

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

17. B.Tech. in Civil Engineering with Computer Applications

17. (a) Mission of the Department

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

17. (b) Program Educational Objectives (PEO)

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

17. (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

17. (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	Graduates apply the knowledge of mathematical and physical sciences to solve problems in various civil engineering domains
PSO - 2	Graduates are capable of handling and applying various software tools for solving problems in various civil engineering fields
PSO - 3	Graduates are capable of working in teams in laboratory and industrial environments to carry out major civil engineering projects

17. (e) Program Structure: B.Tech. in Civil Engineering with Computer Applications

Humanities & Social Sciences including Management Courses (H)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21LEH101T	Communicative English	2	1	0	3	
21LEH102T	Chinese					
21LEH103T	French					
21LEH104T	German					
21LEH105T	Japanese	2	1	0	3	
21LEH106T	Korean					
21LEH107T	Spanish					
21LEH108T	Russian					
21GNH101J	Philosophy of Engineering	1	0	2	2	
21PDH209T ¹	Social Engineering	2	0	0	2	
21GNH401T	Behavioural Psychology	2	1	0	3	
Total Credits 13						

Engineering Science Courses (S)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MES102L ¹	Engineering Graphics and Design	0	0	4	2	
21MES101L ¹	Basic Civil and Mechanical Workshop	0	0	4	2	
21EES101T	Electrical and Electronics Engineering	3	1	0	4	
21CSS101J	Programming for Problem Solving	3	0	2	4	
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3	
21CES201T	Mechanics of Structures	3	0	0	3	
21CSS303T	Data Science	2	0	0	2	
Total Credits 20						

Non Credit Courses (M)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21PDM101L ¹	Professional Skills and Practices	0	0	2	0	
21PDM102L ¹	General Aptitude	0	0	2		
21PDM201L ¹	Verbal Reasoning	0	0	2		
21PDM202L ¹	Critical and Creative Thinking Skills	0	0	2		
21PDM301L ¹	Analytical and Logical Thinking Skills	0	0	2		
21PDM302L ¹	Employability Skills and Practices	0	0	2		
21CYM101T ¹	Environmental Science	1	0	0		0
21LEM101T ¹	Constitution of India	1	0	0		0
21LEM102T ¹	Universal Human Values – Introduction	1	0	0		0
21LEM201T ¹	Professional Ethics	1	0	0		0
21LEM202T ¹	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3	
21LEM301T ¹	Indian Art Form	1	0	0	0	
21LEM302T ¹	Indian Traditional Knowledge	1	0	0	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 03						

Basic Science Courses (B)					
Course Code	Course Title	Hours / Week			
		L	T	P	C
21MAB101T	Calculus and Linear Algebra	3	1	0	4
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
21CYB101J	Chemistry	3	1	2	5
21BTB103T	Biology	2	0	0	2
21PYB104J	Physics : Mechanics	3	1	2	5
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4
21CEB201J	Applied Geology	3	0	2	4
21MAB301T	Probability and Statistics	3	1	0	4
Total Credits 32					

Professional Core Courses (C)					
Course Code	Course Title	Hours / Week			
		L	T	P	C
21CEC101T	Building Materials in the Built Environment	3	0	0	3
21CEC201T	Hydro Mechanics and Hydraulic Engineering	3	0	0	3
21CEC201L ¹	Fluid Mechanics and Machinery Laboratory	0	0	2	1
21CEC202T	Engineering Surveying	3	0	0	3
21CEC202L ¹	Surveying Laboratory	0	0	2	1
21CEC203T	Environmental Engineering and Design	3	0	0	3
21CEC203L ¹	Environmental Engineering Laboratory	0	0	2	1
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
21CEC301T	Structural Analysis	3	0	0	3
21CEC301L ¹	Computer-Aided Civil Engineering Laboratory	0	0	2	1
21CEC302T	Structural Engineering Design-II	2	1	0	3
21CEC303T	Transportation Engineering	3	0	0	3
21CEC303L ¹	Transportation Engineering Laboratory	0	0	2	1
21CEC304T ²	Construction Engineering and Management	3	0	0	3
Total Credits 46					

Project Work, Seminar, Internship in Industry / Higher Technical Institutions (P)					
Course Code	Course Title	Hours / Week			
		L	T	P	C
21GNP301L ¹	Community Connect	0	0	2	1
21CEP302L ¹	Project	0	0	6	3
21CEP303T ¹	MOOC	3	0	0	
21CEP401L	Major Project	0	0	30	15
21CEP402L	Major Project	0	0	20	10
21CEP403L	Internship#	0	0	10	5
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

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						
21CEE418J	Computer Application in Surface Hydrology	2	0	2	3	
21CEE419J	Computer Application in Water Resources Engineering	2	0	2	3	
Professional Elective - 6						
21CEE420J	Remote Sensing Application in Civil Engineering	2	0	2	3	
21CEE421J	GIS Application in Civil Engineering	2	0	2	3	
Professional Elective - 7						
21CEE422J	Building Information Modeling	2	0	2	3	
21CEE423J	Computer Application in Construction Engineering and Management	2	0	2	3	
Total Credits						21

17. (f) Programme Articulation: B.Tech. in Civil Engineering with Computer Applications

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	
21CEE313J	Computer Aided Geotechnical Investigations	3	3			3							3	3	3	
21CEE314J	Computer Application in Geotechnical Engineering	3	3		2	3							3	3	3	
21CEE315J	Computer Application in Environmental Engineering	3	2			3							3	3	3	
21CEE316J	Computer Application in Environmental Impact Assessment	3				2	2	3					3	3	3	
21CEE317J	Computer Application in Pavement Design	3	3	3	3	3							3	3	3	
21CEE318J	Computer Application in Transportation Engineering	3	3	3	3	3							3	3	3	
21CEE416J	Computer Application in Structural Engineering	3	3		2				3				3	3	3	
21CEE418J	Computer Application in Surface Hydrology	3	3			3						3	3	3	3	
21CEE419J	Computer Application in Water Resources Engineering	3	3			3						3	3	3	3	
21CEE420J	Remote Sensing Application in Civil Engineering	3		3	3	3				3		3	3	3	3	
21CEE421J	GIS Application in Civil Engineering	3				3			3				3	3	3	
21CEE422J	Building Information Modeling	3		2.4		2.33					2.4		3	3	3	
21CEE423J	Computer Application in Construction Engineering and Management	2	3								2	3	3	3	3	
21CEE417J	Computer Application in Earthquake Resistant Structure	3	3	3	2	3	3	2.5	2			2	3	3	3	
21CEP302L	Project	3	2	2	3	3	3	1	3	3	3	3	3	3	3	
21CEP303T	MOOC	3	2	2	3	3	3	1	3	3	3	3	3	3	3	
21CEP401L	Major Project	3	2	2	3	3	3	1	3	3	3	3	3	3	3	
21CEP402L	Major Project	3	2	2	3	3	3	1	3	3	3	3	3	3	3	
21CEP403L	Internship	3	2	2	3	3	3	1	3	3	3	3	3	3	3	
	Program Average															

17. (g) Implementation Plan: B.Tech. in Civil Engineering with Computer Applications

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
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 – III						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4	
21CEC201T	Hydro Mechanics and Hydraulic Engineering	3	0	0	3	
21CEC201L ¹	Fluid Mechanics and Machinery Laboratory	0	0	2	1	
21CEC202T	Engineering Surveying	3	0	0	3	
21CEC202L ¹	Surveying Laboratory	0	0	2	1	
21CEC203T	Environmental Engineering and Design	3	0	0	3	
21CEC203L ¹	Environmental Engineering Laboratory	0	0	2	1	
21PDH209T ¹	Social Engineering	2	0	0	2	
21CES201T	Mechanics of Structures	3	0	0	3	
21LEM201T ¹	Professional Ethics	1	0	0	0	
21PDM201L ¹	Verbal Reasoning	0	0	2	0	
21LEM202T ¹	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3	
Total Credits					24	

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 – V						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB301T	Probability and Statistics	3	1	0	4	
21CEC301T	Structural Analysis	3	0	0	3	
21CEC301L ¹	Computer-Aided Civil Engineering Laboratory	0	0	2	1	
21CEC302T	Structural Engineering Design-II	2	1	0	3	
21CEC303T	Transportation Engineering	3	0	0	3	
21CEC303L ¹	Transportation Engineering Laboratory	0	0	2	1	
E-1	Professional Elective – I				3	
O	Open Elective – I				3	
21PDM301L ¹	Analytical and Logical Thinking Skills	0	0	2	0	
21LEM301T ¹	Indian Art Form	1	0	0	0	
21GNP301L ¹	Community Connect	0	0	2	1	
Total Credits					22	

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 – VII						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21GNH401T	Behavioural Psychology	2	1	0	3	
E-4	Professional Elective – IV				3	
E-5	Professional Elective – V				3	
E-6	Professional Elective – VI				3	
E-7	Professional Elective – VII				3	
O	Open Elective – III				3	
Total Credits					18	

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



SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India