SCMS SCHOOL OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

VIDYA NAGAR, PALISSERY, KARUKUTTY - 683576

DEPARTMENT OF CIVIL ENGINEERING

Curriculum for M.Tech in Computer Aided Structural Engineering

Branch Code - CECS

2026 Scheme • Semesters S1 – S4

Vision

To emerge as a premier department, empowering Civil Engineering professionals and research-oriented innovators for sustainable development.

Mission

- Impart industry-relevant Civil Engineering education that promotes ethical conduct and lifelong learning.
- Develop innovative problem-solving skills to address societal needs and environmental challenges in infrastructure development.
- Enhance service learning and research through collaboration with government departments and local bodies.

Program Outcomes (POs)

- PO1: Technical Skills: Post-Graduates will develop confidence and technical skills for taking up research, consultancy and teaching as a profession.
- PO2: Problem analysis / Development of solutions: Post-Graduates will attain an ability to identify, formulate and design system components or processes that meet the specified needs to solve complex structural engineering problems.
- PO3: Conduct investigations of complex problems: Post-Graduates will be able to conduct investigations of complex structural engineering problems using research based knowledge and tests / experiments.
- PO4: The engineer and society: Post-Graduates will understand the impact of engineering solutions on the environment and the society.
- PO5: Ethics: Post –Graduates will have a strong Professional and Ethical responsibility.
- PO6: Communication: Post-Graduates will be able to communicate effectively in both verbal and written forms to the technical community as well as society.
- PO7: Face Challenges: Post-Graduates will develop confidence to face newer challenges in Industry / society.
- PO8: Life-long learning: Post-Graduates will develop confidence for self-education and ability for life-long learning.
- PO9: Adopt new technology: Post-Graduate will learn to adopt new technology by properly understanding the pros and cons to implement the same successfully.

ABBREVIATIONS & COURSE CATEGORIES

L – Lecture (hours)	T – Tutorial (hours)	P – Practical (hours)
SL – Self-Learning (hours)	CIA – Continuous Internal Assessment	SEE – Semester End Examination
PC- Program Core Courses	PE – Program Elective Courses	PCL – Program Core Laboratory Courses
CC – Common Courses	CC- PC- Common Courses - Program Core Courses	CC – AC – Common Courses -Audit Course
CC-SEC – Common Courses- Skill Enhancement Course	IE/ID - Industry / Interdisciplinary Elective	PWI – Project Work/Internship
MC –MOOC Courses		

SEMESTER 1 (S1)

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	A	261TCECC01	CC	PC	Probability and Statistics	3	45	0	0	45	90	40	60	100
2	B	261TCECS02	PC	PC	Theory of Elasticity	4	45	15	0	60	120	40	60	100
3	C	261TCECS03	PC	PC	Structural Dynamics	4	45	15	0	60	120	40	60	100
4	D	261ECECS1X	PE	PE	Program Elective 1	3	45	0	0	45	90	40	60	100
5	E	261ECECS2X	PE	PE	Program Elective 2	3	45	0	0	45	90	40	60	100
6	F	261TCECC06	CC	SEC	Research Methodology and IPR	2	30	0	0	30	60	40	60	100
7	G	261LCECS07	PCL	PCL	Advanced Structural Engineering Lab	2	0	0	45	15	60	100	0	100
TOTAL						21	255	30	45	300	630			

SEMESTER 2 (S2)

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	A	262TCECS01	PC	PC	Advanced Numerical Methods	4	45	15	0	60	120	40	60	100
2	B	262TCECS02	PC	PC	Finite Element Method	4	45	15	0	60	120	40	60	100
3	C	262ECECS3X	PE	PE	Program Elective 3	3	45	0	0	45	90	40	60	100
4	D	262ECECS4X	PE	PE	Program Elective 4	3	45	0	0	45	90	40	60	100
5	E	262ECEIE05 / 262ECEID1X	IE/ID	IE/ID	Industry/Interdisciplinary Elective	3	45	0	0	45	90	40	60	100
6	F	262PCECS06	PWI	PWI	Mini Project	2	0	0	45	15	60	100	0	100
7	G	262LCECS07	PCL	PCL	Computational Lab	2	0	0	45	15	60	100	0	100
TOTAL						21	225	30	90	285	630			

SEMESTER 3 (S3)

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	A	263MCECS01	MC	MC	MOOC Courses	2	0	0	0	60	60	0	0	0
2	B	263SCECC02	CC	SEC	Academic Writing	1	15	0	0	15	30	100	0	100
3	C	263ICECS03	PWI	PWI	Internship	3	0	0	0	90	90	50	50	100
4	D	263PCECSD1	PWI	PWI	Dissertation Phase 1	11	0	0	165	165	330	100	0	100
TOTAL						17	15	0	165	330	510			

SEMESTER 4 (S4)

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	A	264PCECSD2	PWI	PWI	Dissertation Phase II	16	0	0	240	240	480	100	100	200
TOTAL						16	0	0	240	240	480			

TOTAL PROGRAMME CREDITS (S1 – S4): 75

PROGRAMME ELECTIVES

PROGRAM ELECTIVE-1

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	D	261ECECS11	PE	PE	Advanced Theory and Design of Concrete Structures	3	45	0	0	45	90	40	60	100
2		261ECECS12	PE	PE	High Rise Buildings	3	45	0	0	45	90	40	60	100
3		261ECECS13	PE	PE	Experimental Methods in Structural Engineering	3	45	0	0	45	90	40	60	100
4		261ECECS14	PE	PE	Structural Optimization and Reliability of Structures	3	45	0	0	45	90	40	60	100

PROGRAM ELECTIVE-2

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	E	261ECECS21	PE	PE	Advanced Design of Steel Structures	3	45	0	0	45	90	40	60	100
2		261ECECS22	PE	PE	Forensic Engineering and Rehabilitation of Structures	3	45	0	0	45	90	40	60	100
3		261ECECS23	PE	PE	Design of Offshore Structures	3	45	0	0	45	90	40	60	100
4		261ECECS24	PE	PE	Analysis and Design of Substructures	3	45	0	0	45	90	40	60	100

PROGRAM ELECTIVE-3

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	C	262ECECS31	PE	PE	Structural Health Monitoring	3	45	0	0	45	90	40	60	100
2		262ECECS32	PE	PE	Design of Bridges	3	45	0	0	45	90	40	60	100
3		262ECECS33	PE	PE	Stability of Structures	3	45	0	0	45	90	40	60	100
4		262ECECS34	PE	PE	Theory of Plates and Shells	3	45	0	0	45	90	40	60	100

PROGRAM ELECTIVE-4

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	D	262ECECS41	PE	PE	Advanced Composite Structures	3	45	0	0	45	90	40	60	100
2		262ECECS42	PE	PE	Design of Earthquake Resistant Structures	3	45	0	0	45	90	40	60	100
3		262ECECS43	PE	PE	Theory of Plasticity	3	45	0	0	45	90	40	60	100
4		262ECECS44	PE	PE	Engineering Fracture Mechanics	3	45	0	0	45	90	40	60	100

INTERDISCIPLINARY ELECTIVE

Sl.	Slot	Course Code	Type	Cat.	Course Title	Cr.	Hour Structure				Total Hrs.	Marks Distribution		
							L	T	P	SL		CIA	SEE	Total Marks
1	E	262ECEID14	IE/ID	ID	Natural Hazards and Impact Management	3	45	0	0	45	90	40	60	100
2		262ECEID15	IE/ID	ID	Mechanics of Composite Materials	3	45	0	0	45	90	40	60	100
3		262ECEID16	IE/ID	ID	Project Evaluation and Management	3	45	0	0	45	90	40	60	100