

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

23 M.Tech in Data Engineering

23. (a) Department Vision Statement

Stmnt - 1	<i>The Department of Data Science and Business Systems (DSBS) motivates prepares the next generation of practitioners and researchers with equal appreciation for a data-centric world and human values, with the capability to securely store and distribute the data, innovate tools and techniques for efficient data visualization for supporting business ecosystems.</i>
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23. (b) Department Mission Statement

Stmnt - 1	<i>To Impart technical knowledge as per industry requirements in data analysis and information visualization.</i>
Stmnt - 2	<i>To provide a platform to adapt and work with innovative tools and techniques related to the business decision making process.</i>
Stmnt - 3	<i>To provide knowledge in computing techniques including Blockchain, Data Science, Gaming and provide innovative solution for socio-economic problems.</i>
Stmnt - 4	<i>To impart knowledge of Business Principles, Service Orientation, Ethics and Life Values.</i>

23. (c) Program Education Objectives (PEO)

PEO - 1	<i>Graduates will be able to demonstrate their knowledge and skills acquired in Computer Science and Engineering domain</i>
PEO - 2	<i>Graduates will be able to successfully pursue their research in reputed institutions</i>
PEO - 3	<i>Graduates will have the proficiency to adapt, contribute and innovate new technologies and systems in their job domains with appropriate professional skills</i>
PEO - 4	<i>Graduates will be ethically and socially responsible solution providers and entrepreneurs in Computer Science and other engineering disciplines.</i>
PEO - 5	<i>Graduates will have the ability to excel in their career producing outstanding contribution in Computer Science with data engineering domain.</i>

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

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

23. (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>

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

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

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

23. (g) Programme Structure: M.Tech in Data Engineering

Professional Core Courses (C)						
Course	Course	Hours/Week				
Code	Title	L	T	P	C	
21CSC554J	Applied Data Science	3	0	2	4	
21CSC529T	Inferential Statistics	2	1	0	3	
21CSC555J	Machine Learning Algorithms	3	0	2	4	
21CSC556J	Database Systems Design: Relational and NoSQL	3	0	2	4	
21CSC567J	Big Data Frameworks and MLOps	3	0	2	4	
21IPC501J ²	Research Methodology	2	1	2	4	
21CSC601T ¹	Case Studies	3	0	0	3	
Total Credits					26	

Project Work, Internship In Industry / Higher Technical Institutions (P)						
Course	Course	Hours/Week				
Code	Title	L	T	P	C	
21CSP501L	Specialization Project (OR)	0	0	40	20	
21CSP502L	Specialization Project	0	0	30	15	
21CSP503L	Domain Internship	0	0	10	5	
Total Credits					20	

Assessment by Open Book Examination (2)						
Course	Course	Hours/Week				
Code	Title	L	T	P	C	
21IPC501J ²	Research Methodology	2	1	2	4	

Course Delivery by online mode (3)						
Course	Course	Hours/Week				
Code	Title	L	T	P	C	
21CSE668T ³	Business Data Analytics	3	0	0	3	
21CSE519T ³	Geospatial Data Analysis	2	1	0	3	
21CSE557T ³	Streaming Data Analytics	2	1	0	3	
21CSE558T ³	Deep Neural Network Architectures	2	1	0	3	
21CSE559T ³	Cloud Computing for Data Analytics	3	0	0	3	
21CSE591T ³	Advanced Data Visualization	2	1	0	3	
21CSE584T ³	Time Series Analysis and Forecasting	2	1	0	3	
21CSE639T ³	Blockchain Technologies	2	1	0	3	
21CSE655T ³	Advanced Machine Learning Algorithms	2	1	0	3	
21CSE656T ³	Social Media Analytics	2	1	0	3	
21CSE583T ³	Natural Language Processing and its applications	3	0	0	3	
21CSE658T ³	Large Lanquage Models	3	0	0	3	

Professional Elective Courses (E) (Any 7 Courses)						
Course	Course	Hours/Week				
Code	Title	L	T	P	C	
21CSE521T	Advanced Algorithms Analysis	2	1	0	3	
21CSE522T	Functional Programming	2	1	0	3	
21CSE524T	Computer Vision Techniques	2	1	0	3	
21CSE668T ³	Business Data Analytics	3	0	0	3	
21CSE519T ³	Geospatial Data Analysis	2	1	0	3	
21CSE557T ³	Streaming Data Analytics	2	1	0	3	
21CSE558T ³	Deep Neural Network Architectures	2	1	0	3	
21CSE559T ³	Cloud Computing for Data Analytics	3	0	0	3	
21CSE591T ³	Advanced Data Visualization	2	1	0	3	
21CSE584T ³	Time Series Analysis and Forecasting	2	1	0	3	
21CSE639T ³	Blockchain Technologies	2	1	0	3	
21CSE655T ³	Advanced Machine Learning Algorithms	2	1	0	3	
21CSE656T ³	Social Media Analytics	2	1	0	3	
21CSE583T ³	Natural Language Processing and its Applications	3	0	0	3	
21CSE658T ³	Large Language Models	3	0	0	3	
21CSE659T ³	Reinforcement Learning	2	1	0	3	
21CSE600T ¹	Journal Publication	0	0	0	3	
Total Credits					21	

Open Elective Courses (O)						
Course	Course	Hours/Week				
Code	Title	L	T	P	C	
21CSO621T	Cyber Security	3	0	0	3	
21CSO622T	Big Data Analytics	3	0	0	3	
21CSO623T	Data Sciences	3	0	0	3	
Total Credits					3	

100% assessment by the Department (1)						
Course	Course	Hours/Week				
Code	Title	L	T	P	C	
21CSC601T ¹	Case Studies	3	0	0	3	
21CSE600T ¹	Journal Publication	0	0	0	3	

23. (h) Implementation Plan: M.Tech in Data Engineering

Semester - I							
Code	Course Title	Hours/Week					
		L	T	P			
21CSC529T	Inferential Statistics	2	1	0	3		
21CSC554J	Applied Data Science	3	0	2	4		
21CSC555J	Machine Learning Algorithms	3	0	2	4		
21IPC501J ²	Research Methodology	2	1	2	4		
					3		
Total Credits					15/18		
Semester - II							
Code	Course Title	Hours/Week					
		L	T	P			
21CSC556J	Database Systems Design: Relational and NoSQL	3	0	2	4		
21CSC567J	Big Data Frameworks and MLOps	3	0	2	4		
	Professional Elective-1				3		
					3		
					3		
Total Credits					11/17		
Semester - III							
Code	Course Title	Hours/Week					
		L	T	P			
21CSC601T ¹	Case Studies	3	0	0	3		
	Professional Elective-2				3		
					3		
					3		
					3		
Total Credits					6/15		
Semester - IV							
Code	Course Title	Hours/Week					
		L	T	P			
21CSP501L	Specialization Project	0	0	40	20		
	(OR)						
21CSP502L	Specialization Project	0	0	30	15		
21CSP503L	Domain Internship	0	0	10	5		
					3		
					3		
Total Credits					20/26		

Students must register either 21CSP501L or 21CSP502L and 21CSP503L both in fourth semester

Offered and can be enrolled in both ODD & EVEN semester					
Code	Course Title	Hours/Week			C
		L	T	P	
	Professional Elective-3				3
	Professional Elective-4				3
	Professional Elective-5				3
	Professional Elective-6				3
21CSE600T ¹	Journal Publication	0	0	0	3
	Professional Elective-7				3
	Open Elective	3	0	0	3

23. (i) Program Articulation Matrix: M.Tech in Data Engineering

Course Code	Course Name	Programme Outcomes		
		1	2	3
21CSC554J	Applied Data Science	1.5	2	1.75
21CSC529T	Inferential Statistics	2	2	1.6
21CSC555J	Machine Learning Algorithms	1.8	2.8	2.6
21CSC556J	Database Systems Design: Relational and NoSQL	1.6	1.6	2.2
21CSC567J	Big Data Frameworks and MLOps	-	1	2.2
21CSC601T	Case Studies			
21CSE521T	Advanced Algorithms Analysis			
21CSE522T	Functional Programming			
21CSE524T	Computer Vision Techniques			
21CSE668T	Business Data Analytics	1	2	2.2
21CSE519T	Geospatial Data Analysis	1.6	2	2
21CSE557T	Streaming Data Analytics	-	1	2
21CSE558T	Deep Neural Network Architectures	1.7	2.3	1
21CSE559T	Cloud Computing for Data Analytics	1.6	1.6	2
21CSE591T	Advanced Data Visualization	2.8	1.2	0.6
21CSE584T	Time Series Analysis and Forecasting	2	2	2
21CSE639T	Blockchain Technologies	2	2	3
21CSE655T	Advanced Machine Learning Algorithms	1.5	2.6	2
21CSE656T	Social Media Analytics	3	2.3	1
21CSE583T	Natural Language Processing and its applications	3	-	-
21CSE658T	Large Language Models	2	1.8	1.4
21CSE659T	Reinforcement Learning	2	2	2
21CSE600T	Journal Publication			
21IPC501J	Research Methodology	3	2.6	
	Open Elective			
21CSP501L	Specialization Project			
21CSP502L	Specialization Project			
21CSP503L	Domain Internship			
	Program Average			

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



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