



COIMBATORE INSTITUTE OF TECHNOLOGY, COIMBATORE – 641 014
(An Autonomous Institution affiliated to ANNA UNIVERSITY, CHENNAI)

DEPARTMENT OF CIVIL ENGINEERING
REGULATIONS 2023 CHOICEBASEDCREDITSYSTEM

B.E. CIVIL ENGINEERING

VISION

To provide quality education in Civil Engineering and to become a state-of-the-art source of world-class Civil Engineers and Researchers

MISSION

- To impart quality education in diverse areas of civil engineering to achieve the industrial expectations.
- To offer state-of the art facilities towards academic and research excellence
- To nurture intellectual knowledge in modern technologies of Civil Engineering for enhancing entrepreneurship qualities and employability skills

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO 1: To equip the graduates with sufficient knowledge and capabilities to become leaders in industry and academia.

PEO 2: To promote research culture and self-development with an aptitude for lifelong learning among graduates.

PEO 3: To inculcate professional ethics with a commitment to the society and environment

PROGRAM OUTCOMES(POs)

Twelve Graduate Attributes as given by NBA as per Washington Accord agreement should be considered for all the UG programmes without any change for POs.

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of

the information to provide valid conclusions

5. **Modern tool usage:** 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
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
10. **Communication:** 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 presentations, and give and receive clear instructions
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAM SPECIFIC OUTCOMES (PSOs)

- PSO1:** The graduates of this programme with proficiency in mathematics and physical science will excel in the core areas of civil engineering such as Structural, Environmental, Geotechnical, Water resources engineering and Construction Management
- PSO2:** The graduates will plan, produce detailed drawings, write specifications, prepare cost estimates
- PSO3:** The graduates will interact with stakeholders effectively and execute quality construction work

MAPPING OF PROGRAMME EDUCATIONAL OUTCOMES WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC COUTCOMES

PEOs	PROGRAMMEOUTCOMES												PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	3	3	3	2	2	2	2	2	2	2	2	2	3	2	2
2	2	2	2	2	1	2	2	2	1	2	1	3	1	1	1
3	2	2	2	1	1	3	3	3	2	2	1	2	1	2	2



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B.E. CIVIL ENGINEERING
CURRICULA AND SYLLABI

SEMESTER I

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23FYH111	Technical English	HSC	2	2	0	4	4
2	23FYM111	Matrices and Calculus	BSC	3	1	0	4	4
3	23FYP111	Physics for Civil Engineers	BSC	3	0	0	3	3
4	23FYC111	Engineering Chemistry for Civil Engineers	BSC	3	0	0	3	3
5	23CE111	Construction Materials	PCC	3	0	0	3	3
PRACTICALS								
1	23CE121	Engineering Graphics- I	ESC	0	0	4	4	2
2	23CE122	Engineering Practices Laboratory	ESC	0	0	2	2	1
3	23CE123	C Programming Laboratory	ESC	0	0	4	4	2
ONE CREDIT COURSES								
1	23FYH121	Heritage of Tamil	OC	1	0	0	1	1
MANDATORY COURSES								
1	23MC101	Induction Programme	MC	15 DAYS			-	-
2	23MC102	Soft Skills - I	MC	1	0	0	-	-
TOTAL				17	3	10	30	23

SEMESTER II

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23FYH211	Professional English	HSC	3	0	0	3	3
2	23FYM211	Fourier Series and Transforms	BSC	3	1	0	4	4
3	23CE211	Engineering Mechanics	ESC	3	0	0	3	3
4	23CE212	Engineering Geology	ESC	3	0	0	3	3
5	23CE213	Construction Technology	PCC	3	0	0	3	3
PRACTICALS								
1	23FYH221	English Communication Competency Laboratory	HSC	0	0	4	4	2
2	23CE221	Engineering Graphics- II	ESC	0	0	4	4	2
3	23FPC221	Basic Sciences Laboratory	ESC	0	0	4	4	2
ONE CREDIT COURSES								
1	23FYC221	Environmental Science and Engineering	OC	1	0	0	1	1
2	23FYH222	Tamil's & Technology	OC	1	0	0	1	1
CO-CURRICULAR ACTIVITES								
1	23CC	23CC221- NSS	OC	15 HOURS			1	1
2		23CC222- YRC						
3		23CC223- RSP						
4		23CC224- Sports						
TOTAL				18	1	12	31	25

SEMESTER – III

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23M311	Differential Equations and Random Variables	BSC	3	1	0	4	4
2	23CE311	Mechanics of Solids I	ESC	3	0	0	3	3
3	23CE312	Concrete Technology	PCC	3	0	0	3	3
4	23CE313	Mechanics of Fluids	PCC	3	0	0	3	3
5	23CE314	Surveying	PCC	3	0	0	3	3
PRACTICALS								
1	23CE321	Strength of Materials Laboratory	ESC	0	0	4	4	2
2	23CE322	Survey Laboratory	PCC	0	0	4	4	2
3	23CE323	Building Planning and Drawing	ESC	0	0	4	4	2
MANDATORY COURSES								
1	23MC301	Soft Skills – II – Design Thinking	MC	15 HOURS			1	1
2	23MC302	Human Value and Professional Ethics	MC	15 HOURS			1	1
TOTAL				17	1	12	30	24

SEMESTER IV

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23CE411	Mechanics of Solids II	ESC	3	0	0	3	3
2	23CE412	Highway and Railway Engineering	PCC	3	0	0	3	3
3	23CE413	Applied Hydraulics and Hydraulic Machinery	PCC	3	0	0	3	3
4	23CE414	Water Supply Engineering	PCC	3	0	0	3	3
5	23CE415	Construction Management	HSC	3	0	0	3	3
PRACTICALS								
1	23CE421	Environmental Engineering Laboratory I	ESC	0	0	2	2	1
2	23CE422	Hydraulics Laboratory	PCC	0	0	4	4	2
3	23CE423	Concrete Laboratory	PCC	0	0	4	4	2
MANDATORY COURSES								
1	23MC401	Value Added Course - I	MC	15 HOURS			-	-
2	23MC402	Community Service and Engineering	MC	15 HOURS			-	-
TOTAL				17	0	10	27	20

SEMESTER V

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23CE511	Structural Analysis - I	PCC	3	0	0	3	3
2	23CE512	Design of Reinforced Concrete Structural Elements	PCC	3	0	0	3	3
3	23CE513	Mechanics of Soils	PCC	3	0	0	3	3
4		ELECTIVE –I / OPEN ELECTIVE-I	PEC/OEC	3	0	0	3	3
5		ELECTIVE –II	PEC	3	0	0	3	3
PRACTICALS								
1	23CE521	Highway Engineering Laboratory	PCC	0	0	4	4	2
2	23CE522	Quantity Surveying Laboratory	PCC	0	0	4	4	2
3	23CE523	Geo-Informatics Laboratory	PCC	0	0	4	4	2
	PROJ	INPLANT TRAINING*	PROJECT				1	1
MANDATORY COURSES								
1	23MC501	Value Added Course – II	MC	15 HOURS			-	-
2	23MC502	Seminar and Technical Writing	MC	15 HOURS			-	-
TOTAL				18	0	12	30	22

*** 2 weeks of Inplant Training need to be completed during 4th semester vacation**

SEMESTER – VI

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23CE611	Structural Analysis - II	PCC	3	0	0	3	3
2	23CE612	Design of Steel Structures	PCC	3	0	0	3	3
3	23CE613	Foundation Engineering	PCC	3	0	0	3	3
4		ELECTIVE –III / OPEN ELECTIVE - II	PEC/OEC	3	0	0	3	3
5		ELECTIVE – IV	PEC	3	0	0	3	3
PRACTICALS								
1	23CE621	Soil Mechanics Laboratory	PCC	0	0	4	4	2
2	23CE622	Project Planning Laboratory	PROJECT	0	0	4	4	2
3	23CE623	Building Information Modelling Laboratory	PCC	0	0	2	2	1
	PROJ	MINI PROJECT	PROJECT	0	0	4	4	2
MANDATORY COURSES								
1	23MC601	Hackathon	MC	15 HOURS			1	1
TOTAL				16	0	14	30	23

SEMESTER – VII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23CE711	Waste Water Engineering	PCC	3	0	0	3	3
2	23CE712	Prestressed Concrete Structures	PCC	3	0	0	3	3
3	23CE713	Earthquake Resistant Design of Structures	PCC	3	0	0	3	3
4		ELECTIVE -V	PEC	3	0	0	3	3
5		ELECTIVE -VI	PEC	3	0	0	3	3
PRACTICALS								
1	23CE721	Computer Applications Laboratory	PCC	0	0	4	4	2
2	23CE722	Design and Drawing (Concrete & Steel)	PCC	0	0	4	4	2
3	23CE723	Environmental Engineering Laboratory – II	ESC	0	0	2	2	1
TOTAL				15	0	10	25	20

SEMESTER – VIII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1		ELECTIVE –VII	PEC	3	0	0	3	3
2		ELECTIVE -VIII	PEC	3	0	0	3	3
PRACTICALS								
1	PROJ	PROJECT WORK AND VIVA-VOCE	PROJECT	0	0	12	12	6
TOTAL				6	0	12	18	12

LIST OF PROFESSIONAL ELECTIVE COURSES:

SI. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
1. STRUCTURAL ENGINEERING								
1.		Design of Concrete Structures	PE	3	0	0	3	3
2.		Advanced Concrete Structures	PE	3	0	0	3	3
3.		Design of Bridges	PE	3	0	0	3	3
4.		Advanced Steel Structures	PE	3	0	0	3	3
5.		Advanced Structural Analysis	PE	3	0	0	3	3
6.		Prefabricated Structures	PE	3	0	0	3	3
7.		Finite Element Method	PE	3	0	0	3	3
8.		Industrial Structures	PE	3	0	0	3	3
9.		Smart Materials and Structures	PE	3	0	0	3	3
10.		Basics of Structural Dynamics	PE	3	0	0	3	3
2. GEOTECHNICAL ENGINEERING								
11.		Ground Improvement Techniques	PE	3	0	0	3	3
12.		Design of Deep Foundation	PE	3	0	0	3	3
13.		Geo Environmental Engineering	PE	3	0	0	3	3
14.		Slope Stability and Landslides	PE	3	0	0	3	3
15.		Earth retaining Structures	PE	3	0	0	3	3
16.		Foundations in Expansive Soils	PE	3	0	0	3	3
17.		Advanced Foundation Engineering	PE	3	0	0	3	3
18.		Reinforced Soil Structures	PE	3	0	0	3	3
3. ENVIRONMENTAL ENGINEERING								
19.		Solid and Hazardous Waste Management	PE	3	0	0	3	3
20.		Environmental Impact Assessment	PE	3	0	0	3	3

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
21.		Climate change and adaptation	PE	3	0	0	3	3
22.		Marine Pollution and Control	PE	3	0	0	3	3
23.		Instrumental Method of Analysis	PE	3	0	0	3	3
24.		Air and Water Quality Modelling	PE	3	0	0	3	3
25.		Air Pollution and Control	PE	3	0	0	3	3
26.		Industrial Wastewater Treatment and Management	PE	3	0	0	3	3
27.		Irrigation Engineering	PE	3	0	0	3	3
4. TRANSPORTATION ENGINEERING								
28.		Pavement Engineering	PE	3	0	0	3	3
29.		Remote sensing and GIS	PE	3	0	0	3	3
30.		Traffic Engineering	PE	3	0	0	3	3
31.		Advanced Surveying	PE	3	0	0	3	3
32.		Urban Transportation Planning	PE	3	0	0	3	3
33.		Transportation Systems Planning & Management	PE	3	0	0	3	3
34.		Transportation Economics and Finance	PE	3	0	0	3	3
35.		Intelligent Transportation Systems	PE	3	0	0	3	3
36.		Road Safety Engineering	PE	3	0	0	3	3
5. CONSTRUCTION ENGINEERING AND MANAGEMENT								
37.		Valuation of Immovable Properties	PE	3	0	0	3	3
38.		Engineering Economics	PE	3	0	0	3	3
39.		Maintenance Repair and Rehabilitation of Structures	PE	3	0	0	3	3
40.		Advanced Construction Technology	PE	3	0	0	3	3
41.		Contract Management	PE	3	0	0	3	3
42.		Formwork for Concrete Structures	PE	3	0	0	3	3

SI. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
43.		Entrepreneurship in Civil Engineering	PE	3	0	0	3	3
44.		Professional Practices for Civil Engineers	PE	3	0	0	3	3
45.		Building Information Modelling	PE	3	0	0	3	3

LIST OF COURSES FOR MAJOR/MINOR

SI. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
1. STRUCTURAL ENGINEERING								
1.		Design of Concrete Structures	PE	3	0	0	3	3
2.		Advanced Concrete Structures	PE	3	0	0	3	3
3.		Design of Bridges	PE	3	0	0	3	3
4.		Advanced Steel Structures	PE	3	0	0	3	3
5.		Advanced Structural Analysis	PE	3	0	0	3	3
6.		Prefabricated Structures	PE	3	0	0	3	3
7.		Finite Element Method	PE	3	0	0	3	3
8.		Industrial Structures	PE	3	0	0	3	3
9.		Smart Materials and Structures	PE	3	0	0	3	3
10.		Offshore Structures	PE	3	0	0	3	3
11.		Advanced Concrete Technology	PE	3	0	0	3	3
12.		Design of Steel Concrete Composite Structures	PE	3	0	0	3	3
13.		Theory of Plates	PE	3	0	0	3	3
2. GEOTECHNICAL ENGINEERING								
14.		Ground Improvement Techniques	PE	3	0	0	3	3
15.		Design of Deep Foundation	PE	3	0	0	3	3
16.		Geo Environmental Engineering	PE	3	0	0	3	3

SI. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
17.		Slope Stability and Landslides	PE	3	0	0	3	3
18.		Earth retaining Structures	PE	3	0	0	3	3
19.		Foundations in Expansive Soils	PE	3	0	0	3	3
20.		Advanced Foundation Engineering	PE	3	0	0	3	3
21.		Reinforced Soil Structures	PE	3	0	0	3	3
22.		Strength and Deformation Behaviour of Soils	PE	3	0	0	3	3
23.		Subsurface Investigation and Instrumentation	PE	3	0	0	3	3
24.		Shallow Foundation	PE	3	0	0	3	3
25.		Earth and Rock Fill Dams	PE	3	0	0	3	3
3. ENVIRONMENTAL ENGINEERING								
26.		Solid and Hazardous Waste Management	PE	3	0	0	3	3
27.		Environmental Impact Assessment	PE	3	0	0	3	3
28.		Air and Water Quality Modelling	PE	3	0	0	3	3
29.		Air Pollution and Control	PE	3	0	0	3	3
30.		Industrial Wastewater Treatment and Management	PE	3	0	0	3	3
31.		Design of Physico-chemical Treatment Systems	PE	3	0	0	3	3
32.		Design of Biological Treatment Systems	PE	3	0	0	3	3
33.		Sustainable Development and Cleaner Production	PE	3	0	0	3	3
34.		Occupational Health, Safety and Risk Assessment	PE	3	0	0	3	3
35.		Biodegradation and Bioremediation Techniques	PE	3	0	0	3	3

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
36.		Energy Management	PE	3	0	0	3	3
37.		Environment, Health and Safety in Industries	PE	3	0	0	3	3
38.		Landfill Engineering and Remediation Technology	PE	3	0	0	3	3
4. TRANSPORTATION ENGINEERING								
39.		Pavement Engineering	PE	3	0	0	3	3
40.		Remote Sensing and GIS	PE	3	0	0	3	3
41.		Traffic Engineering	PE	3	0	0	3	3
42.		Urban Transportation Planning	PE	3	0	0	3	3
43.		Transportation Systems Planning and Management	PE	3	0	0	3	3
44.		Transportation Economics and Finance	PE	3	0	0	3	3
45.		Intelligent Transport System	PE	3	0	0	3	3
46.		Road safety Engineering	PE	3	0	0	3	3
47.		Town Planning and Architecture	PE	3	0	0	3	3
48.		Metro Systems and Engineering	PE	3	0	0	3	3
49.		Airport and Harbour Engineering	PE	3	0	0	3	3
50.		Theory of Traffic flow	PE	3	0	0	3	3
5. CONSTRUCTION ENGINEERING AND MANAGEMENT								
51.		Project Management for Construction	PE	3	0	0	3	3
52.		Project Formulation and Appraisal	PE	3	0	0	3	3
53.		Planning, Scheduling and Control of Construction Projects	PE	3	0	0	3	3
54.		Contract Management	PE	3	0	0	3	3
55.		Functional Planning, Building Services and Maintenance Management	PE	3	0	0	3	3
56.		Advanced Construction Methods and Techniques	PE	3	0	0	3	3

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
57.		Construction Risk Management	PE	3	0	0	3	3
58.		Shoring, Scaffolding and Formwork	PE	3	0	0	3	3
59.		Valuation of Immovable Properties	PE	3	0	0	3	3
60.		Construction Safety and Health Management systems	PE	3	0	0	3	3
61.		Environmental Impact Assessment for Construction Engineers	PE	3	0	0	3	3
62.		Design of Energy Efficient Buildings	PE	3	0	0	3	3

LIST OF OPEN ELECTIVE COURSES OFFERED FOR THE STUDENTS OF OTHER UG PROGRAMMES:

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C	UG PROGRAMME
1.		Town Planning and Architecture	OE	3	0	0	3	3	COMMON TO ALL PROGRAMMES
2.		Climate Change and Adaptation	OE	3	0	0	3	3	
3.		Metro Systems and Engineering	OE	3	0	0	3	3	
4.		Renewable Energy Resources	OE	3	0	0	3	3	
5.		Principles of Sustainable Development	OE	3	0	0	3	3	
6.		Disaster Management	OE	3	0	0	3	3	
7.		Public Administration	OE	3	0	0	3	3	
8.		Elementary Earthquake Engineering	OE	3	0	0	3	3	
9.		Green Building	OE	3	0	0	3	3	

LIST OF VALUE-ADDED COURSES:

SI. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C
1.		Building Construction Process- an Overview	OC	1	0	0	1	-
2.		Applications of IoT in Civil Engineering	OC	1	0	0	1	-
3.		Certification and Career Roadmap in Civil Engineering	OC	1	0	0	1	-
4.		Environmental Monitoring	OC	1	0	0	1	-
5.		Python for Civil Engineers	OC	1	0	0	1	-
6.		3D Printing of Civil Engineering Structures	OC	1	0	0	1	-
7.		Alternative Building Materials from Waste	OC	1	0	0	1	-
8.		Sustainability in Construction	OC	1	0	0	1	-
9.		Detailing of Steel Structures Using TEKLA	OC	1	0	0	1	-
10.		Pre – Engineered Building Detailing	OC	1	0	0	1	-
11.		Basic Plumbing	OC	1	0	0	1	-
12.		Green Building Rating	OC	1	0	0	1	-
13.		Drone Surveying	OC	1	0	0	1	-
14.		Archaeology of India	OC	1	0	0	1	-
15.		Retrofitting and Rehabilitation of Heritage Structures	OC	1	0	0	1	-

SUMMARY

Category; BSC – Basic sciences, HSC– Humanities and Social Sciences, ESC–Engineering sciences, PCC –Professional Core, PEC- Professional Elective, OEC-Open Elective Course, EEC –Employability Enhancement Course, MC – Mandatory Course

B.E. CIVIL ENGINEERING										
Sl. No.	Subject Area	Credits per Semester								Credits Total
		I	II	III	IV	V	VI	VII	VIII	
1	HSC	4	5		3					12
2	BSC	10	4	4						18
3	ESC	5	10	7	4			1		27
4	PCC	3	3	11	13	15	12	13		70
5	PEC					3	3	6	6	18
6	OEC					3	3			6
7	EEC/PROJECT					1	4		6	11
8	MC			2			1			3
9	OC	1	3							4
TOTAL CREDITS										169