

Course Information Sheet

Programme: UG	Degree: B. Tech (CSE)	
Course Code:	Course Title: BASIC CIVIL & MECHANICAL ENGINEERING	
Year: I Sem: I A.Y. : 2025-26	Regulation: IS23 University: JNTU Kakinada.	
L T/P/D C: 3/0/0/3	Credits: 3	Contact Hrs: 5
Mid Marks: 30	External Marks: 70	Total Marks: 100
Teaching Hrs: 30	Exam Duration1: 3 hrs.	

Course Pre-Requisites: Agricultural Engineering

Course Code	Course Name	Description	Year-Sem
IS23	BASIC CIVIL & MECHANICAL ENGINEERING	<ol style="list-style-type: none"> 1. Get familiarized with the scope and importance of Civil Engineering sub-divisions. 2. Introduce the preliminary concepts of surveying 3. Acquire preliminary knowledge on Transportation and its importance in nation's economy 4. Get familiarized with the importance of quality, conveyance and storage of water 5. Introduction to basic civil engineering materials and construction techniques 	I CSE Semester -1

Course outcomes:**Student will able to**

No.	Description	Skill /Bloom's Taxonomy Level
CO1	Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society	Remember Understand TL1/TL2
CO 2	Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying	Apply/TL3
CO 3:	Realize the importance of Transportation in nation's economy and the engineering measures related to Transportation	Create /TL4
CO4	Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated	Design/TL 6
CO5	Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.	Derived it from lower-level Blooms /TL5

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO) and Program Specific Outcomes (PSO's):

Course Outcomes (CO)	Program Outcomes (PO)												Program Specific Outcomes (PSO's)	
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	2	1	-	-	-	-	-	-	-	-	2	1
CO2	2	3	1	2	-	-	1	-	-	-	-	1	2	1
CO3	2	2	1	2	1	1	3	-	-	1	-	1	2	--
Overall	2	2.8	2	2	0.6	0.6	1.6	-	-	0.2	0.8	0.8	1.8	1.2

Level: 1- Low correlation (Low), 2- Medium correlation (Medium), 3-High correlation (High)

JUSTIFICATIONS OF CO –PO MAPPING

CSE-101.1		
CSE/AI/AIML-P01	2	Apply the knowledge of Mathematics,science,Engineering Fundamentals and an Engineering Specialization to the Solution of complex Engineering problems.
CSE/AI/AIML-P02	3	Identify formulate, review Research literature and Analyze Complex Engineering Problems reaching Substantiated conclusions using first principles of Mathematics, Natural Sciences, and Engineering Sciences
CSE/AI/AIML-P03	2	Design Solutions for Complex Engineering and Problems and design System Components are processes that meet the specified needs with appropriate Consideration for the public health and Safety and the cultural, Societal and Environmental Considerations
CSE/AI/AIML-P04	1	Use research-based Knowledge and research Methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide conclusions
CSE/AI/AIML-PO5	-	
CSE/AI/AIML-PO6	-	
CSE/AI/AIML-PO7	-	
CSE/AI/AIML-PO8	-	
CSE/AI/AIML-PO9	-	
CSE/AI/AIML-P10	-	
CSE/AI/AIML-P11	-	
CSE/AI/AIML-P12	-	

CSE-101.2		
CSE/AI/AIML-P01	2	Apply the knowledge of Mathematics,science,Engineering Fundamentals and an Engineering Specialization to the Solution of complex Engineering problems.
CSE/AI/AIML-P02	3	Identify formulate, review Research literature and Analyze Complex Engineering Problems reaching Substantiated conclusions using first principles of Mathematics , Natural Sciences , and Engineering Sciences
CSE/AI/AIML-P03	1	Design Solutions for Complex Engineering and Problems and design System Components are processes that meet the specified needs with appropriate Consideration for the public health and Safety and the cultural,Societal and Environmental Considerations
CSE/AI/AIML-P04	2	Use research-based Knowledge and research Methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide conclusions
CSE/AI/AIML-PO5	-	
CSE/AI/AIML-PO6	-	

CSE/AI/AIML-PO7	1	Understand the impact of the professional Engineering Solutions in Social and Environmental Contexts, and demonstrate the knowledge of, and need for sustainable development.
CSE/AI/AIML-PO8	-	
CSE/AI/AIML-PO9	--	
CSE/AI/AIML-P10	-	
CSE/AI/AIML-P11	-	
CSE/AI/AIML-P12	1	Recognize the need for, and have the preparation and ability to engage in independent and life long learning in the broadest context of technical change

CSE-101.3		
CSE/AI/AIML-P01	2	Apply the knowledge of Mathematics, science, Engineering Fundamentals and an Engineering Specialization to the Solution of complex Engineering problems.
CSE/AI/AIML-P02	2	Identify formulate, review Research literature and Analyze Complex Engineering Problems reaching Substantiated conclusions using first principles of Mathematics , Natural Sciences , and Engineering Sciences
CSE/AI/AIML-P03	1	Design Solutions for Complex Engineering and Problems and design System Components are processes that meet the specified needs with appropriate Consideration for the public health and Safety and the cultural, Societal and Environmental Considerations
CSE/AI/AIML-P04	2	Use research-based Knowledge and research Methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide conclusions
CSE/AI/AIML-P05	1	Create, select, and apply appropriate techniques , resources and modern engineering and IT tools including prediction and modeling to Complex Engineering Activities with an understanding of the limitations
CSE/AI/AIML-P06	1	Apply reasoning informed by the contextual knowledge to assess social, health, safety legal cultural issues and the consequent responsibilities relevant to the professional Engineering practice
CSE/AI/AIML-P07	3	Understand the impact of the professional Engineering Solutions in Social and Environmental Contexts, and demonstrate the knowledge of, and need for sustainable development.
CSE/AI/AIML-P08	-	
CSE/AI/AIML-P09	-	
CSE/AI/AIML-P10	1	Communicate effectively on complex Engineering activities with the Engineering community and with society at large, such as , being able to comprehend and write effective reports and design documentation , make effective presentation, and give and receive clear instructions
CSE/AI/AIML-P11		
CSE/AI/AIML-P12	1	Recognize the need for, and have the preparation and ability to engage in independent and life long learning in the broadest context of technical change

Justification for CO-PSO Mapping

Topics beyond Syllabus

S.No.	Description	Proposed Actions
1	Various Disciplines of civil engineering	Assignment
2	Different loads acting on Beams	Seminar

TOPICS BEYOND SYLLABUS/ASSIGNMENT/INDUSTRY VISIT/PROJECTS/NPTEL ETC

Topic beyond Syllabus: Mapping with PO and PSO:

Justification for Avg CO-PO Mapping		
Mapping	Level	Justification
CSE/AI/AIML-P01	1	Apply the knowledge of Mathematics, science, Engineering Fundamentals and an Engineering Specialization to the Solution of complex Engineering problems.
CSE/AI/AIML-P02	2	Identify formulate, review Research literature and Analyze Complex Engineering Problems reaching Substantiated conclusions using first principles of Mathematics , Natural Sciences , and Engineering Sciences
CSE/AI/AIML-P03	1	Design Solutions for Complex Engineering and Problems and design System Components are processes that meet the specified needs with appropriate Consideration for the public health and Safety and the cultural, Societal and Environmental Considerations
CSE/AI/AIML-P04	1	Use research-based Knowledge and research Methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide conclusions
CSE/AI/AIML-PO5	1	Create, select, and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to Complex Engineering Activities with an understanding of the limitations
CSE/AI/AIML-PO6	1	Apply reasoning informed by the contextual knowledge to assess social, health, safety legal cultural issues and the consequent responsibilities relevant to the professional Engineering practice
CSE/AI/AIML-PO7	1	Understand the impact of the professional Engineering Solutions in Social and Environmental Contexts, and demonstrate the knowledge of, and need for sustainable development.
CSE/AI/AIML-PO8	--	
CSE/AI/AIML-PO9	--	
CSE/AI/AIML-P10	--	
AGE402.2-P11	--	Page 6 of 11
AGE402.2-P12	-	

Topic beyond syllabus	Program Outcomes (PO)												Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1.	3	3	2	3	3	-	-	-	-	-	-	2	3	2

Justification for Topic beyond the Syllabus (TBS) -PO Mapping.

Mapping	Level	Justification
TBS-PO1	3	Apply the knowledge of Mathematics, science, Engineering Fundamentals and an Engineering Specialization to the Solution of complex Engineering problems.
TBS-PO2	3	Identify formulate, review Research literature and Analyze Complex Engineering Problems reaching Substantiated conclusions using first principles of Mathematics , Natural Sciences , and Engineering Sciences
TBS-PO3	2	Design Solutions for Complex Engineering and Problems and design System Components are processes that meet the specified needs with appropriate Consideration for the public health and Safety and the cultural,Societal and Environmental Considerations
TBS -PO4	3	Use research-based Knowledge and research Methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide conclusions
TBS -PO5	3	Create, select, and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to Complex Engineering Activities with an understanding of the limitations

Justification for Topic Beyond the Syllabus (TBS) -PSO Mapping.

Mapping	Level	Justification
TBS-PSO1	3	Ability in terms of innovative and creative thinking, formulate problem solutions towards real and practical field problems in Basic knowledge in other engineering streams (Core Skills).
TBS-PSO2	2	Ability to learn new Scientific technologies by acquiring knowledge in agricultural engineering to generate employment and entrepreneurship opportunities in other engineering streams (Professional Development).

WEB SOURCE REFERENCES :

1	https://onlinecourses.nptel.ac.in/noc...
2	https://onlinecourses.nptel.ac.in/noc..

Syllabus / Lesson Plan:

S.No	SYALLABUS	Periods	Methodology	Text book/references /web references and additional text book reference
UNIT – I				
1	Introduction to Basics of Civil Engineering	1	Chalk & Talk	T2, A1
2	Role of Civil Engineers in Society	1		
3	Various Disciplines of Civil Engineering	1	Chalk & Talk,	T1, T2, A1
4	Disciplines of Structural Engineering	1	Chalk & Talk,	T2, A1
5	Disciplines of Geo-technical Engineering	1	Chalk & Talk,	T1,T2
6	Disciplines of Transportation Engineering	1		
7	Disciplines of Hydraulics	1	Chalk & Talk	T2, A1
8	Scope of each disciplines in civil engineering	1	Chalk & Talk	T2, A1,
9	Scope of Construction Materials	1	Chalk & Talk	T2, A1
10	Cement - Aggregate – Bricks	1	Chalk & Talk	
11	Scope of Water Resources Engineering	1		T1, T2, A1
12	Scope of Environmental Engineering	1	Chalk & Talk,	T2, A1
13	Scope of Building Construction and Planning	1	Chalk & Talk,	T1,T2

14	Role of civil engineers in the development of society	1	Chalk & Talk,	T1, T2, A1
15	Introduction to Prefabricated construction Techniques	1	Chalk & Talk Demo of mechanisms	
	Total	15		
Unit II				
16	Surveying Objectives of Surveying	1	Chalk & Talk	T1, A1,A2
17	Horizontal Measurements-Angular Measurements	1	Chalk & Talk	T1, A1,A2
18	Introduction to Bearings	1	Chalk & Talk	T1, A1,A2
19	Leveling instruments used for leveling	1	Chalk & Talk	T1, A1,A2
20	Problems on W.C.B to Q.B, Problems on Q.B to W.C.B	1	Chalk & Talk	T1, A1,A2
	Total	05		
Unit III				
21	Transportation Engineering	1	Chalk & Talk	T2, A1, A2
22	Importance of Transportation in Nation's economic development	1	Chalk & Talk	T2, A1, A2
23	Types of Highway Pavements	1	Chalk & Talk	T2, A1, A2
24	Flexible Pavements and Rigid Pavements	1	Chalk & Talk	T2, A1, A2
25	Simple Differences between Flexible Pavements and Rigid Pavements	1	Chalk & Talk	T2, A1, A2
26	Water Resources and Environmental Engineering	1	Chalk & Talk	T2, A1, A2
27	Sources of water- Quality of water	1		
28	Introduction to Hydrology	1	Chalk & Talk	T2, A1, A2
29	Rainwater Harvesting Water Storage and Conveyance Structures	1	Chalk & Talk	T2, A1, A2
30	Simple introduction to Dams and Reservoirs	1	Chalk & Talk	T2, A1, A2
	Total	10		
	GRAND TOTAL	30		

Topic Beyond Syllabus:

S.No.	Topic Beyond Syllabus Planning	PERIODS	Methodology	Text book/references/web references and additional text book reference
1	Parameters of quality water	2	Seminar	T1, T2,A1
2	RMC construction site at Rajahmundry	2	Industrial visit	

Note: Bloom's Taxonomy Levels

BTL1-Remember	BTL2 – Understand	BTL3 –Apply
BTL4-Analyze	BT56 –Evaluate	BTL6–Create

Text books (T) / Reference books (R)/Additional text books (A):

T/R/A	Book Title/Author/Publication
T1	Basic Civil Engineering, M.S.Palanisamy, Tata Mcgraw Hill publications (India) Pvt. Ltd. Fourth Edition.
T2	Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers. 2022. First Edition.
T3	Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition
R1	Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019. Fifth Edition.
R2	Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi. 2016
R3	Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023. 38th Edition
R4	Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10th Edition
R5	Indian Standard DRINKING WATER — SPECIFICATION IS 10500-2012.

Web References:

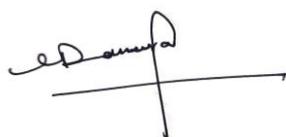
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W2	https://youtu.be/LCyZFTEyNoo
W3	https://youtu.be/gV1tLAeWL0s
W4	https://youtu.be/chhuq_t40rY?list=PL20A0651466E8A776
W5	https://youtu.be/TqbYIHizYJs?list=PLwdnzlV3ogoXXrcA8w6rrYmXfq3uU4R7g

ASSESSMENT METHODOLOGIES-DIRECT

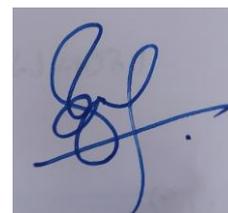
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<input type="checkbox"/> STUD. LAB PRACTICES	<input type="checkbox"/> STUD. VIVA	<input type="checkbox"/> MINI/MAJOR PROJECTS	<input type="checkbox"/> CERTIFICATIONS
<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> OTHERS		

ASSESSMENT METHODOLOGIES-INDIRECT

<input checked="" type="checkbox"/> ASSESSMENT OF COURSE OUTCOMES (BY FEEDBACK, ONCE)	<input checked="" type="checkbox"/> STUDENT FEEDBACK ON FACULTY (TWICE)
<input type="checkbox"/> ASSESSMENT OF MINI/MAJOR PROJECTS BY EXT. EXPERTS	<input type="checkbox"/> OTHERS



Prepared by



Approved by