BTECH ELECTRONICS & COMMUNICATION ENGINEERING

COURSE STRUCTURE

EFFECTIVE 2024-25 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 2024-25

FIRST SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	HSMC	21B11HS111	ENGLISH	2	0	0		2	2
2	HSMC	21B17HS171	ENGLISH LAB	0	0	2		2	1
3	BSC	24B11MA111	ENGINEERING MATHEMATICS -I	3	1	0		4	4
4	BSC	18B11PH111	ENGINEERING PHYSICS-I	3	1	0		4	4
5	BSC	18B17PH171	ENGINEERING PHYSICS LAB-I	0	0	2		2	1
6	ESC	24B11CI111	PROBLEM SOLVING AND PROGRAMMING	3	0	0		3	3
7	ESC	24B17CI171	PROBLEM SOLVING AND PROGRAMMING LAB	0	0	2		2	1
8	ESC	18B17GE171	WORKSHOP PRACTICES OR	0	0	3		3	1.5
9	ESC	18B17GE173	ENGINEERING GRAPHICS	0	0	3			
10	PR	24B19EC191	PROJECT-I	0	0	2	2	2	1
11	MNC	18B17GE172	UHV-I MANDATORY INDUCTION PROGRAM	2 WEEKS					0
TOTAL								**24**	**18.5**

SECOND SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	HSMC	23B11HS211	UHV II: UNDERSTANDING HARMONY	2	1	0		3	3
2	BSC	24B11MA211	ENGINEERING MATHEMATICS -II	3	1	0		4	4
3	BSC	18B11PH211	ENGINEERING PHYSICS-II	3	0	0		3	3
4	BSC	18B17PH271	ENGINEERING PHYSICS LAB - II	0	0	2		2	1
5	ESC	24B11EC211	BASIC ELECTRICAL ENGINEERING	3	1	0		4	4
6	ESC	24B17EC271	BASIC ELECTRICAL ENGINEERING LAB	0	0	2		2	1
7	ESC	24B11CI211	DATA STRUCTURES AND ALGORITHMS	3	0	0		3	3

8	ESC	18B17CI271	DATA STRUCTURES AND ALGORITHMS LAB	0	0	4		4	2
9	ESC	18B17GE171	WORKSHOP PRACTICES OR	0	0	3		3	1.5
10	ESC	18B17GE173	ENGINEERING GRAPHICS	0	0	3			
11	PR	24B19EC291	PROJECT-II	0	0	2	2	2	1
	MNC	23B11HS212	PROFESSIONAL COMMUNICATION PRACTICE (AUDIT)	0	1	0		1	0
TOTAL								**31**	**23.5**

THIRD SEMESTER

SR. NO.	COURSE			CONTACT HOURS					CREDITS
	CATEGORY	COURSE CODE	COURSE TITLE	L	T	P	S	TOTAL	
1	BSC	25B11MA311	PROBABILITY AND RANDOM PROCESSES	3	1	0		4	4
2	PCC	25B11EC313	ELECTRONIC DEVICES AND CIRCUITS	3	1	0		4	4
3	PCC	25B11EC311	SIGNALS AND SYSTEMS	3	1	0		4	4
4	PCC	25B11EC312	DIGITAL CIRCUIT DESIGN	3	1	0		4	4
5	OMC	25B11GE411	ENVIRONMENTAL STUDIES	3	0	0		3	QUALIFYING
6	PCC	25B17EC373	ELECTRONIC DEVICES AND CIRCUITS LAB	0	0	2		2	1
7	PCC	25B17EC371	SIGNALS AND SYSTEMS LAB	0	0	2		2	1
8	PCC	25B17EC372	DIGITAL CIRCUIT DESIGN LAB	0	0	2		2	1
9	HSC	25B11HS311	ECONOMICS	2	1	0		3	3
10	PRC	25B19EC391	SUMMER TRAINING-I (4 WEEKS)	-	-	-		-	2
11	PCC	25B17CI379	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	25B11EC411	ANALOG AND DIGITAL COMMUNICATION	3	1	0		4	4
3	PCC	25B11EC412	ANALOGUE ELECTRONICS	3	1	0		4	4
4	PCC	25B11EC413	DIGITAL SIGNAL PROCESSING	3	1	0		4	4

5	PCC	25B11EC416	TELECOMMUNICATION NETWORKS	3	0	0		3	3
6	PCC	25B17EC471	ANALOG AND DIGITAL COMMUNICATION LAB	0	0	2		2	1
7	PCC	25B17EC472	ANALOGUE ELECTRONICS LAB	0	0	2		2	1
8	PCC	25B17EC473	DIGITAL SIGNAL PROCESSING LAB	0	0	2		2	1
9	PEC		DISCIPLINE ELECTIVE-1*	3/2	0	0/2		3/4	3
10	PCC	25B17CI476	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	0	0	2		2	1
11	PRC		MINOR PROJECT	0	0	4		4	2
12	HSC		LOGICAL AND QUANTITATIVE TECHNIQUES - II	2	0	0		2	2
TOTAL								**33/34**	**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**	**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**	**14**

Total Credits for B.Tech. – **168.0**

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									