

ACADEMIC CURRICULA

POST GRADUATE DEGREE PROGRAMMES

Master of Technology

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 21 Curriculum



SRM

INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

10. M.Tech in Geotechnical Engineering

10. (a) Department Vision Statement

Stmnt - 1	<i>To become a frontier in various fields of Civil Engineering education and research to meet national and global challenges in accordance with the societal needs.</i>
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10. (b) Department Mission Statement

Stmnt - 1	<i>To move up through international alliances and collaborative initiatives in civil engineering to achieve global excellence</i>
Stmnt - 2	<i>To accomplish a process to advance knowledge in a rigorous research environment related to civil engineering and allied disciplines</i>
Stmnt - 3	<i>To attract and build people in a rewarding and inspiring environment by fostering freedom, empowerment, creativity and innovation.</i>

10. (c) Program Education Objectives (PEO)

PEO - 1	<i>To prepare the graduates of the program for their careers as a good geotechnical engineer with professional, ethical and societal responsibilities in research, academics, construction, consultancy, design development etc.</i>
PEO - 2	<i>To enable them to develop team-spirit, managerial abilities and leadership qualities with the highest standards ethically, socially and economically.</i>
PEO - 3	<i>To impart practical perspectives of Geotechnical Engineering to the development of the profession, nation and society by solving complex geotechnical problems.</i>
PEO - 4	<i>To groom the graduates of the program to plan, innovate, design and execute geotechnical system for sustainable development and inculcate multidisciplinary approach towards broader social contexts.</i>
PEO - 5	<i>To pursue professional development as a successful geotechnical engineer upholding the qualities to fit as a specialization expert in broad range of projects in industry, research and academics.</i>

10. (d) Consistency of PEO's with Mission of the Department

	Mission Stmnt. - 1	Mission Stmnt. - 2	Mission Stmnt. - 3
PEO - 1	3	3	2
PEO - 2	3	2	2
PEO - 3	3	3	3
PEO - 4	3	3	3
PEO - 5	3	3	3

10. (e) PO – Program Outcomes

PO - 1	<i>An ability to independently carry out research /investigation and development work to solve practical problems.</i>
PO - 2	<i>An ability to write and present a substantial technical report/document.</i>
PO - 3	<i>Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.</i>

10. (f) Consistency of PEO's with Program Outcomes (PO)

	Program Outcomes (PO)		
	1	2	3
PEO - 1	3	2	3
PEO - 2	2	2	2
PEO - 3	3	3	2
PEO - 4	3	3	3
PEO - 5	3	2	3

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

10. (g) Programme Structure: M.Tech in Geotechnical Engineering

Professional Core Courses (C)							Professional Elective Courses (E)						
Course Code	Course Title	Hours/Week			C		Course Code	Course Title	Hours/Week			C	
		L	T	P					L	T	P		
21CEC601J	Soil Exploration and Instrumentation	3	0	2	4		21CEE601T	Theoretical Soil Mechanics	3	0	0		
21CEC602J	Shallow Foundations	2	0	2	3		21CEE602T	Analysis and Design of Pavement	3	0	0	3	
21CEC603J	Geotextile Characterization	3	0	2	4		21MAE501T	Advanced Mathematical Techniques	3	0	0		
21CEC604J ²	Deep Foundations	3	0	2	4		21CEE603T	Structures on Expansive Soils	3	0	0		
21CEC605J	Artificial Intelligence Application in Geosynthetics Sustainable Structures	3	0	2	4		21CEE604J	Strength and Soil Deformation Mechanism	2	0	2	3	
21IPC501J ²	Research Methodology	2	1	2	4		21CEE605J	Ground Improvement Techniques	2	0	2		
21CEC601T ¹	Case Studies	3	0	0	3		21CEE606J	Engineering Geology and Geotechnical Applications	2	0	2		
Total Credits					26		21CEE607T	Soil Structure Interaction and Analysis	3	0	0	3	
							21CEE608T	Earth Pressure and Retaining Structures	3	0	0		
							21CEE609T	Forensic Geotechnical Engineering	3	0	0		
							21CEE610T ³	Geomechanics and Soil Behaviour	3	0	0	3	
							21CEE611T	Earthquake Geotechnics	3	0	0		
							21CEE612T ³	Slope Stability and Landslides	3	0	0		
							21CEE613T	Reinforced Earth Structures	3	0	0	3	
							21CEE614T	Earthen Embankments	3	0	0		
							21CEE615T	Rock Mechanics	3	0	0		
							21CEE616T	Unsaturated Soil Mechanics	3	0	0		
							21CEE617T	Machine Foundations	3	0	0	3	
							21CEE618T	Geophysical Explorations	3	0	0		
							21CEE600T ¹	Journal Publication	0	0	0		
							21CEE619T	Dynamics of Soils and Foundations	3	0	0		
							21CEE620T	Offshore Geotechniques	3	0	0	3	
							21CEE621T ²	Design of Substructures	3	0	0		
Total Credits					20		Total Credits					21	
Open Elective Courses (O)							Course Delivery by online mode (³)						
Course Code	Course Title	Hours/Week			C		Course Code	Course Title	Hours/Week			C	
		L	T	P					L	T	P		
21CEO601T	Geoenvironmental Engineering	3	0	0	3		21CEE610T ³	Geomechanics and Soil Behaviour	3	0	0	3	
21CEO602T	Soil Pollution and its Management	3	0	0	3		21CEE612T ³	Slope Stability and Landslides	3	0	0	3	
21CEO603T	Geosynthetics in Environmental Engineering	3	0	0	3								
Total Credits					3								
Assessment by Open Book Examination (²)							100% assessment by the Department (¹)						
Course Code	Course Title	Hours/Week			C		Course Code	Course Title	Hours/Week			C	
		L	T	P					L	T	P		
21CEC604J ²	Deep Foundations	3	0	2	4		21CEC601T ¹	Case Studies	3	0	0	3	
21IPC501J ²	Research Methodology	2	1	2	4		21CEE600T ¹	Journal Publication	0	0	0	3	
21CEE621T ²	Design of Substructures	3	0	0	3								

All elective courses may be studied under MOOC platform

¹ 100% assessment by the Department

² Assessment by Open Book Examination

³ Course Delivery through online mode

10. (h) Implementation Plan: M.Tech in Geotechnical Engineering

Semester - I							Semester - II						
Code	Course Title	Hours/Week					Code	Course Title	Hours/Week				
		L	T	P	C				L	T	P	C	
21CEC601J	Soil Exploration and Instrumentation	3	0	2	4		21CEC604J ²	Deep Foundations	3	0	2	4	
21CEC602J	Shallow Foundations	2	0	2	3			Artificial Intelligence Application in Geosynthetics Sustainable Structures	3	0	2	4	
21CEC603J	Geotextile Characterization	3	0	2	4		21CEE604J	Strength and Soil Deformation Mechanism	2	0	2		
21IPC501J ²	Research Methodology	2	1	2	4		21CEE605J	Ground Improvement Techniques	2	0	2	3	
21CEE601T	Theoretical Soil Mechanics	3	0	0			21CEE606J	Engineering Geology and Geotechnical Applications	2	0	2		
21CEE602T	Analysis and Design of Pavement	3	0	0		3	21CEE607T	Soil Structure Interaction and Analysis	3	0	0		
21MAE501T	Advanced Mathematical Techniques	3	0	0			21CEE608T	Earth Pressure and Retaining Structures	3	0	0	3	
21CEE603T	Structures on Expansive Soils	3	0	0			21CEE609T	Forensic Geotechnical Engineering	3	0	0		
Total Credits						18	21CEE610T ³	Geomechanics and Soil Behaviour	3	0	0		
Semester - III							21CEE611T	Earthquake Geotechnics	3	0	0	3	
Code	Course Title	Hours/Week					21CEE612T ³	Slope Stability and Landslides	3	0	0		
		L	T	P	C		Total Credits						17
	Open Elective	3	0	0	3		Semester - IV						
21CEE613T	Reinforced Earth Structures	3	0	0			Code	Course Title	Hours/Week				
21CEE614T	Earthen Embankments	3	0	0		3			L	T	P	C	
21CEE615T	Rock Mechanics	3	0	0			21CEP501L	Specialization Project (OR)	0	0	40	20	
21CEE616T	Unsaturated Soil Mechanics	3	0	0			21CEP502L	Specialization Project	0	0	30	15	
21CEE617T	Machine Foundations	3	0	0		3	21CEP503L	Domain Internship	0	0	10	5	
21CEE618T	Geophysical Explorations	3	0	0			Total Credits						20
21CEE600T ¹	Journal Publication	0	0	0			Semester - IV						
21CEE619T	Dynamics of Soils and Foundations	3	0	0			Code	Course Title	Hours/Week				
21CEE620T	Offshore Geotechniques	3	0	0		3			L	T	P	C	
21CEE621T ²	Design of Substructures	3	0	0			21CEP501L	Specialization Project (OR)	0	0	40	20	
21CEC601T ¹	Case Studies	3	0	0	3		21CEP502L	Specialization Project	0	0	30	15	
Total Credits						15	21CEP503L	Domain Internship	0	0	10	5	

Students must register either 21CEP501L or 21CEP502L and 21CEP503L both in fourth semester

10. (i) Program Articulation Matrix: M.Tech in Geotechnical Engineering

Course Code	Course Name	Programme Outcomes		
		1	2	3
21CEC601J	Soil Exploration and Instrumentation	2	3	1
21CEC602J	Shallow Foundations	3	2	2
21CEC603J	Geotextile Characterization	2	1	2
21CEC604J	Deep Foundations	3	2	2
21CEC605J	Artificial Intelligence Application in Geosynthetics Sustainable Structures	3	2	2
21CEC601T	Case Studies			
21CEE601T	Theoretical Soil Mechanics	3	2	2
21CEE602T	Analysis and Design of Pavement	3	2	2
21MAE501T	Advanced Mathematical Techniques	3	3	-
21CEE603T	Structures on Expansive Soils	2	3	1
21CEE604J	Strength and Soil Deformation Mechanism	2	2	1
21CEE605J	Ground Improvement Techniques	2	2	1
21CEE606J	Engineering Geology and Geotechnical Applications	2	3	2
21CEE607T	Soil Structure Interaction and Analysis	3	2	2
21CEE608T	Earth Pressure and Retaining Structures	3	2	2
21CEE609T	Forensic Geotechnical Engineering	3	3	2
21CEE610T	Geomechanics and Soil Behaviour	3	2	1
21CEE611T	Earthquake Geotechnics	3	2	2
21CEE612T	Slope Stability and Landslides	2	2	2
21CEE613T	Reinforced Earth Structures	3	2	2
21CEE614T	Earthen Embankments	2	2	1
21CEE615T	Rock Mechanics	3	2	2
21CEE616T	Unsaturated Soil Mechanics	3	2	2
21CEE617T	Machine Foundations	2	2	2
21CEE618T	Geophysical Explorations	2	2	2
21CEE600T	Journal Publication			
21CEE619T	Dynamics of Soils and Foundations	3	2	2
21CEE620T	Offshore Geotechniques	2	2	2
21CEE621T	Design of Substructures	2	2	2
21IPC501J	Research Methodology	3	2.6	
	Open Elective			
21CEP501L	Specialization Project			
21CEP502L	Specialization Project			
21CEP503L	Domain Internship			
Program Average				

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation



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