B.Tech. in ELECTRONICS ENGINEERING (VLSI DESIGN AND TECHNOLOGY)

Year	THIRD SEMESTER						FOURTH SEMESTER					
	Subject Code	**Subject Name**	**L**	**T**	**P**	**C**	**Subject Code**	**Subject Name**	L	T	P	C
	MAT ****	Engineering Mathematics – III	2	1	0	3	MAT ****	Engineering Mathematics – IV	2	1	0	3
	ECE ****	Analog Circuits	4	0	0	4	ECE ****	Physics of Semiconductor Devices	4	0	0	4
	ECE ****	Network Analysis	3	0	0	3	ECE ****	VLSI design	4	0	0	4
	ECE ****	Signals & Systems	3	0	0	3	ECE ****	Computer organization and architecture	3	0	0	3
	ECE ****	Digital Circuits	3	0	0	3	ECE ****	FPGA based system design using Verilog	3	0	0	3
	ECE ****	Electromagnetic Waves	3	0	0	3	ECE ****	Digital Signal Processing	3	0	0	3
II	ECE ****	Digital Circuits lab	0	0	3	1	ECE ****	FPGA based system design using Verilog Lab	0	0	3	1
	ECE ****	Analog Circuits Lab	0	0	3	1	ECE ****	VLSI design Lab	0	0	3	1
			18	**1**	**6**	**21**			**19**	**1**	**6**	**22**
	Total Contact Hours (L + T + P)		**25**				**Total Contact Hours (L + T+ P)**		**26**			
	FIFTH SEMESTER						SIXTH SEMESTER					
	XXX ****	Engineering Economics and Financial Management	3	0	0	3	XXX****	Essentials of Management	3	0	0	3
	ECE ****	Microcontrollers and Embedded Systems	3	0	0	3	ECE ****	Analog and Mixed signal IC Design	4	0	0	4
	ECE ****	VLSI Testing	3	0	0	3	ECE ****	MEMS and NEMS	3	0	0	3
	ECE ****	VLSI Fabrication Technology	3	0	0	3	ECE ****	Program Elective- I/ (Minor Specialization)	3	0	0	3
	ECE ****	Verification using System Verilog	3	0	0	3	ECE ****	Program Elective- II/ (Minor Specialization)	3	0	0	3
	XXX ****	Creativity, Problem Solving and Innovation (OE-I*)	3	0	0	3	XXX ****	Open Elective- II	3	0	0	3
	ECE ****	Microcontrollers and Embedded Systems lab	0	0	6	2	ECE ****	Analog IC Design Lab	0	0	3	1
III	ECE ****	Semiconductor Device and Process Simulation Lab	0	0	3	1	ECE ****	Semiconductor fabrication and Characterization Lab	0	0	3	1
			18	**0**	**9**	**21**			**19**	**0**	**6**	**21**
	Total Contact Hours (L + T + P)		**27**				**Total Contact Hours (L + T + P)**		**25**			
	SEVENTH SEMESTER						EIGHTH SEMESTER					
	ECE ****	Program Elective – III / (Minor Specialization)	3	0	0	3	ECE ****	Industrial Training (MLC)				1
	ECE ****	Program Elective – IV/ (Minor Specialization)	3	0	0	3	ECE ****	Project Work / Practice School				12
	ECE ****	Program Elective – V	3	0	0	3	ECE ****	Project Work (B. Tech Honours) ***				20
	ECE ****	Program Elective - VI	3	0	0	3	ECE ****	BTech Honours (Theory 1) ** (V Sem) ***				4
	ECE ****	Program Elective - VII	3	0	0	3	ECE ****	BTech Honours (Theory 2) ** (VI Sem) ***				4
	XXX ****	Open Elective - III	3	0	0	3	ECE ****	BTech Honours (Theory 3) ** (VII Sem) ***				4
IV	ECE ****	Mini Project (Minor Specialization) **				8						
			18	**0**	**0**	**18/26****						**13/33*****
	Total Contact Hours (L + T + P)		**18**									

*OE-I- Mandatory learning course

**Applicable to students opted for minor specialization

***Applicable to eligible students who opted for and successfully completed the B Tech-Honours requirements.

Minor Specializations

I. Computational Intelligence
(Common to Electrical Sciences)
ELE **** Artificial Intelligence
ECE **** Machine Learning
ELE **** Soft Computing Techniques
ECE **** Computer Vision

II. Signal Processing
(Common to Electrical Sciences)
ECE **** Advanced Digital Signal Processing
ELE **** Linear Algebra for Signal Processing
ECE **** Digital Speech Processing
ELE **** Digital Image Processing

III. Electric Mobility
(Common to Electrical Sciences)
ELE ****: Introduction to Electric Vehicles
ELE ****: Energy storage and management in EVs
ELE ****: Electric Vehicle Grid Integration and Control
ELE ****: EV Data Analysis

IV. Business Management
HUM-****: Financial Management
HUM-****: Human Resource Management
HUM-****: Marketing Management
HUM-****: Operation Management

Other Programme Electives

ECE **** Data Structures and Algorithms
ECE **** Number theory and Cryptography.
ECE **** Electronic Instrumentation
ECE **** PCB and System Design
ECE **** Embedded Operating Systems and RTOS
ECE **** Power Electronics
ECE **** BioMEMS and Micro sensors
ECE **** Nature Inspired Algorithms, Tools and Applications
ECE **** Nanoelectronics
ECE **** NEURAL NETWORKS FOR VLSI
ECE **** Object Oriented Programming Using C++
ECE **** Deep Learning and Big Data
ECE **** Logic Synthesis & Optimization
ECE **** SOC design
ECE-**** Scripting Language for VLSI
ECE **** Cyber Security
ECE **** Memory Design and Testing
ECE **** Internet of Things
ECE **** RF Microelectronics
ECE **** Semiconductor Equipment Design and Technology
ECE **** Numerical Analysis with Programming
ECE **** Power Converters Design
ECE **** Organic Electronics
ECE **** Nano devices & Nano sensors
ECE **** HIGH-SPEED INTERFACE CIRCUITS
ECE **** Semiconductor Optoelectronics
ECE **** Nano and Molecular Electronics
ELE **** Thin film and nanostructures
ECE **** Spintronic VLSI
ELE **** Flexible Electronics
ECE **** Hardware for Machine Learning
ECE **** Bioinspired and Evolvable Systems
ELE **** VLSI architecture for Digital Image Processing
ECE **** Security solutions in VLSI
ECE **** Low Power VLSI Design
ECE **** COMPUTER AIDED DESIGN FOR VLSI
ECE-**** ASIC Design

Open Electives offered by ECE Dept

ECE **** Consumer Electronics
ECE **** Electronic Product Design & Packaging
ECE **** Introduction to Communication Systems
ECE **** Introduction to Nano science & Technology
ECE **** Basics of Building Automation Systems
ECE **** Intelligent Instrumentation System
ECE **** Computational Intelligence and Environmental Sustainability
ECE **** Applications of Signal Processing
ECE **** Introduction to Biosensors