Dr. J. J. Magdum Trust's

DR. J. J. MAGDUM COLLEGE OF ENGINEERING, JAYSINGPUR

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• DEPARTMENT •

Civil Engineering

• CURRICULUM •

(As per NEP 2020 Guidelines)
for

Second Year B.Tech. Engineering Program

with effect from 2025-26

Dr. J. S. Lambe
BOS Chairman

Dr. Mrs. S. B. Patil
Dean Academics

Dr. G. V. Mulgund
Principal

Dr J J Magdum College Of Engineering, Jaysingpur

CIVIL ENGINEERING DEPARTMENT

SY- B.Tech -SEM-III

1. Course Name: Mathematics for Civil Engineers

Course Details:

Class	SY- B.Tech		**Semester**		III	
Course Title	Mathematics for Civil Engineers		**Course Code**		Theory: 01CEPCL201 Practical:	
Prerequisites:			Derivative, Integration & Basics of Statistics			
Teaching scheme:	**Theory Hours:**	03	**Practical Hours:**		**Tutorial Hours:**	
	Credits:	03	**Credits:**		**Credits:**	

Evaluation scheme						
Theory				**Practical**		**Total**
T-I	**T-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50			100

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
PCC-01CEL201.01	To develop mathematical skills and enhance thinking power of students.
PCC-01CEL201.02	To give the knowledge to the students of Statistics, Linear Differential Equations with applications, Vector Differential Calculus, Assignment Problem, Probability, Fuzzy set theory.
PCC-01CEL201.03	To prepare students to formulate a mathematical model using engineering skills & interpret the solution in real world.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC-01CEL201.01	CO1:solve problems on Linear Differential Equations of Civil Engineering problems.	03
PCC-01CEL201.02	CO2:solve problems on vector differentiation to find directional derivatives, curl and divergence of vector fields	03
PCC-01CEL201.03	CO3:solve problems on the statistical data numerically by using Lines of regression and Curve fittings.	03
PCC-01CEL201.04	CO4:solve problems on probability theory, including problems involving the binomial, Poisson distribution.	03
PCC-01CEL201.05	CO5:solve assignment problem by using different techniques of operation research.	03
PCC-01CEL201.06	CO6:solve problems on fuzzy set theory.	03

Course Contents			
Unit Number	**Unit Title**	**Hours**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Unit Title: Linear Differential Equations (LDE) and its Applications** 1.1 Linear Differential equations with constants coefficients. 1.2.Rules to find complementary function. 1.3.Methods to find particular Integral $(e^{ax}, \quad sinax$ or $cosax,$ $x^m, e^{ax}x^m, e^{ax}sinax$ or $e^{ax}cosax)$ 1.4Applications of Linear Differential equations to Cantilever, Strut, Beam	06	03
Unit-02	**Unit Title: Vector Differential Calculus**	06	03

	2.1 Differentiation of vectors. 2.2 Gradient of scalar point function. 2.3 Directional derivative. 2.4 Divergence of vector point function. 2.5 Solenoidal and Scalar potential function of a vector field.		
Unit-03	**Unit Title: Correlation, Regression & Curve Fitting** 3.1 Introduction. 3.2 Karl Pearson's Coefficient of Correlation. 3.3 Lines of regression of bivariate data. 3.4 Fitting of Curves by method of Least-squares: 3.4.1 Fitting of Straight lines. 3.4.2 Fitting of second degree Parabolic curves.	06	03
Unit-04	**Unit Title: : Probability Distribution** 4.1 Random variable 4.2 Discrete probability distribution. 4.3 Continuous probability distribution. 4.4 Binomial Distribution. 4.5 Poisson distribution.	06	03
Unit-05	**Unit Title: Assignment Problem:** 5.1 Definition, Balanced and Unbalanced assignment problem. 5.2 Hungarian Method. 5.3 Balanced assignment problems. 5.4 Unbalanced assignment problems.	06	03
Unit-06	**Unit Title: Introduction to Fuzzy sets** 6.1 Crisp set and Fuzzy set. 6.2. Basic concepts of fuzzy sets. 6.3 Basic operations on fuzzy sets. 6.4 Properties of fuzzy sets	06	03

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1.	Textbook	Applied Mathematics, Vol.I	P. N. Wartikar & J. N. Wartikar	Vidyarthi Griha Prakashan, Pune.	6 th Edition	2024
2.	Textbook	Higher Engineering Mathematics	Dr. B. S. Grewal,	Khanna Publishers, Delhi.	42 nd Edition	2020
3.	Textbook	Engineering Mathematics	N. P. Bali, Iyengar	Laxmi Publications (P) Ltd., New Delhi.	9th Edition	2010
4.	Textbook	Fuzzy Sets & Fuzzy Logic Theory and Applications,	George J. Klir and Bo Yuan	PHI Learning Private Limited	1st Edition	2015
5.	Reference	Advanced Engineering Mathematics	Erwin Kreyszig	Wiley India Pvt. Ltd.	10th Edition	2011
6.	Reference	Advanced Engineering Mathematics	H. K. Dass	S. Chand, Pvt. Ltd. New Delhi.	23rd Edition	2024
7.	Reference	Fuzzy Logic with Engineering Applications,	Timothy J. Ross	McGraw-Hill, International Edition	2nd Edition	2004

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1.	NPTEL	https://onlinecourses.nptel.ac.in/noc23_ma77/preview	3,4
2.	NPTEL	https://onlinecourses.nptel.ac.in/noc24_ma37/preview	1

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 10 Experiments based on the curriculum.

Experiment Number	Type of Experiment (Basic /Design/Advanced/Mini/ Minor Projects/ Seminar/ Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.			
2.			
etc			

Examination Scheme and Guidelines:(Sample)

T-I **20 Marks**	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
T-II **20 Marks**	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
ISE **10 Marks**	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE (Practical) **(25/50 Marks)**	Continuous Assessment **,**As per institute policy

ESE **50 Marks**	ESE-End Semester Examination (Sample)
	Que.1: MCQ"s based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 16 Marks)
	Que.3: based on Unit 1,2,3 (Carries 16 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 16 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 16 Marks)

Dr. J. J. Magdum College of Engineering, Jaysingpur.
CIVIL ENGINEERING
SY- B. Tech -SEM-III
Course Name- Surveying

Course Details:

Class	SY		**Semester**	IV
Course Title	SURVEYING		**Course Code**	01CEPCL202
Prerequisites:		Basic Civil Engineering		
Teaching scheme:	**Theory Hours:**	**03 hrs/week**	**Credits:**	**03**
Evaluation scheme				
Theory				**Total**
UT-I	**UT-II**	**ISE**	**ESE**	**100**
20	**20**	**10**	**50**	

Course Objectives:
The course aims to:

Sr No.	Course Objectives
PCC-CEL202.01	To determine the relative position of any objects or points on the earth.
PCC-CEL202.02	To determine the distance and angle between different objects
PCC-CEL202.03	To calculate the elevation of points with respect to reference line
PCC-CEL202.04	To create maps, plans, and charts for land development, construction, and geographical studies.
PCC-CEL202.05	To provide essential data for designing roads, bridges, buildings, and other infrastructure.

Course Outcomes:
Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC-CEL202.01	Understand basic principal of surveying, chaining ranging operations & bearing system	Understand
PCC-CEL202.02	Construct map showing the relative positions of objects as well as nature of ground from linear & angular measurements & R.L's.	Apply
PCC-CEL202.03	Demonstrate various application of Theodolite in surveying like measurement of angles, distances, heights & perform traverse computations.	Apply
PCC-CEL202.04	Calculate R.L's by using tachometer & construct the map.	Apply
PCC-CEL202.05	Design & construct different types of Horizontal & Vertical curves.	Apply
PCC-CEL202.06	Describe the principles, components of Remote sensing, GIS, GPS & EDM.	Understand

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Unit Title: Introduction to Surveying** 1.1 Definition, Objectives & Principal 1.2 Introduction to Chaining & Ranging. 1.3 Bearing System.	**06**	Understand
Unit-02	**Unit Title: Levelling and Contouring** 2.1 Introduction to levelling. 2.2 Permanent Adjustments of dumpy level. 2.3 Reciprocal levelling, Sensitivity of bubble tube, Corrections – curvature and refraction. 2.4 Contouring – Methods and applications.	**06**	Understand/Apply
Unit-03	**Unit Title: Theodolite Traversing** 3.1 Introduction to levelling. 3.2 Permanent Adjustments of dumpy level. 3.3 Reciprocal levelling, Sensitivity of bubble tube, Corrections – curvature and refraction. 3.4 Contouring – Methods and applications.	**06**	Understand/Apply
Unit-04	**Unit Title: Measurement of distances and elevations** 1.1 Tachometry – Principles, Suitability, Methods 1.2 Stadia diaphragm, Stadia Method, Tangential Method. 1.3 Tachometric contouring.	**06**	Understand/Apply
Unit-05	**Unit Title: Curves** 5.1 Significance of curves and curve setting. 5.2 Type of horizontal curve, elements of Simple, Compound curve, Transition curve introduction only, setting out of simple curve by linear and angular methods. 5.3 Vertical curves – Introduction. (No Numerical)	**06**	Apply/Analyze
Unit-06	**Unit Title: Modern methods of surveying** 6.1 Remote sensing – Definition, relevance, types, electromagnetic radiation and energy sources and its characteristics, applications to civil engineering. 6.2 GPS – basic principles, GPS segments, receivers, applications in survey. 6.3 GIS – Terminology, advantages, basic components of GIS, data types, GIS analysis, applications of GIS software.	**06**	Understand

Unit-04	**Unit Title: Measurement of distances and elevations** 1.4 Tachometry – Principles, Suitability, Methods 1.5 Stadia diaphragm, Stadia Method, Tangential Method. 1.6 Tachometric contouring.	**06**	Understand/Apply
Unit-05	**Unit Title: Curves** 5.4 Significance of curves and curve setting. 5.5 Type of horizontal curve, elements of Simple, Compound curve, Transition curve introduction only, setting out of simple curve by linear and angular methods. 5.6 Vertical curves – Introduction. (No Numerical)	**06**	Apply/Analyze
Unit-06	**Unit Title: Modern methods of surveying** 6.1 Remote sensing – Definition, relevance, types, electromagnetic radiation and energy sources and its characteristics, applications to civil engineering. 6.2 GPS – basic principles, GPS segments, receivers, applications in survey. 6.3 GIS – Terminology, advantages, basic components of GIS, data types, GIS analysis, applications of GIS software. 6.4 Principle of EDM, Use and applications of Total Station.	**06**	Understand

Text Books/Reference Books:

Sr. No	Book Type(Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text	Surveying and Levelling Vol. I and Vol. II	by T. P. Kanetkar and S.V.Kulkarni	Pune Vidyarthi Griha Prakashan.		
2	Text	Surveying and Levelling	Subramanian	Oxford University Press.		
3	Reference	Surveying, Vol. I & II	Dr. B. C. Punmia, Ashok K. Jain, ArunK.Jain	Laxmi Publications		
4	Text	Surveying and Levelling	N. N. Basak	Tata McGraw Hill.		
5	Reference	Surveying, Vol. I & II	S. K. Duggal	TataMc-Graw Hill.		
6	Reference	Surveying and Levelling	R. Agor	Khanna Publishers, New Delhi		
7	Reference	Principles of Surveying. Vol. I	J. G. Olliver, J. Clendinning	Van Nostrand Reinhold.		
8	Reference	Plane Surveying	A. M. Chandra,	New Age Internationa l Publishers		
9	Reference	Surveying Vol. I & II	Dr. K. R. Arora	Standard Book House.		
10	Reference	Remote sensing and Geographical Information System	A. M. Chandra and S. K. Ghosh	Narosa Publishing House.		
11	Reference	Advanced Surveying - Total Station, GIS and Remote Sensing	Satheesh Gopi, R. Sathikumar and N. Madhu,	Pearson publication.		
12	Reference	The GIS Book	5Th Edition, George B. Korte	PE onwards press.		

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
	https://nptel.ac.in/		Unit no.6
	https://nptel.ac.in/		Unit no.6

Examination Scheme and Guidelines:(Sample)

UT-I **20 Marks**	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
UT-II **20 Marks**	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
ISE **10 Marks**	ISE/CA -In Semester Evaluation/Continuous Assessment

ESE **70 Marks**	**ESE-End Semester Examination (Sample)**
	Que.1: MCQ's based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 16 Marks)
	Que.3: based on Unit 1,2,3 (Carries 16 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 16 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 16 Marks)

Dr. J. J. Magdum College of Engineering, Jaysingpur

CIVIL ENGINEERING
SY -B. Tech-SEM-III
Strength of Materials

Course Details:

Class	SY		**Semester**	IV
Course Title	Strength of Materials		**Course Code**	01CEPCL203
Prerequisites:		Applied Mechanics		
Teaching scheme:	**Theory Hours:**	**03hrs/week**	**Credits:**	**03**
Evaluation scheme				
Theory				**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**100**
20	**20**	**10**	**50**	

Course Objectives:

The course aims to:

Sr. No.	**Course Objectives**
PCC-CEL0203.01	To develop an understanding of stress-strain behavior and material properties.
PCC- CEL 0203.02	To analyze internal forces and failure criteria in structural components.
PCC- CEL 0203.03	To provide knowledge of bending and shear stresses, column stability, and strain energy.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	**Course Outcomes**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
PCC-CEL0203.01	**Understand** the fundamental concepts of stress, strain and analyze the behavior of materials under axial loading.	Understand, Analyze
PCC- CEL 0203.02	**Construct** shear force and bending moment diagrams for determinate beams.	Apply
PCC- CEL 0203.03	**Analyze** bending and shear stresses in beams and evaluate the stability of columns under different loading conditions.	Analyze
PCC- CEL 203.04	**Calculate** strain energy stored in a body due to various loading conditions.	Apply

CourseContents			
UnitNumber	**UnitTitle**	**Hours**	**CognitiveLevelsof Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Stresses and Strains** Simple stress and strain, Hooke's law, stress strain behavior of material, Composite sections under axial loading, temperature stresses, elastic constants and their relationship.	06	UNDERSTAND
Unit-02	**Principal Stresses** Normal and shear stresses on any oblique plane, Concept of principal planes and stresses by analytical and graphical methods (Mohr's circle of stress 2-D).	06	Understand
Unit-03	**Shear force and Bending Moment** Concept and definition of Shear force and Bending moment, relation between Shear force and Bending moment and loading, Shear force and Bending moment diagrams for various types of loads and supports.	06	Apply
Unit-04	**Bending and Shear Stresses** Theory of pure bending, Derivation of flexural formula, Bending stress distribution for symmetrical and unsymmetrical section, Shear stress equation, Shear stress distribution for symmetrical and unsymmetrical section.	06	Apply
Unit-05	**Columns** Definition, classification of columns, Effective length for various end conditions, Slenderness ratio, radius of gyration, Euler's theory and Rankine's theory.	06	Analyze
Unit-06	**Strain Energy** Strain energy due to different types of loading- suddenly applied load, gradually applied load and impact load, modulus of resilience, proof resilience.	06	Apply

Text Books /Reference Books:

Sr. No	Book Type(Text/ Reference)	Name of theBook	Nameofthe Author	Publisher	Edition	Year of Publication
1	Text	Strength of Materials	R.K.Bansal.,	Laxmi Publications.	Sixth	2006
2	Text	Strength of Materials	S.Ramamrutham,	DhanapatRai Publications	Seventh	2007
3	Text	Structural Analysis	Bhavikatti S.S	Vikas Publications house New Delhi.	Fifth	2006
4	Text	Strength of Materials	R.K.Rajput	S.Chand Publications	Sixth	2008
5	Reference	Mechanics of Materials	Gere and Timoshenko,	CBS publishers.	Sixth	2007
6	Reference	Mechanics of Material	M. Beer and Johnston		Seventh	2009
7	Reference	Strength of Material	F. L. Singer and Pytel	Harper and Row publication	Sixth	2010

Online References: Courser/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	NPTEL	https:archieve.nptel.ac.in /courses/105/105/105105 108/	All units

Examination Scheme and Guidelines: (Sample)

ESE 50 Marks	ESE-End Semester Examination (Sample)
	Que.1: MCQ‟s based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 16 Marks)
	Que.3: based on Unit 1,2,3 (Carries 16 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 16 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 16 Marks)
CIE(Practical) (50Marks)	Continuous Assessment**,** As per institute policy

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CIVIL ENGINEERING
SY- B. Tech-SEM-III

Course Name: Building Construction Materials

Course Details: 01CEL204 Building Construction Materials

Class	SY Civil		**Semester**	III		
Course Title	Building Construction Materials		**Course Code** 01 CEPCL 204	Theory: 02		
Prerequisites:						
Teaching scheme:	**Theory Hours:**	02	**Practical Hours:**	00	**Tutorial Hours:**	00
	Credits:	02	**Credits:**	00	**Credits:**	00

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	00	00	100

Course Objectives:

The course aims to:

Sr. No.	**Course Objectives**
01CEL204.01	Define and describe building functions and classification systems used in construction and architecture.
01CEL204.03	Enable students to identify masonry bonds and understand their use in construction.
01CEL204.04	Understand basic building functions and classification systems used in construction.
01CEL204.05	Explain the structural and functional requirements of roofs and flooring materials, and analyze their role in building stability and comfort.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Course Outcome	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
01CEL204.01	Understand the fundamental purpose and classification of buildings and State the different building components.	CO1	2
01CEL204.02	Classify various types of bonds in brick masonry (e.g., English bond, Flemish bond).	CO3	2
01CEL204.03	Identify and describe the different types of doors, windows, and lintels	CO4	1
01CEL204.04	Explain the structural and functional requirements of roofs and flooring material	CO5	2

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Unit Title:** **Introduction to building Construction** Physical Introduction to building- Types of buildings, Loads on building, substructure, superstructure **Civil Engineering building materials** a) Physical, chemical and engineering property for various Building construction materials b) building components: Various components of building and their functions - Foundation, Plinth, Walls, Columns, Beams, Floors, Roofs, Doors, Windows, Lintels, Stairs, Finishe Waterproofing Systems	07	2
Unit-02	**Unit Title: Building Material** Construction joints in masonry, Types: Stone masonry, Brick masonry, Comparison between brick and stone masonry Concrete Block masonry, Types of Bonds, composite masonry	06	2
Unit-03	**Unit Title: Doors, Windows and Lintels** a) Doors – types , T.W. Paneled Door, Flush Door, Aluminum Glazed Doors, Steel Doors, fixtures and fastening b) Windows - Classification, T.W. Glazed Windows, Aluminum Glazed Windows, fixtures and fastening.	06	1

	c) Lintel: Necessity, Materials: wood, stone, brick, steel, R.C.C. and reinforced brick lintels.		
Unit-04	**Unit Title: Roofs and flooring materials** Definitions, Structural and functional requirements, Load considerations, Types of Sloped roofs, Types of Flat roof/floor, Roof covering materials, Types of RCC slab, Application of DPC,	05	2

Text Books/Reference Books:

Sr. No	Book Type(Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1.	**Text**	Engineering Materials	R. K. Rajput	S. Chand Publications	-	-
2.	**Text**	Building Construction	B. C. Punmia	Laxmi Publications	05	2005
3.	**Text**	Building Construction	Bindra and Arora	Dhanpat Rai and Sons		1997
4.	**Reference**	Building Materials	P. C. Varghese	PHI Learning, Eastern Economy Edition	02	2015
5.	**Reference**	Building Materials	S. K. Duggal	New Age International	03	2008
6.	**Reference**	Building Construction and Construction Materials	Birdie and Ahuja	Dhanpat Rai and Sons	04	-

Online References: Course / NPTL / General Websites etc)

Sr. No.	Website Name	URL	Units Covered
1.	NPTEL	https://archive.nptel.ac.in/courses/105/106/105106206/	All 6 units

List of Assignments/Tutorials for ISE:

Minimum 04 Assignments/Tutorials based on the curriculum.

Examination Scheme and Guide lines

CIE-I **20 Marks**	Examination of 20 marks based on Units 1, 2 should be conducted, and marks should be communicated to the Exam Cell. One question of 05 Marks based on MCQs compulsory.
CIE-I **20 Marks**	Examination of 20 marks based on Units 3,4 should be conducted, and marks should be communicated to the Exam Cell. One question of 05 Marks based on MCQs compulsory.

ISE **10 Marks**	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE **(50 Marks)**	Continuous Assessment **,**As per institute policy

ESE **70 Marks**	ESE-End Semester Examination
	Que.1: MCQs based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2 (Carries 16 Marks)
	Que.3: based on Unit 3,4 (Carries 16 Marks)
	Que.4: based on Unit 1,2,3,4 (Carries 16 Marks)
	Que.4: based on Unit 1,2,3,4 (Carries 16 Marks)

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CIVIL ENGINEERING
SY- B. Tech-SEM-III
Strength of Materials Laboratory

Course Details:

Class	SY		**Semester**	III
Course Title	**Strength of Materials** Lab		**Course Code**	01CEPCP205
Prerequisites:		Applied Mechanics		
Teaching scheme:	**Practical Hours:**	02 hrs/week	**Credits:**	01
Evaluation scheme				
Practical				**Total**
CIE		**ESE**		**100**
50		**50**		

Course Objectives:

The course aims to:

Sr. No.	**Course Objectives**
PCC- 01CEP206.01	To provide students with practical knowledge and hands-on experience in testing various construction and engineering materials using standard testing procedures, understand their mechanical properties, and interpret the test results to evaluate the quality and suitability of materials for engineering applications.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	**Course Outcomes**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
PCC- 01CEP206.01	Identify and operate the Universal Testing Machine, Analyze and interpret the mechanical behavior of materials under various loading conditions.	Apply
PCC- 01CEP206.02	Perform tensile, compressive, bending, impact, shear, hardness, and water absorption tests on engineering materials.	Apply
PCC- 01CEP206.03	Evaluate the suitability of materials for construction and manufacturing based on test results.	Apply

Suggested List of Practical/Experiment for CIE/ESE:

A) Perform at least any seven from the following:

Experiment Number	Type of Experiment (Basic /Design/Advanced/ Mini/ Minor Projects/ Seminar/Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Basic	Study of Universal testing machine	Understand
2.	Basic	Tensile test on Mild steel and Tor steel	Apply
3.	Basic	Compression test on Metals	Apply
4.	Basic	Compression test on Timber	Apply
5.	Basic	Shear testing of Metals	Apply
6.	Basic	Impact test on Metals	Apply
7.	Basic	Bending test on Mild steel	Apply
8.	Basic	Water Absorption test on bricks	Apply
9.	Basic	Flexural test on timber	Apply
10.	Basic	Hardness test on metals	Apply

B) At least one assignment on each unit.

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CIVIL ENGINEERING
SY- B.Tech -SEM-III
Field Project

Course Details:

Class	SY		**Semester**	IV
Course Title	Field Project		**Course Code**	01CEFPP 206
Prerequisites:		Basic Civil Engineering		
Teaching scheme:	**Practical Hours:**	02 hrs/week	**Credits:**	01
Evaluation scheme				
Practical				**Total**
CIE		**ESE**		**100**
50		**50**		

Course Objectives:

The course aims to:

Sr. No.	Course Objectives
PCC- 01CEP208.01	Understand Basic Surveying Principles
PCC- 01CEP208.02	Develop Practical Skills in Chain and Tape Surveying
PCC- 01CEP208.03	Equip students with skills to determine elevation differences using levelling instruments (e.g., Dumpy level, Auto level).
PCC- 01CEP208.04	Teach the methods of generating contour maps and interpreting terrain features from contour lines.
PCC- 01CEP208.05	Provide hands-on experience in angle measurement, traversing, and horizontal/vertical control using a theodolite.
PCC- 01CEP208.06	Enable students to plan and execute basic survey projects and interpret the collected data.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC- 01CEP208.01	Carry out linear measurement using chain and tape, and perform ranging with accuracy.	Apply
PCC- 01CEP208.02	Determine the relative heights of points and produce level books using height of instrument (HI) and rise & fall methods.	Apply
PCC- 01CEP208.03	Conduct contouring surveys and create contour maps, and analyze terrain features for engineering applications.	Apply
PCC- 01CEP208.04	Measure horizontal and vertical angles, and carry out theodolite traversing and plotting.	Apply
PCC- 01CEP208.05	Record, reduce, and interpret field data to produce meaningful results and basic plans or profiles.	Apply
PCC- 01CEP208.06	Work Effectively as a Team in Field Work	Apply

Experiment Number	Type of Experiment (Basic /Design/Advanced/ Mini/ Minor Projects/ Seminar/ Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	**Basic**	Chaining, Ranging & Offsetting	Remember
2.	**Basic**	Determination of Bearing by Prismatic Compass	Understand/Apply
3	**Basic**	Introduction to Dumpy Level, Auto Level and Tilting Level.	Understand
4	**Basic**	Determination of RL's by HI and Rise & Fall Method by using Dumpy Level, Auto Level and Tilting Level.	Apply
5	**Basic**	Sensitivity of bubble tube	Apply
6	**Basic**	Reciprocal Levelling	Apply
7	**Basic**	Permanent Adjustment of Dumpy Level	Apply
8	**Basic**	Introduction of Theodolite	Understand
9	**Basic**	Measurement of horizontal angle by direct method	Apply
10	**Basic**	Measurement of horizontal angle by repetition method	Apply
11	**Basic**	Measurement of horizontal angle by reiteration method	Apply
12	**Basic**	Measurement of vertical angle by theodolite	Apply
13	**Basic**	Measurement of Magnetic bearing by theodolite	Apply
14	**Basic**	Permanent Adjustment of Theodolite	Apply
		PROJECT	
15	**Minor Project**	Block contouring project	Apply/Analyze
16	**Minor Project**	Theodolite Traversing Project	Apply/Analyze

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CIVIL ENGINEERING
SY- B.Tech -SEM-III
Economics for Engineering

Course Details:

Class	S.Y		**Semester**		III	
Course Title	Economics for Engineering		**Course Code**		Theory: 01CEBEL207 Practical:--	
Prerequisites:			Engineering Mathematics			
Teaching scheme:	**Theory Hours:**	02 hrs/Week	**Practical Hours:**	--	**Tutorial Hours:**	--
	Credits:	02	**Credits:**	--	**Credits:**	--

Evaluation scheme		
Practical		**Total**
CIE	**ESE**	**50**
50	--	

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
VEC-01CEP209.01	Student will understand the time value of money concepts to economic analysis.
VEC -01CEP209.02	Student will able to select the appropriate economic comparison method for different scenarios.
VEC -01CEP209.03	Student will understand inventory control techniques to engineering projects

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	**Course Outcomes**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
VEC-01CEP209.01	Understand the fundamental concepts of Engineering Economics, including the time value of money and different types of costs.	Understand
VEC-01CEP209.02	Apply various methods for economic comparison of alternatives to evaluate project feasibility.	Apply
VEC-01CEP209.03	Evaluate investment decisions using advanced economic analysis tools.	Evaluate
VEC-01CEP209.04	Analyze and optimize material and resource management practices.	Analyze

Course Contents			
Unit Number	**Unit Title**	**Hours**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Engineering Economics** **1.1** Introduction, Importance, Objectives **1.2** Time value of Money, types of costs, interest – simple, compound	06	Understand
Unit-02	**Economic Comparisons** **2.1** Equivalent Annual Cost Method, Present Worth Method **2.2** Capitalized Cost Method, Net Present Value	08	Apply
Unit-03	**Economic Comparisons** **3.1** Rate of Return Method, Pay-Back Method, **3.2** Benefit Cost Ratio Break Even Analysis	08	Evaluate
Unit-04	**Resource Management** **4.1** Material Management – Objectives, Functions Inventory Control – Necessity, Techniques such as ABC, EOQ, Safety Stocks.	06	Analyze

Text Books/Reference Books:

Sr. No	Book Type(Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text Book	Engineering Economics	R. Pannerselvam	PHI Learning Pvt. Ltd.	2nd Edition	2013
2	Text Book	Engineering Economics	Layland Blank and Torquin	McGraw Hill India	6th Edition	1998
3	Text Book	Managerial Economics	Geetika Ghosh , Piyali Choudhari	McGraw Hill India	3rd Edition	2012
4	Text Book	Principles of Construction Management	Roy Pilcher	McGraw Hill India		
5	Reference book	The Management of Quality in Construction	John L.Ashford	E & F.N Spon, New York		1989
6	Reference book	Quality planning and Analysis	Juran Frank, J.M. and Gryna, F.M	Tata McGraw Hill		1982

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1.	NPTEL	https://archive.nptel.ac.in/courses/112/107/112107209/	Units 1,2 and 3

List of Assignments/Tutorials for ISE:

- One assignment per unit with minimum four questions in each assignment

Examination Scheme and Guidelines: (Sample)

CIE (Practical) (25/50 Marks)	Continuous Assessment **,**As per institute policy

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CIVIL ENGINEERING
SY- B.Tech -SEM-IV
CONCRETE TECHNOLOGY

Course Details:

Class	SY		**Semester**	IV
Course Title	Concrete Technology		**Course Code**	01CEPCL208
Prerequisites:		Basic Civil Engineering, Building Construction Materials		
Teaching scheme:	**Theory Hours:**	**03 hrs/week**	**Credits:**	**03**

Evaluation scheme				
Theory				**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**100**
20	**20**	**10**	**50**	

Course Objectives:
The course aims to:

Sr. No.	Course Objectives
PCC-01CEL210.01	**Introduce the key ingredients of concert** along with their properties, classifications, and the standard testing methods used to assess their quality.
PCC-01CEL210.02	Develop a deep understanding of the behavior of fresh and hardened concrete, and the influence of various factors on its performance.
PCC-01CEL210.03	Familiarize students with various admixtures used to enhance the properties of concrete for specific applications and environmental conditions.
PCC-01CEL210.04	Enable students to design concrete mixes using standard methods.
PCC-01CEL210.05	Expose students to the properties and applications of special concretes and create awareness of durability issues in concrete.

Course Outcomes:
Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC-01CEL210.01	Understand the physical properties of ingredients of concrete and their effect on strength and durability.	Understand
PCC-01CEL210.02	Analyze the properties of fresh concrete and the stages of concrete manufacturing and curing.	Analyze
PCC-01CEL210.03	Evaluate the mechanical properties and behavior of hardened concrete and the application of nondestructive tests.	Evaluate
PCC-01CEL210.04	Summarize different types of chemical and mineral admixtures to modify concrete properties for specific applications.	Understand
PCC-01CEL210.05	Design concrete mixes using standard methods (ACI, IS 10262, IS 456).	Apply / Understand

PCC-01CEL210.06	Explain the types and characteristics of special concretes and assess factors affecting the durability of concrete under various environmental conditions.	Understand / Evaluate

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Ingredients of Concrete:** **1.1 Cement**: Manufacturing process of cement, chemical composition, grades of cement, hydration, types of cement, Tests for cement: fineness, Standard consistency, setting time, soundness and compressive strength. **1.2 Aggregates:** classification, requirements, Tests for coarse aggregates: specific gravity, grading of aggregate, Flakiness index, Elongation Index, Impact value, abrasion value, crushing value. Tests for fine aggregates: specific gravity, sieve analysis, fineness modulus. Alkali aggregate reaction, bulking of sand. **1.3 Water:** general requirements, quality of water.	**07**	Understand
Unit-02	**Fresh Concrete:** **2.1 Workability:** factors affecting, different tests for measurement of workability. Segregation, bleeding **2.2 Manufacturing process of concrete:** batching, mixing, transportation, compaction, curing of concrete, curing methods.	**05**	Analyze
Unit-03	**Hardened concrete:** **3.1 Strength of concrete:** w/c ratio, gel/space ratio, gain of strength with age, maturity concept of concrete, effect of maximum size of aggregate on strength. **3.2 Test on hardened concrete:** compressive strength, comparison of compressive strength between cube test and cylinder test, flexural strength. Relation between compressive and tensile strength. Elastic constants, factors affecting modulus of elasticity, definition and factors affecting creep and shrinkage. **3.3 Nondestructive testing:** Schmidt's rebound hammer, Ultrasonic pulse velocity method.	**07**	Evaluate
Unit-04	**Admixtures in concrete:** **4.1 Chemical Admixtures:** Plasticizers, Super plasticizers, Retarders, Air entraining agents. **4.2 Mineral Admixtures:** Fly ash, Silica Fume, GGBS, Rice husk ash, metakaolin	**05**	Understand
Unit-05	**Concrete Mix Design:** **5.1** Objectives of mix design, different methods of mix design, factors affecting mix proportions, quality control of concrete, acceptance criteria, **5.2** Numerical on mix design by ACI 211.1-1991, IS 10262- 2009andIS 456 -2000. Mix design of fly ash concrete by IS 10262 – 2009.	**07**	Apply / Understand
Unit-06	**Special Concretes and Durability of concrete:** **6.1 Special Concretes:** Light weight concrete, Polymer modified concrete, concept of fibre reinforced concrete, High performance concrete, Pumpable concrete, Roller compacted concrete, Self-compacting concrete. **6.2 Durability of concrete:** Significance, Permeability and Durability, Chemical Attack, Sulphate attack, Attack by Seawater, Acid attack, Chloride attack, Carbonation of concrete and its determination.	**07**	Understand / Evaluate

Text Books/Reference Books:

Sr. No	Book Type(Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1.	Text	Concrete Technology	Shetty, M.S.	S. Chand Publication		2006
2.	Text	Concrete Technology	Gambhir, M.L	Tata McGraw Hill.	3rd Edition	2005
3.	Reference	Concrete Technology	A. M. Neville, J. J. Brooks	Pearson Education India	2nd Edition	2010
4.	Reference	Properties of Concrete	A. M. Neville	Pearson Education India		2012

Online References: (Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1.	https://nptel.ac.in/	https://archive.nptel.ac.in/courses/105/106/105106176/	Units 1,2,3 and 6

Examination Scheme and Guidelines: (Sample)

CIE-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
CIE-I 20 Marks	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
ESE 50 Marks	**ESE-End Semester Examination (Sample)**
	Que.1: MCQ"s based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 16 Marks)
	Que.3: based on Unit 1,2,3 (Carries 16 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 16 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 16 Marks)

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CIVIL ENGINEERING
SY- B.Tech -SEM-III
Course Name Fluid Mechanics

Course Details:

Class	SY- B.Tech		**Semester**	III		
Course Title	Fluid Mechanics		**Course Code**	01CEPCL209		
Prerequisites:						
Teaching scheme:	**Theory Hours:**	03Hrs./ week	**Practical Hours:**	01Hrs./ week	**Tutorial Hours:**	-
	Credits:	3	**Credits:**	1	**Credits:**	-
Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	20	70	100

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
PCC 03.01	The objectives of this course is to make students to learn basics of engineering Mechanics concepts and its application to the real-world problems, solve problems involving Forces, loads and Moments and know their applications in allied subjects.
PCC 03.02	To understand the basic concepts and principles in fluid statics.
PCC 03.03	To understand the basic concepts and principles in fluid kinematic with their applications in fluid flow problems.
PCC 03.04	To understand the basic concepts and principles in fluid dynamics and to apply Bernoulli's theorem in fluid flow problems.
PCC 03.05	To explain concept of Hydraulic machines.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC-ETC0231.01	Explain fundamental fluid properties and their significance in fluid behavior and mechanics.	2 Understand
PCC-ETC0231.02	Analyze pressure variations in fluids and determine hydrostatic forces on submerged and floating bodies	4 Analyze
PCC-ETC0231.03	Classify and describe different types of fluid flow using stream functions and continuity equations.	2,4 Understand / Analyze
PCC-ETC0231.04	Apply Bernoulli's equation and Euler's equation to analyze fluid motion and flow measurement devices.	3,4 Apply / Analyze
PCC-ETC0231.05	Explain the working principles, selection criteria, and performance evaluation of hydraulic turbines and pumps	2,5 Understand / Evaluate

Course Contents			
Unit Number	**Unit Title**	**Hours**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Unit Title: Basic Concepts and Definitions** **1.1** Distinction between a fluid and a solid; **1.2** Density, Specific weight, Specific gravity, Kinematic and dynamic viscosity; **1.3** variation of viscosity with temperature, **1.4** Newton law of viscosity **1.5** vapour pressure, surface tension, capillarity, Bulk modulus of elasticity, compressibility.	**07hrs**	2 Understand

Unit-02	**Unit Title: Fluid Statics** 2.1 Fluid Pressure: Pressure at a point, Pascal's law, pressure variation with temperature, density and altitude. 2.2 Piezometer, U-Tube Manometer, Single Column Manometer, U-Tube Differential Manometer, Micro manometers. pressure gauges, 2.3 Hydrostatic Pressure and force: horizontal, vertical and inclined surfaces. 2.4 Buoyancy and stability of floating bodies.	**08hrs**	4 Analyze
Unit-03	**Unit Title: Fluid Kinematics** 3.1 Classification of fluid flow : steady and unsteady flow; uniform and non-uniform flow; laminar and turbulent flow; rotational and irrotational flow; compressible and incompressible flow; ideal and real fluid flow; one, two and three dimensional flows; 3.2 Stream line, path line, streak line and stream tube; stream function, velocity potential function. 3.3One-, two- and three -dimensional continuity equations in Cartesian coordinates	**09hrs**	2,4 Understand , Analyze
Unit-04	**Unit Title: Fluid Dynamics** 4.1Forces Acting on Fluid in Motion, Euler's Equation along a Streamline, 4.2 Bernaulies equations, Bernoulli's Theorem assumptions, Limitations and modifications. 4.3 Bernoulli's Applications: Venturimeter (Horizontal and Vertical), Orificemeter, Orifices, Time required for Emptying the Tank, 4.4 Concept of HGL and TEL. 4.5 Therotical and Experimental determination of hydraulic coefficients of orifice.	**08hrs**	3,4 Apply, Analyze
Unit-05	**Unit Title: Fluid Machinery** 5.1 Turbines: Definition: Gross and net heads; different efficiencies; 5.2 Classification of turbines; component parts and working principles; selection of turbines on the basis of head and specific speed. 5.3 Centrifugal Pump: Component parts; working principle; Static and manometric heads; different efficiencies; Priming & priming devices, Specific speed; 5.4 Theoretical aspects of multistage pumps; Trouble & remedies; operating characteristics curves	**08hrs**	2,5 Understand ,Evaluate

Text Books/Reference Books:

Sr. No	Book Type (Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text Book	Fluid Mechanics	A.K. Jain	Khanna Pub., Delhi	8th Edition	2016
2		Hydraulic and Hydraulic Mechanics	Modi/Seth	Standard Book House, Delhi	21st Edition	2017
3		Fluid Mechanics	S. Nagrathanam	Khanna Pub., Delhi.	1st Edition	2005
4		Fluid Mechanics	Garde-Mirajgaonkar	Nemchandand Bros., Roorkee.	8th Edition	2004
5		Fluid Mechanics	R.K.Bansal	Laxmi Pubication	10th Edition	2018
6	Reference Book	Fluid Mechanics	Streeter-McGraw-Hill	International Book Co., Auckland	9th Edition	2001
7		Fundamentals of Fluid Mechanics	Young, Okiishi, Huebesch	Wiley Publication.	8th Edition	2019

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	NPTEL	https:// https://nptel.ac.in/courses/105/103/105103096/	All
2	NPTEL	https://nptel.ac.in/courses/105/107/105107059/	All
3	Virtual Labs	https://www.vlab.co.in/broad-area-civil-engineering	Practical's
4	Gate tutor	https://www.gatetutor.in/	All

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 08 Experiments based on the curriculum.

Expt. No.	Type of Experiment	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Basic	Measurement of viscosity	Apply / Analyze(3,4)
2.		Study of Pressure Measuring Devices	Understand / Apply(2,3)
3		Stability of Floating Body	Analyze / Evaluate(4,5)

4		Hydrostatics Force on Flat Surfaces/Curved Surfaces	Apply / Analyze(3,4)
5		Verification of Bernoulli's Theorem	Apply / Analyze(3,4)
6		Venturimeter	Apply / Analyze(3,4)
7		Orifice meter	Apply / Analyze(3,4)
8		Flow Visualisation -Ideal Flow	Understand / Analyze
9		Laminar Flow	Understand / Apply / (2,3,4)Analyze

Examination Scheme and Guidelines:

CIE-I **20 Marks**	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
CIE-II **20 Marks**	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
ISE **10 Marks**	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE (Practical) **(25/50 Marks)**	Continuous Assessment **,**As per institute policy
ESE **50 Marks**	ESE-End Semester Examination (Sample)
	Que.1: MCQ"s based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 16 Marks)
	Que.3: based on Unit 1,2,3 (Carries 16 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 16 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 16 Marks)

Dr J J Magdum College of Engineering, Jaysingpur

DEPARTMENT OF CIVIL ENGINEERING

SY- B. Tech -SEM-IV

Course Name- Building Planning and Design

Course Details:

Class		SY B Tech		**Semester**		IV
Course Title		Building Planning and design		**Course Code** 01CEPCL210		Theory:
Prerequisites:						
Teaching scheme:		**Theory Hours:**	02			
		Credits:	02			
Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50			

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
PCC-01CEP218.01	To acquire knowledge of procedure to sanction a building proposal from the local town planning authority
PCC-01CEP218.02	to acquire knowledge of construction components with industry standard templates
PCC-01CEP218.03	To apply knowledge of building principles to develop a plan
PCC-01CEP218.04	Develop Construction drawings that will be released for execution (Working drawings)

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC-01CEP218.01	Understand various building components	02 Understand
PCC-01CEP218.02	Apply principles of planning and building regulations and guidelines to create building plans	03 Apply
PCC-01CEP218.03	study and plan all types of buildings.	02 Understand

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Components of building and cross sections:** 1.1Types of Footings: Isolated, Combined, Raft, Pile with Reinforcement details. 1.2Types of Staircases: design and drawing of dog-legged, Open Well, Bifurcated, quarter-turn, and fire escape with reinforcement details. 1.3 Openings: wooden Panelled door and window, other door types.	12	02 Understand
Unit-02	**Building byelaws and planning principles**: 2.1 Types of residential building, planning components of residential buildings, 2.2component's geometrical design based on ergonomics for residential building, 2.3Bye laws and NBC 2016 provisions for planning and services (lighting, ventilation, acoustics, plumbing, electrification, sustainability, firefighting)	12	03 Apply
Unit-03	**Public building** 2.1 Educational Buildings: Younger age range, Middle age range 2.2 Building for Health: Health centers, Hospitals 2.3 Assembly Buildings: Recreational halls, Cinema theatres, Restaurants, Hotels, Clubs 2.4 Business and Mercantile Buildings: Shops, Banks, Markets and malls	12	02 Understand

	2.5 Industrial Buildings: Factories, Workshops, Cold storages 2.6 Office Buildings: Administrative buildings, Corporate office 2.7 Buildings for Transportation: Bus stations, Railway / metro stations		

Text Books/Reference Books:

Sr. No	Book Type (Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text	Building Drawing	Shah, Kale, Patki	Tata McGraw-Hill	5	2017
2	Text	Civil Engineering Drawing	M. Chakraborty	M. CHAKRABORTI	12	2019
3	Reference	NBC 2016 volume I and II	NBC 2016	--	--	2016

Online References: Coursera/NPTEL/General websites etc)

Sr. No.	Website Name	URL	Units Covered

Examination Scheme and Guidelines :(Sample)

CIE-I 20 Marks	Examination of 20 marks based on Units 1, 2 should be conducted, and marks should be communicated to the Exam Cell.
CIE-I 20 Marks	Examination of 20 marks based on Unit 3 should be conducted, and marks should be communicated to the Exam Cell.
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
ESE 50 Marks	Que.1: Unit 1 (Carries 14 marks) Que.2: based on 2 (carries 14 marks) Que.3: Based on unit 1& 2 (carries residential building drawing for 14 marks) Que.4: based on Unit 3 (Carries 14 Marks) Que.5: based Unit 3 (Carries public building drawing for 14 marks)

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CIVIL ENGINEERING

SY- B.Tech -SEM-IV

Concrete Technology Laboratory

Course Details:

Class	SY		**Semester**	IV
Course Title	Concrete Technology Lab		**Course Code**	01CEPCP211
Prerequisites:		Basic Civil Engineering, Building Construction Materials		
Teaching scheme:	**Practical Hours:**	02 hrs/week	**Credits:**	01
Evaluation scheme				
Practical				**Total**
CIE		**ESE**		**100**
50		**50**		

Course Objectives:

The course aims to:

Sr. No.	Course Objectives
PCC- 01CEP215.01	Understand and evaluate the physical properties of cement, fine and course aggregate.
PCC- 01CEP215.02	Develop the ability to assess the workability of fresh concrete
PCC- 01CEP215.03	Evaluate the compressive strength of concrete specimens.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC- 01CEP215.01	Recognize the properties of cement and aggregates.	Remember
PCC- 01CEP215.02	Demonstrate the workability of fresh concrete slump cone and compaction factor test.	Apply
PCC- 01CEP215.03	Discuss the NDT for hardened concrete.	Understand
PCC- 01CEP215.04	Demonstrate compressive strength tests on concrete cubes (M20 or M30 grade)	Apply

Suggested List of Practical/Experiment for CIE/ESE:

Experiment Number	Type of Experiment (Basic /Design/Advanced/Mini/ Minor Projects/ Seminar/ Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Basic	To determine fineness of cement by Sieve analysis and/or Blaine's air permeability method.	Remember
2.	Basic	To determine the standard consistency of cement using Vicat's apparatus.	Remember
3.	Basic	To determine initial and final setting time of cement.	Remember
4.	Basic	Determination of soundness of cement by Le-Chatelier's apparatus and/or Auto Clave test.	Remember
5.	Basic	Determination of particle size distribution of fine, coarse and all in aggregate by sieve analysis (grading of aggregate).	Remember
6.	Basic	To determine flakiness and elongation index of coarse aggregates.	Remember
7.	Design	To determine workability of fresh concrete by using Slump cone.	Apply
8.	Design	To determine workability of fresh concrete by using Compaction Factor test	Apply
9.	Basic	Nondestructive test on concrete by: a. Rebound Hammer Test	Understand
10.	Design	Tests for compressive strength of concrete cubes for M20 or M30 (ACI 211.1-91, IS 10262- 2009 and IS 456 2000).	Apply

Examination Scheme and Guidelines: (Sample)

CIE (Practical) (50 Marks)	Continuous Assessment **,** As per institute policy
ESE (Practical) (50 Marks)	Oral examination based on listed experiments.

Dr. J. J. Magdum College of Engineering, Jaysingpur

CIVIL ENGINEERING
SY- B.Tech -SEM-IV

Fluid Mechanics Laboratory

Course Details:

Class	SY		**Semester**	IV
Course Title	Fluid Mechanics Lab		**Course Code**	01CEPCP212
Prerequisites:		Basic Civil Engineering, Building Construction Materials		
Teaching scheme:	**Practical Hours:**	02 hrs/week	**Credits:**	01
Evaluation scheme				
Practical				**Total**
CIE		**ESE**		**100**
50		**50**		

Course Objectives:

The course aims to:

Sr. No.	Course Objectives
01	To determine the viscosity of a given fluid using a viscometer and understand its temperature dependency.
02	To study and understand the working principles and applications of various pressure measurement devices such as manometers and pressure gauges.
03	To verify the conditions for the stability of a floating body and to determine the metacentric height.
04	To calculate the hydrostatic force and its point of application on immersed flat and curved surfaces.
05	To experimentally verify Bernoulli's theorem and demonstrate the relationship between pressure and velocity in a flowing fluid.
06	To determine the discharge of fluid through a pipe using a Venturimeter and compare theoretical and actual values.
07	To measure the flow rate of a fluid through an orifice meter and evaluate discharge coefficient.
08	To visualize and study the streamline patterns of ideal fluid flow around different geometries.
09	To observe and understand the characteristics of laminar flow and determine Reynolds number for flow classification.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
01	Determine the viscosity of a fluid and understand its variation with temperature.	Apply / Analyze
02	Understand the working of various pressure measuring devices such as manometers and gauges.	Understand / Apply

03	Verify the stability conditions of a floating body and determine the metacentric height.	Analyze / Evaluate
04	Calculate hydrostatic forces on flat and curved surfaces and determine the point of action.	Apply / Analyze
05	Experimentally verify Bernoulli's theorem and relate pressure, velocity, and elevation in fluid flow.	Apply / Analyze
06	Use a Venturimeter to measure fluid discharge and compare theoretical and actual values.	Apply / Analyze
07	Measure flow rate through an orifice meter and determine the discharge coefficient.	Apply / Analyze
08	Visualize ideal flow patterns and interpret streamline behavior around objects.	Understand / Analyze
09	Observe characteristics of laminar flow and calculate Reynolds number to classify flow regime.	Understand / Apply / Analyze

Online References:

Sr. No.	Website Name	URL	Content Covered
1	Virtual Labs	https://www.vlab.co.in/broad-area-civil-engineering	Practical's

Examination Scheme and Guidelines :(Sample)

CIE(Practical) (25/50Mark)	Continuous Assessment **,**As per institute policy

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 08 Experiments based on the curriculum.

Expt. No.	Type of Experiment	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	**Basic**	Measurement of viscosity	Apply / Analyze
2.		Study of Pressure Measuring Devices	Understand / Apply
3		Stability of Floating Body	Analyze / Evaluate
4		Hydrostatic Forces on Flat and Curved Surfaces	Apply / Analyze
5		Verification of Bernoulli's Theorem	Apply / Analyze
6		Venturimeter	Apply / Analyze
7		Orifice meter	Apply / Analyze
8		Flow Visualization – Ideal Flow	Understand / Analyze
9		Laminar Flow Study	Understand / Apply / Analyze

Dr J J Magdum College of Engineering, Jaysingpur
DEPARTMENT OF CIVIL ENGINEERING
SY- B. Tech -SEM-IV

Course Name: Computer Aided Building Planning and Design Lab

Course Details:

Class		SY B TECH		**Semester**		IV
Course Title		Computer aided building planning and design		**Course Code** 01CEPVSP213		Practical:
Prerequisites:						
Teaching scheme:				Practical hours		04
				credits		02
Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
				50		50

Course Objectives:

The course aims to:

Sr No.	Course Objectives
PCC-01CEP218.1	to draft components of building with industry standard templates
PCC-01CEP218.2	To apply knowledge of building principles to develop a plan
PCC-01CEP218.3	Develop Construction drawings that will be released for execution (Working drawings)

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC-01CEP218.01	To draw cross sections of various building components	02 Understand
PCC-01CEP218.02	Apply principles of planning, building regulations and guidelines to create all types of building plans	03 Apply
PCC-01CEP218.03	Demonstrate ability to use a computer-aided application for drafting Civil engineering components	02 Understand

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Suggested List of Practical/Experiment for CIE/ESE:

Minimum 10 Experiments based on the curriculum

Exp NO	**Type of Experiment (Basic/Design/Advanced/Mini/ Minor Projects/ Seminar/ Case Studies)**	**Experiment Title**	**Cognitive levels of attainment as per Bloom's Taxonomy**
1.	Basic	Cross section of 1. footing, 2. staircase, 3. door and windows	02 Understand
2.	Design	Developed plan of residential building	03 apply
3.	Design	Developed plan of public building (Any one)	03 apply
4.	Design	Working drawing 1. Electrification, 2. plumbing, 3. furniture, 4. foundation plan	03 apply

Examination Scheme and Guidelines:(Sample)

CIE (Practical) (50 Marks)	Continuous Assessment**,** As per institute policy

Dr J J Magdum College Of Engineering, Jaysingpur

CIVIL ENGINEERING
SY- B.Tech -SEM-IV
Course Name - Universal Human Values

Course Details:

Class	SY		**Semester**		III	
Course Title	Universal Human Values		**Course Code**		**Theory:** 01CEVEL214 Practical:	
Prerequisites:						
Teaching scheme:	**Theory Hours:**	1 Hr/ week	**Practical Hours:**	-	**Self-Study**	1 Hr/ week
	Credits:	1	**Credits:**	-	**Credits:**	1
Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
--	--	--	--	50	--	50

Course Objectives:

The course aims to:

Sr No.	Course Objectives
01	Appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
02	Development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
03	Highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Revised Bloom's Taxonomy
1ADVEL207.01	**Explain** the concepts of right understanding, happiness, and prosperity and their relevance to holistic development.	K^2
1ADVEL207.02	**Distinguish** between the needs of the Self and the Body and analyze their interrelationship for achieving harmony.	K^4
1ADVEL207.03	**Illustrate** the foundational values of trust and respect and **analyze** their role in ensuring harmony in relationships.	K^3, K^4

1ADVEL207.04	**Describe** the concept of harmony in nature and **interpret** co-existence among the four orders of nature.	K^2, K^4
1ADVEL207.05	**Apply** the principles of human values and ethics in real-life situations and **examine** their role in professional conduct.	K^3, K^4

Course Contents

Unit Number	Unit Title	Hours	Revised Bloom's Taxonomy
Unit-01	**Introduction to Value Education** Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations	3	K^2
Unit-02	**Harmony in the Human Being** Understanding Human being as the Co-existence of the Self and the Body, distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health	3	K^3
Unit-03	**Harmony in the Family and Society** Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human Order	3	K^4
Unit-04	**Harmony in the Nature/Existence** Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence	7	K^4
Unit-05	**Implications of the Holistic Understanding – a Look at Professional Ethics** Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Competence in Professional Ethics Holistic Technologies, Production Systems and Management Models-Typical Case Studies, Strategies for Transition towards Value-based Life and Profession	5	K^2

Text Books/Reference Books:

Sr. No	Book Type (Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text	The Textbook A Foundation Course in Human Values and Professional Ethics	R R Gaur, R Asthana, G P Bagaria,	Excel Books, New Delhi	2nd	2019
2	Text	The Teachers Manual for A Foundation	R R Gaur, R Asthana, G			

		Course in Human Values and Professional Ethics				
3	Reference	Fundamentals of Ethics for Scientists & Engineers	E G Seebauer & Robert L. Berry	Oxford University Press		2000

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	**You Tube**	https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw	ALL
2	**Website**	https://fdp-si.aicte-india.org/8dayUHV_download.php	ALL

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Evaluation Scheme:

CIE (50 Marks)	• Continuous Assessment, as per institute policy 25 Marks • MCQ (multiple choice questions) for 25 Marks can be conducted

Dr J J Magdum College Of Engineering, Jaysingpur

CIVIL ENGINEERING
SY- B.Tech -SEM-IV
Course Name -Engineering Management

Course Details:

Class	Second Year		**Semester**		IV	
Course Title	Engineering Management		**Course Code**		01CEEEL215	
					Practical: --	
Prerequisites:						
Teaching scheme:	**Theory Hours:**	2	**Practical Hours:**	--	**Tutorial Hours:**	--
	Credits:	02	**Credits:**	--	**Credits:**	--
Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
--	--	50	--	--	--	50

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
PCC-CEL218.01	**To introduce** the basic principles and importance of management and the foundational contributions of Henry Fayol.
PCC- CEL 218.02	**To familiarize** students with project management tools such as Bar Charts, CPM networks, and PERT analysis.
PCC- CEL 218.03	**To illustrate** the concepts of material management, including inventory control, EOQ, ABC analysis, and procurement processes.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	**Course Outcomes**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
PCC-CEL218.01	Understand the key functions of management in practical contexts	Understand
PCC- CEL218.02	Demonstrate understanding of decision-making processes and construct decision trees and CPM networks	Understand, Apply

PCC- CEL218.03	Develop and interpret project management tools such as Bar Charts, CPM, and PERT	Apply
PCC- CEL 218.04	Understand inventory control techniques like EOQ and ABC analysis, and understand procurement and stock processes	Understand

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Introduction to Management** a) Importance, Principles of Management (Henry Fayol) b) Functions of Management: Planning- Importance, Nature, Process Organizing – Types Staffing – Importance, Process Directing – Supervision, Co-ordination, Communication, Motivation, Leading Controlling – Importance, Techniques. c) Decision Making: Process, decision Tree (Concept Only)	06	Remember, Understand
Unit-02	**CPM** a)Bar Chart, Mile Stone Chart, CPM b)Development of CPM Network – Time Estimates, Floats, Critical Path. c)Network Compression, Resource Allocation- (Concept only), Network Updating	08	Understand , Apply
Unit-03	**PERT** a)PERT - Concept of Probability, Normal and Beta Distribution, Time Estimates, Slack, Probability of Project Completion b) Precedence Network: Concept only.	06	Understand , Apply
Unit-04	**Advances in Management:** a) Concept of work study and method study, ISO 9000 b) Site layout, Safety in construction - Personal protective equipment.	06	Understand , Apply

Text Books/Reference Books:

Sr. No	Book Type(Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text Book	Principles of Construction Management	Roy Pilcher	McGraw Hill India		
2	Reference book	The Management of Quality in Construction	John L. Ashford	E & F.N Spon, New York		1989
3	Reference book	Quality planning and Analysis	Juran Frank, J.M. and Gryna, F.M	Tata McGraw Hill		1982

Online References: Courser/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1			
2			

List of Assignments/Tutorials for ISE:

- Assignments/Tutorials based on the curriculum (Assignments on each unit).
- One session on Softwares used for Management

Examination Scheme and Guidelines :(Sample)

ISE Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE (Practical) (25/50 Marks)	Continuous Assessment **,**As per institute policy

Dr. J. J. Magdum College of Engineering, Jaysingpur

CIVIL Engineering

SY- B.Tech -SEM-IV

Course Name: Environmental Studies

Course Details:

Class:.	**S.Y. B. Tech**	**Semester: -**	**IV**
Course Title	**Environmental Studies**	**Course Code:**	**01CEVECL217**
Prerequisites: Basic Science Knowledge, Geography, General Awareness, Observation and Critical Thinking, Data Interpretation, Environmental Sensitivity and Responsibility and Ethical Thinking.			
Teaching scheme:	**Theory Hours:**	02	
	Credits:	02	

Evaluation scheme						
Theory				**Practical**		**Total**
T-I	**T-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	--	--	--	50

Course Objectives:

The course aims to:

Sr No.	Course Objectives
PCC-CEL217.01	**To introduce the scope, importance, and multidisciplinary nature** of Environmental Studies, helping students understand the relationship between humans and the environment.
PCC-CEL217.02	**To explore various types of natural resources,** their uses, associated problems, and the importance of sustainable management.
PCC-CEL217.03	**To provide foundational knowledge on ecosystems and biodiversity**, highlighting their structure, function, and significance, and to raise awareness about threats to biodiversity and conservation strategies.
PCC-CEL217.04	**To examine different types of environmental pollution,** their causes, effects, and control measures, and to understand major social issues and policies related to environmental protection.
PCC-CEL217.05	**To promote hands-on learning through environmental field projects,** enabling students to observe, analyze, and report on real-life environmental issues and propose sustainable solutions.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
PCC-CEL217.01	**1.1** Explain the scope and significance of Environmental Studies and demonstrate an understanding of the interconnectedness between human activities and the environment	Understand
PCC-CEL217.02	**1.2** Identify various natural resources, describe their uses and associated challenges, and analyze the need for sustainable resource management practices.	Analysis
PCC-CEL217.03	**1.3** Describe the structure and functions of ecosystems, classify biodiversity types, and evaluate threats to biodiversity along with conservation strategies.	Evaluate
PCC-CEL217.04	**1.4** Analyze the sources, effects, and control measures of major types of pollution and assess the role of environmental policies and social movements in addressing environmental issues.	Analyze
PCC-CEL217.05	**1.5** Design and execute a basic environmental field project, involving data collection, interpretation, and presentation of findings to propose feasible environmental solutions.	Create

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Unit Title: Nature of Environmental Studies.** **1.6** Definition, scope and importance of Environment. Structure of Environment. **1.7** Need for public awareness. Sustainable Development.	**02**	Remembering, Understanding
	Unit Title: Natural Resources and Associated Problems **1.1** Introduction, types of Natural Resources. **Forest resources:** Use and over exploitation, deforestation, Dams: Benefits and its effects. **1.2** **Water resources:** Use and over - utilization of surface and ground		

Unit-02	Water, Floods, drought. **1.3 Mineral resources:** Usage and exploitation, environmental effects of extracting and using mineral resources. Renewable Energy Resources. **1.4 Food Resources :** World Food Problems, Changes caused by Modern Agriculture Practices (Fertilizers ,Pesticides Problems) **1.5 Land resources:** Land as a resource, Man induced landslides, soil erosion Role of an individual in conservation of natural resources.	**05**	Remembering, Understanding, Analyzing
Unit-03	**Unit Title: Ecosystem /Ecology** **1.1** Introduction of Ecosystems, Structure and function of an ecosystem. Producers, consumers and decomposers. **1.2** Food chains, food webs. Energy flow in the ecosystem. **1.3** Ecological pyramids.	**03**	Remembering, Understanding
Unit-04	**Unit Title: Biodiversity & Its Conservation** **1.1** Introduction & Types of Biodiversity (Genetic, Species and Ecosystem) **1.2** Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic, National values, India as a mega-diversity nation **1.3** Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, Hot-spots of biodiversity. **1.4** Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity	**04**	Remembering, Understanding, Evaluating
Unit-05	**Unit Title: Environmental Pollution, Social Issues & Environmental** **1.1** Definition of Environmental Pollution, Causes, Effects and Control measures of Air Pollution. **1.2** Water Pollution, Marine Pollution, Soil Noise Pollution. **1.3** Global Warming, Acid Rain. Ozone layer Depletion, **1.4** Solid waste Management (causes, Effects and Control measures of Urban & Industrial waste) Role of an individual in prevention of pollution **1.5** Disaster management: Floods, Earthquake, landslides.	**05**	Remembering, Understanding, Applying

Unit-06	**Environmental Field Project – Key Activities:** **Topic Selection:** Choose a relevant environmental issue (e.g., water pollution, waste management, biodiversity, air quality). **Site Visit / Field Observation:** Visit a local area such as a forest, lake, industrial site, park, landfill, or village. Observe and document environmental conditions. **Data Collection:** Use surveys, interviews, sampling, photography, and GPS mapping. Collect data on pollution levels, species diversity, waste generation, etc. **Interaction with Stakeholders:** Talk to local residents, authorities, farmers, workers, or NGOs to gather insights. **Data Analysis:** Interpret findings using charts, graphs, and tables. Identify patterns, problems, and possible causes. **Solution-Oriented Approach:** Suggest practical, sustainable, and low-cost solutions or improvements. **Report Preparation:** Compile observations, analysis, and solutions in a structured report. Include photos, maps, and references. **Presentation / Viva:** Present the findings to classmates or faculty. Answer questions and reflect on learning outcomes.	**05**	Applying, Analyzing, Evaluating, Creating

Text Books/Reference Books:

Sr. No	Book Type	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
01	Text Books	Textbook of Environmental Studies for Undergraduate Courses	Erach Bharucha	Orient BlackSwan	2nd Edition	2013
02		Environmental Studies	R. Rajagopalan	Oxford University Press	3rd Edition	2016
03		Environmental Science: Toward a Sustainable Future	Richard T. Wright, Dorothy F. Boorse	Pearson Education	13th Edition	2021
04		Principles of Environmental Science: Inquiry and Applications	William P. Cunningham, Mary Ann Cunningham	McGraw Hill Education	9th Edition	2020
05		Environmental Studies	Benny Joseph	McGraw Hill Education	3rd Edition	2017
06		Environment: Problems and Solutions	D.K. Asthana, Meera Asthana	S. Chand Publishing	5th Revised Edition	2018
07		Environmental Science	G. Tyler Miller Jr., Scott Spoolman	Cengage Learning	16th Edition	2020
08		Fundamentals of Environmental Studies	S. Arora	Kalyani Publishers	1st Edition	2015
09		Environmental Studies	Anubha Kaushik, C.P. Kaushik	New Age International Publishers	5th Edition	2019
10		Environmental Studies	Dr.P.D.Raut	Shivaji University,Kolhapur	6th Edition	2014
11	Reference Books	Environmental Chemistry	A.K. De	New Age International Publishers	9th Edition	2018
12		Ecology and Environment	P.D. Sharma	Rastogi Publications	Revised Edition	2020
13		Introduction to Environmental Engineering and Science	Gilbert M. Masters, Wendell P. Ela	Pearson Education	3rd Edition	2013
14		Environmental Pollution Control Engineering	C.S.Rao	New Age International Publishers	3rd Edition	2007
15		Environmental Management	Dr.S.N.Chatterjee	Katson Books	Revised Edition	2015

Online References: Coursera /NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
01	Ministry of Environment, Forest and Climate Change (MoEFCC), Govt. of India	https://moef.gov.in	Units 2, 4, 5 (Natural resources, Policies, Field-based data)
02	ENVIS – Environmental Information System	http://envis.frlht.org	Units 1, 3 (Biodiversity, Environment basics)
03	United Nations Environment Programme (UNEP)	https://www.unep.org	Units 3, 4 (Global pollution, conservation, sustainability)
04	Centre for Science and Environment (CSE), India	https://www.cseindia.org	Units 2, 4, 5 (Pollution, Environmental laws, Water & air)
05	National Biodiversity Authority (NBA), India	https://nbaindia.org	Unit 3 (Biodiversity, Conservation policies)
06	India Biodiversity Portal	https://indiabiodiversity.org	Unit 3, 5 (Species data, Field projects)
07	Sustainable Development Goals – UN	https://sdgs.un.org/goals	Unit 1, 4 (Global sustainability, Social issues)
08	Pollution Control Boards (CPCB/SPCBs)	https://cpcb.nic.in	Unit 4 (Pollution types, standards, control)

List of Environmental Field project Report (ISE) :

Sr. No.	Name of Subject
01	Survey of Local Biodiversity (Flora and Fauna)
02	Water Quality Assessment of Nearby River/Lake
03	Study of Noise Pollution Levels in Urban Areas
04	Air Pollution Monitoring Near Traffic Zones
058	Study of Noise Pollution Levels in Urban Areas
06	Composting Organic Waste at Institutional Level
07	Awareness Campaign on Plastic Waste Reduction
08	Mapping and Survey of Local Water Bodies
09	Tree Plantation Drive and Carbon Sequestration Estimation
10	Study of Medicinal Plants in the Local Area
11	Rainwater Harvesting Feasibility Study
12	Study of Energy Consumption in Campus/Community
13	E-Waste Collection and Management Survey
14	Soil Quality Analysis from Agricultural Fields
15	Visit and Report on a Wildlife Sanctuary/National Park
16	Study of Local Climate Change Indicators
17	Field Study of a Wetland Ecosystem
18	Household Survey on Environmental Awareness
19	Analysis of Groundwater Quality in Different Areas
20	Eco-Friendly Lifestyle Practices in Community
21	Study of Mangrove or Coastal Ecosystem (if applicable
22	Environmental Impact Assessment (EIA) of a Small Construction Site
23	Study of Local Transportation and Its Carbon Footprint
24	Biodiversity Index Calculation in a Green Campus
25	Wastewater Treatment Plant Visit and Process Analysis

26	Analysis of Effects of Deforestation in Nearby Area
27	Survey on Use of Renewable Energy in Households
28	Green Audit of School/College Campus
29	Documentation of Traditional Environmental Knowledge
30	Community-Based River or Lake Cleaning Drive

Evaluation Scheme and Guidelines:

T-I **20 Marks**	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. One question of 05 Marks based on MCQ‟s compulsory.
T-II **20 Marks**	Examination of 20 marks based on Units 4,and 5 should be conducted, and marks should be communicated to the Exam Cell. One question of 05 Marks based on MCQ‟s compulsory.
ISE **10 Marks**	ISE-Continuous Assessment of Environmental Field Project based on Unit 1-5.