SCHOOL OF ENGINEERING AND SCIENCES

B. Tech Electronics and Communication Engineering

2023-27 Batch

Category Wise Credit Distribution

Course Sub-category	Subcategory Credits	Category Credits	Learning hours
Ability Enhancement Courses (AEC)		**8**	**240**
University AEC	8		
School AEC	0		
Value Added Courses (VAC)		**8**	**240**
University VAC	8		
School VAC	0		
Skill Enhancement Courses (SEC)		**16**	**480**
School SEC	4		
Department SEC	6		
SEC Elective	6		
Foundation/ Interdisciplinary courses (FIC)		**18**	**540**
School FIC	18		
Department FIC	0		
Core + Core Elective including Specialization (CC)		**80**	**2400**
Core	65		
Core Elective (Inc Specialization)	15		
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		**162**	**4860**

Semester Wise Course Credit Distribution Under Various Categories

	Semester									
Category	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**Total**	**% age**
Ability Enhancement Courses (AEC)	2	2	2	2	0	0	0	0	8	5
Value Added Courses (UG Common) (VAC)	2	2	0	0	0	4	0	0	8	5
Skill Enhancement Courses (SEC)	2	2	3	3	3	3	0	0	16	12.5
Foundation/ Interdisciplinary courses (FIC)	12	6	0	0	0	0	0	0	18	7.5
Major Core + Specialization (CC)	0	8	15	15	18	15	9	0	80	49.4
Minor (MC) + Open Elective (OE)	0	0	3	3	3	3	3	0	15	9.3
Research / Design / Industrial Practice / Project (RDIP)	0	0	0	0	0	0	4	12	16	11.9
Grand Total	**19**	**20**	**23**	**23**	**24**	**25**	**16**	**12**	**162**	**100**

B. Tech. – Electronics and Communication Engineering [ECE]

Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits
Semester-1						
AEC	University AEC	Art of Listening, Speaking and Reading Skills	1	0	1	2
VAC	University VAC	Environmental Science	2	0	0	2
SEC	School SEC	Analytical Reasoning and Aptitude Skills	1	1	1	3
FIC	School FIC	Engineering Physics	2	0	1	3
FIC	School FIC	Calculus For Engineers	3	0	0	3
FIC	School FIC	Fundamentals of Computing and Programming in C	3	0	1	4
FIC	School FIC	Emerging Technologies	2	0	0	2
					Semester Total	**19**

Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits
Semester-2						
AEC	University AEC	Effective Writing and Presentation Skills	1	0	1	2
VAC	University VAC	Universal Human Values and Ethics	2	0	0	2
SEC	School SEC	Entrepreneurial Mindset	0	0	2	2
FIC	School FIC	Linear Algebra and Differential Equations	3	0	0	3
FIC	School FIC	Principles of Economics and Management	3	0	0	3
CC	Core	Fundamentals of Electrical Circuits	3	0	1	4
CC	Core	Microelectronic Devices and Circuits	3	0	1	4
					Semester Total	**20**

			Semester-3				
Category	**Sub-Category**		**Course Title**	**L**	**T/D**	**P/Pr**	**Credits**
AEC	School AEC		Problem Solving Skills	1	0	1	2
VAC	School VAC		Co-Curricular Activities	0	0	2	2*
VAC	School VAC		Community Service and Social Responsibility	2	0	0	2*
SEC	Department/School SEC		Data Structures	2	0	1	3
CC	Core		Digital Design with HDL	3	0	1	4
CC	Core		Signals and Systems	3	0	1	4
CC	Core		Probability and Random Processes	3	0	0	3
CC	Core		Design and Analysis of Analog, Mixed Signal Circuits	3	0	1	4
OE/Minor	OE/Minor			3	0	0	3
						Semester Total	**23**

		Semester-4				
Category	**Sub-Category**	**Course Title**	**L**	**T/D**	**P/Pr**	**Credits**
AEC	School AEC	Creativity and Critical thinking Skills	1	0	1	2
VAC	School VAC	Co-Curricular Activities	0	0	2	2*
VAC	School VAC	Community Service and Social Responsibility	2	0	0	2*
SEC	Department/School SEC	Hands on with Python and Raspberry PI	1	1	1	3
CC	Core	Principles of Modern Communication Systems	3	0	1	4
CC	Core	Digital Signal Processing	3	0	1	3
CC	Core	Control Systems	2	1	0	3
CC	Core	AI/ML for Electronics Engineers	3	0	1	4
OE/Minor	OE/Minor		3	0	0	3
					Semester Total	**24**

Semester-5						
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits
VAC	School VAC	Co-Curricular Activities	0	0	2	2*
VAC	School VAC	Community Service and Social Responsibility	2	0	0	2*
SEC	SEC Elective	Career Skills-1	3	0	0	**3**
CC	Core	Basic CMOS VLSI Design	3	0	1	4
CC	Core	Wireless Communication	3	0	1	4
CC	Core	Microprocessors and Micro Controllers	3	0	1	4
CC	Core	Electro Magnetics and Wave Propagation	3	0	0	3
CC	Core	Internet of Things	2	0	1	3
OE/Minor	OE/Minor		3	0	0	3
					Semester Total	**24**

Semester-6						
Category	Sub-Category	Course Title	L	T/D	P/Pr	Credits
VAC	School VAC	Co-Curricular Activities	0	0	2	2
VAC	School VAC	Community Service and Social Responsibility	2	0	0	2
SEC	SEC Elective	Career Skills-2	3	0	0	**3**
CC	Core	FPGA based Advanced Digital System Design	2	0	1	3
CC	Core	Antenna Design	2	0	1	3
CC	Core	Embedded System Design	3	0	1	4
CE/SE	SE	Specialization Elective-I	3/2	0	0/1	3
CE/SE	SE	Specialization Elective-II	3/2	0	0/1	3
OE/Minor	OE/Minor		3	0	0	3
					Semester Total	**26**

Semester-7						
Category	**Sub-Category**	**Course Title**	**L**	**T/D**	**P/Pr**	**Credits**
CE/SE	SE	Specialization Elective-III	3/2	0	0/1	3
CE/SE	SE	Specialization Elective-IV	3/2	0	0/1	3
CE/SE	SE	Specialization Elective-V	3/2	0	0/1	3
RDIP	Internship / Research / Thesis	Internship	0	0	4	4
OE/Minor	OE/Minor		3	0	0	3
					Semester Total	**16**

Semester-8						
Category	**Sub-Category**	**Course Title**	**L**	**T/D**	**P/Pr**	**Credits**
RDIP	Internship / Research / Thesis	Major Project	0	0	12	12
					Semester Total	**12**

Specialization Electives: **Embedded Systems and IoT**
1. Embedded Programming 2. RTOS 3. Embedded Networking 4. IoT Architecture and Protocols 5. IoT Security 6. SOC Design for IoT 7. VLSI Accelerators for ML 8. Advanced HDL based FPGA Design 9. Embedded Systems for Electric Vehicles 10. Cloud Computing
Specialization Elective: **VLSI Design**
1. VLSI Physical Design 2. Advanced CMOS Digital IC Design 3. CMOS RFIC Design 4. VLSI Accelerators for ML 5. Advanced HDL based FPGA Design 6. Design Verification and Testing 7. Nanoelectronics 8. CAD for VLSI IC Design 9. Low Power VLSI Design 10. Semiconductor Device Modeling
Specialization Elective: **Advanced Communication Systems**
1. Advanced Wireless Communication Systems (5G/6G) 2. Quantum Communications 3. Information Theory and Coding 4. Optical communication 5. Computer Networks and Internet Protocols 6. Detection and Estimation theory 7. Satellite communication 8. Convex optimization 9. Massive MIMO Communications 10. Advanced RF system

Specialization Elective: **Advanced Signal Processing with AI/ML**
1. Advanced Signal Processing
2. Deep Learning
3. Image Processing and Computer Vision
4. Biomedical Signal Processing
5. Detection and estimation
6. Natural language/ speech signal processing
7. Convex optimization
8. Image & Video processing
9. Pattern recognition
10. AI for medical Applications

Minor Program – Drone Technology	
1	Drone Fabrication and Testing
2	Drone Security
3	Hands on with Python and Raspberry PI for Drones
4	Internet of Drones
5	Embedded System Design for Drones