

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)

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Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

52. Integrated M.Tech. in Computer Science and Engineering with Specialization in Data Science

52. (a) Mission of the Department

Mission Stmt – 1	<i>To impart knowledge in cutting edge Computer Science and Engineering technologies in par with industrial standards.</i>
Mission Stmt – 2	<i>To collaborate with renowned academic institutions to uplift innovative research and development in Computer Science and Engineering and its allied fields to serve the needs of society</i>
Mission Stmt – 3	<i>To demonstrate strong communication skills and possess the ability to design computing systems individually as well as part of a multidisciplinary teams.</i>
Mission Stmt – 4	<i>To instill societal, safety, cultural, environmental, and ethical responsibilities in all professional activities</i>
Mission Stmt – 5	<i>To produce successful Data Science graduates with personal and professional responsibilities and commitment to lifelong learning</i>

52. (b) Program Educational Objectives (PEO)

PEO – 1	<i>Graduates will be able to demonstrate their knowledge in technical/managerial roles with right skills and aptitude in software industries and R&D sectors</i>
PEO – 2	<i>Graduates will possess the proficiencies and additional skills in core computer science and engineering discipline in par with industry requirements.</i>
PEO – 3	<i>Graduates will be able to successfully pursue higher education in reputed institutions and also extend their research career.</i>
PEO – 4	<i>Graduates will be self-empowered solution providers and entrepreneurs in Computer Science and Engineering</i>
PEO – 5	<i>Graduates will possess the ability to adapt, contribute and innovate new technologies and systems in the key domains of Data Science</i>

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

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

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

52. (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	-	-	1	-	2	-	3	2	3	-	-	3	3	3
PEO - 2	-	2	2	-	3	-	3	2	-	-	-	-	3	3	3
PEO - 3	-	3	3	2	-	-	-	-	-	2	-	3	3	3	3
PEO - 4	-	2	3	-	-	3	2	-	2	-	2	2	3	3	3
PEO - 5	3	-	-	-	3	3	-	2	-	3	3	3	3	3	3

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	<i>To understand, analyse, design, and develop computing solutions by applying fundamental concepts of computer science and engineering.</i>
PSO - 2	<i>To apply computing principles, skills and practices to develop solutions using logical and reasoning skills for real life problems.</i>
PSO - 3	<i>Ability to understand the requirements, gather a large amount of data, analyze, utilize the tools to extract insights to increase the productivity and efficiency of the business along with better visual representations.</i>

52. (e) Program Structure: Integrated M.Tech. in Computer Science and Engineering with Specialization in Data Science

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	2	1	0	3	
21LEH103T	French					
21LEH104T	German					
21LEH105T	Japanese					
21LEH106T	Korean					
21LEH107T	Spanish					
21LEH108T	Russian					
21GNH101J	Philosophy of Engineering	1	0	2	2	
21PDH209T ¹	Social Engineering	2	0	0	2	
21GNH401T	Behavioral Psychology	2	1	0	3	
Total Credits 13						

Basic Science Courses (B)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21PYB102J	Semiconductor Physics and Computational Methods	3	1	2	5	
21CYB101J	Chemistry	3	1	2	5	
21MAB101T	Calculus and Linear Algebra	3	1	0	4	
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4	
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4	
21MAB301T	Probability and Statistics	3	1	0	4	
21MAB302T	Discrete Mathematics	3	1	0	4	
21BTB102T	Introduction to Computational Biology	2	0	0	2	
Total Credits 32						

Engineering Science Courses (S)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21EES101T	Electrical and Electronics Engineering	3	1	0	4	
21MES101L ¹	Basic Civil and Mechanical Workshop	0	0	4	2	
21MES102L ¹	Engineering Graphics and Design	0	0	4	2	
21CSS101J	Programming for Problem Solving	3	0	2	4	
21CSS202T	Fundamentals of Data Science	3	2	0	5	
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3	
21CSS301T	Full Stack Development	1	1	0	2	
Total Credits 22						

Professional Core Courses (C)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21CSC101T	Object Oriented Design and Programming	2	1	0	3	
21CSC201J	Data Structures and Algorithms	3	0	2	4	
21CSC202J	Operating Systems	3	0	2	4	
21CSC204J	Design and Analysis of Algorithms	3	0	2	4	
21CSC205P ¹	Database Management Systems	3	1	0	4	
21CSC206T	Artificial Intelligence	2	1	0	3	
21CSC206P ¹	Advanced Object Oriented Programming	2	1	0	3	
21CSC301T	Formal Language and Automata	3	0	0	3	
21CSC302J	Computer Networks	3	0	2	4	
21CSC303J	Software Engineering and Project Management	2	0	2	3	
21CSC304J	Compiler Design	2	0	2	3	
21CSC307P ¹	Machine Learning for Data Analytics	2	1	0	3	
21CSC502T	Applied Deep Learning	3	1	0	4	
21CSC501T	Natural Language Processing Techniques	3	1	0	4	
21IPC501J ²	Research Methodology	2	1	2	4	
Total Credits 53						

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		
21LEM101T ¹	Constitution of India	1	0	0		
21LEM102T ¹	Universal Human Values – Introduction	1	0	0		
21LEM201T ¹	Professional Ethics	1	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						

Professional Elective Courses (E) (Any 13 Courses)							Professional Elective Courses (E)						
Course Code	Course Title	Hours / Week			C		Course Code	Course Title	Hours / Week			C	
		L	T	P					L	T	P		
21CSE222T	Big Data Tools and Techniques	3	0	0	3		21CSE427T	Augmented and Virtual Reality	2	1	0	3	
21CSE224T	Computer Architecture	3	0	0	3		21CSE428T	Healthcare Analytics	2	1	0	3	
21CSE253T	Internet of Things	2	1	0	3		21CSE429T	Data Science for Internet of Things	2	1	0	3	
21CSE251T	Digital Image Processing	3	0	0	3		21CSE447T	Robot Motion Planning	2	1	0	3	
21CSE321T	Data Warehousing and Data Mining	2	1	0	3		21CSE448T	Bio-inspired computing and Fuzzy Logic	2	1	0	3	
21CSE322T	Multivariate Techniques for Data Analytics	2	1	0	3		21CSE421T	Business Intelligence and Analytics	2	1	0	3	
21CSE323T	Marketing Analytics	2	1	0	3		21CSE430T	Automatic Speech Recognition	2	1	0	3	
21CSE359T	Information Storage and Management	2	1	0	3		21CSE449T	Risk Analytics	2	1	0	3	
21CSE325T	Applied Social Network Analysis	2	1	0	3		21CSE521T	Advanced Algorithms Analysis	2	1	0	3	
21CSE326T	Artificial Neural Networks	3	0	0	3		21CSE522T	Functional Programming	2	1	0	3	
21CSE373T	Streaming Analytics	2	1	0	3		21CSE524T	Computer Vision Techniques	2	1	0	3	
21CSE425T	Advanced Machine Learning	2	1	0	3		21CSE527T	Text Mining and Analytics	2	1	0	3	
21CSE327T	Cloud Computing for Data Analytics	2	1	0	3		21CSE529T	Web Intelligence	2	1	0	3	
21CSE422T	Convolutional Neural Networks	2	1	0	3		Total Credits						39
21CSE426T	Financial Machine Learning	2	1	0	3								

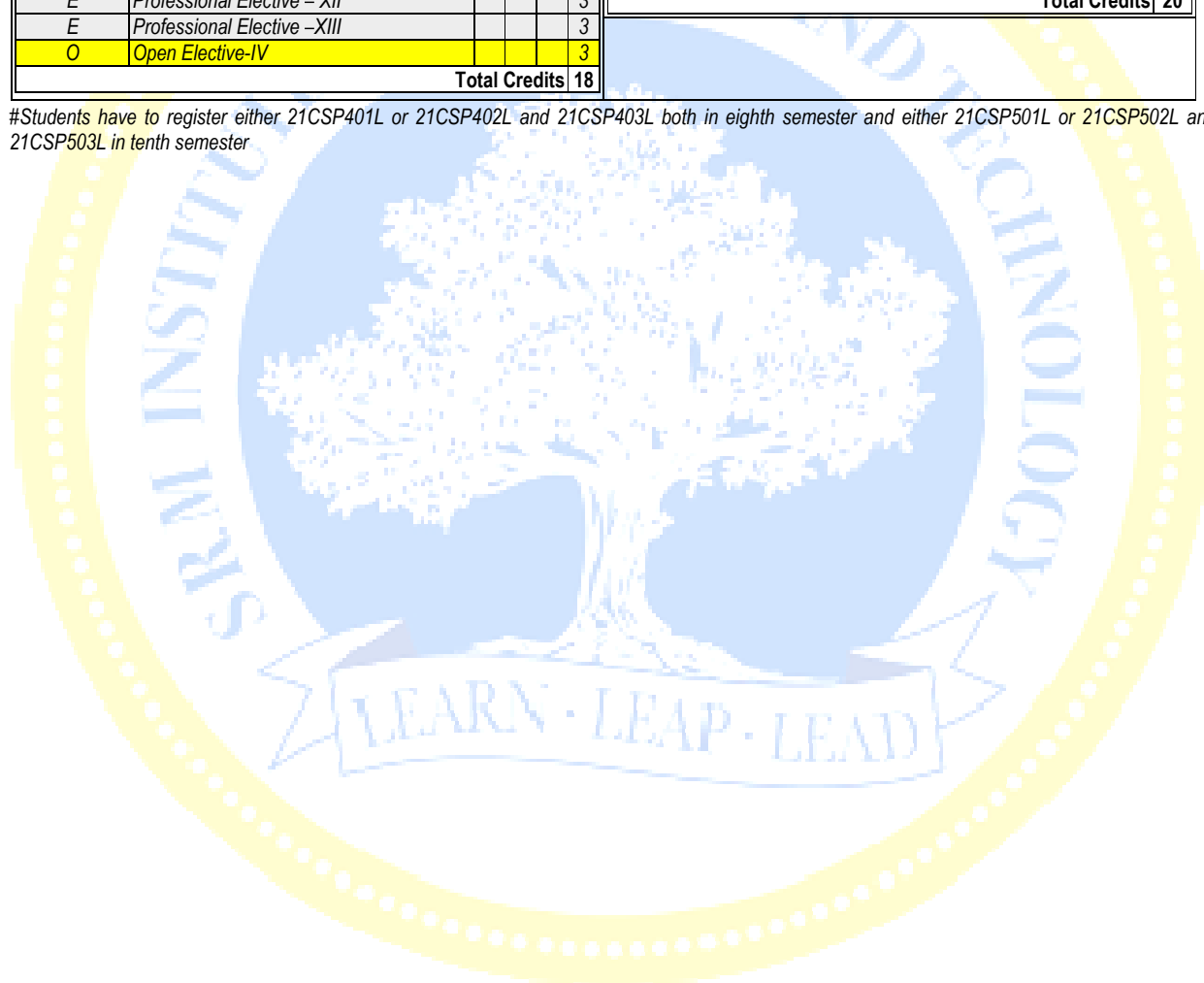


52. (g) Implementation Plan: Integrated M.Tech.in Computer Science and Engineering with Specialization in Data Science

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	
21PYB102J	Semiconductor Physics and Computational Methods	3	1	2	5	
21MES102L ¹	Engineering Graphics and Design	0	0	4	2	
21EES101T	Electrical and Electronics Engineering	3	1	0	4	
21CSS101J	Programming for Problem Solving	3	0	2	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 22						
Semester – III						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4	
21CSS202T	Fundamentals of Data Science	3	2	0	5	
21CSC201J	Data Structures and Algorithms	3	0	2	4	
21CSC202J	Operating Systems	3	0	2	4	
21CSC206P ¹	Advanced Object Oriented Programming	2	1	0	3	
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3	
21LEM201T ¹	Professional Ethics	1	0	0	0	
21PDM201L ¹	Verbal Reasoning	0	0	2	0	
Total Credits 23						
Semester – IV						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB301T	Probability and Statistics	3	1	0	4	
21CSC204J	Design and Analysis of Algorithms	3	0	2	4	
21CSC205P ¹	Database Management Systems	3	1	0	4	
21CSC206T	Artificial Intelligence	2	1	0	3	
E	Professional Elective – I				3	
21PDH209T ¹	Social Engineering	2	0	0	2	
21PDM202L ¹	Critical and Creative Thinking Skills	0	0	2	0	
21LEM202T ¹	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3	
Total Credits 23						
Semester – VI						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21CSS301T	Full Stack Development	1	1	0	2	
21CSC303J	Software Engineering and Project Management	2	0	2	3	
21CSC304J	Compiler Design	2	0	2	3	
E	Professional Elective – III				3	
E	Professional Elective – IV				3	
O	Open Elective – II				3	
21CSP302L ¹	Project	0	0	6	3	
21CSP303T ¹	MOOC	3	0	0		
21PDM302L ¹	Employability Skills and Practices	0	0	2	0	
21LEM302T ¹	Indian Traditional Knowledge	1	0	0	0	
Total Credits 20						

					Semester - VIII									
					Course Code	Course Title	Hours / Week			C				
							L	T	P					
					21CSC502T	Applied Deep Learning	3	1	0	4				
					21CSC501T	Natural Language Processing Techniques	3	1	0	4				
					21IPC501J ²	Research Methodology	2	1	2	4				
					21CSP401L	Major Project	0	0	30	15				
					21CSP402L	Major Project	0	0	20	10				
					21CSP403L	Internship	0	0	10	5				
										Total Credits			27	
					Semester - IX									
					Course Code	Course Title	Hours / Week			C				
							L	T	P					
					E	Professional Elective – IX				3				
					E	Professional Elective – X				3				
					E	Professional Elective – XI				3				
					E	Professional Elective – XII				3				
					E	Professional Elective –XIII				3				
					O	Open Elective-IV				3				
										Total Credits			18	
					Semester - X									
					Course Code	Course Title	Hours / Week			C				
							L	T	P					
					21CSP501L	Specialization Project	0	0	40	20				
					21CSP502L	Specialization Project	0	0	30	15				
					21CSP503L	Domain Internship	0	0	10	5				
										Total Credits			20	

#Students have to register either 21CSP401L or 21CSP402L and 21CSP403L both in eighth semester and either 21CSP501L or 21CSP502L and 21CSP503L in tenth semester





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