SCHOOL OF ENGINEERING AND SCIENCES

Department of Computer Science & Engineering

B. Tech Curriculum

2023 Batch

Category wise credit distribution

Course Sub-category	Subcategory Credits	Category Credits	Learning hours
Ability Enhancement Courses (AEC)		8	240
University AEC	4		
School AEC	4		
Value Added Courses (VAC)		8	240
University VAC	4		
School VAC	4		
Skill Enhancement Courses (SEC)		15	450
School SEC	5		
Department SEC	4		
SEC Elective	6		
Multidisciplinary/Interdisciplinary /Foundation (FIC)		17	510
School FIC	17		
Department FIC	0		
Core + Core Elective including Specialization (CC)		84	2520
Core	62		
Core Elective (Inc Specialization)	22		
Minor (MC) + Open Elective (OE)		15	450
Research / Design / Internship/ Project (RDIP)		16	480
Internship / Design Project / Startup / NGO	4		
Internship / Research / Thesis	12		
Total		163	4890

Semester wise course credit distribution under various categories

Category	S1	S2	S3	S4	S5	S6	S7	S8	Total	%age
Ability Enhancement Courses (AEC)	2	2	2	2					8	4.91%
Value Added Courses (UG Common) (VAC)	2	2				4			8	4.91%
Skill Enhancement Courses (SEC)	3	2	2	2	3	3			15	9.20%
Multidisciplinary / Interdisciplinary / Foundation Core (FIC)	8	9							17	10.43%
Major Core (CC) + Specialization (SE) + Core Elective (CE)	4	4	13	15	19	18	11		84	51.53%
Minor (MC) + Open Elective (OE)			3	3	3	3	3		15	9.20%
Research / Design / Industrial Practice / Project (RDIP)					2		2	12	16	9.82%
Grand Total	19	19	20	22	27	28	16	12	**163**	100.00%

B. Tech. - Computer Science and Engineering [CSE]

Semester-1

No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	AEC	University AEC	Listen closely, Speck up, read well: A Holistic approach to Language skills	1	0	1	2	60
2	VAC	University VAC	Environmental Science	2	0	0	2	60
3	SEC	School SEC	The Arrows of Intellect: Analytical Reasoning and Aptitude	1	1	1	3	90
4	FIC	School FIC	Engineering Physics	2	0	1	3	90
5	FIC	School FIC	Calculus For Engineers	3	0	0	3	90
6	FIC	School FIC	Emerging Technologies	2	0	0	2	60
7	CC	Core	Fundamentals of Computing and Programming in C	3	0	1	4	120
			Semester Total				**19**	**570**

Semester-2

No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	AEC	University AEC	The power of the pen and the voice-Basics of writing and presentation	1	0	1	2	60
2	VAC	University VAC	Ethics and Universal Human Values	2	0	0	2	60
3	SEC	School SEC	Entrepreneurial Mindset	0	0	2	2	60
4	FIC	School FIC	Linear Algebra and Differential Equations	3	0	0	3	90
5	FIC	School FIC	Foundations of Electrical and Electronics Engineering	2	0	1	3	90
6	FIC	School FIC	Principles of Economics and Management				3	90
7	CC	Core	Data Structures	3	0	1	4	120
			Semester Total				**19**	**570**

Semester-3

No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	AEC	School AEC	Problem Solving Skills	1	0	1	2	60
2	VAC	School VAC	Co-Curricular Activities	0	0	2	2*	60*
3	VAC	School VAC	Community Engagement	2	0	0	2*	60*
4	SEC	Department/School SEC	Coding Skill - I				2	60
5	CC	Core	OOPS with C++	3	0	1	4	120
6	CC	Core	Discrete Mathematics	3	0	0	3	90
7	CC	Core	Design and Analysis of Algorithms	3	0	1	4	120
8	CC	Core	Hands on with Python	0	0	2	2	60
9	OE/Minor	OE/Minor	OE/Minor - I				3	90
	Semester Total						20	600

Semester-4

No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	AEC	School AEC	Creativity and Critical thinking Skills	1	0	1	2	60
2	VAC	School VAC	Co-Curricular Activities	0	0	2	2*	60*
3	VAC	School VAC	Community Engagement	2	0	0	2*	60*
4	SEC	Department/School SEC	Coding Skill - II				2	60
5	CC	Core	Digital Electronics	3	0	1	4	120
6	CC	Core	Probability and Statistics	3	0	0	3	90
7	CC	Core	Database Management Systems	3	0	1	4	120
8	CC	Core	Web Technology	3	0	1	4	120
9	OE/Minor	OE/Minor	OE/Minor - II				3	90
	Semester Total						22	660

Semester-5

No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	VAC	School VAC	Co-Curricular Activities	0	0	2	2*	60*
2	VAC	School VAC	Community Engagement	2	0	0	2*	60*
3	SEC	SEC Elective	Career Skills-1				3	90
4	CC	Core	Computer Networks	3	0	1	4	120
5	CC	Core	Operating Systems	3	0	1	4	120
6	CC	Core	Machine Learning	3	0	1	4	120
7	CC	Core	Automata and Compilers Design	3	0	0	3	90
8	CC	Core	Computer Organization and Architecture	3	0	1	4	120
9	OE/Minor	OE/Minor	OE/Minor - III				3	90
	Semester Total						**27**	810

Semester-6

No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	VAC	School VAC	Co-Curricular Activities	0	0	2	2	60
2	VAC	School VAC	Community Engagement	2	0	0	2	60
3	SEC	SEC Elective	Career Skills-2				3	90
4	CC	Core	Software Engineering & Project Management	3	0	1	4	120
5	CC	Core	Mobile Application Development with Java	3	0	1	3	90
6	CC/CE	Core Elective	Core Elective - I	3	0	0	3	90
7	CE/SE	Stream Elective	Stream Elective - I	3	0	1	4	120
8	CE/SE	Stream Elective	Stream Elective - II	3	0	1	4	120
9	OE/Minor	OE/Minor	OE/Minor - IV				3	90
	Semester Total						**28**	840

Semester-7

No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	CE/SE	Core Elective	Core Elective - II	3	0	0	3	90
2	CE/SE	Stream Elective	Stream Elective - III	3	0	1	4	120
3	CE/SE	Stream Elective	Stream Elective - IV	3	0	1	4	120
4	RDIP	Internship / Research / Thesis	Summer Internship/Mini Project/Research Project	0	0	2	4	60
5	OE/Minor	OE/Minor					3	90
	Semester Total						**18**	**480**

Semester-8								
No	Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits	Learning Hours
1	RDIP	Internship / Research / Thesis	Major Project	0	0	12	12	360
	Semester Total						**12**	**360**

Total Credit (Excluding the subjects marked in Red color)	**163**	**4890**

List of Stream Specific Electives					
Course Code	**Course Name**	**L**	**T**	**P**	**C**
Artificial Intelligence and Machine Learning Stream					
SE1 VI	Artificial Intelligence	3	0	1	4
SE2 VI	Digital Image Processing	3	0	1	4
SE3 VII	Deep Learning	3	0	1	4
SE4 VII	Principles of Soft Computing	3	0	1	4
Cyber Security Stream					
SE1 VI	Cryptography and Network Security	3	0	1	4
SE2 VI	Web Application Penetration Testing	3	0	1	4
SE3 VII	Vulnerability Analysis and Cyber Forensics	3	0	1	4
SE4 VII	Blockchain Technology	3	0	1	4
Big Data Analytics Stream					
SE1 VI	Data Warehousing and Mining	3	0	1	4
SE2 VI	Applied Data Science	3	0	1	4
SE3 VII	Principles of Big Data Management	3	0	1	4
SE4 VII	Information Retrieval	3	0	1	4
Distributed and Cloud Computing Stream					
SE1 VI	Parallel and Distributed Computing	3	0	1	4
SE2 VI	Cloud Computing	3	0	1	4
SE3 VII	Edge Computing	3	0	1	4
SE4 VII	Service Oriented Computing	3	0	1	4
Internet of Things Stream					
SE1 VI	Embedded Systems	3	0	1	4
SE2 VI	IoT System Design and Implementation	3	0	1	4
SE3 VII	IoT Data Analytics	3	0	1	4
SE4 VII	IoT Security and Blockchain	3	0	1	4

List of Core Technical Electives					
Course Code	**Course Name**	**L**	**T**	**P**	**C**
CSE 321	Human Computer Interaction	3	0	0	3
CSE 322	Advanced Computer Architecture	3	0	0	3
CSE 323	Natural Language Processing	3	0	0	3
CSE 324	Computer Graphics	3	0	0	3
CSE 325	Advanced Data Structures and Algorithms	3	0	0	3
CSE 326	Distributed Operating Systems	3	0	0	3
CSE 420	Data and Web Mining	3	0	0	3
CSE 421	Complexity Theory	3	0	0	3
CSE 422	Software Project Management	3	0	0	3
CSE 423	Multimedia	3	0	0	3
CSE 424	Deep Learning	3	0	0	3
CSE 425	Advanced Database Management Systems	3	0	0	3
CSE 426	Fog Computing	3	0	0	3
CSE 427	Parallel Algorithms	3	0	0	3
CSE 428	Web Services	3	0	0	3
CSE 429	Advances in Data Mining	3	0	0	3
CSE 327	Social Network Analysis	3	0	0	3
CSE 328	Recommender Systems	3	0	0	3
CSE 329	Computational and Complexity Theory	3	0	0	3
CSE 430	Cryptography and Network Security	3	0	0	3
CSE 431	Artificial Intelligence	3	0	0	3
CSE 432	Machine Learning on Edge Computing	3	0	0	3
CSE 433	Mobile and wireless security	3	0	0	3
CSE 434	Internet protocols and networking	3	0	0	3
CSE 435	Mobile application security testing	3	0	0	3
CSE 436	IoT security	3	0	0	3
CSE 437	Biometric Security	3	0	0	3
CSE 438	Cyber Law	3	0	0	3
CSE 439	Ethical Hacking	3	0	0	3
CSE 440	Security audit and Risk Assessment	3	0	0	3
CSE 441	Digital Forensics and Incident Response	3	0	0	3
CSE 442	Security Analytics	3	0	0	3
CSE 443	Multiview Geometry	3	0	0	3
CSE 444	Quantum Computation	3	0	0	3