

**BTECH ELECTRONICS &
COMPUTERSCIENCE
COURSE STRUCTURE
EFFECTIVE 2025-26 ADMISSION BATCH**

Department of Electronics & Computer Science

PROGRAM OUTCOMES

Engineering Graduates will be able to:

PO1: Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

PO6: The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

PO8: Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

PO9: Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

PO10: Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

**Course Structure for B. Tech. Electronics & Computer Science -
Effective 2025-26**

FIRST SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	BSC	25B11MA113	MATHEMATICS-I	3	1	0	0	4	4
2	BSC	25B11PH111	PHYSICS-I	3	1	0	0	4	4
3	ESC	25B11CI11	SOFTWARE DEVELOPMENT FUNDAMENTALS-I	3	1	0	0	4	4
4	HSC	21B11HS111	ENGLISH	1	0	2	0	3	2
5	BSC	25B17PH171	PHYSICS LAB-I	0	0	2	0	2	1
6	ESC	25B17CI172	SOFTWARE DEVELOPMENT FUNDAMENTALS LAB-I	0	0	2	0	2	1
7	ESC	25B17GE171	WORKSHOP	0	0	3	0	3	1.5
8	ESC	25B11EC111	BASIC ELECTRONICS	3	1	0	0	4	4
9	ESC	25B17EC171	BASIC ELECTRONICS LAB	0	0	2	0	2	1
TOTAL								28	22.5

SECOND SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	BSC	25B11MA21	MATHEMATICS-II	3	1	0		4	4
2	BSC	25B11PH211	PHYSICS-II	3	1	0		4	4
3	ESC	25B11CI211	SOFTWARE DEVELOPMENT FUNDAMENTALS -II	3	1	0		4	4
4	BSC	25B17PH271	PHYSICS LAB-II	0	0	2		2	1
5	ESC	25B17CI271	SOFTWARE DEVELOPMENT FUNDAMENTALS LAB- II	0	0	2		2	1
6	HSC	25B17HS271	LIFE SKILLS & PROFESSIONAL COMMUNICATION LAB	0	0	2		2	QUA LIFYI NG
7	ESC	25B17GE172	ENGINEERING DRAWING &DESIGN	0	0	3		3	1.5
8	HSC	25B11HS211	UNIVERSAL HUMAN VALUES (UHV)	2	1	0		3	3

TOTAL					24	18.5
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THIRD SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	BSC		PROBABILITY AND RANDOM PROCESSES	3	1	-		4	4
2	PCC		DATA STRUCTURES AND ALGORITHMS	3	1	-		4	4
3	PCC		ELECTRONIC DEVICES AND CIRCUITS	3	1	-		4	4
4	PCC		DIGITAL CIRCUIT DESIGN	3	1	-		4	4
5	OMC		ENVIRONMENTAL STUDIES	3	-	-		3	QUA LIFYI NG
6	PCC		DATA STRUCTURES AND ALGORITHMS LAB	-	-	2		2	1
7	PCC		ELECTRONIC DEVICES AND CIRCUITS LAB	-	-	2		2	1
8	PCC		DIGITAL CIRCUIT DESIGN LAB	-	-	2		2	1
9	HSC		ECONOMICS	2	1	-		3	3
10	PRC		SUMMER TRAINING-I (4 WEEKS)	-	-	-		-	2
11	PCC		COMPETITIVE PROGRAMMING-I	0	0	2		2	1
TOTAL								30	25

FOURTH SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	HSC		HSS ELECTIVE – 1	2	1	-		3	3
2	PCC		ANALOGUE ELECTRONICS	3	1	-		4	4
3	PCC		SIGNALS AND SYSTEMS	3	1	-		4	4
4	PCC		INTRODUCTION OF DATABASE MANAGEMENT SYSTEM	3	1	-		4	4
5	PCC		COMPUTER ARCHITECTURE AND ORGANIZATION	3	-	-		3	3
6	PCC		ANALOGUE ELECTRONICS LAB	-	-	2		2	1
7	PCC		SIGNALS AND SYSTEMS LAB	-	-	2		2	1
8	PCC		INTRODUCTION OF DATABASE MANAGEMENT SYSTEM LAB	-	-	2		2	1

9	PEC		DISCIPLINE ELECTIVE -1*	3-2	-	0/2		3-4	3
10	PCC		COMPETITIVE PROGRAMMING-II	0	0	2		2	1
TOTAL								29/30	25

FIFTH SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PCC		OPERATING SYSTEM CONCEPTS	3	1	-		4	4
2	PCC		ANALOG AND DIGITAL COMMUNICATION	3	1	-		4	4
3	PCC		OPERATING SYSTEM CONCEPTS LAB	-	-	2		2	1
4	PCC		ANALOG AND DIGITAL COMMUNICATION LAB	-	-	2		2	1
5	PEC		DISCIPLINE ELECTIVE – 2*	3-2	0	0/2		3-4	3
6	PEC		DISCIPLINE ELECTIVE – 3*	3-2	0	0/2		3-4	3
7	BSC		SCIENCE ELECTIVE	3		-		3	3
8	OMC		INDIAN CONSTITUTION & TRADITIONAL KNOWLEDGE	3	-	-		3	QUA LIFYI NG
9	PRC		SUMMER TRAINING-II (6 WEEKS)	-	-	-		-	2
10	PCC		COMPETITIVE PROGRAMMING-III	0	0	2		2	1
11	HSC		LOGICAL AND QUANTITATIVE TECHNIQUES - II	2	0	0		2	2
TOTAL								28/30	24

SIXTH SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PCC		EMBEDDED SYSTEMS AND MICROPROCESSORS	3	-	-		3	3
2	PCC		FUNDAMENTALS OF ALGORITHM AND PROBLEM SOLVING	3		-		3	3
3	PCC		ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	3		-		3	3
4	PEC		DISCIPLINE ELECTIVE – 4*	3-2	0	0/2		3-4	3
5	PEC		DISCIPLINE ELECTIVE -5*	3-2	0	0/2		3-4	3
6	OEC		OPEN ELECTIVE - 1	2				2	2

7	VALUE ADDED		SELECTED VALUE-ADDED COURSE	2				2	AUDI T
8	PCC		EMBEDDED SYSTEMS AND MICROPROCESSORS LAB	-	-	2		2	1
9	PCC		FUNDAMENTALS OF ALGORITHM AND PROBLEM SOLVING LAB	-	-	2		2	1
10	HSC		SOFT SKILL FOR EMPLOYABILITY	-	-	2		2	1
11	PRC		MINOR PROJECT	-	-	4		4	2
12	HSC		QUANTITATIVE SKILLS PRACTICE-II	2	0	0		2	2
TOTAL								31/33	24

SEVENTH SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		DISCIPLINE ELECTIVE -6*	3- 2	0	0/2		3-4	3
2	OEC		OPEN ELECTIVE - 2	3	-	-		3	3
3	PRC		MAJOR PROJECT PART-1	-	-	8		8	4
4	PRC		SUMMER TRAINING-III (6 WEEKS)	-	-	-		-	4
TOTAL								14/15	14

EIGHTH SEMESTER

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		DISCIPLINE ELECTIVE -7*	3- 2	0	0/2		3-4	3
2	OEC		OPEN ELECTIVE -3	3	-	-		3	3
3	PRC		MAJOR PROJECT PART-2	-	-	16		16	8
TOTAL								22/23	14

Total Credits for B.Tech. –

167.0

Mandatory Internships/Summer Trainings

Summer Training -I (4 weeks) (In summer vacation after second semester)

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	

1	PRC1	"Inter/Intra institutional activates (Training with higher Institutions; Soft skill training" organized by Training and Placement Cell of the respective institutions; contribution at incubation/ innovation /entrepreneurship cell of the institute; participation in conferences/ workshops/ competitions etc.; Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop; Working for consultancy/ research project within the institutes and Participation in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.)	0	0	6			6	2
TOTAL								6	2

Summer Training -II (6 weeks) (In summer vacation after fourth semester)

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PRC1		Industrial/Govt./ NGO/MSME/Rural Internship/ Innovation /Entrepreneurship (Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/Medium enterprises to make themselves ready for the industry. In case student want to pursue their family business and don't want to undergo internship, a declaration by a parent may be submitted directly to the TPO.)	0	0	6		6	2
TOTAL								6	2

Summer Training -III (6 weeks) (In summer vacation after sixth semester)

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PRC1		Industrial/Govt./ NGO/MSME/Rural Internship/ Innovation /Entrepreneurship (Students may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/Medium enterprises to make themselves ready for the industry. In case student want to pursue their family business and don't want to undergo internship, a declaration by a parent may be submitted directly to the TPO.)	0	0	8		8	4

TOTAL										8	4
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DEPARTMENTAL ELECTIVE - 1

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		COMPUTER NETWORK	3	0	0		3	3
2	PEC		INTERNET OF THINGS (IOT)	3	0	0		3	3
3	PEC		INTRODUCTION TO DEEP LEARNING	3	0	0		3	3
4	PEC		DIGITAL HARDWARE DESIGN	3	0	0		3	3
5	PEC		MOBILE COMMUNICATION	3	0	0		3	3
6	PEC		NETWORK ANALYSIS AND SYNTHESIS	3	0	0		3	3
7	PEC		INFORMATION THEORY AND APPLICATION	3	0	0		3	3
TOTAL									

DEPARTMENTAL ELECTIVE - 2

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		ELECTROMAGNETIC THEORY	3	0	0		3	3
2	PEC		DIGITAL SIGNAL PROCESSING	3	0	0		3	3
3	PEC		HARDWARE DESCRIPTION LANGUAGES: VHDL AND VERILOG	3	0	0		3	3
TOTAL									

DEPARTMENTAL ELECTIVE - 3

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		JAVA PROGRAMMING	3	0	0		3	3
2	PEC		NEURAL NETWORKS AND FUZZY LOGIC	3	0	0		3	3
3	PEC		SENSOR TECHNOLOGY & ANDROID PROGRAMMING	3	0	0		3	3
4	PEC		INTRODUCTION TO BLOCKCHAIN TECHNOLOGY	3	0	0		3	3
5	PEC		ETHICAL HACKING & PREVENTION	3	0	0		3	3
TOTAL									

DEPARTMENTAL ELECTIVE - 4

SR · NO ·	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		COMPUTER VISION	3	0	0		3	3
2	PEC		DIGITAL IMAGE PROCESSING	3	0	0		3	3
3	PEC		WIRELESS SENSOR NETWORKS	3	0	0		3	3
4	PEC		RF AND MICROWAVE	3	0	0		3	3
5	PEC		CONTROL SYSTEMS	3	0	0		3	3
6	PEC		INFORMATION THEORY & CODING	3	0	0		3	3
7	PEC		MACHINE LEARNING AND NATURAL LANGUAGE PROCESSING	3	0	0		3	3
TOTAL									

DEPARTMENTAL ELECTIVE - 5

SR · NO ·	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		CLOUD COMPUTING	3	0	0		3	3
2	PEC		MACHINE LEARNING AND STATISTICAL PATTERN RECOGNITION	3	0	0		3	3
3	PEC		MODELLING AND SIMULATION OF SEMICONDUCTOR DEVICES	3	0	0		3	3
4	PEC		NETWORK & CYBER SECURITY	3	0	0		3	3
5	PEC		WEB TECHNOLOGY AND CYBER SECURITY	3	0	0		3	3
6	PEC		SOFT COMPUTING PARADIGMS	3	0	0		3	3
7	PEC		BIG DATA WITH HADOOP AND SPARK	3	0	0		3	3
TOTAL									

DEPARTMENTAL ELECTIVE - 6

SR · NO ·	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		INTRODUCTION TO FPGAS	3	0	0		3	3
2	PEC		FUNDAMENTALS OF EMBEDDED SYSTEMS	3	0	0		3	3

3	PEC		MIMO OFDM APPLICATIONS TO WIRELESS COMMUNICATION	3	0	0		3	3
4	PEC		CONVERGENCE AND NEXT GENERATION NETWORKS	3	0	0		3	3
5	PEC		COMPUTER GRAPHICS	3	0	0		3	3
6	PEC		ESSENTIALS OF VLSI TESTING	3	0	0		3	3
7	PEC		AUTOMATION AND ROBOTICS	3	0	0		3	3
8	PEC		SYSTEM SIMULATION AND MODELLING	3	0	0		3	3
9	PEC		ETHICAL HACKING & PREVENTION	3	0	0		3	3
TOTAL									

DEPARTMENTAL ELECTIVE - 7

SR NO	COURSE			CONTACT HOURS					CRE DITS
	CATEGOR Y	COURSE CODE	COURSE TITLE	L	T	P	S	TOTA L	
1	PEC		INTRODUCTION TO BLOCKCHAIN TECHNOLOGY	3	0	0		3	3
2	PEC		ADAPTIVE SYSTEMS AND SIGNAL PROCESSING	3	0	0		3	3
3	PEC		SATELLITE AND OPTICAL COMMUNICATION	3	0	0		3	3
4	PEC		WAVELETS AND APPLICATION	3	0	0		3	3
5	PEC		AI FOR HEALTHCARE & SMART SYSTEMS	3	0	0		3	3
6	PEC		NEXT GENERATION TELECOM NETWORKS	3	0	0		3	3
7	PEC		WIRELESS COMMUNICATION AND COMPUTING	3	0	0		3	3
8	PEC		BASIC OF ANTENNA AND WAVE PROPAGATION	3	0	0		3	3
TOTAL									

