UNIVERSITY OF KERALA

B. TECH. DEGREE COURSE

(2013 SCHEME)

SYLLABUS FOR

III SEMESTER

CIVIL ENGINEERING

SCHEME -2013

III SEMESTER
CIVIL ENGINEERING (C)

Course No	Name of subject	Credits	Weekly load, hours			C A Marks	Exam Duration Hrs	U E Max Marks	Total Marks
			L	T	D/P				
13.301	Engineering Mathematics II (ABCEFHMNPRSTU)	4	3	1	-	50	3	100	150
13.302	Mechanics of Structures (C)	4	3	1	-	50	3	100	150
13.303	Fluid Mechanics I (C)	4	3	1	-	50	3	100	150
13.304	Concrete Technology & Advanced Construction (C)	4	3	1	-	50	3	100	150
13.305	Surveying I (C)	5	4	1	-	50	3	100	150
13.306	Engineering Geology (C)	4	3	1	-	50	3	100	150
13.307	Building Drawing (C)	2	-	-	2	50	3	100	150
13.308	Practical Surveying I (C)	2	-	-	2	50	3	100	150
	Total	**29**	**19**	**6**	**4**	**400**		**800**	**1200**

13.301 ENGINEERING MATHEMATICS - II (ABCEFHMNPRSTU)

Teaching Scheme: 3(L) - 1(T) - 0(P) **Credits**: 4

Course Objective:

This course provides students a basic understanding of vector calculus, Fourier series and Fourier transforms which are very useful in many engineering fields. Partial differential equations and its applications are also introduced as a part of this course.

Module – I

Vector differentiation and integration: Scalar and vector functions-differentiation of vector functions-velocity and acceleration - scalar and vector fields - vector differential operator-Gradient-Physical interpretation of gradient - directional derivative – divergence - curl - identities involving ∇ (no proof) - irrotational and solenoidal fields - scalar potential.

Vector integration: Line, surface and volume integrals. Green's theorem in plane. Stoke's theorem and Gauss divergence theorem (no proof).

Module – II

Fourier series: Fourier series of periodic functions. Dirichlet's condition for convergence. Odd and even functions. Half range expansions.

Fourier Transforms: Fourier integral theorem (no proof) –Complex form of Fourier integrals-Fourier integral representation of a function- Fourier transforms – Fourier sine and cosine transforms, inverse Fourier transforms, properties.

Module – III

Partial differential equations: Formation of PDE. Solution by direct integration. Solution of Langrage's Linear equation. Nonlinear equations - Charpit method. Homogeneous PDE with constant coefficients.

Module – IV

Applications of Partial differential equations: Solution by separation of variables. One dimensional Wave and Heat equations (Derivation and solutions by separation of variables). Steady state condition in one dimensional heat equation. Boundary Value problems in one dimensional Wave and Heat Equations.

References:

1. Kreyszig E., *Advanced Engineering Mathematics*, 9/e, Wiley India, 2013.
2. Grewal B. S., *Higher Engineering Mathematics*, 13/e, Khanna Publications, 2012.

3. Ramana B.V., *Higher Engineering Mathematics*, Tata McGraw Hill, 2007.
4. Greenberg M. D., *Advanced Engineering Mathematics*, 2/e, Pearson, 1998.
5. Bali N. P. and M. Goyal, *Engineering Mathematics*, 7/e, Laxmi Publications, India, 2012.
6. Koneru S. R., *Engineering Mathematics*, 2/e, Universities Press (India) Pvt. Ltd., 2012.

Internal Continuous Assessment *(Maximum Marks-50)*

50% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, quiz, literature survey, seminar, term-project, software exercises, etc.

20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

The question paper shall consist of 2 parts.

Part A (20 marks) - Five Short answer questions of 4 marks each. All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

Part B (80 Marks) - Candidates have to answer one full question out of the two from each module. Each question carries 20 marks.

Course Outcome:

At the end of the course, the students will have the basic concepts of vector analysis, Fourier series, Fourier transforms and Partial differential equations which they can use later to solve problems related to engineering fields.

13.302 MECHANICS OF STRUCTURES (C)

Teaching Scheme: 3(L) - 1(T) - 0(P) **Credits**: 4

Course Objective:

To learn the principles underlying the mechanics of deformable bodies and thereby to understand the strength and physical performance of structures.

Module – I

Rigid and deformable bodies – Self weight – external loads –Concept of internal stresses – Normal stress and shear stress – Concept of strain – Normal strain and shear strain – Constitutive relation – Hooke's law – Poisson's ratio – Stress-strain diagram for mild steel and tor steel – Working stress. Deformation of axially loaded bars of constant and varying section – Principle of superposition – Composite sections – Elastic constants - Relationship between elastic constants – Temperature stresses. Stress on inclined plane for axial and biaxial stress fields – Principal stresses and strains – Mohr's circle of stress

Module – II

Introduction to analysis of beams - Concept of bending moment and shear force - Relationship connecting intensity of loading, shear force and bending moment – Shear force and bending moment diagrams for cantilever, simply supported and overhanging beams for different loadings such as point load, UDL, uniformly varying load and applied moment. Theory of simple bending – Limitations – Flexural Rigidity - Bending stress distribution in beams of different cross-sections – Moment of resistance – Beams of uniform strength

Module – III

Shear stress distribution in beams of different cross-sections. Introduction to shear centre and shear flow (concept only – no numerical examples). Theory of columns – Short columns – Direct and bending stresses in short columns - Kern of section - Pressure distribution of dams and retaining walls. Torsion of solid and hollow circular shafts – Torsion of rectangular shafts – Power transmission – Closely coiled and open coiled helical springs

Module – IV

Analysis of pin-jointed plane frames by the method of joints and sections. Strain energy – Strain energy due to normal stress, shear stress and bending stress – Instantaneous stresses and strains due to suddenly applied and impact loading. Stresses in thin cylindrical and spherical shells – stresses in thick cylindrical shells.

References:

1. Junarkar S. B. and Shah S. J., *Mechanics of Structures (Vol. I)*, 30/e,Charotar Publishing House Pvt. Ltd., New Delhi, 2012.
2. Egor P. Popov, *Engineering Mechanics of Solids*, Prentice-Hall of India, New Delhi, 1993.
3. Timoshenko S. P. and J. M. Gere, *Mechanics of Materials*, CBS Publishers & Distributors, New Delhi.1996.
4. Gere J. M., *Mechanics of Materials*, Thomson Books, New Delhi, 2003.
5. Crandall S. H., N. C. Dahl and T. J. Lardner, *An Introduction to the Mechanics of Solids*, McGraw Hill International, Tokyo, 1994.
6. Singh D. K., *Strength of Materials*, 3/e, Ane Books Pvt. Ltd., New Delhi, 2013.
7. Punmia B. C., A. K. Jain and A. K. Jain, *Mechanics of Materials*, Laxmi Publications(P) Ltd, New Delhi, 2001.
8. Prakash Rao D. S., *Strength of Materials - A Practical Approach (Vol. I)*, University Press, Hyderabad, 1999.
9. Jindal U C., *Strength of Materials*, Pearson, Delhi, 2012.
10. Jose S. and Kurian S. M., *Mechanics of Solids*, Pentagon, 2012.

Internal Continuous Assessment *(Maximum Marks-50)*

50% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, quiz, literature survey, seminar, term-project, software exercises, etc.

20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

The question paper shall consist of 2 parts.

Part A (20 marks) - Five Short answer questions of 4 marks each. All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

Part B (80 Marks) - Candidates have to answer one full question out of the two from each module. Each question carries 20 marks.

Course Outcome:

At the end of the course, the students will be able to do the design and analysis of a huge variety of mechanical and structural systems.

13.303 FLUID MECHANICS – I (C)

Teaching Scheme: 3(L) - 1(T) - 0(P) **Credits**: 4

Course Objectives:

- *An understanding of fluid statics fundamentals, including concepts of pressure on submerged & floating bodies.*
- *An understanding of fluid dynamics fundamentals, including concepts of mass and momentum conservation.*
- *An ability to apply the fundamental theories of fluid statics and fluid dynamics to solve problems in Civil Engineering.*
- *An exposure to recent developments in fluid mechanics, with application to civil engineering systems.*

Module – I

Fluid statics: Fluid pressure, variation of pressure in a fluid, measurement of pressure using manometers-simple manometers, differential manometers,. Pressure head forces on immersed plane and curved surfaces. Pressure distribution diagram for vertical surfaces, Practical application of total pressure (spillway gates).

Buoyancy and Floatation: Buoyant force, stability of floating and submerged bodies, metacentre and metacentric height, analytical and experimental determination of metacentric height.

Module – II

Kinematics of fluids: Methods of describing fluid motion, Lagrangian and Eulerian methods, Types of fluid flow: steady and unsteady flow, uniform and non-uniform flow, one, two and three dimensional flow, laminar and turbulent flow, rotational and irrotational flow,
Types of flow lines: stream line, path line, streak lines, conservation of mass, equation of continuity in one, two and three dimensions, (Derivation in Cartesian co-ordinate system)
Velocity & Acceleration of fluid particle, convective and local acceleration, Deformation of fluid elements: circulation and vorticity, velocity potential, stream function, equipotential lines, flow net, uses of flow net.

Module – III

Factors influencing motion: Euler's equation of motion and integration of Euler's equation of motion along a streamline, Bernoulli's Equation, Energy and Momentum correction factors, Applications of Bernoulli's equation, Pitot tube, Venturimeter and orifice meter. Vortex motion, free and forced vortex(no problems).

Flow through orifices: Different types of orifices, Flow over a sharp edged orifice, Hydraulic coefficients –Experimental determination of these coefficients, flow through large

rectangular orifice, Flow through submerged orifices, flow under variable heads, time of emptying.

Flow over weirs: Types of weirs flow over rectangular sharp crested weir, Francis formula, Flow over a trapezoidal weir, Cipolletti weir, broad crested weir, submerged weirs, proportional weir, time of emptying through weirs.

Module – IV

Pipe flow: Major and minor energy losses, Darcy- Weisbach equation, hydraulic gradient and total energy line, pipe connecting reservoirs-pipes in series, pipes in parallel, equivalent pipe, transmission of power through pipes

Viscous flow: Laminar flow through circular pipes, Hagen Poiseuille equation, Reynolds experiment. Laminar flow between two stationary parallel plates.

Momentum equation – application to flow through pipe bends.

References:

1. Modi P. N. and S. M. Seth, *Hydraulics & Fluid Mechanics*, S.B.H Publishers, New Delhi, 2002.
2. Vennard J. K. and R. L. Street, *Elementary Fluid Mechanics*, John Wiley and Sons, New York, 1975.
3. Streeter V. L., E. B. Wylie and K. W. Bedford*, Fluid Mechanics*, Tata McGraw Hill, Delhi, 2010.
4. Kumar D. S., *Fluid Mechanics and Fluid Power Engineering,* S. K. Kataria & Sons, New Delhi, 1998.
5. Jain A. K., *Fluid Mechanics*, Khanna Publishers, Delhi, 1996.
6. Douglas J. F.*, Fluid Mechanics*, 4/e Pearson Education, 2005.
7. Narasimhan S.*, A First Course in Fluid Mechanics*, University Press (India) Pvt. Ltd., 2006.
8. Husain Z., Z. Abdullah and Z. Alimuddin, *Basic Fluid Mechanics & Hydraulic Machines*, B S Publications, 2008.
9. Bansal R. K., *A Textbook of Fluid Mechanics and Hydraulic Machines*, Laxmi Publications, 2005.
10. Subramanya K., *Theory and Applications of Fluid Mechanics*, Tata McGraw-Hill, 1993.

Internal Continuous Assessment *(Maximum Marks-50)*

50% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, quiz, literature survey, seminar, term-project, software exercises, etc.

20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

The question paper shall consist of 2 parts.

Part A (20 marks) - Five Short answer questions of 4 marks each. All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

Part B (80 Marks) - Candidates have to answer one full question out of the two from each module. Each question carries 20 marks.

Note: No charts, tables, codes are permitted in the Examination hall .If necessary relevant data shall be given along with the question paper by the question paper setter.

Course Outcome:

- *Students can identify and analyse problems in Fluid mechanics related areas in Civil Engineering*
- *Develops an ability to solve problems in Civil Engineering using the principles of fluid mechanics*
- *Acquires the required knowledge for preparing designs for hydraulic structures*

13.304 CONCRETE TECHNOLOGY AND ADVANCED CONSTRUCTION (C)

Teaching Scheme: 3(L) - 1(T) - 0(P) **Credits**: 4

Course Objective:

- *This course provides students a detailed insight into the various concrete making materials and their properties on fresh and hardened properties of concrete.*
- *This course also introduces students to various construction equipment and techniques.*

Module – I

Cement: Manufacturing of Portland cement, Ingredients, Chemical composition, basic properties of cement compounds, Hydration of cement, heat of hydration, physical properties of Portland cements, Indian standard tests and specification, various types and grades of cement, storage of cement

Aggregates: Classification of aggregates based on size, shape, unit weight, Characteristics of aggregates – Strength of aggregate, particle shape and texture, specific gravity, bulk density,

porosity, moisture content of aggregate, bulking of fine aggregate, deleterious substance in aggregate, soundness of aggregate , alkali- aggregate reaction , sieve analysis:- grading curves, fineness modulus, grading requirements, grading of fine and coarse aggregates, zoning, IS tests and specification for aggregates for concrete.

Water: Quality of mixing water, effect of impurities in water on properties of concrete.

Admixtures: Functions and classification of admixtures, chemical and mineral admixtures and its effect on concrete, factors influencing the dosage of different admixtures.

Module – II

Properties of fresh concrete: Water/ Cement ratio and its significance in fresh concrete, workability - different methods for assessing workability according to IS Specification, factors affecting workability, requirements of workability for various work, segregation, bleeding, setting and hardening.

Process of manufacture of concrete: Mix proportion and grade of concrete, Various types of batching, mixing, transporting, placing, compacting, curing and finishing of concrete, Joints in concreting – construction and expansion joints.

Special concrete (Brief discussion only): Lightweight concrete, High strength concrete, High performance concrete, Polymer concrete, Fibre reinforced concrete, Ferro-cement, Ready mixed concrete, Pumpable concrete.

Module – III

Properties of Hardened concrete: Strength of concrete - factors influencing the strength of concrete, Stress - strain characteristics of concrete, IS tests for assessing the performance of hardened concrete, Effect of creep, shrinkage and temperature, Durability of concrete - factors affecting durability - permeability, chemical attack, sea water attack and air entrainment.

Non-destructive testing of concrete: Rebound hammer and ultrasonic pulse velocity testing

Mix Design: Factors causing variations in the quality of concrete, statistical quality control, quality management in concrete construction, Proportioning of concrete mixes - factors influencing the choice of mix proportions, General principles of concrete mix deign by IS Method, Importance of trial mixes and adjustment of ingredients of concrete.

Module – IV

Formwork for concrete: Requirements of a good formwork, Materials used for formwork – advantages and disadvantages, Formwork for beams, columns, slabs.

Coffer dam – Types

Construction equipment – excavator, bulldozer, power shovel, dumper, rollers, compactors, aggregate crushers, concrete mixtures, pile driving equipment.

Tunneling – Method of tunneling through hard rock and soft soil, drainage, ventilation, lining.

Earthquake resisting construction – Construction aspects only.

References:

1. Neville A. M. and J. J. Brooks, *Concrete Technology*, Pearson Education, 2008.
2. Neville A. M., *Properties of Concrete*, 4/e, Pearson Education, 2003.
3. Shetty M. S., *Concrete Technology*, S. Chand & Company, 2005.
4. Peurifoy R. L. and C. J. Schexnayder, *Construction Planning, Equipment and Methods*, 6/e, Tata McGraw Hill Publishers, 2003.
5. Gambhir M. L., *Concrete Technology*, 5/e, Tata McGraw Hill Publishers, 2013.
6. Santhakumar A. R., *Concrete Technology*, Oxford University Press, India, 2006.

Internal Continuous Assessment *(Maximum Marks-50)*

50% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, quiz, literature survey, seminar, term-project etc.

20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

The question paper shall consist of 2 parts.

Part A (20 marks) - Five Short answer questions of 4 marks each. All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

Part B (80 Marks) - Candidates have to answer one full question out of the two from each module. Each question carries 20 marks.

Course Outcome:

- *At the end of the course, the students will be familiar with the uses and properties of various concrete making materials and properties and testing of concrete in both fresh and hardened stages.*
- *The students will also be familiar with various advanced construction methods and equipment and will acquire a basic knowledge for supervising the construction of buildings.*

13.305 SURVEYING – I (C)

Teaching Scheme: 4(L) - 1(T) - 0(P) **Credits:** 5

Course Objectives:

- *To introduce the principle of surveying*
- *To impart awareness on the various fields of surveying and the types of instruments*
- *To understand the various methods of surveying and computations*

Module – I

Principles of surveying, Classification of surveying

Linear measurement: Instruments for linear measurements- survey stations- survey lines- ranging out survey lines- chain and tape- tape corrections.

Angular measurements: Instruments for angular measurements prismatic compass bearing of survey lines, systems of bearings and conversions - variations- local attraction - declination- dip.

Graphical methods of surveying: Plane table surveying - instruments used - methods of plane table surveying. – Radiation & Intersection only – advantages & disadvantages

Module – II

Leveling: Principles of leveling- leveling instruments - booking and reduction levels – methods - simple, differential, and reciprocal leveling - profile and cross sectioning. Digital Level, errors in levelling

Contouring: Characteristics, methods, uses.

Area and Volume: Methods of computation (problems only)

Mass diagram: Construction, Characteristics and uses.

Module – III

Theodolite survey: Instruments- measurement of horizontal and vertical angle.

Tacheometric surveying: Stadia tacheometry - principles- determination of instrument constants, tangential tacheometry - principles.

Module – IV

Hydrographic Survey – Sounding –Methods of locating soundings – Three point problem – analytical method – Station pointer

Field Astronomy – Terrestrial latitude and longitude, Celestial Sphere – Astronomical triangle, Co-ordinate system

References:

1. Gopi S., Madhu N. and Sathikumar R., *Advanced Surveying*, Pearson Education, New Delhi, 2004.
2. Kenetkar T. P. and Kulkarni S. V., *Surveying and Levelling*, Pune Vidyarthi Griha Prakashan, New Delhi, 2004.
3. Punmia B. C., Ashok Kumar Jain and Arun Kumar Jain – *Surveying (Vol. II and III)*, Laxmi publications (P) Ltd., New Delhi, 2005.
4. Agor R, *A Text book of Surveying and Levelling*, Khanna Publishers, New Delhi, 2005.
5. Duggal S. K., *Surveying* (*Vol. I and II)*, Tata Mc Graw Hill, New Delhi, 2006.
6. Bhavikatti S. S., *Surveying and Levelling (Vol. I and II*), I. K. International Publishing House Pvt. Ltd., New Delhi, 2011.

Internal Continuous Assessment *(Maximum Marks-50)*

50% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, quiz, literature survey, seminar, term-project, software exercises, etc.

20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

The question paper shall consist of 2 parts.

Part A (20 marks) - Five Short answer questions of 4 marks each. All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

Part B (80 Marks) - Candidates have to answer one full question out of the two from each module. Each question carries 20 marks.

Note: No charts, tables, codes are permitted in the Examination hall .If necessary relevant data shall be given along with the question paper by the question paper setter.

Course Outcome:

After successful completion of the course, the students will possess knowledge on the various types of surveys, the instruments and its suitability for various purposes.

13.306 ENGINEERING GEOLOGY (C)

Teaching Scheme: 3(L) - 1(T) - 0(P) **Credits**: 4

Course Objective:

To impart the knowledge of geology in order to fulfill the geological requirements in various fields of Civil Engineering like Soil Mechanics, Rock Mechanics, Water Resources Engg, Environmental Engg, and Earthquake Engineering.

Module – I

Scope of Geology in Civil Engineering. Subdivisions of Geology. Exogenous and endogenous geological processes and their relevance in Civil Engineering. Interior of the earth. Basic concept of continental drift hypothesis and Plate tectonics theory. Soil Genesis-Weathering, factors, agents, types, products and engineering significance of weathering. Soil profile. Geologic classification of soils, soil erosion and soil conservation measures. Rivers-Erosion, transportation and deposition. Major erosional and depositional landforms by rivers. Hydrogeology-occurrence of groundwater, Types of aquifers.

Module – II

Definition and physical properties of minerals. Physical properties and chemical composition of quartz, feldspars (orthoclase, microcline and plagioclase), micas (biotite and muscovite), amphibole (hornblende only), pyroxene (augite and hypersthene), gypsum, calcite, dolomite, clay minerals (kaolinite only). Genetic divisions of rocks, rock cycle. Brief account of texture, structure and classifications of igneous, sedimentary and metamorphic rocks. Brief study of granite, gabbro, dolerite, basalt, sandstone, limestone, shale, gneiss, schist, slate, marble and quartzite. Rock types of Kerala. Engineering properties of rocks used as site rocks, building stones and aggregates.

Module – III

Attitude of rocks and geological structures- strike and dip. Brunton compass. Terminology, classification and engineering significance of folds, faults, joints and unconformities. Major geological factors to be considered in the construction of dams and reservoirs, tunnels, building foundations, bridges and transportation routes. Principles of geophysics in electrical resistivity and seismic refraction methods. Geo-informatics- Basic principles of remote sensing. Geographic Information Systems and Global Positioning Systems

Module – IV

Natural disasters management- Earth processes and natural disasters-Significance of earth processes, natural hazards, risks and disasters. Geological hazards-Landslides-types, causes and prevention. Landslides of Kerala. Earthquakes-terminology, classification and safety

factor. Oceans-coastal landforms, marine erosion and coastal protection. Basic principles of disaster management. Vulnerability assessment, Preparedness and mitigation measures for earthquakes, floods, tsunamis, landslides and volcanoes.

References:-

1. Abbott P. L., *Natural Disasters*, 3/e, McGraw Hill Co., 2001.
2. Bryant E. A., *Natural Hazards*, Cambridge University Press, New Delhi, 1991.
3. Kanithi V., *Engineering Geology*, Universities Press, 2012.
4. Kesavalu N. C., *Text book of Engineering Geology*, MacMillan India Ltd., Delhi, 1999.
5. Kumar S., *Basics of Remote Sensing and GIS*, Laxmi Publications (P) Ltd., Delhi, 2005.
6. Miller V. C. and C. F. Miller, *Photogeology*, Mc Graw Hill, 1961.
7. Gaur R., *Disaster Management*, GNOSIS, New Delhi, 2008.
8. Reddy V., *Engineering Geology for Civil Engineers*, Oxford IBH, 1995.
9. Singh P., *Engineering and General Geology*, S. K. Kataria and Sons, Delhi, 2004.
10. Swamy S. N., *Engineering Geology*, Dhanpat Rai and Co., 2000.

Internal Continuous Assessment *(Maximum Marks-50)*

50% - Tests (minimum 2)
30% - Assignments (minimum 2) such as home work, problem solving, quiz, literature survey, seminar, term-project, software exercises, etc.
20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

The question paper shall consist of 2 parts.

Part A (20 marks) - Five Short answer questions of 4 marks each. All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

Part B (80 Marks) - Candidates have to answer one full question out of the two from each module. Each question carries 20 marks.

Course Outcome:

Students will be benefited by the knowledge of dynamics of the earth, properties of rocks and minerals and the occurrence and distribution of ground water and the recent geo information technologies.

13.307 BUILDING DRAWING (C)

Teaching Scheme: 0(L) - 0(T) - 2(P) **Credits**: 2

Course Objective:

This course provides students an insight into detailed drawings of building components and preparation of full fledged drawing of small residential building.

Module – I

General – Study of IS codes of practice on building drawing, Symbols for various materials

Brick bond-Plan and Elevation of 1, 1½ & 2 brick wall corner in English and Flemish bond.

Footing- Isolated and combined footing

Doors, Windows and Ventilators – Sectional plan, Sectional elevation, Front view and joint details of doors –Panelled, Glazed and flush, Glazed wooden windows and ventilators.

RCC lintel and sunshade – longitudinal and cross section.

Module – II

Roofing - Elevation and joint details of lean-to roof, coupled and collar roof, King post, Queen post trusses with A.C. and tile roofing – Steel (French) roof truss with AC/GI sheet roofing.

Stairs – Plan and sectional elevation of RCC dog legged stairs.

Building:-Preparation of Plan Section and Elevation of small residential building from line sketch.

References:

1) Chudley R., *Construction Technology*, *(Vol. I – IV),* ELBS, Longman, 1997.
2) Rangwala S.C., *Building Materials*, Charotar Publishing House, 1997.
3) Rangwala S. C., *Building Construction*, Charotar Publishing House, 2009.
4) Shaw M. H. and Kale C. M., *Building Drawing*, Tata McGraw Hill, 2002.
5) Arora S. P. and S. P. Bindra*, A Textbook of Building Construction*, Dhanpat Rai & Sons, New Delhi, 1997.
6) Prabhu B. T. S., *Building Drawing and Detailing*, Spades Publishers, Calicut, 1987.

Internal Continuous Assessment *(Maximum Marks-50)*

40% - Tests (minimum 2)

40% - Class work. Drawing sheets to be prepared from all topics in module I & II (minimum 10 Sheets)

20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

The question paper shall consist of 2 parts.

Part A (20 marks) - Five Short answer questions of 4 marks each. All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

Part B (80 Marks) - Candidates have to answer one question out of the two from each module. Each question carries 40 marks.

Course Outcome:

At the end of the course, the students will be familiar with the various building components, method of preparing plan, section and front elevation of a residential building.

13.308 PRACTICAL SURVEYING I (C)

Teaching Scheme: 0(L) - 0(T) - 2(P) **Credits**: 2

Course Objective :

- *To equip the students to undertake survey using levels*
- *To equip the students to undertake survey using theodolites*
- *To impart awareness on modern levels*

List of Exercises:

1. Chain Survey & Compass Survey – - 1 class
2. Plane Table Survey – Radiation & Intersection - 2 class
3. Levelling – H.I. and Rise and fall method - 3 class
4. Theodolite survey – - 6 class
   (Height & distance using Trigonometric levelling)
5. Study of instruments – Automatic level, digital level - 1 class

Internal Continuous Assessment *(Maximum Marks-50)*

40% - Test
40% - Class work and Record
20% - Regularity in the class

University Examination Pattern:

Examination duration: 3 hours *Maximum Total Marks: 100*

Either Plane Table Surveying (50Marks) & Levelling (50Marks)
or Theodolite Survey (100 Marks)

Candidate shall submit the certified fair record for endorsement by the external examiner.

Course Outcome:

After successful completion of the course, the students will be able to undertake survey using level and theodolite.