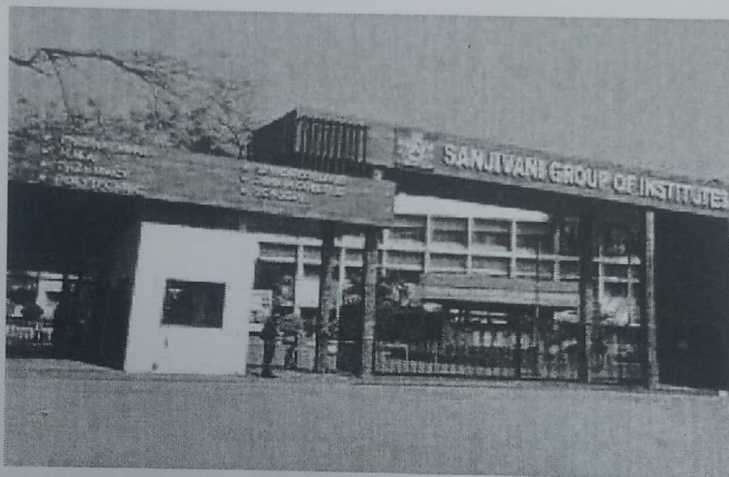SANJIVANI RURAL EDUCATION SOCIETY'S
SANJIVANI COLLEGE OF ENGINEERING KOPARGAON
(An Autonomous Institute affiliated to SPPU, Pune)

DEPARTMENT OF CIVIL ENGINEERING

COURSE STRUCTURE AND SYLLABUS- 2023 PATTERN
(NEP 2020 w.e.f AY 2024-25)
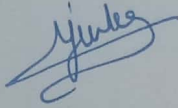
SECOND YEAR B. TECH CIVIL ENGINEERING
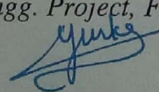
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DECLARATION

We, the Board of Civil Engineering, hereby declare that we have designed the Curriculum and syllabus of **S.Y.B.Tech 2023 PATTERN** (NEP 2020 w.e.f AY 2024-25) as per the guidelines. Hence, we are pleased to submit and publish this final copy of the curriculum for the information to all the concerned stakeholders.

Submitted by

BoS Chairman
Dr. C. L. Jejurkar

Approved by

Dean Academics
Dr. A. B. Pawar

Director
Dr. A. G. Thakur

SEMESTER III

Course Code	Course Title	Teaching Scheme			Credits	Contact Hrs.	Exam Head	Evaluation Scheme		
		L (hrs.)	T (hrs.)	P (hrs.)				CIA	ESE	Total Marks
PCC										
PCCE201	Solid Mechanics	3	1	-	3	4	TH	40	60	100
PCCE202	Solid Mechanics and Material Testing Lab	-	-	2	1	2	OR	20	30	50
PCCE203	Surveying	3	-	-	3	3	TH	40	60	100
PCCE204	Surveying Lab	-	-	2	1	2	PR	20	30	50
PCCE205	Building Technology and Planning	3	-	-	3	3	TH	40	60	100
PCCE206	AUTO CAD Lab: BTP	-	-	2	1	2	OR	20	30	50
MDM										
MDCE221	Quality Control and Assurance	2	-	-	2	2	TH	20	30	50
MDCE222	Mathematics for Engineer	2	-	-	2	2	TH	20	30	50
EEM										
EECE241	Engineering Economics	2	-	-	2	2	TH	20	30	50
VEC										
VECE251	Universal Human Value	2	-	-	2	2	OR	20	30	50
CEP										
CECE266	Common Engineering Project-Field Practices in Civil Engineering	-	-	4	2	4	OR	-	50	50
Total		**17**	**1**	**10**	**22**	**28**				**700**

L- Lecture, T – Tutorial, P - Practical in Lab, CIA- Continuous Internal Assessment, ESE- End Semester Examination

Minimum Marks for Passing Theory and Laboratory Course

1. In End, Semester Examination (ESE) out of 60 marks, 24 marks and CIA+ESE = 40 marks are required.
2. In End, Semester Examination (ESE) out of 30 marks, 12 marks and CIA+ESE = 20 marks are required.
3. In Practical out of 50 marks, 20 marks are required.
4. *Additional One Lecture for the Practice can be added

Legends: BSC-Basic Science Course, ESC-Engineering Science Course, PCC-Programme Core Course, PEC -Programme Elective Course, MDM-Multidisciplinary Minor, OE-Open Elective, VSEC-Vocational and Skill Enhancement Course, AEC-Ability Enhancement Course, EEM-Entrepreneurship/Economics Management Courses, IKS-Indian Knowledge System, VEC-Value Education Course, RM-Research Methodology, CEP- Comm. Engg. Project, FP-Field Project, PR-Project, IN/OJ-internship/ OJT, CCA-Co-curricular Courses

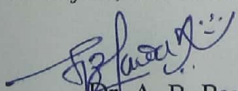|		
Dr. C.L. Jejurkar	Dr. A. B. Pawar	Dr. A. G. Thakur
Head of Department	**Dean Academics**	**Director**

SEMESTER IV

Course Code	Course Title	Teaching Scheme			Credits	Contact Hrs.	Exam Head	Evaluation Scheme		
		L (hrs.)	T (hrs.)	P (hrs.)				CIA	ESE	Total Marks
PCC										
PCCE207	Concrete Technology	3	-	-	3	3	TH	40	60	100
PCCE208	Concrete Technology Lab	-	-	2	1	2	OR	20	30	50
PCCE209	Geotechnical Engineering	3	-	-	3	3	TH	40	60	100
PCCE210	Geotechnical Engineering Lab	-	-	2	1	2	OR	20	30	50
PCCE211	Analysis of Structures	3	1	-	3	4	TH	40	60	100
PCCE212	Computer Aided Architectural Building Drawing Lab	-	-	2	1	2	PR	20	30	50
MDM										
MDCE223	MATLAB for Engineer	-	-	4	2	4	PR	20	30	50
OE										
OECE221	Open Elective I	2	-	-	2	2	TH	20	30	50
VSEC										
SECE261	Programming in Python Language	-	-	4	2	4	PR	20	30	50
AEC										
AECE281	Soft Skills	2	-	-	2	2	-	-	50	50
VEC										
VECE252	Environmental Science	2	-	-	2	2	TH	20	30	50
Total		15	1	14	22	30				700

L- Lecture, T – Tutorial, P - Practical in Lab, CIA- Continuous Internal Assessment, ESE- End Semester Examination
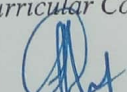
Minimum Marks for Passing Theory and Laboratory Course

1. In End, Semester Examination (ESE) out of 60 marks, 24 marks and CIA+ESE = 40 marks are required.
2. In End, Semester Examination (ESE) out of 30 marks, 12 marks and CIA+ESE = 20 marks are required.
3. In Practical out of 50 marks, 20 marks are required.
4. *Additional One Lecture for the Practice can be added

Legends: BSC-Basic Science Course, ESC-Engineering Science Course, PCC-Programme Core Course, PEC - Programme Elective Course, MDM-Multidisciplinary Minor, OE-Open Elective, VSEC-Vocational and Skill Enhancement Course, AEC-Ability Enhancement Course, EEM-Entrepreneurship/Economics Management Courses, IKS-Indian Knowledge System, VEC-Value Education Course, RM-Research Methodology, CEP-Comm. Engg. Project, FP-Field Project, PR-Project, IN/OJ-internship/ OJT, CCA-Co-curricular Courses

Dr. C.L. Jejurkar
Head of Department

Dr. A. B. Pawar
Dean Academics

Dr. A.G. Thakur
Director

PCCE201: Solid Mechanics

Teaching Scheme:	Examination Scheme:
Lectures: 03 Hrs. / Week **Tutorial: 01**	**CIA : 40 Marks** **End Sem Exam : 60 Marks**
Credits: 03	**Total Marks: 100**

Prerequisite Course: Fundamentals of Engineering Mechanics, Mathematics

Course Objectives:

Sr. No.	Course Objectives
1	To learn the concepts of stresses and strains there by strength of materials.
2	To learn the nature and draw the SFD and BMD for various types of beams and loadings.
3	To learn and study the nature of bending and shear stress variations along the cross section of beams.
4	To learn the torsion mechanism for solid and hollow cross sections when shafts are in series and parallel.
5	To learn the buckling behaviour of columns using various column theories for axial and eccentric loadings.
6	To learn the practical aspect of the subject through different CIA activities to get real life knowledge.

Course Outcomes (COs): At the end of the course student will be able to:

Co.No.	Course Outcomes (COs)	Bloom's Taxonomy	
		Level	Descriptor
1	Compute the stresses and strains in axially loaded bar structures; and members subjected to thermal loads.	3	Apply
2	Analyze and draw shear force and bending moment diagrams for simply supported, overhang and cantilever beams.	4	Analyze
3	Determine bending stresses, shear stresses and moment resisting capacity of prismatic beams using Euler-Bernoulli beam theory.	3	Apply
4	Solve problems using torsion theory for various types of shafts connected in series and parallel.	3	Apply
5	Determine critical buckling load for axially and eccentrically loaded columns using Euler's and Rankine's theory.	3	Apply
6	Collect the information of all engineering materials available in the market to know the strengths and compare its strength with I.S. standards to get practical knowledge.	4	Analyze

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	-	2	-	-	-	-	-	-	-	-	3	-
CO2	3	3	-	2	2	-	-	-	-	-	-	-	3	-
CO3	3	3	-	2	-	-	-	-	-	-	-	-	3	-
CO4	3	3	-	2	-	-	-	-	-	-	-	-	3	-
CO5	3	3	-	2	-	-	-	-	-	-	-	-	3	-
CO6	3	3	-	2	2	2	2	2	2	2	2	2	3	-

Course Contents

Unit No	Unit Title	No. of Hours	COs
I	**Simple Stresses and Strains:** Introduction to material properties, Concept of stress and strains, Simple Stresses, Hook's Law, Stress-Strain curves for elastic, plastic materials and brittle material, Idealized stress-strain diagram, Concept of axial stresses (compression, tension), Concept of various strains like linear, lateral, shear and volumetric. Stresses, strains and deformations of prismatic and composite bars of varying cross sections, Deformation of a body due to self-weight, Poisson's ratio, Elastic constants and their relations. **Thermal stresses:** Thermal stresses, Stresses and strains due to change in temperature. Compound sections subjected to thermal stresses.	08	1
II	**Shear Force and Bending Moment Diagrams:** Types of beams, supports and loading. Introduction to shear and moment, Relation between loading, SF and BM., sign conventions, Concept of determinate and indeterminate beams, Shear force and bending moment diagrams for standard cases like point load, UDL and UVL. Shear force and bending moment diagrams for simply supported, overhanging and cantilever beams subjected to point loads, UDL and UVL. Point of contraflexure, SFD & BMD for the beams subjected to moments and various load combinations.	07	2
III	**Bending, Shear and Introduction to Principal Stresses:** **Bending stresses in beams:** Theory of simple and pure bending, Assumptions, Bending stress and stress distribution diagrams, Moment of Resistance, Position of N.A, Modulus of section, Numerical on bending stresses for symmetrical and unsymmetrical I, T and L cross sections, **Shear stresses in beams:** Concept of shear, Complimentary shear, Shear stress formula, shear stress variations for various cross sections. Maximum and average shear stress for circular, rectangular and triangular	07	3

	sections, Numerical on shear stresses for circular, rectangular, Symmetrical and unsymmetrical I, T and L sections. **Introduction to Principal stresses and strains**: Principal planes and principal stresses, Concept of normal and shear stresses on an oblique plane, magnitude and orientation of principal stresses.			
IV	**Torsion of shafts:** **Torsion of circular shafts:** Theory of torsion, assumptions for shear stress in a circular shaft subjected to torsion, derivation of torsion formula Torsional stresses and strains, Strength of solid and hollow shafts, Polar moment of Inertia, Power transmission through shaft, Stresses, strains and deformations in determinate and indeterminate shafts of hollow and solid cross sections, **Compound shafts:** Shafts in series and parallel, Replacement of shafts, composite shafts, Shafts subjected to combined bending and torsion.	07	4
V	**Axially and Eccentrically Loaded Columns:** **Axially loaded columns:** Concept of failure of column or strut, critical load and buckling, Euler's theory, Assumptions, Concept of equivalent length for various end conditions of column, factor of safety, slenderness ratio, radius of gyration, Numerical for buckling load or critical load, Limitations of Euler's formula, Rankine's formula, safe load carrying capacity of long columns, find crushing load. **Direct and Bending stresses:** Direct stresses, Column subjected to eccentric loading, Concept of eccentric load and development of stresses, Core or kern for various solid and hollow cross sections. Rectangular cross section, Middle third rule, Conditions for no tension, Uniaxial and bi-axial bending, find corner stresses for eccentric loads.	07	5

Text Books:
1. R.Subramanian, "Strength of materials", Oxford University Press. ISBN: 10:0-19-567590-4.
2. R.S.Khurmi and N. Khurmi, "Strength of materials" S. Chand & company pub, revised edition.
3. A.K. Datta, D Gosh "Strength of materials", New Age International Publications. ISBN:978-81-224-3080-6
4. S. S.Ratan, "Strength of Materials", Tata McGraw Hill Publication ISBN:978-066895-9
5. B.C.Punmia, Ashok K. Jain, Arun K. Jain. "Mechanics of Materials, Laxmi Publication Pvt. Ltd. Revised edition, ISBN:978-81-318-0646-3.

Reference Books:

1. Ferdinand P.Beer,E.Russell Johnston Jr.,John T. Dewolf, david F.Mazurek. "Mechanics of Materials".5th Edition,Tata McGraw Hill Education Pvt. Ltd. New Delhi. ISBN10:0-07-015389-2
2. E.P.Popov, "Introduction to Mechanics of Solids, Prantice Hall Publication. ISBN:978-0134877693
3. Gere and Timoshenko, "Mechanics of materials, CBS Publication.ISBN:978-8123908946
4. Stephen H Crandall, Norman C. Dahi, Thomas J Lardner "An introduction to the mechanics of Solids" Tata McGraw Hill.
5. S. Ramamrutham, R. Narayanan "Strength of Materials", Dhanpat Rai Publication Company.ISBN:9788187433545, 9788187433545.

E-Resources: https://nptel.ac.in/courses/105/105/105105108/

PCCE202: Solid Mechanics and Material Testing Lab

Teaching Scheme	Evaluation Scheme
Practical: 02 Hrs./ Week	Oral Exam: CIA: 20 Mark ESE: 30 Mark
Credits: 01	Total Marks: 50

Prerequisite Course: Fundamentals of Engineering Mechanics and Mathematics

Course Objectives:

Sr. No.	Course Objectives
1	To know various material testing methods and material properties.
2	To learn the testing procedure of bricks, tiles, glass, timber and metal specimens in laboratory and compare its quality with I.S. specifications.
3	To learn about the material standards and select the suitable materials for construction purpose.

Course Outcomes (COs): At the end of the course students able to:

CO's No.	Course Outcomes (COs)	BLOOM'S TAXONOMY	
		Level	Descriptor
1	Apply the scientific methods for material characterization.	3	Apply
2	Apply basic concepts of material testing and know the strength of different civil engineering materials.	3	Apply
3	Analyze the quality standards as per I.S. specifications to decide the material suitability for its practical use.	4	Analyze

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	1	1	2	1	-	2	2	2	-	2	3	-
CO2	3	-	1	1	2	1	-	2	2	2	-	2	3	-
CO3	3	-	1	1	2	1	-	2	2	2	-	2	3	-

List of Experiments: Laboratory work (12 Practicals are compulsory)

A. Test on bricks
1. Field test and water absorption of bricks.
2. Efflorescence test on bricks.
3. Compressive Strength of Bricks and Concrete Blocks.

B. Test on Tiles
4. Flexural strength of flooring tile. (Three different types of tiles)
5. Abrasion test of flooring tile. (Three different types of tiles)

C. Test on Timber

6. Compression test on timber (Across and Parallel to grains)
7. Bending test on timber. (Across and Parallel to grains)

D. Test on Metals

8. Tension test on Mild steel and TMT steel.
9. Shear test on mild steel (Single and double shear)
10. Impact test on mild steel, Aluminum, Brass, Copper (Izod and Charpy Tests).
11. Hardness tests on Metal (Brinell and Rockwell Hardness Number)
12. Torsion Test on Mild Steel (Demo Practical)

E. Test on Glasses

13. Introduction to various tests conducted on Door and Window Glasses and IS requirement. (Advised to watch videos available on you tube for glass testing and prepare the report on testing.)

Also refer IS 3548, IS 2553 and IS 16231 Part-4 2014 and latest codes in practice.

PCCE203: Surveying

Teaching Scheme: Lectures: 03 Hrs. / Week	Examination Scheme: CIA : 40 Marks End Sem Exam : 60 Marks
Credits: 03	Total Marks: 100

Prerequisite Course: Basic Civil Engineering

Course Objectives:

Sr. No.	Course Objectives
1	To learn the fundamental concepts of using Prismatic compass and Plane table in Surveying.
2	To learn leveling, types of leveling and contouring by using auto level and digital level.
3	To learn measurement of horizontal and vertical angle by using theodolite.
4	To learn use of Tacheometer to measure vertical and horizontal distances and modern instruments and techniques
5	To study various types of curves and methods of setting out of curves.
6	To enhance the communication skill, team work, leadership and software skills.

Course Outcomes (COs): At the end of the course students able to

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Explain the concept of compass surveying and Plane table surveying	2	Understand
2	Make use of auto level and digital level for various types of leveling and contouring survey.	3	Apply
3	Experiment with Theodolite for horizontal and vertical angle measurement and traversing.	3	Apply
4	Analyze horizontal distances and elevations of points by using Tacheometer and examine the modern instruments and techniques.	4	Analyze
5	Classify various types of curves, their design and application in Civil Engineering projects.	4	Analyze
6	To Motivate communication skill, team work, leadership and software skills.	4	Analyze

Mapping of Course Outcomes to Program Outcomes (POs) and Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	1	2	1	-	-	1	3	2	2	2	3	2
CO2	3	2	2	2	2	-	-	1	3	2	2	2	3	2
CO3	3	1	2	2	2	-	-	2	3	2	2	2	3	2
CO4	3	2	2	2	1	-	-	1	3	2	2	2	3	2
CO5	3	2	3	1	2	1	-	2	3	3	2	2	3	3
CO6	3	2	2	2	2	2	2	2	3	3	3	3	3	3

Course Contents

Unit-No	Unit Title	No. of Hrs	COs
I	**Compass and Plane Table Surveying:** Introduction, Principles of surveying, Construction and use of Prismatic compass, Meridian and its types, Concept of bearing and Types of bearings, Local attraction, dip and magnetic declination. **Plane Table survey**: Instrument and accessories for plane table survey, Orientation of plane table, advantages and disadvantages and errors in plane table surveying, Methods of plane table survey: Radiation, Intersection, traversing and resection.	08	1
II	**Levelling:** Introduction, Types of leveling- Reciprocal leveling, profile leveling, cross-sectioning etc., Booking and Reducing levels, Study and use of Auto level, Digital level and Laser level. Curvature and refraction corrections. **Contouring:** Introduction, characteristics of Contours, Methods of Contouring, Application of contour maps. Introduction to Golden Surfer software. Area and Volume Calculation.	07	2
III	**Theodolite Surveying:** Introduction, Study of 20" Vernier transit Theodolite, fundamental axes. Use of Theodolite for measurement of horizontal angles by repetition and reiteration method, deflection angles, magnetic bearing, prolonging a Straight line. Theodolite Traversing: computations of Consecutive and Independent coordinates. Latitude and Departure, Closing Errors, Balancing the Closed traverse by Bowditch's and Ttransit Rules, omitted measurement.	07	3
IV	**Tacheometry:** Introduction, Instrument required, applications, principle of stadia, fixed hair method with vertical staff, Determination of tachometric constants. Tacheometric contouring. **Modern Surveying Technique:** Types and applications of Total station, Components of GIS (Geographic Information System) and GPS (Global	08	4

	Positioning System) and their applications in Civil Engineering. Introduction to DGPS, Remote sensing, GPR (Ground Penetrating Radar) and Drone survey.		
V	**Curves:** Introduction, classification of curves, simple circular curves, Definitions and Notations. Linear and Angular methods, (Rankine's method of deflection angles). Numerical on simple circular curves, Transition curves: necessity and types, Concept of super elevation in curve.	06	5

Text Books:
1. T. P. Kanetkar and S.V. Kulkarni, "Surveying and Levelling Vol. I and Vol. II", Pune Vidyarthi Griha Prakashan, ISBN:8185825114 & ISBN: 8185825009.
2. Dr. B. C. Punmia, Ashok K. Jain, Arun K.Jain, "Surveying" Vol. I, Laxmi Publications, ISBN:9788170088530
3. S. K. Duggal, "Surveying", Vol. I & II, TataMc-Graw Hill, ISBN:1259029832.
Reference Books :
1. A. M. Chandra, "Plane Surveying", New Age International Publishers, ISBN: 812241902X, 9788122419023
2. N. N. Basak, "Surveying and Levelling", Tata McGraw Hill, ISBN: 0-07-460399-x.
3. Dr. K. R. Arora, "Surveying", Vol. I & II, Standard Book House, ISBN-13: 9788189401238.
4. Advanced Surveying -Total Station, GIS and Remote Sensing by Satheesh Gopi, R. Sathikumar and N. Madhu , Pearson publication, ISBN- 9788131743010, 8131743012, 2nd edition-2008.
Foreign References Books :
1. W. Schofield & M Breach, "Engineering Surveying" Spon Press Oxon,ISBN: 13:978-0-7506-6949-8; 10:0-7506-6949-7.
2. Arthur Bannister, Stanley Raymond, Raymond Baker, "Surveying", Pearson Education India, ISBN:13:978-058230 2495&10.0582302498. University of Salford, Manchester.
E-resources
https://nptel.ac.in/courses/105107122 http://www.nitttrc.edu.in/nptel/courses/video/105104101/L02.html http://nptel.ac.in/courses/105107122/ http://nptel.ac.in/courses/105107157/ http://nptel.ac.in/courses/105101087/ http://nptel.ac.in/courses/105104100/

PCCE204: Surveying Lab

Teaching Scheme	Evaluation Scheme
Practical: 02 Hrs./ Week	**CIA: 20 Mark** **End Sem Practical Exam: 30 Mark**
Credits: 01	**Total Marks: 50**

Prerequisite Course: Basic Civil Engineering

Course Objectives:

Sr. No.	Course Objectives
1	To study and use various surveying and leveling instruments.
2	To compile and analyze surveying data for different Civil Engineering projects.
3	To learn modern instruments and techniques for the preparation of maps in surveying.

Course Outcomes (COs): At the end of the course students will able to:

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Make use of various surveying and leveling instruments such as prismatic compass, plane table, digital level, theodolite, and GPS.	3	Apply
2	Evaluate and interpret surveying data for different civil engineering projects.	5	Evaluate
3	Justify the data collected through surveying instruments for mapping.	5	Evaluate

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	3	3	2	2	-	3	3	2	2	3	2
CO2	3	2	3	2	3	2	2	1	3	3	2	2	3	2
CO3	3	2	2	1	3	-	-	-	3	2	2	2	3	3

List of Experiments: Laboratory work

A) 1. Measurement of magnetic bearings of sides of a triangle or polygon

2. Correction for local attraction and calculations of true bearings using a prismatic compass.

3. Plane table survey by radiation and Intersection method.

4. Simple and differential levelling with at least three change points using a digital level.

5. Measurement of horizontal angles (by repetition method) using Vernier Transit Theodolite.

6. Calculating a horizontal and vertical distance of an object by using Tacheometer.

7. Setting out a building from a given foundation plan (minimum six coordinates).

8. Determination of coordinates of the traverse using GPS.

B) Project I: Road project using Auto level for a minimum length of 500 m, including fixing Alignment   with at least one circular curve, profile leveling, cross-sectioning, and plotting of L-Section and Cross Section with estimation of earthwork quantities.

C) Project II: Traversing using a total station.

D) Project III: Tachometric contouring project on a hilly area with at least two instrument stations about 60 m to 100 m apart using a theodolite, GPS, and generating contours using Golden Surfer.

PCCE205: Building Technology and Planning

Teaching Scheme: Lectures: 03 Hrs. / Week	Examination Scheme: CIA : 40 Marks End Sem Exam : 60 Marks
Credits: 03	Total Marks: 100

Prerequisite Course: Basics of Civil Engineering

Course Objectives:

Sr. No.	Course Objectives
1	To learn and understand different types of buildings and masonry in building construction.
2	To study different types of flooring, roofing materials and arches.
3	To gain knowledge of various types of doors, windows and vertical circulation.
4	To learn different types of formwork, Scaffolding and application of protective coatings
5	To gain knowledge of different modern construction techniques.
6	To understand necessity of principles of building and architecture planning with bye laws and legal aspects.

Course Outcomes (COs): At the end of the course students able to

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Classify different types of buildings, structures and masonry	2	Understand
2	Make use of different types of flooring, roofing materials and arches.	3	Apply
3	Illustrate types of doors, windows, and vertical circulation.	3	Apply
4	Applications of different types of formworks, scaffolding and Protective coatings.	3	Apply
5	Identify different modern construction techniques	4	Analyze
6	Apply the principles of architectural planning and building bye laws	3	Apply

Mapping of Course Outcomes to Program Outcomes (POs) and Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	--	--	--	-	--	--	--	--	--	--	1	1	2	2
CO2	-	1	2	-	1	--	--	--	2	1	1	2	1	2
CO3	-	--	-	2	2	1	-	--	1	2	--	1	2	2
CO4	1	--	1	-	--	-	-	--	2	2	-	1	-	2
CO5	2	2	2	2	2	2	2	--	3	2	-	3	3	3
CO6	2	2	--	2	--	2	3	--	3	2	2	2	2	2

Course Contents

Unit-No	Unit Title	No. of Hrs	COs
I	**Introduction to Building Construction and Masonry:** **Introduction to Building Construction:** Definition, Types of building as per National building code of India, Building components and their requirements, Plinth filling process, **Masonry:** Stone masonry: Principal terms, Types of stone masonry, IS specification and tests on stone, Bonds in stone Masonry. **Brick masonry:** Introduction to bricks, Classification of bricks-silica, refractory, fire etc., IS specification, Quality test on Bricks, Bonds in Brick Masonry - English, Flemish, Stretcher, Header, Ornamental brick work, and Composite masonry. **Block Masonry:** Cellular lightweight concrete block, Autoclaved Aerated Concrete (AAC), Hollow blocks etc.	08	1
II	**Flooring, Roofing Materials and Arches:** **Floor and Flooring Materials –** Components of floor, Materials for construction, Functional requirement of flooring, Types of floor finishes and their suitability, Modern floor finishing materials **Roof and Roofing Materials –** Types of roofing materials, fixing details of roof covering and construction procedure, Types of trusses with their suitability, Introduction to shell structures, Latest roofing materials. **Arches** – Principle of arch action, Types of arches, Method of arch construction, Lintels - Necessity and types.	07	2
III	**Doors, Windows, and Vertical Circulation** **Doors and Windows** – Technical terms, Installation of doors and window frames, and their size specifications, Fixtures and Fastenings. Types of doors and windows. Ventilators: Purpose and types, Recent trends in door and window designs. **Vertical Circulation –** Consideration in planning, Design of staircase, Types of staircases, ramps, ladders, lifts, and escalator.	06	3
IV	**Form work, Scaffolding and Protective Coatings:** **Form work:** Materials, Formwork for footing, columns, beams and slabs, Slip form work (Mivan Technology), Underpinning, Centering and its removal **Scaffolding:** Purpose, Types, suitability and Modern scaffoldings – hydraulic, modular, mast climbing. **Protective Coatings:** Plastering: lime plaster, cement plaster, gypsum plaster, textured plaster and their application, Pointing: purpose and types, Painting and varnishing, types and application.	07	4

| V | **Modern Construction Techniques, Building Bye Laws and Legal Aspects:**

Modern Construction Techniques – Glass claddings, Aluminium composite panel cladding. Introduction to 3D printing, Introduction to Prefabricated and modular construction, pre-engineering structures

Building Bye Laws - Principles of Building planning, Principles of Architectural planning; relation between form and function, Utility, Aesthetics, Necessity of bye-laws, Plot sizes, Road width, Open spaces, Floor area ratio (F.A.R.), Marginal distances, Building line, Control line, Height regulations, Room sizes, and area calculations as per National Building Code (latest).

Legal Aspects - Role of plan sanctioning authorities, 7/12 abstract, meaning of different terms of 7/12 abstract, Form 6 and its types, Permission and Sanctioning of plan, Various NOC's required, Completion certificate. | 08 | 5 |

Text Books:

1. Building Construction by B.C. Punmia, 11th Edition, Laxmi Publications, ISBN: 9788131804285
2. Building Materials by S.V. Deodhar, 5th Edition, Khanna Publication, ISBN-13:9788174091994.
3. Construction by Bindra and Arora, Dhanpat Rai Publications, ISBN: 978818992880.
4. Building Drawings with an integrated Approach to build-Environment by M. G. Shah, C. M. Kale and S. Y. Patki, New Delhi, Tata McGraw Hill. (5th edition.)

Reference Books :

1. Building Materials by S. K. Duggal, 4th Edition, New Age International Publishers, ISBN: 9788122433791
2. Civil Engineering Materials by TTTI Chandigarh, Tata McGraw Hill Publications, ISBN-13: 978-0074604311.
3. Materials of construction by D.N Ghose, 13th Edition, Tata McGraw Hill, ISBN 13, 9780074516478.
4. Building Construction by S.C. Rangwala, 34th Edition, Charotar Publications, ISBN-13: 978-9385039041.
5. National Building Code of India (Latest Revision)
6. The construction of buildings; seventh edition, Vol.1 and Vol.2 by R. Barry, Oxford: Blackwell Science.
7. Building science and planning by Dr. S. V. Deodhar, Khanna Publishers.

 e – Resources:
www.nptel.iitm.ac.in/courses/iitkanpur

PCCE206: Auto CAD Lab: BTP

Teaching Scheme	Evaluation Scheme
Practical: 02 Hrs./ Week	Oral Exam: CIA: 20 Mark ESE: 30 Mark
Credits: 01	Total Marks: 50

Prerequisite Course: Engineering Graphics

Course Objectives:

Sr. No.	Course Objectives
1	To learn Auto CAD software for preparing Civil Engineering drawings.
2	To learn types of opening and their standard dimensions in a residential building.
3	To study measurement drawing of residential building.

Course Outcomes (COs): At the end of the course students will able to:

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Apply Auto CAD software for developing various 2D Civil Engineering drawings.	3	Apply
2	Identify types of opening in building with their standard dimensions.	3	Apply
3	Develop Residential Building Plan, Elevation and Section.	3	Apply

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	--	--	--	3	1	2	3	2	2	--	3	3	3
CO2	2	--	--	--	3	3	2	3	--	--	--	2	--	3
CO3	2	--	--	--	3	2	2	3	2	2	--	3	3	3

List of Practical: Term work shall consist of the following exercises

Practical No.	List of Practical / Course Contents	No. of Hours	COs
I	**Students should write detailed report on basic commands of Auto CAD.**	04	1
II	**Students should draw Standard sketches showing Dimensions of the following using AutoCAD (Not toScale / Proportionate):** 1. Details of the shallow footings / foundations.	04	1,2

	2. Details of Lintels and arches showing different components.			
	3. Types of Paneled doors			
	4. Types of Windows			
	5. Types of Stairs cases			
III	**Students should visit construction Site and write technical site visit reports.** 1. Site visit and Case Study of existing RCC (G + 2) residential building. 2. Site visit to any on-going residential building construction project site. (Visit report should contain: details of the project, stage of construction, sketches of components with dimensions, materials used and site plan, etc.).	04	2	
IV	**Measurement drawing of existing (G+2) RCC residential building.** Students should draw a detailed plan, elevation and section using suitable scale on same sheet using AutoCAD for site visit C) -1 above. (Use scale 1:50 or 1:100).	04	3	
V	**Students should prepare working drawing of foundation plan with foundation type details using AutoCAD** (Use scale 1:50 or 1:100).	04	3	

Text Books:
1. Building Construction by B.C. Punmia, 11th Edition, Laxmi Publications, ISBN: 9788131804285.
2. Building Construction by Bindra and Arora, Dhanpat Rai Publications, ISBN: 978818992880.
3. Building Planning and Drawing by S.S. Bhavikatti and M. V. Chitawadagi, I K International Publishing House Pvt. Ltd., ISBN-13: 978-9382332565.
4. Building Drawings with an integrated Approach to build-Environment by M. G. Shah, C. M. Kale and
5. S. Y. Patki, 6th edition, Tata McGraw Hill publication, New Delhi.
6. Auto CAD (Civil & Architecture) Workbook by CAD Desk.

Reference Books:

1. Building Materials by S. K. Duggal, 4th Edition, New Age International Publishers, ISBN: 9788122433791

2. Building Planning and Drawing by Dr. N. Kumara Swamy, A. Kameswara Rao, 9th Edition 2023,Charotar Publishing House Pvt. Ltd., ISBN-10: 9385039385.

3. Civil Engineering Materials by TTTI Chandigarh, Tata McGraw Hill Publications, ISBN-13:978-0074604311.

4. Materials of construction by D.N Ghose, 13th Edition, Tata McGraw Hill, ISBN-13: 9780074516478

5. AutoCAD 2024: A Power Guide for Beginners and Intermediate Users by Cadartifex, Sandeep Dogra,John Willis, 9th Edition, ISBN-13: 978-9394074125

6. National building Code of India. (Latest Revision) Building science and planning by Dr. S. V. Deodhar, Khanna Publishers.

e – Resources:
www.nptel.iitm.ac.in/courses/iitkanpur

MDCE221: Quality Control and Assurance

Teaching Scheme	Evaluation Scheme
Lectures: 02 Hrs./ Week	CIA : 20 Mark End Sem Exam: 30 Mark
Credits: 02	Total: 50 Marks

Prerequisite Course: Nil

Course Objectives:

Sr. No.	Course Objectives
1	To understand the importance of quality in modern business scenarios to individuals, organizations, customers, suppliers, and society.
2	To understand the principles of quality control.
3	To demonstrate concept of quality assurance

Course Outcomes (COs): At the end of the course students will able to:

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Define quality and discuss obstacles of quality management.	2	Understand
2	Define quality assurance and describe the consequences of poor-quality management.	3	Apply
3	Illustrate the ISO Principles and Quality manual	3	Apply

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3	2	2	3	1	3	3	3	1	3	1	3
CO2	2	2	1	1	3	2	3	3	3	3	2	2	3	2
CO3	2	3	2	3	2	3	2	3	3	3	2	3	1	3

Course Contents

Unit-No	Unit Title	No. of Hrs	COs
I	**Introduction to Quality:** Evolution of Quality, Various definitions and interpretation, Importance of Quality, Factors affecting Quality, Reasons for poor Quality & measures to overcome, Contribution of various Quality gurus (Juran, Deming, Crossby, Ishikawa), PDCA cycle.	09	1
II	**Quality Control:** Introduction, Objectives, Importance of Quality Control, Functions of Quality Control Department, Mechanism of QC- Setting	09	2

	standards and specifications, Inspection, Statistical quality control, Inspection devices, Seven Quality Control Tools- Check sheet, Fishbone diagram, Histogram, Pareto chart, Control chart, Scatter diagram, and Stratification, Quality Circle.		
III	**Quality Assurance:** Study of ISO 9001 Principles- Scope, Normative reference, Terms and Definition, Quality Manual-Importance and documentation, Check-list-Importance, Specimens of various activities, Corrective and Preventive actions, Conformity and Non- Conformity reports, Six Sigma Concept-Importance and levels, Zero defects concept.	09	3

Text Books:

1. Total Quality Control by Armand V Feigenbaum, McGraw-Hill Inc., ISBN 978-0071626286.
2. Total Quality Control Essentials: Key Elements, Methodologies and Managing for Success by Sarv Singh Soin, McGraw-Hill Inc., ISBN 978-0070595484.
3. Quality Assurance In Small And Medium Sized Industries by H. Dalebesterfield, Newage publishers, ISBN 978-8122412055.
4. Statistical Quality Control Paperback by Mahajan M, Dhanpat Rai & Co., ISBN 978-8177000399.
5. Quality Control by A.K. Bewoor V.A. Kulkarni, Wiley, ISBN 978-8126519071.

Reference Books

1. Juran's Quality Handbook by Juran, McGraw-Hill Education Publication, ISBN 978-0071629737.
2. Principles of Quality Control by Jerry Banks, John Wiley & Sons Inc., ISBN 978-0471635512.
3. Quality Control Paperback by Dale H. Besterfield, Pearson Education, ISBN 978-8131700648.
4. Statistical Quality Control & Quality Management by R. C. Gupta, Khanna Publishers, ISBN 978-8174091116.
5. Statistical Quality Control by Eugene Grant and Richard Leavenworth, McGraw Hill Education, ISBN 978-0070435551.
6. Quality Control and Total Quality Management by Jain P L Jain, McGraw Hill Education, ISBN 9780070402140
7. Total Quality Management Kindle Edition by Dr. Gunmala Suri Dr. Puja Chhabra Sharma

e – Resources:
https://archive.nptel.ac.in/courses/110/104/110104080/

MDCE222: Mathematics for Engineers

Teaching Scheme	Evaluation Scheme
Lectures: 02 Hrs./ Week	CIA : 20 Marks
	End Sem Exam: 30 Mark
Credits: 02	Total Marks : 50

Prerequisite Course: Engineering Mathematics I, Engineering Mathematics II

Course Objectives:

Sr. No.	Course Objectives
1	To make students familiarize with concepts and techniques of vector calculus, probability and differential calculus.
2	The intent is to furnish them with the techniques to understand engineering mathematics and its applications that would develop logical thinking power, useful in their disciplines.

Course Outcomes (COs): At the end of the course students will able to:

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	**Apply** statistical tools and probability distributions to solve real-world problems and make data-driven decisions. **Action**: Apply **Knowledge**: Statistical Methods and probability distributions **Condition:** Data Analysis	3	Apply
2	**Calculate** directional derivative, divergence and curl of vector function as well as vector integration with the help of Green's theorem, etc. **Action:** Apply **Knowledge:** Vector differentiation and Integration Condition: Vector function	3	Apply
3	**Determine** solution of partial differential equations using Fourier transform technique. **Action:** Analyze **Knowledge:** Fourier Transform **Condition:** Solution of partial differential equations	3	Apply

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	1	-	-	1	1	1	-	-	3	2
CO2	3	2	-	-	-	-	-	1	1	1	-	-	3	2
CO3	3	2	-	-	-	-	-	1	1	1	-	-	3	2

(Specify values as: 3: High Level, 2: Medium Level, 1: Low Level for mapping of Cos to POs)

CO's	Co's will be measured
CO1	Questions may be of the type- Find- level 1, Level 2, prove that-Level 3
CO2	Questions may be of the type-Find- level 1, Evaluate-Level 2, show that, prove that –level 3
CO3	Questions may be of the type-find- level 1and level 2, Examine, calculate-level 3

Course Contents

Unit-No	Unit Title	No. of Hrs	COs
I	**Statistics and Probability** Random variable, Probability mass function, Probability density function, Expected value, variance, Binomial, Poisson and Normal distribution. Inferential Statistics, Hypothesis Testing, Confidence Intervals, Regression Analysis, Method of least square.	10	1
II	**Vector Calculus** Vector Differentiation, Gradient of scalar function, Divergence and curl. Line and Surface integrals, statements and Illustrations of Green, (stokes and Gauss-Divergence theorem only statements)	10	2
III	**Fundamentals of Fourier Analysis and Partial Differential Equations** Basic Concept of Fourier series, Definition of Fourier transform, Fourier transform of exponential and hyperbolic functions, Separation of variables; solutions of one-dimensional diffusion equation; first and second order one-dimensional wave equation and two-dimensional Laplace equations.	10	3

Text Books:

1. B. S. Grewal, Higher Engineering Mathematics, 42/e, Khanna Publishers, 2012, ISBN-13: 978-8174091154.
2. H. K. Das, Engineering Mathematics, S Chand, 2006, **ISBN-8121905209**
3. P. C. Biswal, Probability and Statistics, PHI, New Delhi, 2012, **ISBN-9788120331402 Lib-56298.**
4. S.P. Gupta, Statistical Methods, 28th Edition, Sultan Chand and Sons., New Delhi, 1997

Reference Books:

1. K.A Principles Stroud & D. S. Booth, Advanced Engineering Mathematics, Industrial Press, 5/e, 2011, **ISBN-9780831134495.**
2. P. C. Matthews, Vector Calculus, Springer, 2/e, 2012, **ISBN-9783540761808**
3. Erwin Kreyszig, Advanced Engineering Mathematics, Wiley, 9/e, 2013, **ISBN-13: 978-0471488859.**
4. John A. Rice, Mathematical Statistics and Data Analysis, International Thomson Publication, 1995, **IBSN-0534209343**

EECE241: Engineering Economics

Teaching Scheme	Evaluation Scheme
Lectures: 02 Hrs./ Week	CIA : 20 Mark
	End Sem Exam: 30 Mark
Credits: 02	Total: 50 Marks

Prerequisite Course: Basic knowledge of Economics

Course Objectives:

Sr. No.	Course Objectives
1	To study the basic of different terms associated with the economics
2	To study the economic environment of business, resources and productivity
3	To study the basic concept of finance, capital, taxes, foreign exchange etc.

Course Outcomes (COs): At the end of the course students will able to:

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Explain the basic terms associated with economics	2	Understand
2	Explain and understand business environment, economics of resources and productivity	2	Understand
3	Understand and explain concept of finance, capital taxes and foreign exchange	2	Understand

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	--	--	-	1	1	2	--	1	1	1	-	-
CO2	1	-	--	--	-	1	1	2	1	1	1	1	-	-
CO3	1	-	--	--	-	1	1	2	1	1	1	1	-	-

Course Contents

Unit-No	Unit Title	No. of Hrs	COs
I	**Unit 1 Introduction, Demand and Supply:** **Economic Environment of Business** **Introduction-**Introduction to Engineering Economics, Definition, Principles, Introduction to Investment, Assets, Liabilities, Wealth, Goods, Wants	10	1

	Difference between Cost, Value, Price and its relevance to Marketing Utility, Law of Diminishing Marginal Utility. **Demand and Supply Demand**: Demand & Schedule, Law of Demand, Demand Curve, Elasticity of Demand Supply, Supply Schedule, Supply Curve, Elasticity of Supply, Law of Substitution Equilibrium, Equilibrium Price, Equilibrium Amount, Factors affecting Price Determination		
II	**Unit 2 Economic Environment and Production Resources** **Economic Environment of Business -** Business Cycle, Life Cycle of Product, Laws of Returns, Perfect Competition, Imperfect Competition, Monopolistic Competition Introduction to Gross National Product, Gross Domestic Product Introduction to Tools for Engineering Economics. **Resources and Productivity** - Resource of Introduction, Factors of Production, Land, Labour, Capital, Organization, Materials, Machinery Concept of Productivity and its Improvement, Concept of Resource Scarcity and need for Optimization, Economics of Size, Large Scale Production, Small Scale Production	10	2
III	**Unit: 3 Basic Concepts of Finance** Definition of Money, Rent, Simple and Compound Interest, Profit, Annuities Capital, Types of Capital :- Working and Fixed Capital Introduction to Capital Generation: Shares, Debentures, Public Deposits, Foreign Capitals, Mutual Funds, Concept of Built Own Transfer (BOT) Concepts of Inflation and Deflation of Currency, Credit, Types of Taxes related to Machinery and Materials, Elements of Cost: Prime Cost, Overheads, Total Cost, Concept of Depreciation, Cost Break-even Studies Types of Cost: - Material, Labour, Machinery etc., Cost Control, SEBI, RBI, Foreign Exchange, Mechanism of Foreign Exchange, Insurance.	10	3

Text Books:
1. Industrial Organization and Engineering Economics, T. R. Banga, S. C. Sharma, Khanna Publisher
Reference Books:
1. Engineering Economics, James Riggs, David Bedworth, Sabah Randhawa, McGraw Hill
2. Financial Management, M. Y. Khan, P. K. Jain, Tata McGraw Hill Edition

VEC251: Universal Human Value

Teaching Scheme	Evaluation Scheme
Lectures: 02 Hrs./ Week	CIA : 20 Mark
	End Sem Exam: 30 Mark
Credits: 02	Total: 50 Marks

Prerequisite Course: Nil

Course Objectives:

Sr. No.	Course Objectives
1	To elaborate on Self Exploration as the process of Value Education.
2	To facilitate understanding of harmony at various levels starting from self and going towards family and society.
3	To elaborate on the salient aspects of harmony in nature and in entire existence.

Course Outcomes (COs): At the end of the course students will able to:

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Recognize the concept of self-exploration as the process of value education.	1	Remember
2	Interpret the feelings in the relationships as essential aspects of harmony in family and society.	2	Understand
3	Demonstrate the concept of interconnectedness inherent in nature and entire existence.	3	Apply

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	2	-	3	-	1	-	2	-	3
CO2	-	-	-	-	-	2	-	3	-	1	-	2	-	3
CO3	-	-	-	-	-	3	2	3	-	1	-	2	-	3

Course Contents

Unit-No	Unit Title	No. of Hrs	COs
I	**Introduction to Value Education and Harmony in Human Being** **Introduction to Value Education:** Values, Morals and Ethics; Concept and need of value education; Self-exploration as the process for value education; Guidelines for value education; Basic human aspirations and	08	1

	their fulfillment, understanding Happiness and Prosperity-Their continuity. **Harmony in Human Being:** Human being as the coexistence of self and the body; Discrimination between the needs of the self and the body; The body as an instrument; Harmony in the self; Harmony of the self with the body			
II	**Harmony in Family and Society**: Family as the basic unit of human interaction; Understanding relationship; Feelings in relationship; Right feeling; Role of physical facility in fulfillment of relationship; Response and reaction in behavior. **Harmony in Society:** Understanding Human Goal; Human Order; Dimensions of Human Order; Professions in a human society; World Family Order; Harmony from Family Order to World Family Order	08	2
III	**Harmony in Nature/Existence:** **Harmony in Nature/Existence:** Nature as a collection of units; Classification of units into four orders; Interconnectedness and mutual fulfillment among the four orders; Significance of Education – Sanskar for human order; Existence as units in space; Understanding submergence; Material and consciousness units; Expression of coexistence at different levels; Role of human being in existence	08	3

Text Books:
1. R. R. Gaur, R. Sangal, G. P. Bagaria A Foundation Course in Human Values and Professional Ethics", Excel Books Pvt. Ltd.
2. R. S. Naagarazan, "A Textbook on Professional Ethics and Human Values", New Age International (P) Ltd. Publishers
Reference Books:
2. B. P. Banerjee, "Foundations of Ethics and Management", Excel Books Pvt. Ltd. 3. P. L. Dhar, R. R. Gaur, "Science and Humanism", Commonwealth Publishers 4. M. K. Gandhi, "The Story of my Experiments with Truth", Discovery Publisher
e – Resources http://uhv.org.in/, **https://fdp-si.aicte-india.org/download.php#1/**

CECE266: Field Practices in Civil Engineering

Teaching Scheme	Evaluation Scheme
Practical: 04 Hrs./ Week	CIA : 20 Mark End Sem Exam: TW Based Oral -30 Marks
Credits: 02	Total Marks : 50

Prerequisite Course: Basic Civil Engineering

Course Objectives:

Sr. No.	Course Objectives
1	To learn different documents required for building permissions.
2	To learn the different building construction activities.

Course Outcomes (COs): At the end of the course students will able to:

CO's No	Course Outcome (s)	Bloom's Taxonomy	
		Level	Descriptor
1	Understand building approval and sanctioning process	2	Understand
2	Examining different building construction activities.	3	Apply

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	3	2	3	1	1	-	3	3	3
CO2	3	-	3	-	3	3	3	3	3	2	3	3	3	3

Report on Construction Site Visits:

(Detailed report on site visits with photos for the following assignments)

1. Collection of essential documents required for plan sanctioning, approval and completion of building.

2. Understanding feasibility of construction site, lay out of site and line out of building.

3. Deliberate standards for construction material selection and their rates in market.

4. Supervise activities like excavation and in-situ casting of foundation.

5. Noticing construction process of plinth.

6. Observation of different masonry works used in superstructure.

7. Supervise activities such as casting of RCC members in superstructure.

8. Understanding finishing activities such as plastering and coloring of building.

9. Expressive different types of flooring and roofing used in buildings.

10. Considerate plumbing arrangements and electrification in building.