compaction: Definition, Principle and factors affecting compaction, Problems on compaction. Field compaction control - compactive effort & method of compaction, lift thickness and number of passes, Proctor needle, Compacting equipments and their suitability.	7
IV	Consolidation: Definition, Terzaghi's one dimensional consolidation theory-assumption, types of consolidation, Determination of Consolidation characteristics (C_c , a_v , m_v , C_v) by square root of time fitting and logarithmic time fitting and Numerical problems on consolidation. Determination of Pre-consolidation pressure by Casagrande's method.	9
V	Shear Strength: Mohr-coulomb theory, factors affecting shear strength, Determination of Shear Strength by Direct shear test, Unconfined compression test and Triaxial compression test. Numerical problems on above. Thixotropy and sensitivity. Test under different drainage conditions.	8

Course Outcomes

Course outcome	Descriptions
CO1	To determine the index properties in classifying the soils based on index properties and plasticity chart.
CO2	To determine compaction characteristics and permeability property of soils in acquiring the knowledge of stresses due to seepage and effective stress.
CO3	To solve practical problems related to estimation of consolidation settlement of soil.
CO4	To estimate shear strength parameters of different types of soils using the data of different shear tests using Mohr-Coulomb failure theory.



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Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	“Basic and Applied Soil mechanics”, New Age Publishers and Distributors, New Delhi.	GopalRanjan and A S R Rao	2 nd Edition, 2009
2	“Soil Mechanics And Foundation Engineering”, UBS Publishers And Distributors, New Delhi.	V N S Murthy	2 nd Edition, 2009

Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	“Soil Mechanics and Foundation Engineering”, Laxmi Publications, New Delhi.	B C Punmia	18 th Edition, 2017
2	“Geotechnical Engineering”, New Age Publications, New Delhi	Venkatramaiah C	3 rd Edition, 2009
3	“Foundation Analysis and Design”, McGraw Hill Publishers, New York.	Joseph E Bowles	8 th Edition, 2010
4	“Soil Mechanics Fundamentals”, John Wiley And Sons Publications, New York.	Muni Budhu And Wiley Blackwell	2 nd Edition, 2009



Syllabus for the Academic Year 2020 - 2021

Department: CIVIL ENGINEERING

Semester: IVS

Subject Name: BASIC MATERIAL TESTING LABORATORY

Subject Code: CE4LB1

L-T-P-C: 0-0-3-1.5

Course Objectives:

Sl.No	Course Objectives
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 function on multi-disciplinary teams in the area of materials testing
4	Understanding of professional and ethical responsibility in the areas of material testing.

UNIT	Description	Hours
1	Tension test on Mild steel and HYSD bars.	3
2	Compression test of Mild Steel, & Cast iron	3
3	Torsion test on Mild Steel circular sections	3
4	Shear Test on Mild steel.	3
5	Impact test on Mild Steel (Charpy & Izod)	3
6	Bending and Rebending test on steel (for demonstration)	3
7	Hardness test on ferrous and non-ferrous metals 1. Brinell's, 2. Rockwell 3. Vicker's	6
8	Bending Test on RCC beam under two point loading	3



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9	TestsonCoarseaggregates: 1. WaterAbsorption 2. SpecificGravity 3. BulkDensity 4. SieveAnalysis	12
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CourseOutcomes

Course outcome	Descriptions
CO1	Studentswillbeabletounderstandthebehaviorofengineeringmaterialsby conductingtension and compressiontests
CO2	Studentswill be able to understand thebehaviorofengineeringmaterialsby
CO3	Studentswill beable tounderstandthe behaviorof engineeringmaterials by
CO4	Studentswillbeabletofindcertainpropertiescourseaggregates,likewater

TextBooks:

Sl	TextBooktitle	Author	VolumeandYear
1	TestingofEngineeringMaterials	Davis,H.E.,Troxell,	McGraw Hill Publications, New
2	ConcreteManual	M.L.Gambhir	DhanpatRai&Sons

ReferenceBook:

Sl	TextBooktitle	Author	VolumeandYear
1	MechanicalTestingofMaterials	Fenner,	GeorgeNewnesLtd.
2	ExperimentalStrengthofMaterials	HolesKA,	EnglishUniversities
3	TestingofMetallicMaterials	SuryanarayanaAK	
4	MaterialTestingLaboratoryManual	KukrejaCB,Kishore	StandardPublishers



Syllabus for the Academic Year - 2021 - 2022

Department: Civil Engineering Semester: IV

Subject Name: SURVEYING PRACTICE - II

Subject Code: CE4LB2

L-T-P-C: 0-0-3-1.5

Sl.No	Course Objectives
1	To facilitate the students to develop their intellectual and motor skills to conduct the surveying works based on objectives.
2	To train the students of civil engineering in using various surveying Instruments - care and adjustments.
3	To train the students to collect the field data, field notes and to apply corrections required using suitable methods before plotting or setting-out.
4	To use the various techniques necessary for engineering practices.

Expt no.	Experiments
1	To determine distance using tachometric surveying with horizontal and inclined line of sight.
2	To determine tachometric constants using tachometric surveying with horizontal and inclined line of sight.
	Total station
3	Introduction to the total station and to study the parts of Total station.
4	To make the temporary adjustments of Total station and to measure Horizontal and sloping distance.
5	Orientation with reference to north, measurement of horizontal distances, sloping distances, horizontal angles in angular measuring mode.
6	To compute the coordinates ie., Northing, Easting and reduced levels for various points given on the ground from one instrument station.



7	To conduct open traverse using Total station and to measure the coordinates of intermediate points like electrical poles, trees etc., and to orient the instrument with respect previous station points.
8	To conduct closed traverse using Total station and to measure the coordinates NEZ values.
9	To conduct profile leveling to existing ground profile and Plot LS &CS.

Course Outcomes

Course outcome	Descriptions
CO1	To Perform tacheometric survey to avail field data
CO2	To perform basic operations of total station
CO3	To utilize the total station for various type of field survey like standard traverse, profile leveling to existing ground etc.
CO4	To Work effectively as a member in a team & contribute to the team's goal

Question paper Pattern:

Examination will be conducted for 50 marks

1. Experiment identification and procedure writing :15 marks
2. Experiment conduction:25 marks
3. Viva voce :10 marks

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Surveying	B.C. Punmia,	Volume-I,Laxmi Publications, New Delhi..
2	Plane Surveying	A.M Chandra,	Volume-I, New Age International © Ltd.,



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Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Fundamentals of Surveying	S.K. Roy	Prentice Hall of India
2	Fundamentals of Surveying	Milton O. Schmidt Wong	Thomson Learning.
3	Surveying	S.K. Duggal	Volume I
4	Plane Surveying	ALAK, S. Chand	Company Ltd., New Delhi.



Syllabus for the Academic Year 2020 - 2021

Department: Civil Engineering

Semester: IV

Subject Name: Engineering Geology Laboratory

Subject Code: CE4LB3

L-T-P-C: 0-0-3-1.5

Course objectives:

Sl no	Course objectives
1	To expose the students to identify the minerals and rocks based on their physical properties and uses in civil engineering.
2	Students will learn the thickness of strata, dip and strike, bore hole problems related to geological formations for foundation, tunnels, reservoirs and mining
3	To educate the students in the interpretation of the geological maps related to civil engineering projects
4	Students will understand the field knowledge by visiting the site structural features of the earth like faults, folds, joints, unconformity etc.

Experiments	Description of experiment	Hours
1	Study of physical properties of minerals and identification of different group of minerals and their uses. Rock Forming minerals - Quartz group, Feldspar group, Garnet, Corundum, Mica group, Hornblende, Talc, Chlorite, Olivine, Asbestos, Calcite, Gypsum, etc	3 hours
2	Study of physical properties of minerals and identification of different group of minerals and their uses. Ore forming minerals - Magnetite, Hematite, Limonite, Pyrite, Chalcopyrite, Galena, Pyralusite, Chromite, Bauxite etc.	3 hours
3	Study of physical properties and Engineering Properties of rocks and their identification and uses. Igneous rocks - Granites and related rocks, Dolerite, Porphyries of Granite, Syenite, Diorite, Basalt, and Pegmatite etc.	3 hours



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4	Study of physical properties and Engineering Properties of rocks and their identification and uses. Sedimentary rocks –Conglomerate, Breccia, Sandstone, Shale, Lime stone, Laterite, etc. Metamorphic rocks - Gneiss, Schist, Marble, Quartzite, Slate,Charnockite, etc.	3 hours
5	Calculation of Thickness of strata - Vertical, True thickness and width of the outcrops. (3 methods)	3 hours
6	Dip and Strike problems- Determine Apparent dip and True dip and amount of inclinations (3 methods)	3 hours
7	Borehole problems- Determination of subsurface behavior of rocks, their attitude related to foundation, tunnels, reservoirs and mining. Triangular methods.	3 hours
8	Borehole problems- Determination of subsurface behavior of rocks, their attitude related to foundation, tunnels, reservoirs and mining. Square methods.	3 hours
9	Interpretation and drawing of sections for geological maps showing formation of rock bodies, tilted beds, faults, unconformities etc. (10 Maps)	9 hours
10	Study of Rock Forms & Structural features by using Wooden Models.	3hours

Course Outcomes

Course outcome	Descriptions
CO1	The students able to identify the minerals, rocks and utilize them effectively in civil engineering practices.
CO2	The students will interpret subsurface information such as thickness of soil, weathered zone, depth of hard rock
CO3	The students will interpret and understand the geological conditions of the area for implementation of civil engineering projects.
CO4	The students will be able to identify the different structural features in the field.

Reference Book:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Engineering Geology Laboratory Manual	B.S. SatyanarayanaSwamy	DhanpatRai Sons, New Delhi.
2	Structural Geology	MP Billings	CBS Publishers and Distributors, New Delhi.
3	Textbook of Geology	P.K.MUKERJEE,	WorldPress Pvt. Ltd., Kolkatta