MECHANICS OF MATERIALS
B.E., III Semester, Civil Engineering
[As per Choice Based Credit System (CBCS) scheme]

Subject Code: 22CV32	CIE: 50
Number of Lecture Hours/Week: 04	SEE: 50
Total Number of Lecture Hours: 52	Exam Hours: 03

CREDITS – 04

Course Objectives: This course will enable students;

1. To understand the basic concepts of the stresses and strains for different materials and strength of structural elements.
2. To know the importance of shear and bending moment diagrams in beam analysis.
3. To analyse and understand different internal forces, bending and shear stresses induced due to representative loads on structural elements.
4. To analyze and understand effect of compound, principal stresses and torsional behavior of structural components.
5. To evaluate the behavior Thin & Thick Cylinder for internal forces.

Modules	RBT LEVEL/ HRS
Module -1	
Stresses and Strains: Introduction, Properties of Materials, Stress, Strain, Hook's law, Poisson's Ratio, Stress – Strain Diagram for structural steel, Principles of superposition, Total elongation of tapering bars of circular and rectangular cross sections. Composite section, Volumetric strain, expression for volumetric strain, Elastic constants, relationship among elastic constants, Thermal stress and strains.	L1, L2, L4 10 HRS
Module -2	

Bending moment and shear force diagrams in beams: Definition of shear force and bending moment, Sign convention, Relationship between load, shear force and bending moment, Shear force and bending moment equations, development of Shear Force Diagram (SFD) and Bending Moment Diagram (BMD) with salient values for cantilever, simply supported and overhanging beams for point loads, UDL (Uniformly Distributed Load), UVL (Uniformly Varying Load) and Couple.	L1, L2, L3, L4 11 HRS
Module -3	
Bending stress in beams: Introduction – Bending stress in beam, Pure bending, Assumptions in simple bending theory, derivation of Simple bending equation (Bernoulli's equation), modulus of rupture, section modulus, Flexural rigidity, Problems **Shear stress in beams:** Derivation of Shear stress intensity equations, Derivation of Expressions of the shear stress intensity for rectangular, triangular and circular cross sections of the beams. Problems on calculation of the shear stress intensities at various critical levels of T, I and Hollow rectangular cross sections of the beam	**L2, L3, L4** **10 HRS**
Module -4	
Compound stresses: Introduction, Stress components on inclined planes, General two-dimensional stress system, Principal planes and stresses, maximum shear stresses and their planes (shear planes). Compound stress using Mohr's circle method. **Torsion:** Twisting moment in shafts, simple torque theory, derivation of torsion equation, tensional rigidity, polar modulus, shear stress variation across solid circular and hollow circular sections, Problems.	**L2, L3, L4** **11 HRS**
Module -5	
Thin cylinders: Introduction: Longitudinal, circumferential (hoop) stress in thin cylinders. Expressions for longitudinal and circumferential stresses. Efficiency of longitudinal and circumferential joints. Problems on estimation of change in length, diameter and volume when the thin cylinder subjected to internal fluid pressure. **Thick cylinders:** Concept of Thick cylinders Lame's equations applicable to thick cylinders with usual notations, calculation of longitudinal, circumferential and radial stresses – simple numerical examples. Sketching the variation of radial stress (pressure) and circumferential stress across the wall of thick cylinder	**L1, L2, L3** **10 HRS**
Course outcomes: After studying this course, students will be able; 1. To evaluate the strength of internal forces such as compression, tension, shear, bending and torsion of structural components. 2. To determine the bending moment and shear force in beam and draw its SFD and BMD. 3. To evaluate the bending stress and shear stress in beams. 4. To evaluate the behavior and strength of structural elements under the action of compound stresses	

and torsion.
5. To understand the basic concept in analysis of thin and thick cylinder.

Question Paper Pattern:

- The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
- The question paper will have ten full questions carrying equal marks.
- Each full question carries 20 marks.
- There will be two full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

CIE + Assignments: 15+35=50 Marks

There will be a 3 CIE's, the average of best of 2 CIE's will be considered and there will be a 35 marks for Assignments

TEXT BOOKS:

1.SS Bhavikatti" Strength of Materials",3rd Edition ,Vikas Publishing House PVT LTD,2013
2.BK Kolhapure " mechanics of materials' 1st Edition, Eastern Book Promoters Belgaum 2016
3.B C Punmia '' strength of materials '' 10th edition, laxmi publications p ltd. 2018
4.Dh Bansal, "A Textbook of Strength of Materials", 4th Edition, Laxmi Publications, 2010
5.I B Prasad '' mechanics of materials'' Khanna publishers 1998.

REFERENCE BOOKS:

1. D.H. Young, S.P. Timoshenko " Elements of Strength of Materials" East West Press Pvt. Ltd., 5th Edition (Reprint 2014)
2. R K Bansal, "A Textbook of Strength of Materials", 4th Edition, Laxmi Publications, 2010
3. S.S. Rattan " Strength of Materials" McGraw Hill Education (India) Pvt. Ltd., 2nd Edition (Sixth reprint 2013)
4. Vazirani, V N, Ratwani M M. and S K Duggal "Analysis of Structures Vol. I", 17th Edition, Khanna Publishers, New Delhi.
5. B.S. Basavarajaiah, P.Mahadevappa "Strength of Materials" in SI Units, University Press (India) Pvt. Ltd., 3rd Edition, 2010
6. Ferdinand P. Beer, E. Russell Johnston and Jr.John T. DeWolf "Mechanics of Materials", Tata McGraw-Hill, Third Edition, SI Units
7.S Ramamrtham '' strength of materials'' Dhanpat Rai Publishing Company.

Course Code: 22CV33	CIE Marks: 50
Number of Lecture Hours/Week: 02+02	**SEE Marks: 50**
Total Number of Lecture Hours: 42 hours	**Exam Hours: 03**

Credits – 03

Course Objectives: The objective of this course is to enable students to know:

1. The Fundamental properties of fluids and its applications.
2. Hydrostatic laws and application to practical problem solving.
3. To apply Principles of Kinematics and Hydrodynamics for practical applications.
4. To determine losses in pipe flow & design pipe networks.
5. To measure flow rates.

Module-1 **Fluids & Their Properties:** Concept of fluid, Systems of units. Properties of fluid; Mass density, Specific weight, Specific gravity, Specific volume, Viscosity, Cohesion, Adhesion, Surface tension& Capillarity. Fluid as a continuum, Newton's law of viscosity (theory & problems). Capillary rise in a vertical tube and between two plane surfaces (theory & problems). Applications of Surface tension and Capillarity. Numerical problems. **Fluid Pressure and Its Measurements:** Definition of pressure, Pressure at a point, Pascal's law, Variation of pressure with depth. Types of pressure. Measurement of pressure using simple, differential & inclined manometers (theory & problems).	**L2, L3 9 HRS**
Module-2 **Hydrostatic forces on Surfaces:** Definition, Total pressure, Centre of pressure, total pressure on horizontal, vertical, and inclined plane surface, total pressure on curved surfaces. Numerical Problems. **Fundamentals of fluid flow (Kinematics):** Introduction. Methods of describing fluid motion. Velocity and Total acceleration of a fluid particle. Types of fluid flow, Description of flow pattern. Basic principles of fluid flow, three-dimensional continuity equation in Cartesian coordinate system. Potential function, stream function, orthogonality of streamlines and equipotential lines. Numerical problems on Stream function and velocity potential function.	**L2, L4 9 HRS**
Module-3 **Fluid Dynamics:** Introduction. Forces acting on fluid in motion. Euler's equation of motion along a streamline and Bernoulli's equation. Assumptions and limitations of Bernoulli's equation. Modified Bernoulli's equation. Problems on applications of Bernoulli's equation (with and without losses). problems Momentum equation. Problems on pipe bends. **Applications:** Introduction. Venturi meter, Orifice meter, Pitot tube. Numerical Problems.	**L2, L4 8 HRS**
Module-4 **Orifice and Mouthpiece:** Introduction, classification, flow through orifice, hydraulic coefficients, Numerical problems, Mouthpiece, classification, Borda's Mouthpiece (No problems). **Notches and Weirs:** Introduction. Classification, discharge over rectangular, triangular,	**L2,L4 8 HRS**

trapezoidal notches, Cippoletti notch, broad crested weirs, ogee weir. Numerical problems. Ventilation of weirs, submerged weirs.	
Module-5 **Flow through Pipes:** Pipes in series, pipes in parallel, equivalent pipe-problems Pipe Networks, Numerical problems. **Losses in pipes:** Introduction. Major and minor losses in pipe flow. Darcy- Weisbach equation for head loss due to friction in a pipe. Minor losses in pipe flow, equation for head loss due to sudden expansion & contraction. Numerical problems. Design of Pipe Network-numerical problems.	**L2, L4 8 HRS**

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

1. Measure of fluid pressure using manometers.
2. Apply principles of mathematics to represent kinematic concepts related to fluid flow.
3. Apply fundamental laws of fluid mechanics and the Bernoulli's principle for practical applications.
4. Compute the discharge through pipes over notches and weirs.
5. Calculate the major and minor losses in pipe flow.

Textbooks:

1. P N Modi and S M Seth, "Hydraulics and Fluid Mechanics, including Hydraulic Machines", 20th edition, 2015, Standard Book House, New Delhi.
2. R.K. Bansal, "A Textbook of Fluid Mechanics and Hydraulic Machines", Laxmi Publications, New Delhi.
3. S K SOM and G Biswas, "Introduction to Fluid Mechanics and Fluid Machines", Tata McGraw Hill, New Delhi.
4. Dr. Jagdish Lal, "Fluid Mechanics And Hydraulics With Computer Applications", 9th edition, Metropolitan.

Reference Books:

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

BASIC SURVEYING

B.E., III Semester, Civil Engineering

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

Course Code :22CV34	CIE Marks:50
Number of Lecture Hours/Week :02+02	SEE Marks :50
Total Number of Lecture Hours:42 Hours	Exam Hours :03
Credits – 03	

Course Objectives: This course will enable students to;

1.Understand the classifications and its basic principles of surveying.

2. Learn the measurement of horizontal distances by chaining/taping and concepts of chain surveying. 3. Employ conventional surveying data capturing techniques and process the data for computations.

4.Learn the modern surveying equipment used for the accuracy of the work.

MODULE	RBT LEVEL/HRS
Module-1 **Introduction:** Definition of surveying, Objectives and importance of surveying. Classification of surveys. Principles of surveying. Surveying measurements and errors, types of errors, precision and accuracy. Classification of maps, map scale, conventional symbols, topographic maps, map layout. **Measurement of Horizontal Distances:** Different Instruments used for measurement, measuring tape & chain and types, ranging of lines, direct and indirect methods of ranging. Field book and types, entries, Conventional symbols. **Measurement of Directions and Angles: Compass survey:** Basic definitions; meridians, bearings, magnetic and True bearings. Prismatic and surveyor's compasses, temporary adjustments, declination. Quadrantal bearings, Whole Circle Bearings, Local attraction and related problems.	L1,L2 09 HRS
Module-2 **Theodolite Survey:** Theodolite and types, parts of Transit theodolite, uses of theodolite, Temporary adjustments of transit theodolite, measurement of horizontal and vertical angles. **Traversing:** Types of Traverse, Traverse Survey and Computations: Latitudes and departures, rectangular coordinates, Traverse adjustments, Bowditch rule and transit rule, Numerical Problems	L2,L3 08HRS

Module-3 **Leveling:** Basic terms and definitions, fundamental lines and their relationship, Methods of leveling, Dumpy level, auto level. Curvature and refraction corrections. Booking and reduction of levels. Differential leveling, profile leveling & cross sectioning, fly leveling & check levelling. **Trigonometric leveling** (heights and distances-single plane and double plane methods).	**L1,L2,L3** **08HRS**
Module-4 **Contouring:** Contours, horizontal equivalent, Contour interval, characteristics of contour. Methods of contour: Direct and Indirect(interpolation) **Tacheometry:** basic principle, types of tacheometry, methods of measuring constants of tacheometer distance equation for horizontal and inclined line of sight in fixed hair method (staff held vertical and normal). **Electronic distance measurement (EDM**): Definition, working principles, uses. **Total Station:** Definition, Parts, working principle. uses, theory of Total Station, Advantages and disadvantages.	**L2,L3,L4** **08HRS**
Module-5 **Curves: types of curves** Simple Curve-necessity-designation-Numerical on elements of simple curve, methods of setting out curve-linear method (offsets from long chord method & offsets from chord produced), angular method-Rankine's deflection method, Compound Curve: Definition, elements, relation between various elements of compound curve (case I), Reverse curve: Definition, elements, relation between various elements of reverse curve. Transition curve: Definition, elements, requirements of ideal transition curve.	**L2,L3,L4** **09HRS**
Course outcomes: After a successful completion of the course, the student will be able to: 1. Incorporate fundamental principles of surveying. 2. Measurement of vertical and horizontal distances to arrive at solutions to basic surveying problems. 3. Understand the computations of linear and angular dimensions to arrive at basic surveying problems. 4. Understand the nature of ground profile by taking levelling. 5. Exposure to various modern equipment used for the advanced survey work.	
Question Paper Pattern: • The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.	

TITLE OF THE COURSE: Building Materials & Construction Technology

B.E. III Semester, Civil Engineering

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

Course Code: 22CV35	**CIE Marks: 50**
Number of Lecture Hours/Week: 04	**SEE Marks: 50**
Total Number of Lecture Hours: 42	**Exam Hours:03**

Credits – 03

- The question paper will have ten full questions carrying equal marks.
- Each full question carries 20 marks.
- There will be two full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

CIE + Assignments: 15+35=50 Marks

There will be a 3 CIE's, the average of best of 2 CIE's will be considered and there will be a 35 marks for Assignments

Course Objectives: This course will develop astudent;

1. Inrecognizingthegoodmaterialstobeusedfortheconstructionwork
2. Investigation the soil condition, Deciding suitable type foundation for differentstructures
3. Classifythedifferenttypesofmasonry
4. In selection of materials and supervision of suitable type of floor and roof.

To gain knowledge about doors, windows, plastering, painting, damp proofing, scaffolding,shoring,underpinningandtotakesuitableengineeringmeasures.

MODULE	RBT LEVELS/ HRS
Module-1 **Building Materials**: **Stone** as building material; Requirement of good buildingstones, Dressing of stones. **Bricks** Classification, Manufacturing of clay bricks, Types of Kilns and Clamps. Field and laboratory tests on bricks; compressive strength, water absorption, efflorescence, dimension and warpage. **Blocks:**Cement Concrete blocks, Stabilized Mud Blocks, Sizes, requirement of good blocks. **Mortar:** types and requirements. **Timber** as construction material **Advanced construction material:** Autoclaved Aerated block (AAC) manufacturing process and uses, Laminates, types and its application. Gypsum board, Insulating materials.	**L1,L2** **10 HRS**
Module-2 **Foundation:** Preliminary investigation of soil, safe bearing capacity of soil Function and requirements of good foundation , types of foundation , introduction to spread, combined , strap, mat and pilefoundation **Masonry:** Definition and terms used in masonry. Brick masonry, characteristics and requirements of good brick masonry, Bonds in brick work, Header, Stretcher, English, Flemish bond, Stone masonry, Requirements of good stone masonry, Classification, characteristics of different stone masonry, Joints in stone masonry. Types of walls; load bearing, partition walls, cavity walls. **Lintels and Arches**: Definition, function and classification of lintels, Balconies, chejja and canopy. Arches; Elements and Stability of an Arch.	**L1,L2,L3** **8 HRS**
Module-3 **Doors,WindowsandVentilators**:Locationofdoorsandwindows,technicalterms, Materials for doors and windows, Paneled door, Flush door, Collapsible door, Rolling shutter, PVC Door, Paneled and glazed Window, Bay Window, French window. Ventilators. Sizes as per IS recommendations. **Roofs:** Requirement of good roof, Types of roof, Elements of a pitched roof, Trussed roof, Flat roof, King post Truss, Queen Post Truss, Steel Truss,Different roofing materials.	**L2,L3** **8 HRS**
Module-4 **Floors:** Floors; Requirement of good floor, Components of ground floor, Selection of flooring material, Laying of Concrete, Mosaic, Marble, Granite, Tileflooring, Ceramic tiles and vitrified tiles. **Stairs:** Definitions, technical terms and types of stairs, Requirements of good stairs. Geometrical design of RCC doglegged and open-wellstairs. **Formwork:** Introduction to form work, scaffolding, shoring, under pinning. **Plastering and Pointing** : purpose, materials and methods of plastering and pointing,defectsinplastering-Stuccoplastering,latheplastering	**L2,L3,L4,L5** **8 HRS**

BUILDING MATERIAL TESTING LAB

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

SEMESTER – III

Module-5

Subject Code: 22CVL36 | **CIE:** 50

Number of Lecture Hours/Week: 03 | **SEE:** 50 | **L1,L2 8 HRS**

Total Number of Lecture Hours: 20 | **Exam Hours: 03**

CREDITS – 01

Plumbing: Introduction-plumbing services, water meter, valves, Storage Tanks, general principles of house drainage, pipes and traps, sanitary fittings, system of plumbing

Dampproofing- Causes, effects andmethods.

Paints- Purpose, types, ingredients and defects, Preparation and applications of paints to new and old plastered surfaces, wooden and steel surfaces.

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

1. Selectsuitablematerialsforbuildingsandadoptsuitableconstructiontechniques.
2. Suitabletype of foundation and masonry for buildings.
3. Select suitable Doors, Windows and Roofs materials to give good aesthetic looks for the buildings.
4. Select suitable flooring materials, Stairs, formwork and plastering.
5. Select advanced plumbing, Damp proofing and Paints materials to reduce maintenance cost.

Course Objectives: The objective of this course is to make students to learn:

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

Text Books:

1. Sushil Kumar "Building Materials and construction", 20th edition, reprint 2015,StandardPublishers
2. Dr. B.C.Punmia, Ashok kumar Jain, Arun Kumar Jain, "Building Construction, Laxmi Publications (P) ltd., NewDelhi.

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

Reference Books:

1. S.K.Duggal,"BuildingMaterials",(FourthEdition)NewAgeInternational(P) Limited, 2016 National Building Code(NBC) ofIndia
2. P C Vergese, "Buliding Materials", PHI Learning Pvt.Ltd
3. Building Materials and Components, CBRI, 1990,India
4. Jagadish.K.S,"AlternativeBuildingMaterialsTechnology",NewAge International,2007

SL.NO	EXPERIMENT NAME	
1	Tension test on mild steel and HYSD bars	**L2,L3,L5**
2	Compression test on mild steel and wood.	**L1,L2,L3,L5**
3	Bending Test on Wood Under single and two point loading.	**L1,L2,L3,L5**
4	Shear Test on Mild steel- single and double shear.	**L1,L2,L3,L5**
5	Impact test on Mild Steel (Charpy & Izod).	**L1,L2,L3,L5**
6	Hardness tests on ferrous and non-ferrous metals- Brinell's, Rockwell and Vicker's.	**L1,L2,L3**,L5
7	Compression and water absorption tests on Bricks and Tiles.	**L1,L2,L3,L5**
8	Tests on Fine aggregates-Moisture content, Specific gravity, Bulk density, Sieve analysis and Bulking.	**L1,L2,L3,L5**
9	Tests on Coarse aggregates-Absorption, Moisture content, specific gravity, Bulk density and Sieve analysis.	**L1,L2,L3,L5**
10	Torsion test on Mild Steel and HYSD bar.	**L1,L2,L3,L5**
11	Demonstration of Strain gauges and Strain indicators.	**L1,L2,L3,L5**

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

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

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

Question paper pattern:

- Group experiments - Tension test, compression test and bending test.
- Individual Experiments - Remaining tests.
- Two questions are to be set - One from group experiments and the other as individual experiment.
- Instructions as printed on the cover page of answer script for split up of marks to be strictly followed.

Reference Books:

1. Davis, Troxell and Hawk, "Testing of Engineering Materials", International Student Edition – McGraw Hill Book Co. New Delhi.
2. M L Gambhir and Neha Jamwal, "Building and construction materials-Testing and quality control", McGraw Hill education(India)Pvt. Ltd., 2014
3. Fenner, " Mechanical Testing of Materials", George Newnes Ltd. London.
4. Holes K A, "Experimental Strength of Materials", English Universities Press Ltd. London.
5. Suryanarayana A K, "Testing of Metallic Materials", Prentice Hall of India Pvt. Ltd.New Delhi.
6. Kukreja C B, Kishore K. and Ravi Chawla "Material Testing Laboratory Manual",Standard Publishers & Distributors 1996.
7. Relevant **latest IS Codes**

TITLE OF THE COURSE: Surveying Practice-I Lab
B.E., III Semester, Civil Engineering
[As per Choice Based Credit System (CBCS) scheme]

Course Code: 22CVL37	**CIE Marks :50**
Number of Lecture Hours/Week :02	**SEE Marks: 50**
Total Number of Hours: 28	**Exam Hours: 03**

Credits – 01

Course Objectives: The objectives of this course is to make students to:

1. Apply the basic principles of engineering surveying and measurements
2. Follow effectively field procedures required for a professional surveyor
3. Use techniques, skills and conventional surveying instruments necessary for engineering practice.

Experiments:

1. Measurements of distances using chain & tape by direct ranging. L3, L4
2. Setting out perpendiculars using cross staff, chain and tape. L3, L4
3. Setting out of geometrical figures using chain, Tape and prismatic compass. L3
4. Measurement of bearings of sides of a closed traverse and adjustment of closing error by Bowditch method. L3
5. Determination of distance between two inaccessible points using compass and accessories. L4
6. Measurement of horizontal angle by repetition and reiteration method. **L4**
7. Measurement of vertical angle by theodolite. L4
8. To determine reduced levels of points using dumpy level/auto level (simple leveling). L4
9. To determine reduced levels of points using dumpy level/auto level (differential leveling and inverted leveling). L4
10. To determine the difference in elevation between two points using Reciprocal leveling. L4
11. Demonstration on planimeter. L3

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

1. Apply the basic principles of engineering surveying for linear and angular measurements.
2. Comprehend effectively field procedures required for a professional surveyor.
3. Use techniques, skills and conventional surveying instruments necessary for engineering practice.

Question paper pattern:

- All are individual experiments.
- Instructions as printed on the cover page of answer script for split up of marks to be strictly followed.
- All exercises are to be included for practical examination.

Reference Books:

1. B.C. Punmia, **"Surveying Vol.1"**, Laxmi Publications pvt. Ltd., New Delhi 2009.
2. Kanetkar T P and S V Kulkarni , **Surveying and Levelling Part I**, Pune VidyarthiGrihaPrakashan, 1988
3. S.K. Duggal, **"Surveying Vol.1"**, Tata McGraw Hill Publishing Co. Ltd. New Delhi.- 2009.
4. K.R. Arora, **"Surveying Vol. 1"** Standard Book House, New Delhi. - 2010 & Distributors

TITLE OF THE COURSE: **Auto- Cad Lab**

B.E., III Semester, Civil Engineering

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

Subject Code	22CVL38	**CIE:**	50
Number of Lecture Hours/Week:	03	**SEE:**	50
Total Number of Lecture Hours:	40	**Exam Hours:**	03

CREDITS –01

Course objectives: Provide students with a basic understanding
□ □ Achieve skill sets to prepare computeraided engineering drawings
□ □ Understand the details of construction of different building elements.
□ □ Visualize the completed form of the building and the intricacies of construction based on the engineering
drawings.

Modules	**RBT Level/hrs**
Module -1 Drawing Basics: Selection of scales for various drawings, thickness of lines, dimensioning, abbreviations and conventional representations as per IS: 962 Simple engineering drawings with CAD drawing tools : Lines, Circle, Arc, Polyline, Multiline, Polygon, Rectangle, Spline, Ellipse, Modify tools: Erase, Copy, Mirror, Offset, Array, Move, Rotate, Scale, Stretch, Lengthen, Trim, Extend, Break, Chamfer and Fillet, Using Text: Single line text, Multiline text, Spelling, Edit text, Special Features: View tools, Layers concept, Dimension tools, Hatching, Customising toolbars, Working with multiple drawings.	10 Hours L1,L2
Module -2 Drawings Related to Different Building Elements: Following drawings are to be prepared for the data given using CAD Software a. Cross section of Masonry Wall Foundation, b. RCC columns with isolated & combined footings. c. Different types of staircases – Dog legged, Open well d. Lintel and chajja e. RCC slabs and beams f. Cross section of a pavement	10 Hours L2,L3,L4,L5, L6
Module -3 Building Drawings: Principles of planning, Planning regulations and building bye-laws, factors affecting site selection, Functional planning of residential and public buildings, design aspects for different public buildings. Recommendations of NBC.Submission drawing (sanction drawing) with access to terrace including all details and statements as per the local bye-laws Drawing of Plan, elevation and sectional elevation including electrical, plumbing and sanitary services *using CAD software* for: a. Single story residential building b. Hostel building	20 Hours L2,L3,L4,L5, L6

c. School building d. Draw the Single story residential building plan, elevation, sectional and site plan with all detailed naming as per municipal corporation rules	

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

1. Gain a broad understanding of planning and designing of buildings
2. Prepare, read and interpret the drawings in a professional set up.
3. Know the procedures of submission of drawings and Develop working and submission drawings for building
4. Plan and design a residential or public building as per the given requirements

Program Objectives

- Engineering knowledge
- Problem analysis
- Interpretation of data

Question paper pattern:

- There will be two full questions with sub divisions if necessary from Module 2 with each full question carrying *twenty* marks. Students have to answer one question.
- There will be two full questions from Module 3 with each full question carrying *thirty* marks. Students have to one answer one question.

Text book:

1. MG Shah, CM Kale, SY Patki, "Building drawing with an integrated approach to Built Environment Drawing", Tata Mc Graw Hill Publishing co. Ltd., New Delhi
2. Gurucharan Singh, "Building Construction", Standard Publishers, & distributors, New Delhi.
3. Malik R S and Meo G S, "Civil Engineering Drawing", Asian Publishers/Computech Publications Pvt Ltd.

Reference Books:

1. Time Saver Standard by Dodge F. W., F. W. Dodge Corp.,
2. IS: 962-1989 (Code of practice for architectural and building drawing)
3. National Building Code, BIS, New Delhi.

SOFT SKILLS

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

SEMESTER –III

Subject Code 22HSM310B	CIE:50
Number of Lecture Hours/Week:03	SEE:50
Total Number of Lecture Hours: 40	Exam Hours:03

CREDITS –01

Course Objectives :

To enable the students to obtain the basic knowledge about Communication Skills - Iin the following topics:-

- The Meaning, definition, importance, purpose, process, types, barriers and Essential of communication.
- Develop reading and understanding ability
- Learn effective writing
- Learn how to write different types of letter.
- Case method of learning

Modules	RBT Level/hrs
Module - I INTRODUCTION TO COMMUNICATION: Meaning, Definition, Importance & Purpose of Communication, Process of Communication, Types of Communication, Communication network in an organization, 7c's of communication, Barriers to Communication and Essential of good Communication.	6 HOURS
Module – II READING AND UNDERSTANDING – Reading Comprehension – Reading rate and reading comprehension, Paraphrasing, Book reading and summarizing it.	6 hours
Module -III EFFECTIVE WRITING. Purpose of Writing, Clarity in Writing, Principle of Effective Writing. Better writing using personal Experiences – Describing a person, situation, memorable events etc.…	5 Hours
Module -IV DRAFTING OF LETTERS: Writing different types of letters – writing for employment, joining letter, complaints & follows up , Enquiries, representation etc. Official Communication – e-mail & Social Media, environmental related issues.	6 Hours
Module - V CASE METHOD OF LEARNING: Understand Case method of learning, different type of cases, overcoming the difficulties of the case method, analyzing the case. Do's & Don'ts for case preparation.	5 HOURS

Course

CO 1	Explain about basic of Communication C 2
CO 2	Develop reading and understanding ability. ,C 2
CO 3	Learn effective writing. C 2
CO 4	Learn how to write different types of letter C 2
CO 5	Analyze a Case study and solve C 2

Outcomes: At the end of the course the students will be able to

Pattern of question paper

Solve all five full questions selecting atleast one question from each module .

Text Books :

1. Scot ofer, contemporary business communication, Biztant ra
2. Chaturvedi P D & Mukesh chaturvedi - Business communication:Concepts, cases & applications- 2/e, pearson education.
3. Essential of Business communication – Rajendra Pal and J.S Korlhall – Sultan Chand & Sons, New Delhi.

Reference Books :

- Business correspondence & report writing – R.C.Sharma, Krishna Mohan – Tata Megraww Hill Publising Company Ltd, New Delhi.
- Business Communcation – K.K. Sinha – Galgotio Publishing Company, New Delhi.

TITLE OF THE COURSE: Microsoft Office
B.E., III Semester, Civil Engineering
[As per Choice Based Credit System (CBCS) scheme]

Course Code:	**Course Code:** 22ACV311A
Number of Lecture Hours/Week :03	**Number of Lecture Hours/Week :03**
Total Number of Hours: 30	**Total Number of Hours: 30**

Credits – 01

Course Objectives: The objectives of this course is to make students to:

Basic to Advanced topics of MS Word, MS Excel, MS PowerPoint and Internet and Emailing.

Modules	**RBT LEVEL/ HRS**
Module -1 **Introduction** Introduction to MS Windows, Computer Basics, MS Word, MS Excel, MS Power point, Internet and Emailing	**L1,L2 02 HRS**
Module -2 **MS Word** Text Basics, Text Formatting and saving file, Working with Objects, Header & Footers, Working with bullets and numbered lists, Tables, Styles and Content, Merging documents ,Sharing and Maintaining Document ,Proofing the document ,Printing	**L1,L2 07 HRS**
Module -3 **MS Excel** Introduction to Excel, Formatting excel work book, Perform Calculations with Functions, Sort and Filter Data with Excel, Create Effective Charts to Present Data Visually, Analyze Data Using PivotTables and Pivot Charts, Protecting and Sharing the work book, Use Macros to Automate Tasks, Proofing and Printing	**L2,L3 07 HRS**
Module -4 **MS Power point** Setting Up PowerPoint Environment, Creating slides and applying themes, Working with bullets and numbering, Working with Objects, Hyperlinks and Action Buttons Working With Movies and Sounds, Using SmartArt and Tables, Animation and Slide Transition, Using slide Master , Slide show option ,Proofing and Printing	**L2,L3 07 HRS**
Module -5 **INTERNET & E-MAIL** What is Internet?, Receiving Incoming Messages, Sending Outgoing Messages, Email addressing, Email attachments, Browsing, Search engines, Text chatting, Job Searching, Downloading video and Music, Uploading Video or Music, Voice chatting, Webcam Chatting etc.	**L2,L3 07 HRS**

Question paper pattern:

- The question paper will have tenquestions.
- Each full question consists of 10marks.
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under amodule.

The students will have to answer 5 full questions, selecting one full question from each module.

`REFERENCE BOOKS:

1. Mastering MS OFFICE by Bittu Kumar, Publisher: V&S Publishers
2. MS Office Skill Enhancement Course By MEPL Classes Dipak Agarwal