

CO-PO Mapping

3rd SEMESTER

CIVIL ENGINEERING MATERIAL & CONSTRUCTION

Course Outcomes (COs)

CO1 :Student are able to Select appropriate material for construction of building.

CO2 : Student are able to Define the engineering principles relevant to civil engineering materials.

CO3 : Students are able to understand the explore building drawing as a way of discovering and developing ideas for designing residential, commercial and public buildings.

CO4 :Students will be able to identify the factors to be considered in construction of buildings and develop the construction practices and techniques.

CO5 : Students will be able to understand various precautionary measures pertaining to construction materials.

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
1.	2	2	1	3	2	2	2	2	3	2	2
2.	3	2	2	2	1	3	2	2	3	2	2
3.	3	3	2	2	2	2	2	2	3	2	3
4.	3	3	2	2	2	2	2	1	3	2	3
5.	2	1	2	2	2	2	1	2	1	2	1
Gravity of contribution	90%	77%	60%	77%	60%	76%	60%	61%	88%	70%	70%
Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)											
	1 – Slightly	2 – Moderately		3 – Substantive							
		PSO1		PSO2		PSO3					

CO1	2	2	2
CO2	1	2	2
CO3	1	2	2
CO4	2	1	3
CO5	2	2	2

MECHANICS OF SOLID

Course Outcomes (COs)

CO1: To evaluate the strength of various structural elements internal forces such as compression, tension, shear, bending and torsion.

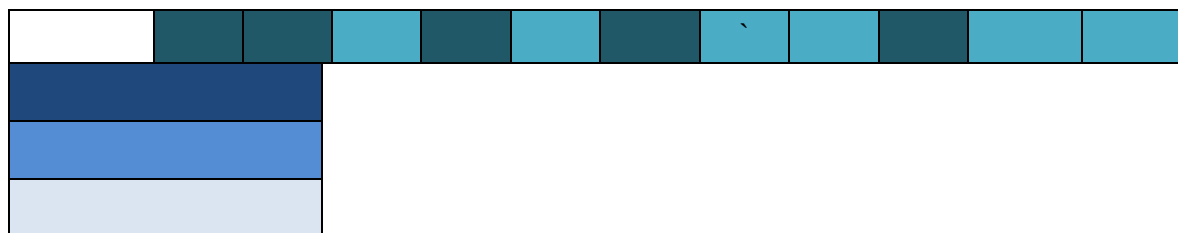
CO2: To suggest suitable material from among the available in the field of construction and manufacturing.

CO3: To evaluate the behavior and strength of structural elements under the action of compound stress and thus understand failure concepts.

CO4: To understand the basic concept of analysis and design of members subjected to torsion.

CO5: To understand the basic concept of analysis and design of structural elements such as columns and struts.

Course Outcomes (CO)											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO 7	PO 8	PO 9	PO10	PO11
1.	3	2	1	3	2	2	2	2	3	2	2
2.	2	3	2	2	1	3	3	2	3	2	1
3.	3	2	3	2	2	2	2	2	2	2	2
4.	3	2	2	3	2	2	2	1	3	2	2
5.	1	2	2	2	2	2	1	2	1	2	2
Gravity of contribution	80%	73%	66%	80%	60%	73%	66%	60%	80%	66%	60%



Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)			
1 – Slightly	2 – Moderately	3 – Substantive	
	PSO1	PSO2	PSO3
CO1	2	2	1
CO2	3	2	3
CO3	2	3	2
CO4	1	1	3
CO5	2	2	1

FLUID MECHANICS & HYDRAULIC MACHINES

Course Outcomes(COs)

CO1 :Student are able to understand and analyze the fluid characteristics like density , specific gravity , viscosity , surface tension and their utility in fluid science.

CO2 :Student are able to understand hydrostatic and dynamic pressures at various conditions ,understand different types of pressure measuring devices and identify application potential.

CO3 :Students are able to understand the concept of fluid flow in one ,two and three dimension ,principles of discharge ,energy and momentum as well as understand the working principle of various discharge measuring devices and their applications.

CO4 : Students will be able to apply their knowledge of fluid mechanics in addressing problems of open channel flow by understanding cross sections, hydraulic depth, hydrostatic pressure distribution and Manning's law and identifying future course of development in open channel flow.

CO5 : Students will be able to understand and address problems pertain to design, construction as well as efficient working of various types of hydraulics structures and machines by using dimensional analysis and model studies. Students will also have knowledge in Impact of Jet on vanes which is a base for analysis and design of turbo machines as well as knowledge of hydraulic machines (pumps and turbines)

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
6.	2	2	1	3	2	2	2	2	3	2	2
7.	3	2	2	2	1	3	2	2	3	2	2
8.	3	3	2	2	2	2	2	2	3	2	3
9.	3	3	2	2	2	2	2	1	3	2	3
10.	2	1	2	2	2	2	1	2	1	2	1
Gravity of contribution	90%	77%	60%	77%	60%	76%	60%	61%	88%	70%	70%

	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	1	2	2

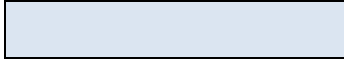
C03	1	2	2
C04	2	1	3
C05	2	2	2

CONCRETE TECHNOLOGY

Course Outcomes(COs)

1. Get the detail knowledge of various building materials used in construction.
2. Clear the concept of fresh and hardened properties of concrete.
3. Get the knowledge to design the concrete mix and find the proportional quantity by using IS code.
4. Develop the knowledge about the technique behind construction work.
5. Well understanding of the mechanism of construction by using different equipments.

Course Outcomes (CO)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
11.	3	1	1	1	1	3	3	3	3	1	3
12.	3	1	2	2	2	2	1	1	2	1	3
13.	3	2	2	2	1	2	1	1	2	1	2
14.	3	2	1	2	2	2	1	2	3	2	2
15.	3	1	2	1	1	2	2	1	2	1	2
Gravity of contribution	100 %	44%	55%	50%	50%	77%	55%	55%	83%	39%	83%



Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)				
	1 – Slightly	2 – Moderately	3 – Substantive	
	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	1
CO2	3	2	2	1
CO3	2	3	1	1
CO4	3	3	2	1
CO5	3	3	1	1

FLUID MECHANICS &HYDRAULIC MACHINES LAB

COURSE OUTCOMES

On completion of this course, the students will be able to,

- CO1. Determine the impact of jets in flow devices .
- CO2. Analyze the equilibrium conditions of floating bodies
- CO3. Apply Bernoulli equation for calibration of flow measuring devices.
- CO3. Determine the performance characteristics of turbines.
- CO4. Determine the performance characteristics of pumps.

SURVEY FIELD WORK-LAB

COURSE OUTCOMES

On completion of this course, the students will be able to,

- CO1. Apply the principle of surveying for Civil engineering Application.
- CO2. Calculation of areas, drawing plans and contour maps using different measuring equipment at field level
- CO3. To prepare topographical map and contour map on an area.
- CO4. To relate theoretical knowledge of surveying to resolve real field problems.
- CO5. To learn to work as team, ethics, and prepare technical reports of surveying.

TRANSPORTATION ENGINEERING

CO5: Students will be able to understand regarding the testing of construction materials used in highway such as Soil, Stone Aggregate, Bitumen, and Marshal Stability Test etc.

Course Outcomes (CO)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
16.	2	2	1	2	2	1	3	2	1	3	2
17.	1	3	1	1	3	1	2	3	1	2	2
18.	2	3	2	2	3	2	2	3	2	2	2
19.	3	3	1	3	3	1	1	3	1	-	1
20.	3	1	3	3	1	3	-	1	3	3	1
Gravity of contribution	73%	80%	53%	73%	80%	53%	67%	80%	53%	67%	53%
							,				

	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	3	2
CO3	3	2	1
CO4	2	3	2
CO5	2	2	3

STRUCTURAL ANALYSIS –I

Course Outcomes (COs)

At the end of this course:

CO1: To provide a holistic development of the students for the courses in sector of Structural Analysis

CO2: To present the foundations of many basic engineering concepts related to Analysis of structures

CO3: To give an experience for implementation of analysis concepts which are applied in the field of structural design.

CO4: To involve in the application of scientific and technological principles of Analysis

CO5: To enable the students realize the real-life behavior of Civil Engineering structures and to make the students familiar with latest computational techniques and software used for structural analysis.

Course Outcomes (CO)											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO 7	PO 8	PO 9	PO10	PO11 2
21.	3	2	1	3	2	2	2	2	3	2	2
22.	2	3	2	2	1	3	3	2	3	2	1
23.	3	2	3	2	2	2	2	2	2	2	2
24.	3	2	2	3	2	2	2	1	3	2	2

WATER & WASTE WATER ENGINEERING

Course Outcomes(COs)

At the end of this course:

CO1 : Student will be able to clarify and identify raw water as per the standard practices as well as the impurities present in water used for domestic, different types of industrial as well as construction works. They may be able to differentiate the parameters that characterize the constituents in potable water and wastewater by using fundamental water chemistry.

CO2: Student will be able to apply appropriate treatment to raw water i.e. surface water/ground water useful for domestic as well as drinking purpose, industries liquid waste and reuse of water.

CO3: Student will be able to calculate and recommend the pipe- network distribution for water supply and Sewage disposal effectively.

CO4: Students will be able to summarize the quality parameters typically used to differentiate wastewater and judge the different classes of treated wastewater.

CO5: Students will be able to describe various types of process units used for preliminary, primary and secondary treatment and choose a treatment system for a given wastewater to achieve the target level of treatment, specified end use which will conduct basic design of treatment units.

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of contrib ution	67%	77%	61%	78%	61%	50%	67%	78%	61%	72%	61%

Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)				
	1 – Slightly	2 – Moderately	3 – Substantive	
	PSO1	PSO2	PSO3	PSO4
CO1	2	2	2	1
CO2	1	2	2	2
CO3	2	1	2	2
CO4	2	1	3	2
CO5	2	2	2	2

SURVEYING

Course Outcomes (COs)

At the end of this course:

CO1: Student are able to understand the basic principles of surveying for vertical, horizontal, linear and angular measurements to arrive at solutions to basic surveying problems.

CO2: Student are able to understand levelling (auto level,theodolite) and using it in field of construction. Further draw contours to represent 3D data on plane figures.

CO3: Students are able to understand capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments.

CO4:Students will be able to apply their knowledge of Survey in design and implement different types of curves of alignment, and applying surveying techniques to align highway and railway curves.

CO5:Students will be able to analyze type of survey operation required for problem solving in field to perform.

Course Outcom es (CO)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO 7	PO 8	PO 9	PO10	PO11
30.	2	3	1	3	2	2	2	2	3	2	2
31.	3	2	2	2	1	3	3	2	3	2	2
32.	3	3	3	2	2	2	2	2	2	2	3
33.	3	3	2	3	2	2	2	1	3	2	3
34.	2	1	2	2	2	2	1	2	1	2	1
Gravity of contribution	86%	80%	66%	80%	60%	73%	66%	60%	80%	66%	73%

Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)			
1 – Slightly	2 – Moderately	3 – Substantive	
	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	1	3	1
CO3	3	2	2
CO4	2	1	3
CO5	2	2	2

TRANSPORTATION ENGINEERING LABORATORY

COURSE OUTCOMES

On completion of this course, the students will be able to,

CO1. Determine pH, Electrical Conductivity and turbidity of water sample

CO2. Determine the physical characteristics of water

CO3. Determine the chemical characteristics of water

CO4. Determine the biological characteristics of water

CO5. Determine DO,BOD of water

CONCRETE TECHNOLOGY-LAB

COURSE OUTCOMES

On completion of this course, the students will be able to,

CO1. Identify the functional role of different materials of highway engineering.

CO2. Test the existing highway material used for construction of pavement.

CO3. Examine the quality of that material used in existing highway.

CO4. Apply this knowledge to mix design philosophy to get different suitable B.M. &S.D.B.C. Mix.

CO5. Student shall learn to work in a team to achieve the objective.

ENVIRONMENTAL ENGINEERING LAB

COURSE OUTCOMES

On completion of this course, the students will be able to,

CO1. Determine pH, Electrical Conductivity and turbidity of water sample

CO2. Determine the physical characteristics of water

CO3. Determine the chemical characteristics of water

CO4. Determine the biological characteristics of water

CO5. Determine DO,BOD of water

5TH SEMESTER

Environmental Geo-Techniques

Course Outcomes(COs)

At the end of this course:

CO1: Understand basic knowledge of concepts and principles of Geo-environmental Engineering.

CO2: in capable of selecting site for safe disposal of waste.

CO3: Aware of soil stabilization by utilizing solid waste.

CO4: Assess the contamination in the soil and to select suitable remediation methods based on contamination.

CO5: Prepare the suitable disposal system for particular waste.

Course Outcomes

(CO)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	1	2	1	1	1	1	3	1	3	3
CO2	3	1	3	3	2	1	1	3	3	3	3
CO3	3	1	2	3	2	1	1	3	3	3	3
CO4	2	1	3	3	3	1	1	3	3	3	3
CO5	3	1	3	2	3	1	1	3	3	3	3
Gravity of contribution	87%	34%	87%	80%	74%	34%	34%	100%	87%	100%	100%

	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	2	3
CO3	2	2	3
CO4	2	2	3
CO5	2	3	2

SOLID WASTE MANAGEMENT

Course Outcomes(COs)

On completion of the course, the student is able to:

CO1: Understand the nature and characteristics of solid wastes and the regulatory requirements regarding solid waste management.

CO2: Explain the segregation of solid waste and the onsite storage methods.

CO3: Explain the various transfer methods and to know the site condition for the transfer station.

CO4 :Select appropriate methods for processing and disposal of solid and hazardous wastes, taking into account the impact of the solutions in a sustainability context.

CO5: Selection of appropriate disposal methods and its handling in an efficient manner

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DESIGN OF CONCRETE STRUCTURES

Course Outcomes(COs)

After successful completion of the course students are able to

CO1: Recall basic concepts of reinforced concrete design, material stress–strain curves, and safety factors to know the properties of concrete structure and the concept of Stress block parameters and use the design concept of working stress method, limit state method for designing different structural components like beams and columns

CO2: Solve singly reinforced, doubly reinforced, T, and L beam sections for obtaining the reinforcement details in load bearing members.

CO3: Develop the design concept of one way and two-way Slabs and continuous slabs for design the different spans and loading condition.

CO4: Understand the concepts of short and long columns to evaluate the design strength of vertical members and obtain reinforcement details.

C05: Develop concept for the design of various type of retaining walls .

Course Outcomes (CO)											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO 7	PO 8	PO 9	PO1 0	PO11
1.	2	2	1	3	2	2	2	0	3	2	2
2.	3	3	2	2	1	3	2	0	3	2	2
3.	3	3	2	2	2	2	2	0	3	2	3
4.	3	3	2	2	2	2	2	0	3	2	3
5.	2	1	2	2	2	2	1	0	1	2	1
Gravity of contribution	83%	77%	61%	72%	55%	71%	55%	0%	78 %	66%	66%

Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)			
	1 – Slightly	2 – Moderately	3 – Substantive
	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	1	2	2
CO3	1	2	2
CO4	2	1	3
CO5	2	2	2

STRUCTURAL ANALYSIS-II

Course Outcomes (COs)

At the end of this course:

CO1: Analysis of indeterminate structure using slope-deflection method, moment distribution method and kani's method.

CO2: Analysis of indeterminate arch to finding out of the different stress resultant factors like moment and reaction at support, shear force, normal thrust and radial shear at different sections.

CO3: Computer-automated analysis of complex structures by Matrix Method using stiffness method which is suitable statically indeterminate structures.

CO4: Solving structural design problems by flexibility matrix method suitable to kinematically indeterminate structures.

CO5: How to find the shape factors and also formation of plastic hinge in a structure.

Course Outcomes (CO)											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO 7	PO 8	PO 9	PO10	PO11
1.	2	3	1	2	2	2	2	2	3	2	2
2.	2	2	2	1	2	3	3	2	3	2	2
3.	3	3	3	2	2	2	2	2	2	2	3
4.	3	3	2	2	2	2	2	1	3	2	3
5.	1	1	2	2	2	2	1	2	1	2	1
Gravity of contribution	73%	80%	66%	60%	66%	73%	66%	60%	80%	66%	73%

DESIGN OF CONCRETE STRUCTURE PRACTICES

COURSE OUTCOMES:

On completion of this course, the students will be able to,

CO1: know how to find the properties of different ingredients of concrete.

CO2: Design concrete mix as per Indian standard for different types of concrete.

CO3: understand to calculate the dead load and live load of different structural member.

CO4: Develop concept for the design of various RCC member.

CO5: know the detailing of different structural member

FOUNDATION ENGINEERING

Course Outcomes(COs)

At the end of this course:

CO1 Graduate will demonstrate an ability to plan and execute a detailed site investigation to select geotechnical design parameters and type of foundation

CO2 Graduate will demonstrate an ability to design shallow foundations, its component or process as per the needs and specifications.

CO3 Graduate will demonstrate an ability to design combined footings and raft foundations, its component or process as per the needs and specifications

CO4 Graduate will demonstrate an ability to design deep foundations, its component or process as per the needs and specifications.

CO5 Graduate will demonstrate an ability to design retaining walls, its component or process as per the needs and specifications.

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	3	3	3	1	1	1	2	1	1	3
CO2	2	3	3	3	1	1	1	2	1	2	3

CO3	2	3	3	3	1	1	1	2	1	1	3
CO4	3	3	3	3	1	1	1	1	1	1	3
CO5	3	3	3	3	1	1	1	2	1	1	3
Gravity of contribution	80%	100%	100%	100%	34%	34%	34%	60%	34%	40%	100%

	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	3	2
CO3	2	3	2
CO4	2	3	3
CO5	2	3	3

Water Power Engineering

Course Outcomes(COs)

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

CO1: Understand the need for hydel energy and estimate the power generation capacity.

CO2: Design different components and their arrangement for hydel plants of both run off river plants and pumped storage plants.

CO3: Design different components of water conveyance system for power plants

CO4: Design various components of different types of turbines

CO5 : Perform planning of a power house

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	3	2	2	3	2	1	1	1	1	3
CO2	3	2	3	2	3	2	1	1	1	1	3
CO3	3	3	2	2	2	2	1	2	1	1	3
CO4	2	3	3	2	2	1	1	1	1	1	3
CO5	3	3	2	2	2	1	1	1	1	1	3
Gravity of contribution	93	93	80	67	80	54	34	40	34	34	100

Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)			
	1 – Slightly	2 – Moderately	3 – Substantive
	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	1	2	2
CO3	1	2	2
CO4	2	1	3
CO5	2	2	2

Ground Water Hydrology

Course Outcomes(COs)

At the end of this course, student is able to :

CO1 Define the groundwater system basic, types of aquifers, aquifer parameters, movement and its potential for confined and unconfined aquifers

CO2 Apply the knowledge of groundwater flow in steady and unsteady flow characteristics of well hydraulics

CO3 Explain the concept of groundwater model development and data base management for groundwater management

CO4 Apply the creative and innovative technique on conservation of groundwater and describe the importance of artificial recharge and groundwater quality concepts

CO5 Apply remote sensing techniques and other methodologies for surface and subsurface exploration.

Course Outcomes (CO)											
	PO 1	PO2	PO3	PO4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO12
CO1	3	3	3	-	1	1	2	3	-	-	2
CO2	3	3	3	-	2	2	2	3	-	-	2
CO3	2	2	3	-	3	2	2	2	-	3	2
CO4	2	2	2	-	3	3	2	3	-	3	3
CO5	2	2	2	3	3	3	2	3	3	3	3
Gravity of contribution in %	80	80	85	20	80	74	70	93	20	60	80

	Relationship of Course Outcomes (CO) to Program Specific Outcomes (PSO)		
	1 – Slightly	2 – Moderately	3 – Substantive
CO \ PSO	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	3	3
CO3	3	3	3
CO4	3	3	3
CO5	3	3	2

ADVANCE SURVEYING

Course Outcomes (COs)

At the end of this course:

CO1: Student is able to understand and analyze modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.

CO2: Student is able to understand regarding geodetic data to process and perform analysis for survey problems with the use of electronic instruments;

CO3: Students are able to understand regarding design and implementation of different types of curves for deviating type of alignments.

CO4: Students will be able to apply their knowledge about geometric principles arrive at surveying problems

CO5: Students will be able to understand regarding design of types of curves for deviating type of alignments.

Course Outcomes (CO)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
40.	2	1	2	1	1	1	2	3	2	3	2
41.	3	1	3	3	2	1	1	3	3	3	1
42.	2	1	2	2	3	1	2	3	3	3	1
43.	2	1	3	3	2	1	1	3	2	3	2
44.	3	1	3	2	3	1	3	3	3	3	1
Gravity of contribution	80%	34%	87%	80%	74%	34%	60%	100%	86%	100%	100%
							,				

	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	3
CO3	2	3	2
CO4	3	2	3
CO5	2	3	3

IRRIGATION ENGINEERING & HYDRAULIC STRUCTURES

Course Outcomes(COs)

At the end of this course , the student is able to

CO1 Describe the national water policy structure and soil plant water characteristics

CO2 Describe the basics of requirements and estimation of crop water

CO3 Apply the concepts of Irrigation water management, water user association for participatory irrigation management

CO4 Design the components of irrigation canal includes canal drops and CD works ,Diversion Head Works and understand the concept of various seepage theories .

CO5 Design the various types of hydraulic structure includes dams, spillways and dissipaters

Course Outcomes (CO)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	3	2	2	3	2	1	1	1	1	3
CO2	3	2	3	2	3	2	1	1	1	1	3
CO3	3	3	2	2	2	2	1	2	1	1	3
CO4	2	3	3	2	2	1	1	1	1	1	3
CO5	3	3	2	2	2	1	1	1	1	1	3
Gravity of contribution	93	93	80	67	80	54	34	40	34	34	100

	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	2	3
CO3	2	2	3
CO4	2	2	3
CO5	2	3	2

ESTIMATION AND PROFESSIONAL PRACTICE

Course Outcomes (COs)

At the end of this course:

CO1: Student is able to understand about the preparation of specification for materials of construction and its items of works.

CO2: Student is able to understand detailed estimation of material consumption and abstracts for entire construction projects.

CO3: Students are able to understand the rates for different items of works including labour and material.

CO4: Students will be able to interpret fundamental concepts of valuation.

CO5: Students will be able to understand regarding identification of various legal issues related to construction and application for estimation of buildings.

Course Outcomes (CO)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
45.	2	2	1	2	2	1	3	2	1	3	2
46.	1	3	1	1	3	1	2	3	1	2	2

CO4: Solve Numerical on the design of laterally supported and unsupported beam

CO5: Solve Numerical on the design of plate girder and gantry girder.

HYDRAULIC STRUCTURES DESIGN PRACTICE

COURSE OUTCOMES

On completion of the course, the student is expected to be able to

CO1 Design the components of irrigation canal includes canal drops

CO2 Design of Diversion Head works

CO3 Design the components of CD works

CO4 Design and detailing of Gravity and Earth dams

CO5 Design and detailing of other hydraulic structures such as, spillways and falls

Course Outcomes (CO)	Relationship of Course Outcomes (CO) to Program Outcomes (PO)											
	1 – Slightly				2 – Moderately				3 – Substantive			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	3	2	1	1	1	1	2	2
CO2	2	2	3	2	3	2	1	1	1	1	2	3
CO3	3	3	2	2	2	2	1	2	1	1	2	2
CO4	2	3	3	2	2	1	1	1	1	1	2	3
CO5	2	3	2	2	2	1	1	1	1	1	1	2
Gravity of contribution	75	93	80	67	80	54	34	40	34	34	60	80

	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	3	2	3
CO3	2	3	2
CO4	2	2	3
CO5	2	3	2

7TH SEMESTER

Entrepreneurship Development

COURSE OUTCOMES:

After reading this subject, students will be able to:

CO1	Know the various concepts related to entrepreneurship and intrapreneurship and know their classifications.
CO2	Able to identify opportunities in the market according to the entrepreneurial environments.
CO3	Get knowledge about the capital flow and its management to start up and run a business.
CO4	Identify the shortfalls and causes of business failures.
CO5	Get knowledge about different policies made by Government and other regulatory authorities.

Sl No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	1	-	2	1	3	1	1	3

CO2	1	-	2	3	3	3	2	3	3	1	3
CO3	-	-	-	1	3	3	-	1	1	1	3
CO4	1	-	2	3	3	3	2	3	3	1	3
CO5	-	-	-	-	-	3	3	3	1	1	3
Avg.	1	-	2	2	3	2.8	2	2.6	1.8	1	3

Sl. No	PSO1	PSO2
CO1	-	1
CO2	-	2
CO3	-	2
CO4	-	2
CO5	-	2

**PAVEMENT
DESIGN**

Course Outcomes (COs)

At the end of this course:

CO1: Student is able to understand the properties and various tests for the subgrade soil, road aggregates and the bitumen.

CO2: Student is able to understand regarding the Performance of Bituminous Mix design and understand the fatigue behaviors of bituminous mixes.

CO3: Students are able to understand the proportions of ingredients required for the mix design of both asphalt mixtures and cement concrete

CO4: Students will be able to select appropriate asphalt binder for construction of a flexible pavement depending upon the traffic and climatic condition.

CO5: Students will be able to understand regarding stresses, strains and deflections in rigid and flexible pavements; traffic loading; and material characterization, structural and functions failure and the evaluation of pavements.

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
50.	3	2	3	1	2	1	1	1	1	1	2
51.	3	2	3	2	3	3	1	1	1	1	3
52.	3	2	3	2	3	3	1	1	1	1	3
53.	3	2	3	2	3	3	1	1	1	-	3
54.	3	2	3	2	3	3	1	1	1	1	3

CO5: Students will be able to understand regarding the planning & design of harbor and other costal structures.

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
55.	3	2	3	1	2	1	1		1	1	2
56.	3	2	3	2	3	3	1	1	1	1	3
57.	3	2	3	2	3	3	1	1	1	1	3
58.	3	2	3	2	3	3	-	1	1	-	3
59.	3	2	3	2	3	3	1	1	1	1	3
Gravity of contribution	100%	67%	100%	60%	93%	87%	27%	33%	33%	27%	93%

	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	1
CO3	2	2	1
CO4	2	2	1
CO5	2	2	1

Prestressed Concrete

CO1	Find out the losses in prestressed concrete and enhance its concepts, which include pre and post tensioning processes.
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CO2	Analyze and Design the statically determinate prestressed concrete members.
CO3	Design the end blocks of prestressed concrete members.
CO4	Analyze and Design the statically indeterminate prestressed concrete members.
CO5	Design the composite structures using prestressed concrete techniques..

CO-POMatrices												
SI	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
CO1	-	-	-	1	-	2	1	3	1	1	1	
CO2	1	-	2	3	3	3	2	3	3	1	2	
CO3	-	-	-	1	3	3	-	1	1	1	3	
CO4	1	-	2	3	3	3	2	3	3	1	3	
CO5	-	-	-	-	-	3	3	3	1	1	3	
Avg.	1	-	2	2	3	2.8	2	2.6	1.8	1	2.4	
CO-PSOMatrices												
Sl.No	PSO1					PSO2				PSO3		
CO1	-					1				3		
CO2	-					2				3		
CO3	-					2				3		
CO4	-					2				3		
CO5	-					2				3		