

ACADEMIC CURRICULA
UNDERGRADUATE/ INTEGRATED
POST GRADUATE DEGREE
PROGRAMMES

(With exit option of Diploma)

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 1

(Revised on July 2024)



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

16. B.Tech. in Civil Engineering

16. (a) Mission of the Department

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

16. (b) Program Educational Objectives (PEO)

PEO – 1	<i>Graduates will pursue higher studies in civil engineering, management and other related fields</i>
PEO – 2	<i>Graduates will perform as professional engineers in the fields of civil engineering</i>
PEO – 3	<i>Graduates will perform in diverse fields and gradually move into teamwork and leadership positions.</i>
PEO – 4	<i>Graduates will contribute to the development of the profession, nation and society</i>

16. (c) Mission of the Department to Program Educational Objectives (PEO) Mapping

	Mission Stmt. - 1	Mission Stmt. - 2	Mission Stmt. - 3
PEO - 1	3	3	2
PEO - 2	3	2	3
PEO - 3	3	2	3
PEO - 4	3	2	3

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

16. (d) Mapping Program Educational Objectives (PEO) to Program Outcomes (PO)

	Program Outcomes (PO)												Program Specific Outcomes (PSO)		
	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2	PSO-3
	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning			
PEO - 1	3	3	3	3	3	1	1	1	1	1	1	1	3	3	3
PEO - 2	3	3	3	3	3	1	1	1	1	1	1	1	3	3	3
PEO - 3	1	1	1	1	2	2	1	3	3	3	3	3	3	2	3
PEO - 4	1	1	1	1	1	3	3	3	2	2	2	3	3	3	3

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	<i>Graduates apply the knowledge of mathematical and physical sciences to solve problems in structural engineering, construction engineering management, geotechnical engineering, water resources engineering, environmental engineering and transportation engineering</i>
PSO - 2	<i>Graduates are capable of handling and applying modern engineering tools, software, Remote Sensing and GIS for solving civil engineering related problems</i>
PSO - 3	<i>Graduates are capable of working in teams in laboratory and industrial environment and carrying out major design projects</i>

16. (e) Program Structure: B.Tech. in Civil Engineering

Humanities & Social Sciences including Management Courses (H)					Basic Science Courses (B)				
Course Code	Course Title	Hours / Week			Course Code	Course Title	Hours / Week		
		L	T	P			L	T	P
21LEH101T	Communicative English	2	1	0	21MAB101T	Calculus and Linear Algebra	3	1	0
21LEH102T	Chinese				21MAB102T	Advanced Calculus and Complex Analysis	3	1	0
21LEH103T	French				21CYB101J	Chemistry	3	1	2
21LEH104T	German				21BTB103T	Biology	2	0	0
21LEH105T	Japanese	2	1	0	21PYB104J	Physics : Mechanics	3	1	2
21LEH106T	Korean				21MAB201T	Transforms and Boundary Value Problems	3	1	0
21LEH107T	Spanish				21CEB201J	Applied Geology	3	0	2
21LEH108T	Russian				21MAB301T	Probability and Statistics	3	1	0
21GNH101J	Philosophy of Engineering	1	0	2	Total Credits 32				
21PDH209T ¹	Social Engineering	2	0	0	Professional Core Courses (C)				
21GNH401T	Behavioural Psychology	2	1	0	Course Code	Course Title	Hours / Week		
Total Credits 13							L	T	P
Engineering Science Courses (S)									C
Course Code	Course Title	Hours / Week			21CEC101T	Building Materials in the Built Environment	3	0	0
		L	T	P	21CEC201T	Hydro Mechanics and Hydraulic Engineering	3	0	0
21MES102L ¹	Engineering Graphics and Design	0	0	4	21CEC201L ¹	Fluid Mechanics and Machinery Laboratory	0	0	2
21MES101L ¹	Basic Civil and Mechanical Workshop	0	0	4	21CEC202T	Engineering Surveying	3	0	0
21EES101T	Electrical and Electronics Engineering	3	1	0	21CEC202L ¹	Surveying Laboratory	0	0	2
21CSS101J	Programming for Problem Solving	3	0	2	21CEC203T	Environmental Engineering and Design	3	0	0
21DCS201P ¹	Design Thinking and Methodology	1	2	0	21CEC203L ¹	Environmental Engineering Laboratory	0	0	2
21CES201T	Mechanics of Structures	3	0	0	21CSC206T	Artificial Intelligence	2	1	0
21CSS303T	Data Science	2	0	0	21CEC204T ²	Structural Engineering Design-I	3	0	0
Total Credits 20					21CEC204L ¹	Concrete Technology and Strength of Materials Laboratory	0	0	2
Non Credit Courses (M)					21CEC205T	Geomechanics	3	0	0
Course Code	Course Title	Hours / Week			21CEC205L ¹	Geomechanics Laboratory	0	0	2
		L	T	P	21CEC206T	Irrigation and Water Resources Engineering	3	0	0
21PDM101L ¹	Professional Skills and Practices	0	0	2	21CEC207T	Concrete Technology and Special Concrete	3	0	0
21PDM102L ¹	General Aptitude	0	0	2	21CEC301T	Structural Analysis	3	0	0
21PDM201L ¹	Verbal Reasoning	0	0	2	21CEC301L ¹	Computer-Aided Civil Engineering Laboratory	0	0	2
21PDM202L ¹	Critical and Creative Thinking Skills	0	0	2	21CEC302T	Structural Engineering Design-II	2	1	0
21PDM301L ¹	Analytical and Logical Thinking Skills	0	0	2	21CEC303T	Transportation Engineering	3	0	0
21PDM302L ¹	Employability Skills and Practices	0	0	2	21CEC303L ¹	Transportation Engineering Laboratory	0	0	2
21CYM101T ¹	Environmental Science	1	0	0	21CEC304T ²	Construction Engineering and Management	3	0	0
21LEM101T ¹	Constitution of India	1	0	0	Total Credits 46				
21LEM102T ¹	Universal Human Values – Introduction	1	0	0	Project Work, Seminar, Internship in Industry / Higher Technical Institutions (P)				
21LEM201T ¹	Professional Ethics	1	0	0	Course Code	Course Title	Hours / Week		
21LEM202T ¹	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0			L	T	P
21LEM301T ¹	Indian Art Form	1	0	0					C
21LEM302T ¹	Indian Traditional Knowledge	1	0	0	21GNP301L ¹	Community Connect	0	0	2
21GNM101L ¹	Physical and Mental Health using Yoga				21CEP302L ¹	Project	0	0	6
21GNM102L ¹	National Service Scheme				21CEP303T ¹	MOOC	3	0	0
21GNM103L ¹	National Cadet Corps				21CEP401L	Major Project	0	0	30
21GNM104L ¹	National Sports Organization				21CEP402L	Major Project	0	0	20
Total Credits 03					21CEP403L	Internship#	0	0	10
					Total Credits 19				

Open Elective Courses (O) (Any 3 Courses)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21CEO301T	Maintenance and Rehabilitation of Structures	3	0	0	3		
21CEO302T	Disaster Resistant Structures	3	0	0	3		
21CEO303T	Smart City and Infrastructure	3	0	0	3		
21CEO304T	Real Estate Management	3	0	0	3		
21CEO305T	Project Management	3	0	0	3		
21CEO306T	Environmental Impact Assessment	3	0	0	3		
21CEO307T	Municipal Solid Waste Management	3	0	0	3		
21CEO308T	Disaster Mitigation and Management	3	0	0	3		
21CEO309T	Water Pollution and its Management	3	0	0	3		
21CEO310T	Global Warming and Climate Change	3	0	0	3		
21CEO311T	Indoor and Ambient Air Quality Management	3	0	0	3		
21CEO312T	Intelligent Transportation Systems	3	0	0	3		
21CEO313T	Traffic Management Systems	3	0	0	3		
21CEO314T	Traffic flow Modeling and Simulation Techniques	3	0	0	3		
21CEO315T	Viscoelasticity	3	0	0	3		
21CEO316T	Soil Sciences	3	0	0	3		
21CEO317J	Rural Development and Technology	2	0	2	3		
21CEO318T	Floods and Flood Management	3	0	0	3		
21CEO319T	Climate Change and Water Resources Management	3	0	0	3		
Total Credits 09							
Professional Elective Courses (E)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
Professional Elective – 1							
21CEE301T	Foundation Engineering and Design	3	0	0	3		
21CEE302T ²	Geotechnical Design	3	0	0	3		
21CEE303T	Ground Improvement Techniques	3	0	0	3		
21CEE304T	Foundation on Expansive Soil	3	0	0	3		
Professional Elective – 2							
21CEE305T	Solid and Hazardous Waste Management	3	0	0	3		
21CEE306T	Air and Noise Pollution Control	3	0	0	3		
21CEE307T	Environmental Impact Assessment and Life Cycle Analysis	3	0	0	3		
Professional Elective – 3							
21CEE308T	Pavement analysis and design	3	0	0	3		
21CEE309T	Railway, Airport and Harbour Engineering	3	0	0	3		
21CEE310T	Traffic Engineering	3	0	0	3		
21CEE311T	Pavement Construction Technology	3	0	0	3		
21CEE312T	Computer Application in Highway Engineering	3	0	0	3		
Professional Elective – 4							
21CEE401T	Advanced Pre-stressed Concrete	3	0	0	3		
21CEE402T ²	Earthquake Resistant Design of Structures	3	0	0	3		
21CEE403T	Design of Steel Concrete Composite Structures	3	0	0	3		
Open Elective Courses (O)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21CEO320T	Principles of Satellite Remote Sensing	3	0	0	3		
21CEO321T	Spatial Information System	3	0	0	3		
21CEO322T	Remote sensing and GIS applications in Engineering	3	0	0	3		
21CEO323T	Spatial technology in Engineering	3	0	0	3		
21CEO324T	GIS and Spatial Analysis	3	0	0	3		
21CEO325T	Web GIS	3	0	0	3		
21CEO401T	Building Materials	3	0	0	3		
21CEO402T	Introduction to Environmental Studies	3	0	0	3		
21CEO403T	Integrated Waste Management	3	0	0	3		
21CEO404T	Principles of Sustainable Development	3	0	0	3		
21CEO405T	Road Safety and Audit	3	0	0	3		
21CEO406T	Transportation Systems	3	0	0	3		
21CEO407T	Rheology of Complex Materials	3	0	0	3		
21CEO408T	Water Conservation and Management	3	0	0	3		
21CEO409T	Water Quantity and Quality	3	0	0	3		
21CEO410T	Remote Sensing Surveying	3	0	0	3		
21CEO411T	Introduction to GIS and data	3	0	0	3		
21CEO412T	Web and Mobile GIS	3	0	0	3		
21CEO413T	Digital Mapping	3	0	0	3		
Total Credits 09							
Professional Elective Courses (E)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
Professional Elective – 5							
21CEE404T	Surface Hydrology	3	0	0	3		
21CEE405T	Groundwater Engineering	3	0	0	3		
21CEE406T ²	Design of Hydraulic Structures and Irrigation Engineering	3	0	0	3		
21CEE407T	Advance Hydraulic Engineering and Design	3	0	0	3		
Professional Elective – 6							
21CEE408T	Fundamentals of Remote Sensing and GIS	3	0	0	3		
21CEE409T ²	GIS and its Techniques	3	0	0	3		
Professional Elective – 7							
21CEE410T	Construction Equipment and Automation	3	0	0	3		
21CEE411T	Contracts Management	3	0	0	3		
21CEE412T	Repairs and Rehabilitation techniques	3	0	0	3		
21CEE413T	Sustainable Construction Methods	3	0	0	3		
21CEE414T	BIM in Construction Management	3	0	0	3		
21CEE415T	Modern Civil Engineering Economics	3	0	0	3		
Total Credits 21							

Course Code	Course Name	Program Outcomes (PO)												PSO		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
21CEB201J	Applied Geology	2.6						2.6						3		3
21CES201T	Mechanics of Structures	3	3		3									3		
21CEC101T	Building Materials in the Built Environment	3				2	2.5	3						3		
21CEC201T	Hydro Mechanics and Hydraulic Engineering	3	3											3		
21CEC201L	Fluid Mechanics and Machinery Laboratory	3	3							3				3		3
21CEC202T	Engineering Surveying	3	3			3								3		
21CEC202L	Surveying Laboratory	3	3			3							3	3	3	3
21CEC203T	Environmental Engineering and Design	3		3	2		2	3						3		
21CEC203L	Environmental Engineering Laboratory	3	2					3						3		3
21CEC204T	Structural Engineering Design-I	3	2					3						3		
21CEC204L	Concrete Technology and Strength of Materials Laboratory	2.8	3							3			3	3		3
21CEC205T	Geomechanics	3	3	2										3		
21CEC205L	Geomechanics Laboratory	3	3							3				3		3
21CEC206T	Irrigation and Water Resources Engineering	3	3	2	2									3		
21CEC207T	Concrete Technology and Special Concrete	3	2.2	3			2	3					2	3		
21CEC301T	Structural Analysis	2.8	3		2									3	3	
21CEC301L	Computer-Aided Civil Engineering Laboratory	2.8	2		2.8	2.8				3			3	3	3	3
21CEC302T	Structural Engineering Design-II	3	3	3									3	3		
21CEC303T	Transportation Engineering	2.8	3	2.8	2.8									3		
21CEC303L	Transportation Engineering Laboratory	3	2							3				3	3	3
21CEC304T	Construction Engineering and Management	3	3									3		3		3
21CEE301T	Foundation Engineering and Design	3	2.8	2.5												
21CEE302T	Geotechnical Design	3	3	3										3		
21CEE303T	Ground Improvement Techniques	3	2.2		2									3		
21CEE304T	Foundation on Expansive Soil	3	2.3	2.5										3		
21CEE305T	Solid and Hazardous Waste Management	3				2	2	3						3		
21CEE306T	Air and Noise Pollution Control	2.8					2	2.8						3		
21CEE307T	Environmental Impact Assessment and Life Cycle Analysis	3					2	3	2			2		3		
21CEE308T	Pavement Analysis and Design	3	2.6	2.5	2.5	3								3		
21CEE309T	Railway, Airport and Harbour Engineering	3	2.8	2.6	2.6									3		
21CEE310T	Traffic Engineering	3	2.4	2.75	2.75		2							3		
21CEE311T	Pavement Construction Technology	2.8	3						2					3		

16. (g) Implementation Plan: B.Tech. in Civil Engineering

Semester – I						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21LEH101T	Communicative English	2	1	0	3	
21MAB101T	Calculus and Linear Algebra	3	1	0	4	
21PYB104J	Physics : Mechanics	3	1	2	5	
21MES102L ¹	Engineering Graphics and Design	0	0	4	2	
21EES101T	Electrical and Electronics Engineering	3	1	0	4	
21CYM101T ¹	Environmental Science*	1	0	0	0	
21PDM101L ¹	Professional Skills and Practices	0	0	2	0	
21LEM101T ¹	Constitution of India	1	0	0	0	
Total Credits 18						
Semester – II						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21LEH102T	Chinese	2	1	0	3	
21LEH103T	French					
21LEH104T	German					
21LEH105T	Japanese					
21LEH106T	Korean					
21LEH107T	Spanish					
21LEH108T	Russian					
21GNH101J	Philosophy of Engineering	1	0	2	2	
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4	
21CYB101J	Chemistry	3	1	2	5	
21CEC101T	Building Materials in the Built Environment	3	0	0	3	
21CSS101J	Programming for Problem Solving	3	0	2	4	
21BTB103T	Biology	2	0	0	2	
21MES101L ¹	Basic Civil and Mechanical Workshop	0	0	4	2	
21PDM102L ¹	General Aptitude*	0	0	2	0	
21GNM101L ¹	Physical and Mental Health using Yoga	0	0	2	0	
21GNM102L ¹	National Service Scheme					
21GNM103L ¹	National Cadet Corps					
21GNM104L ¹	National Sports Organization					
Total Credits 25						
Semester – IV						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21CEB201J	Applied Geology	3	0	2	4	
21CSC206T	Artificial Intelligence	2	1	0	3	
21CEC204T ²	Structural Engineering Design-I	3	0	0	3	
21CEC204L ¹	Concrete Technology and Strength of Materials Laboratory	0	0	2	1	
21CEC205T	Geomechanics	3	0	0	3	
21CEC205L ¹	Geomechanics Laboratory	0	0	2	1	
21CEC206T	Irrigation and Water Resources Engineering	3	0	0	3	
21CEC207T	Concrete Technology and Special Concrete	3	0	0	3	
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3	
21PDM202L ¹	Critical and Creative Thinking Skills	0	0	2	0	
Total Credits 24						
Semester – VI						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21CSS303T	Data Science	2	0	0	2	
21CEC304T ²	Construction Engineering and Management	3	0	0	3	
E-2	Professional Elective – II				3	
E-3	Professional Elective – III				3	
21CEP302L ¹	Project	0	0	6	3	
21CEP303T ¹	MOOC	3	0	0	3	
O	Open Elective – II				3	
21PDM302L ¹	Employability Skills and Practices	0	0	2	0	
21LEM302T ¹	Indian Traditional Knowledge	1	0	0	0	
Total Credits 17						
Semester - VIII						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21CEP401L	Major Project	0	0	30	15	
21CEP402L	Major Project	0	0	20	10	
21CEP403L	Internship#	0	0	10	5	
Total Credits 15						

#Students have to register either 21CEP401L or 21CEP402L and 21CEP403L both in eighth semester

#Students have to register either 21CEP401L or 21CEP402L and 21CEP403L both in eighth semester



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