BTECH ELECTRONICS & COMMUNICATION ENGINEERING

COURSE STRUCTURE

EFFECTIVE 2025-26 ADMISSION BATCH

Approved in Academic Council held on 30 July 2025

Department of Electronics & Communication Engineering

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 & Communication Engineering - Effective 2025-26

FIRST SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
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					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
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	QUALIFYING
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**

THIRD SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	BSC		PROBABILITY AND RANDOM PROCESSES	3	1	0		4	4
2	PCC		ELECTRONIC DEVICES AND CIRCUITS	3	1	0		4	4
3	PCC		SIGNALS AND SYSTEMS	3	1	0		4	4
4	PCC		DIGITAL CIRCUIT DESIGN	3	1	0		4	4
5	OMC		ENVIRONMENTAL STUDIES	3	0	0		3	QUALIFYING
6	PCC		ELECTRONIC DEVICES AND CIRCUITS LAB	0	0	2		2	1
7	PCC		SIGNALS AND SYSTEMS LAB	0	0	2		2	1
8	PCC		DIGITAL CIRCUIT DESIGN LAB	0	0	2		2	1
9	HSC		ECONOMICS	2	1	0		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					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	HSC		HSS ELECTIVE–1	2	1	0		3	3
2	PCC		ANALOG AND DIGITAL COMMUNICATION	3	1	0		4	4
3	PCC		ANALOGUE ELECTRONICS	3	1	0		4	4
4	PCC		DIGITAL SIGNAL PROCESSING	3	1	0		4	4
5	PCC		TELECOMMUNICATION NETWORKS	3	0	0		3	3
6	PCC		ANALOG AND DIGITAL COMMUNICATION LAB	0	0	2		2	1
7	PCC		ANALOGUE ELECTRONICS LAB	0	0	2		2	1
8	PCC		DIGITAL SIGNAL PROCESSING LAB	0	0	2		2	1
9	PEC		DISCIPLINE ELECTIVE-1*	3/2	0	0/2		3/4	3
10	PCC		COMPETITIVE PROGRAMMING-II	0	0	2		2	1

TOTAL					29/30	25

* Discipline electives may run in 3 0 0 or 2 0 2 (L T P) mode as per requirement of subject

FIFTH SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	PCC		DATA STRUCTURES AND ALGORITHMS	3	1	0		4	4
2	PCC		ELECTROMAGNETIC FIELD THEORY	3	1	0		4	4
3	PCC		DATA STRUCTURES AND ALGORITHMS LAB	0	0	2		2	1
4	PCC		ELECTROMAGNETIC FIELD THEORY LAB	0	0	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	0	0		3	3
8	OMC		INDIAN CONSTITUTION & TRADITIONAL KNOWLEDGE	3	0	0		3	QUALIFYNG
9	PRC		SUMMER TRAINING-II (6 WEEKS)	0	0	0		0	2
10	PCC		COMPETITIVE PROGRAMMING-III	0	0	2		2	1
11	HSC		LOGICAL AND QUANTITATIVE TECHNIQUES - I	2	0	0		2	2
TOTAL								28/30	24

SIXTH SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	PCC		ADVANCE WIRELESS TECHNOLOGIES	3	0	0		3	3
2	PCC		INTRODUCTION TO IOT AND EMBEDDED SYSTEMS	3	0	0		3	3
3	PCC		DIGITAL CMOS VLSI DESIGN	3	0	0		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	0	0		2	2
7	VALUE ADDED		SELECTED VALUE-ADDED COURSE	2	0	0		2	AUDIT
8	PCC		EMBEDDED SYSTEMS/IOT LAB	0	0	2		2	1

9	PCC		VLSI DESIGN LAB	0	0	2		2	1
10	HSC		SOFT SKILL FOR EMPLOYABILITY	-	-	2		2	1
11	PRC		MINOR PROJECT	-	-	4		4	2
12	HSC		LOGICAL AND QUANTITATIVE TECHNIQUES - II	2	0	0		2	2
TOTAL								**31/33**	**24**

SEVENTH SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	PEC		DISCIPLINE ELECTIVE –6*	3/2	0	0/2		3/4	3
2	OEC		OPENELECTIVE-2	3	0	0		3	3
3	PRC		MAJOR PROJECT PART-1	0	0			8	4
4	PRC		SUMMER TRAINING-III (6 WEEKS)	0	0	0		0	4
TOTAL								**14/15**	**14**

EIGHTH SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
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					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	

1	PRC1		Inter/Intra institutional activities (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 e.g.: 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**					**CREDITS**
	CATEGORY	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**S**	**TOTAL**	
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**					**CREDITS**
	CATEGORY	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**S**	**TOTAL**	

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								**6**	**4**

NEW DEPARTMENTAL ELECTIVES

SR. NO.	**COURSE**			**CONTACT HOURS**					**CREDITS**
	CATEGORY	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**S**	**TOTAL**	
1	DE-1		IOT ARCHITECTURE AND PROTOCOLS	3	0	0		3	3
2	DE-2		5G AND NEXT GENERATION NETWORKS	3	0	0		3	3
3	DE-3		REAL-WORLD INFORMATION PROCESSING	3	0	0		3	3
4	DE-4		INTELLIGENT MEDICAL IMAGE ANALYSIS	3	0	0		3	3
5	DE-6		CMOS DIGITAL VLSI DESIGN	3	0	0		3	3
TOTAL									

NEW OPEN ELECTIVES

Sr. No.	**COURSE**			**CONTACT HOURS**					**CREDITS**
	CATEGORY	**COURSE CODE**	**COURSE TITLE**	**L**	**T**	**P**	**S**	**TOTAL**	
1	OE-1		INTELLIGENT TRANSPORTATION SYSTEMS	3	0	0		3	3
2	OE-2		DIGITAL SYSTEM DESIGN USING FPGA	3	0	0		3	3
3	OE-2		MOBILE COMMUNICATION	3	0	0		3	3
4	OE-3		INDUSTRIAL INTERNET OF THINGS	3	0	0		3	3
5				3	0	0		3	3

TOTAL						