

# **ACADEMIC CURRICULA**

## **POSTGRADUATE DEGREE PROGRAMMES**

### **Master of Technology in Structural Engineering**

**Two Years (Full-Time)**

**Learning Outcome Based Education**

**Choice Based Flexible Credit System**

**Academic Year**

**2020 - 2021**



**SRM INSTITUTE OF SCIENCE AND TECHNOLOGY**

**(Deemed to be University u/s 3 of UGC Act, 1956)**

**Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India**

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**Instructions**

1. After discussion with higher authorities the number of credits has been frozen at 70; neither more nor less.
2. All core and professional elective courses will have 4 credits only and L-T-P may vary depending of the nature of the course.
3. Number of core and professional electives may also vary; however total put-together they will have 36 credits.
4. MOOC has been brought under open electives.
5. The departments responsible for setting the syllabus for the given open electives /Audit courses / Research Publishing are mentioned.
6. Under open electives seven courses including MOOCs) have been listed. However if a program wants to offer an additional open elective the same can be included in the list with its program code. However the syllabus shall be so framed that all students including those from the program which has formulated the syllabus may take it without the fear of repeating earlier courses undergone. Open electives will not have pre-requisites.
7. Code numbering same as UG starting from 501 and ending with 699. . For every department only one code is to be used instead of a separate code for each of the programs. For example for all PG programs offered by Civil Dept. it will be only CE.
8. The implementation plan is advisory in nature. Departments can devise their own.

## M.Tech in **Structural Engineering**

1. Department Vision Statement															
Stmnt - 1	To emerge as a world ranking department														
Stmnt - 2	To foster quality knowledge in Civil Engineering and allied disciplines to meet the changing industrial and societal needs														
Stmnt - 3	To inculcate ethical values among the students to best serve the world for the betterment of mankind														
2. Department Mission Statement															
Stmnt - 1	To move up through international alliances and collaborative initiatives in civil engineering to achieve global excellence														
Stmnt - 2	To accomplish a process to advance knowledge in a rigorous research environment related to civil engineering and allied disciplines														
Stmnt - 3	To attract and build people in a rewarding and inspiring environment by fostering freedom, empowerment, creativity and innovation.														
3. Program Education Objectives (PEO)															
PEO - 1	Graduates will perform as professional engineers in the various fields of Civil engineering.														
PEO - 2	Graduates will perform well in their specialized field and gradually move into teamwork and leadership positions														
PEO - 3	Graduates will pursue higher studies and lifelong learning in their specialized fields of Civil Engineering														
PEO - 4	Graduates will exhibit entrepreneurship qualities and perform as an all-round achiever														
PEO - 5	Graduates will contribute to the development of the profession, nation and society														
4. Consistency of PEO's with Mission of the Department															
	Mission Stmnt. - 1					Mission Stmnt. - 2				Mission Stmnt. - 3					
PEO - 1	H					M				H					
PEO - 2	H					M				H					
PEO - 3	H					H				M					
PEO - 4	H					M				H					
PEO - 5	H					M				H					
H – High Correlation, M – Medium Correlation, L – Low Correlation															
5. Consistency of PEO's with Program Learning Outcomes (PLO)															
	Program Learning Outcomes (PLO)														
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
	Disciplinary Knowledge	Critical Thinking	Problem Solving	Analytical Reasoning	Research Skills	Team Work	Scientific Reasoning	Reflective Thinking	Self-Directed Learning	Multicultural Competence	Ethical Reasoning	Community Engagement	ICT Skills	Leadership Skills	Life Long Learning
PEO - 1	H	H	H	H	M	H	M	M	H	M	L	L	H	L	L
PEO - 2	H	M	M	L	L	H	L	H	H	H	H	H	H	H	M
PEO - 3	H	H	H	H	H	L	M	M	H	L	L	L	M	L	L
PEO - 4	L	L	L	L	L	H	M	M	M	H	H	H	H	H	M
PEO - 5	L	L	L	L	L	M	L	L	L	H	M	H	L	L	M

6. Programme Structure (70 Total Credits)									
1. Professional Core Courses (C) (5 Courses)									
Course Code	Course Title	Hours/ Week			C				
		L	T	P					
20CEC501T	Matrix Computer Method of Structural Analysis	3	1	0	4				
20CEC502T	Structural Dynamics	4	0	0	4				
20CEC503T	Theory of Elasticity and Plasticity	3	1	0	4				
20CEC504J	Finite element method with computer application	3	0	2	4				
20CEC505T	Advanced Steel structures	3	1	0	4				
Total Learning Credits					20				
3. Skill Enhancement Courses (S) (2 Courses)									
Course Code	Course Title	Hours/ Week			C				
		L	T	P					
20GNS501J	Research Publishing and Presenting Skills	1	0	2	2				
20CES501J	Research Methods in Civil Engineering	2	0	2	3				
Total Learning Credits					5				
2. Professional Elective Courses (E) (5 Courses)									
Course Code	Course Title	Hours/ Week			C				
		L	T	P					
20MAE501T	Applied Mathematics	3	1	0	4				
20CEE501J	Advanced Reinforced Concrete Structures	3	0	2	4				
20CEE502T	Aseismic design of structures	4	0	0	4				
20CEE503T	Stability of Structures	4	0	0	4				
20CEE504T	Mechanics of Structural Composite Materials	3	1	0	4				
20CEE505T	Concrete Technology & Special Concretes	4	0	0	4				
20CEE506T	Maintenance and Rehabilitation of Structures	4	0	0	4				
20CEE507T	Prestressed Concrete Structures	3	1	0	4				
20CEE601T	Design of Steel-Concrete Composite Structures	3	1	0	4				
20CEE602T	Offshore Structures	4	0	0	4				
20CEE603T	Experimental Techniques and Instrumentation	3	1	0	4				
20CEE604T	Design of Reinforced Concrete Foundations	3	1	0	4				
20CEE605T	Design of Bridges	3	1	0	4				
20CEE606T	Design of Tall Buildings	4	0	0	4				
20CEE607T	Analysis and Design of Structural Sandwich Panels	3	1	0	4				
20CEE608T	Advanced Analysis and Design for Wind Earthquake and other Dynamic Loads	3	1	0	4				
20CEE609T	Design of Shell and Folded Plate Structures	3	1	0	4				
20CEE610T	Computer Aided Design and Programming	3	1	0	4				
20CEE611T	Ancient Building Materials and Additives in the Conservation of Heritage Structures	4	0	0	4				
20CEE612T	Seismic retrofit of buildings	4	0	0	4				
20CEE613T	Disaster Resistant Structures	4	0	0	4				
Total Learning Credits					16				
4. Open Elective Courses (O) (Any 1 Course)									
Course Code	Course Title	Hours/ Week			C				
		L	T	P					
MBS	Business Analytics	3	0	0	3				
ME	Industrial Safety	3	0	0	3				
MA	Operations Research	3	0	0	3				
MBA	Cost Management	3	0	0	3				
NANO	Composite Materials	3	0	0	3				
20CEO531T	Waste to Energy	3	0	0	3				
20CEP620T	MOOC	3	0	0	3				
Total Learning Credits					3				
5. Project Work, Internship In Industry / Higher Technical Institutions MOOC / Professional Elective (P)									
Course Code	Course Title	Hours/ Week			C				
		L	T	P					
20CEP601L	Internship (4-6 weeks)	0	0	8	4				
20CEP602L	Minor Project	0	0	12	6				
20CEP603L	Project Work Phase I	-	-	-	16				
20CEP604L	Project Work Phase I I	0	0	32					
20CEP605L	Semester Internship Phase II (15 weeks)	-	-	-					
Total Learning Credits					26				
7. Mandatory Courses (M) (3 Courses)									
Course Code	Course Title	Hours/ Week			C				
		L	T	P					
20PDM501T	Career Advancement for Engineers – 1	1	0	1	0				
20PDM502T	Career Advancement for Engineers – 2	1	0	1	0				
20PDM601T	Career Advancement for Engineers – 3	1	0	1	0				
6. Audit Courses (M) (2 Courses)									
Course Code	Course Title	Hours/ Week			C				
		L	T	P					
20CEA531J	Disaster Management	1	0	1	0				
EFL	Constitution of India	1	0	1	0				
EFL	Value Education	1	0	1	0				
CARE	Physical and Mental Health using Yoga	1	0	1	0				

## 7. Implementation Plan

Semester - I					
Code	Course Title	Hours/ Week			C
		L	T	P	
20CEC501T	Matrix Computer Method of Structural Analysis	3	1	0	4
20CEC502T	Structural Dynamics	4	0	0	4
20CEC503T	Theory of Elasticity and Plasticity	3	1	0	4
20MAE501T	Applied Mathematics				
20CEE502T	Aseismic design of structures				
20CEE503T	Stability of Structures	4	0	0	4
20CEE505T	Concrete Technology & Special Concretes				
20CEE506T	Maintenance and Rehabilitation of Structures				
20CEE504T	Mechanics of Structural Composite Materials	3	1	0	
20CEE507T	Prestressed Concrete Structures				
20CEE501J	Advanced Reinforced Concrete Structures	3	0	2	
CARE	Research Publishing and Presenting Skills	1	0	2	2
20PDM501T	Career Advancement for Engineers – 1	1	0	1	0
	Audit Course - 1	1	0	1	0
Total Learning Credits					18

Semester - III					
Code	Course Title	Hours/ Week			C
		L	T	P	
	Open Elective	3	0	0	3
20CEP620T	MOOC				
20CEE607T	Analysis and Design of Structural Sandwich Panels	3	1	0	4
20CEE609T	Design of Shell and Folded Plate Structures				
20CEE610T	Computer Aided Design and Programming				
20CEE611T	Ancient Building Materials and Additives in the Conservation of Heritage Structures	4	0	0	
20CEE612T	Emerging technology in Structural Engineering				
20CEP601L	Internship (4-6 weeks) / Minor Project	-	-	10	5
20CEP602L	Project Phase I	-	-	12	6
20CEP603L	Semester Internship I (8 weeks)	-	-	-	
20PDM601T	Career Advancement for Engineers – 3	1	0	1	0
Total Learning Credits					18

Semester - II					
Code	Course Title	Hours/ Week			C
		L	T	P	
20CEC504J	Finite element method with computer application	3	0	2	4
20CEC505T	Advanced Steel structures	3	1	0	4
20CEE601T	Design of Steel-Concrete Composite Structures	3	1	0	
20CEE602T	Offshore Structures	4	0	0	4
20CEE603T	Experimental Techniques and Instrumentation	3	1	0	
20CEE604T	Design of reinforced concrete foundations				
20CEE605T	Design of Bridges	3	1	0	
20CEE606T	Design of Tall Buildings	4	0	0	
20CEE608T	Advanced Analysis and Design for Wind Earthquake and other Dynamic Loads	3	1	0	4
20CEE613J	Disaster Resistant Structures	4	0	0	
20CES501J	Research Methods in Civil Engineering	1	0	2	2
20PDM502T	Career Advancement for Engineers – 2	1	0	1	0
	Audit Course - 1	1	0	1	0
Total Learning Credits					18

Semester - IV					
Code	Course Title	Hours/ Week			C
		L	T	P	
20CEP604L	Project Work Phase I I	0	0	32	16
20CEP605L	Semester Internship Phase II (15 weeks)	-	-	-	
Total Learning Credits					16

8. Program Articulation Matrix
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[illegible]

H – High Correlation, M – Medium Correlation, L – Low Correlation