



SSN School of Engineering

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**Master of Technology
Computer Science and Engineering**

CURRICULUM

REGULATIONS 2026

Vision and Mission of the Department

VISION

To emerge as a world class technology department through education, innovation, and collaborative research.

MISSION

- To impart quality education to students
- To create and disseminate knowledge for the betterment of mankind.
- To establish a center of excellence in collaboration with industries, research laboratories and other agencies to meet the changing needs of society.
- To provide individual attention and enable character building.
- To encourage entrepreneurship skills among students

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Successful career – Graduates will be successful in modern computing practices, have an attitude for research, and engage in entrepreneurial ventures, promoting growth of national and global economy.

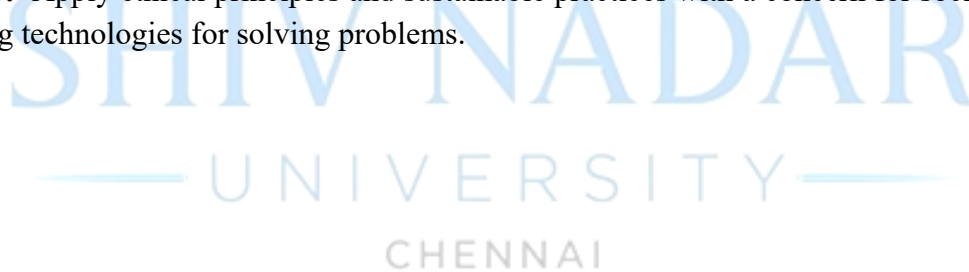
PEO 2: Professional Excellence – Graduates will excel in their profession, demonstrating professional standards, good communication skills, and leadership qualities.

PEO 3: Ethical and Societal Responsibility – Graduates will maintain high ethical standards adopting equitable and sustainable practices.

PROGRAM OUTCOMES (POs)

The graduates of the M.E degree program in Computer Science and Engineering will be able to:

- PO1:** Independently carry out research / investigation, and development work to solve practical problems.
- PO2:** Read, write, and present a substantial technical report/document
- PO3:** 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
- PO4:** Analyze computational problems and develop software systems methodically, applying suitable modern AI techniques.
- PO5:** Apply ethical principles and sustainable practices with a concern for societal issues, while using technologies for solving problems.



COURSE SUMMARY

The listed courses in the curriculum are broadly classified as per the recommendations from the UGC.

Sl. No	Broad Category of Course	Minimum Credit Requirement
1	Department Core Course (DC)	10
2	Major Core Course (MC)	30
3	Multidisciplinary Course (MD)	10
4	Open Elective (OE)	2
5	Project Dissertation (PD)	20
6	Research Internship (RI)	4
5	Skill Enhancement Course (SEC)	4
Total		80

The semester wise credit breakup of the Curriculum based on the above credit breakup proposed by the UGC is as follows:

Semester\Category	DC	MC	MD	OE	PD	RI	SEC	TOTAL
I	7	8	4	2	-	-	2	23
II	3	14	3	-	-	-	2	22
III	-	8	3	-	8	4	-	23
IV	-	-	-	-	12	-	-	12
Total	10	30	10	2	20	4	4	80

SEMESTER I

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
				CONTACT PERIODS	L	T	P	TW&SL	TH	C
1		Linear Algebra and Estimation Theory	MD	4	60	0	0	60	120	4
2		Advanced Data Structures and Algorithms	DC	5	45	0	30	45	120	4
3		Real-time Operating Systems	DC	3	45	0	0	45	90	3
4		Advanced Machine Learning	MC	5	45	0	30	45	120	4
5		Elective 1	MC	5	45	0	30	45	120	4
6		Research Methodology / IPR/Operations Research	OE	2	30	0	0	30	60	2
7		Full Stack Web Development	SEC	2	0	0	45	15	60	2
TOTAL				26	270	15	135	285	690	23

SEMESTER II

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
				CONTACT PERIODS	L	T	P	TW&SL	TH	C
1		Multi-disciplinary Open Elective 1	MD	3	45	0	0	45	90	3
2		Advanced Databases	DC	3	45	0	0	45	90	3
3		High Performance Computing	MC	5	45	0	30	45	120	4
4		Elective 2	MC	5	45	0	30	45	120	4
5		Elective 3	MC	3	45	0	0	45	90	3
6		Elective 4	MC	3	45	0	0	45	90	3
7		Mobile Application Development	SEC	2	0	15	30	15	60	2
TOTAL				24	270	15	90	285	660	22

SEMESTER III

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
				CONTACT PERIODS	L	T	P	TW&SL	TH	C
1		Multi-disciplinary Open Elective 2	MD	3	45	0	0	45	90	3
2		Elective 5	MC	5	45	0	30	45	120	4
3		Elective 6	MC	5	45	0	30	45	120	4
PRACTICALS										
4		Project/Dissertation Phase I	PD	16	0	0	240		240	8
5		Research Internship	RI		0	0	60	180	240	4
TOTAL				29	135	0	300	435	810	23

SEMESTER IV

CHENNAI

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
				CONTACT PERIODS	L	T	P	TW&SL	TH	C
PRACTICALS										
1		Project/Dissertation Phase II	PD	24	0	0	180	180	360	12
TOTAL				24	0	0	360	180	360	12

ELECTIVE 1

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Advanced Software Engineering	MC	5	45	0	30	45	120	4
2	Software Architecture and Design	MC	5	45	0	30	45	120	4
3	Information Retrieval Techniques	MC	5	45	0	30	45	120	4
4	Principles of Data Science	MC	5	45	0	30	45	120	4
5	Cognitive Computing	MC	5	45	0	30	45	120	4
6	Advanced Computer Networks	MC	5	45	0	30	45	120	4
7	Embedded Software Development	MC	5	45	0	30	45	120	4

MULTI- DISCIPLINARY OPEN ELECTIVE -1

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Bioinformatics	MD	3	45	0	0	45	90	3
3	Business Analytics	MD	3	45	0	0	45	90	3
4	Wearable Computing	MD	3	45	0	0	45	90	3

Note: Students from M.Tech. Computer Science and Engineering must not opt for this Open Elective.

ELECTIVE 2

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Software Verification and Validation	MC	5	45	0	30	45	120	4
2	Penetration Testing and Vulnerability Analysis	MC	5	45	0	30	45	120	4
3	Natural Language Processing	MC	5	45	0	30	45	120	4
4	Social Network Analysis	MC	5	45	0	30	45	120	4
5	Image processing and Analysis	MC	5	45	0	30	45	120	4
6	Cyber Security	MC	5	45	0	30	45	120	4
7	Cloud Computing	MC	5	45	0	30	45	120	4

ELECTIVE 3

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Formal System Verification -	MC	3	45	0	0	45	90	3
2	Industry 5.0	MC	3	45	0	0	45	90	3
3	Statistical Machine Learning	MC	3	45	0	0	45	90	3
4	Edge analytics	MC	3	45	0	0	45	90	3
5	Computational Biology	MC	3	45	0	0	45	90	3
6	Wireless Sensor Networks and Protocols	MC	3	45	0	0	45	90	3
7	Security Principles and Practices	MC	3	45	0	0	45	90	3

ELECTIVE 4

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Software Security	MC	3	45	0	0	45	90	3
2	Software Agents	MC	3	45	0	0	45	90	3
3	Reinforcement Learning	MC	3	45	0	0	45	90	3
4	Optimization and algorithmic paradigm	MC	3	45	0	0	45	90	3
5	Quantum Computing	MC	3	45	0	0	45	90	3
6	Digital Forensics	MC	3	45	0	0	45	90	3
7	Introduction to Data and AI Governance	MC	3	45	0	0	45	90	3

MULTI-DISCIPLINARY OPEN ELECTIVE - 2

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Sustainable and Green Computing	MD	3	45	0	0	45	90	3
2	Robotics and Intelligent Systems	MD	3	45	0	0	45	90	3
3	Edge and Fog Computing	MD	3	45	0	0	45	90	3
4	Human-Computer Interaction	MD	3	45	0	0	45	90	3

Note: Students from M.Tech. Computer Science and Engineering must not opt for this Open Elective.

ELECTIVE 5

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Software Project Management	MC	5	45	0	30	45	120	4
2	Generative AI for Software Development	MC	5	45	0	30	45	120	4
3	Deep Learning	MC	5	45	0	30	45	120	4
4	Healthcare Data and Analytics	MC	5	45	0	30	45	120	4
5	Application Development using VR, AR and MR	MC	5	45	0	30	45	120	4
6	Blockchain Technologies	MC	5	45	0	30	45	120	4
7	Machine Learning for Cyber Security	MC	5	45	0	30	45	120	4

ELECTIVE 6

S. No.	COURSE TITLE	COURSE CATEGORY	Teaching and Learning Scheme (per semester)						
			CONTACT PERIODS	L	T	P	TW& SL	TH	C
1	Microservices and DevOps	MC	5	45	0	30	45	120	4
2	User Experience Design	MC	5	45	0	30	45	120	4
3	Advanced AI	MC	5	45	0	30	45	120	4
4	Computer Vision	MC	5	45	0	30	45	120	4
5	Advanced Data Science	MC	5	45	0	30	45	120	4
6	Software Defined Networks	MC	5	45	0	30	45	120	4
7	Network Security	MC	5	45	0	30	45	120	4

L - Lecture, T - Tutorial, P - Practical, TW & SL – Term Work & Self Learning, TH – Total Hours and C – Credits

	Semester 1	Semester 2			Semester 3	
	Elective 1	Elective 2	Elective 3	Elective 4	Elective 5	Elective 6
Software Engineering	Advanced Software Engineering Software Architecture and Design	Software Verification and Validation (LAB) Penetration Testing and Vulnerability Analysis (LAB)	Formal System Verification Industry 5.0	Software Security Software Agents	Software Project Management (LAB) Generative AI for Software Development (LAB)	Microservices and DevOps (LAB) User Experience Design (LAB)
Data Science and AI	Information Retrieval Techniques Principles of Data Science Cognitive Computing	Natural Language Processing (LAB) Social Network Analysis (LAB) Image processing and Analysis (LAB)	Statistical Machine Learning Edge analytics Computational Biology	Reinforcement Learning Optimization and algorithmic paradigm Quantum Computing	Deep Learning (LAB) Healthcare Data and Analytics (LAB) Application Development using VR, AR and MR (LAB)	Advanced AI (LAB) Computer Vision (LAB) Advanced Data Science (LAB)
	Semester 1	Semester 2			Semester 3	
	Elective 1	Elective 2	Elective 3	Elective 4	Elective 5	Elective 6
Network Systems and Security	Advanced Computer Networks Embedded Software Development	Cyber Security (LAB) Cloud Computing (LAB)	Wireless Sensor Networks and Protocols Security Principles and Practices	Digital Forensics Introduction to Data and AI Governance	Blockchain Technologies (LAB) Machine Learning for Cyber Security (LAB)	Software Defined Networks (LAB) Network Security (LAB)

	Semester 2 (Open Elective)	Semester 3 (Open Elective)
Multidisciplinary	Bioinformatics Business Analytics Wearable Computing	Sustainable and Green Computing Robotics and Intelligent Systems Edge and Fog Computing Human-Computer Interaction

SHIV NADAR
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CHENNAI