

CURRICULUM
B.TECH. ELECTRONICS & COMMUNICATION ENGINEERING
CHOICE BASED CREDIT SYSTEM

STUDENTS LEARNING OUTCOMES

The curriculum and syllabi of B.Tech. Electronics & Communication Engineering Program (2017-18) conform to Outcome Based Education (OBE) for a flexible and structured Choice Based Credit system (CBCS). In general, **ELEVEN STUDENT OUTCOMES** (a-k) have been identified and the curriculum and syllabi have been chosen in such a way that each of the modules meets one or more of these outcomes. Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program. Further, each module in the program spells out clear instructional objectives which are mapped to the student outcomes.

The Student Outcomes are:

- (a) Ability to apply knowledge of Mathematics and science in Electronics and Communication Engineering solutions.
- (b) Ability to understand the Engineering concepts and their applications using the acquired broad based knowledge.
- (c) Ability to design, set up and conduct relevant experiments as well as to analyze and interpret data.
- (d) Ability to use the techniques, skills, and modern Engineering hardware and software tools necessary for engineering practice.
- (e) Ability to identify, analyze and solve problems in related multiple areas including VLSI design, signal processing, communication system and formulate requirements of circuit design and fabrication.
- (f) Ability to design a system, component or process to meet desired needs within realistic constraints such as health & safety, economic, aesthetic, environmental, social, ethical, reliability and sustainability.
- (g) Ability to apply Enterprise level application software for design of engineering product/process.
- (h) Ability to function as consultant in industry for the design of Electronic circuits / Products and providing reliable solutions.
- (i) An understanding of professional and ethical responsibility.
- (j) Ability to communicate effectively in diverse groups and exhibit leadership qualities.
- (k) To develop an understanding on global environment and its protection.

B.TECH. ELECTRONICS & COMMUNICATION ENGINEERING

SUMMARY OF PROGRAM CURRICULUM

Category		Sub-Category	Total Number of Credits (B.Tech)	Total Number of Credits (B.Tech-LEET)	Min Required Credits (B.Tech)	Min Required Credits (B.Tech-LEET)	Percentage of Total credits
G	General		52	0	48	0	26%
E	Engineering	Program Core (PC)	69	69	69	69	
		Program Elective (PE)	32	32	28	28	
		Generic Elective (GE)	8	8	4	4	
		Project (PD)	20	20	20	20	
Total : Engineering			129	129	121	121	64%
M	Management		7	7	7	7	3%
P	Professional Enrichment	Ability enhancement (AE)	8	8	7	7	
		Skill enhancement (SE)	4	4	4	4	
		Creativity & Innovation (CI)	1	1	0	0	
		Co-Curricular Activity (CA)	1	1	0	0	
Total : Professional Enrichment			14	14	11	11	7%
Overall Total			202	150*	187	139*	100%

Note:

Students are to earn at least 187/139*credits out of 202/150* credits to become eligible for the award of B.Tech degree.

* FOR LATERAL ENTRY

PROGRAM SCHEME

SEMESTER - I

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ENGL0101	G		ENGLISH	3	0	0	3	25	75	100
MATH0101	G		APPLIED MATHEMATICS - I	3	1	0	3.5	50	100	150
CHEM0101	G		INDUSTRIAL CHEMISTRY	3	0	0	3	25	75	100
CHEM0102	G		INDUSTRIAL CHEMISTRY LAB	0	0	2	1	25	25	50
PHYS0101	G		APPLIED PHYSICS – I	3	1	0	3.5	50	100	150
PHYS0102	G		APPLIED PHYSICS – I LAB	0	0	2	1	25	25	50
ECEN1101	G		ELECTRICAL TECHNOLOGY	2	0	0	2	25	50	75
ECEN1102	G		ELECTRICAL TECHNOLOGY LAB	0	0	2	1	25	25	50
CSEN0101	G		FUNDAMENTALS OF COMPUTERS AND PROGRAMMING (WITH C)	4	0	0	4	50	100	150
CSEN0102	G		FUNDAMENTALS OF COMPUTERS AND PROGRAMMING (WITH C) LAB	0	0	2	1	25	25	50
	G		FOREIGN LANGUAGE PART-I #	2	0	0	2	25	50	75
TOTAL				20	2	8	25	350	650	1000

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

FOREIGN LANGUAGE

One foreign language out of the following

MODULE CODE	MODULE NAME
LANF0101	French
LANG0102	German
LANS0103	Spanish

SEMESTER - II

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
PHYS0103	G		APPLIED PHYSICS-II	3	1	0	3.5	50	100	150
PHYS0104	G		APPLIED PHYSICS-II LAB	0	0	2	1	25	25	50
ECEN1103	G		ANALOG ELECTRONICS	2	0	0	2	25	50	75
ECEN1104	G		ANALOG ELECTRONICS LAB	0	0	2	1	25	25	50
MECH0102	G		BASICS OF MECHANICAL ENGINEERING	2	0	0	2	25	50	75
MECH0103	G		BASICS OF MECHANICAL ENGINEERING LAB	0	0	2	1	25	25	50
MECH1102	G		WORKSHOP TECHNOLOGY LAB	0	0	2	1	25	25	50
CIVL0101	G		BASICS OF CIVIL ENGINEERING	2	0	0	2	25	50	75
CIVL0102	G		BASICS OF CIVIL ENGINEERING LAB	0	0	2	1	25	25	50
MATH0116	G		APPLIED MATHEMATICS-II	4	1	0	4.5	50	100	150
MATH0117	G		NUMERICAL METHODS	3	0	0	3	25	75	100
VALU0109	G		VALUE EDUCATION	2	0	0	2	25	50	75
CSEN1103	G		PC LAB	0	0	2	1	25	25	50
	G		FOREIGN LANGUAGE PART- II #	2	0	0	2	25	50	75
TOTAL				20	2	12	27	400	675	1075

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

FOREIGN LANGUAGE

One foreign language out of the following

MODULE CODE	MODULE NAME
LANF0104	French
LANG0105	German
LANS0106	Spanish

SEMESTER - III

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS
ECEN2101	E	PC	ELETROMAGNETIC FIELD THEORY	3	0	0	3	25	75
ECEN2102	E	PC	NETWORK ANALYSIS AND SYNTHESIS	4	0	0	4	50	100
ECEN2103	E	PC	NETWORK ANALYSIS AND SYNTHESIS LAB	0	0	2	1	25	25
ECEN2104	E	PC	ELECTRONIC DEVICES AND CIRCUITS	3	0	0	3	25	75
ECEN2105	E	PC	ELECTRONIC DEVICES AND CIRCUITS LAB	0	0	2	1	25	25
VALU0119	P	AE	APTITUDE I	2	0	0	2	25	50
MGMT0101	M		MANAGEMENT & PROFESSIONAL LEADERSHIP	3	0	0	3	25	75
VALU0123	P	SE	PROFESSIONAL COMMUNICATION-I	2	0	0	2	25	50
ENGL0009	P	AE	ACADEMIC WRITING	0	0	2	1	25	25
	P	AE	^YOGA/NCC/NSS	0	0	2	1	25	25
	E	PE	ELECTIVE-I	4	0	0	4	50	100
	E	PE	ELECTIVE-II	4	0	0	4	50	100
TOTAL				23	0	10	29	375	725

L = Lecture

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P = Practical

C = Credit Point

ELECTIVES

MODULE CODE	ELECTIVE-I
ECEN2206	SENSORS AND TRANSDUCERS
ECEN2207	PLC AND SCADA SYSTEM

MODULE CODE	ELECTIVE-II
ECEN2208	ELECTROMECHANICAL ENERGY CONVERSION
ECEN2209	POWER ELECTRONICS

^MODULE

MODULE CODE
VALU0118
VALU0121
VALU0122

SEMESTER - IV

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS
ECEN2110	E	PC	ELECTRONIC MEASUREMENT AND INSTRUMENTATION	4	0	0	4	50	100
ECEN2111	E	PC	DIGITAL ELECTRONICS	3	1	0	3.5	50	100
ECEN2112	E	PC	DIGITAL ELECTRONICS LAB	0	0	2	1	25	25
ECEN2113	E	PC	ANALOG ELECTRONICS CIRCUITS	3	0	0	3	25	75
ECEN2114	E	PC	ANALOG ELECTRONICS CIRCUITS LAB	0	0	2	1	25	25
ECEN2115	E	PC	COMMUNICATION SYSTEM	3	1	0	3.5	50	100
ECEN2116	E	PC	COMMUNICATION SYSTEM LAB	0	0	2	1	25	25
ECEN2117	E	PC	ELECTRONIC WORKSHOP AND PCB DESIGN LAB	0	0	2	1	25	25
	E	PE	ELECTIVE- III	4	0	0	4	50	100
	E	PE	ELECTIVE-IV	4	0	0	4	50	100
TOTAL				21	2	8	26	375	675

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ELECTIVES

MODULE CODE	ELECTIVE-III
ECEN2218	NANOTECHNOLOGY
ECEN2219	MEMS

MODULE CODE	ELECTIVE-IV
ECEN2220	DATA COMMUNICATION
ECEN2221	COMPUTER NETWORKS

TOTAL
100
150
50
100
50
75
100
75
50
50
150
150
1100

MODULE NAME
YOGA
NCC
NSS

TOTAL
150
150
50
100
50
150
50
50
150
150
1050

SEMESTER - V

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN3101	E	PC	SIGNALS & SYSTEMS	3	1	0	3.5	50	100	150
ECEN3102	E	PC	INFORMATION THEORY AND CODING	3	0	0	3	25	75	100
ECEN3103	E	PC	CONTROL SYSTEM ENGINEERING	3	1	0	3.5	50	100	150
ECEN3104	E	PC	CONTROL SYSTEM ENGINEERING LAB	0	0	2	1	25	25	50
ECEN3105	E	PC	MICROPROCESSORS AND MICROCONTROLLERS	3	1	0	3.5	50	100	150
ECEN3106	E	PC	MICROPROCESSORS AND MICROCONTROLLERS LAB	0	0	2	1	25	25	50
ECEN3107	E	PD	INDUSTRIAL TRAINING I (TO BE UNDERGONE AFTER IV SEMESTER)	0	0	0	1	50		50
ECEN3108	E	PD	SPECIALIZED MINOR PROJECT (GROUP)	0	0	4	2	50	50	100
VALU0136	P	AE	APTITUDE II	2	0	0	2	25	50	75
VALU0140	P	SE	PROFESSIONAL COMMUNICATION-2	2	0	0	2	25	50	75
	E	PE	ELECTIVE-V	4	0	0	4	50	100	150
	E	PE	ELECTIVE-VI	3	1	0	3.5	50	100	150
TOTAL				22	3	11	30	450	800	1250

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ELECTIVES

MODULE CODE	ELECTIVE-V
ECEN3209	SATELLITE COMMUNICATION
ECEN3210	OPTICAL COMMUNICATION

MODULE CODE	ELECTIVE-VI
ECEN3211	NEURAL NETWORKS AND FUZZY LOGIC
ECEN 3212	IMAGE PROCESSING

SEMESTER - VI

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN3113	E	PC	MICROWAVE AND RADAR ENGINEERING	3	0	0	3	25	75	100
ECEN3114	E	PC	MICROWAVE AND RADAR ENGINEERING LAB	0	0	2	1	25	25	50
ECEN3115	E	PC	ANTENNA AND WAVE PROPAGATION	3	0	0	3	25	75	100
ECEN3116	E	PC	ANTENNA AND WAVE PROPAGATION LAB	0	0	2	1	25	25	50
ECEN3117	E	PC	DIGITAL SIGNAL PROCESSING	3	0	0	3	25	75	100
ECEN3118	E	PC	DIGITAL SIGNAL PROCESSING LAB	0	0	2	1	25	25	50
ECEN3119	E	PD	SPECIALIZED MINOR PROJECT (INDIVIDUAL)	0	0	8	4	100	100	200
	P	CI	§CREATIVITY AND INNOVATION/ACADEMIC WRITING	0	0	0	1	25	25	50
	E	PE	ELECTIVE-VII	4	0	0	4	50	100	150
	E	GE	ELECTIVE-A**	4	0	0	4	50	100	150
TOTAL				17	0	14	25	375	625	1000

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

ELECTIVES

§MODULE

MODULE CODE	ELECTIVE-VII	MODULE CODE	MODULE NAME
ECEN3221	DIGITAL LOGIC DESIGN	ECEN3120	CREATIVITY AND INNOVATION
ECEN3222	MOBILE COMPUTING	ENGL0110	ACADEMIC WRITING
MODULE CODE	**GENERIC ELECTIVE - A		
SAPM0321	SAP (MM) ^ψ		
SAPS0322	SAP (SD) ^ψ		
SAPH0323	SAP (HCM) ^ψ		
	ONE / TWO MOOCS MODULE		

^ψ Additional fee, if any, shall be borne by the student.

SEMESTER - VII

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN4101	E	PC	WIRELESS COMMUNICATION	3	0	0	3	25	75	100
ECEN4102	E	PC	EMBEDDED SYSTEM DESIGN	3	1	0	3.5	50	100	150
ECEN4103	E	PC	EMBEDDED SYSTEM DESIGN LAB	0	0	2	1	25	25	50
ECEN4104	E	PC	VLSI DESIGN	3	1	0	3.5	50	100	150
ECEN4105	E	PC	VLSI DESIGN LAB	0	0	2	1	25	25	50
ECEN4106	E	PD	SPECIALIZED MAJOR PROJECT (GROUP) ^{##}	0	0	8	4	100	100	200
ECEN4107			INDUSTRIAL TRAINING II (TO BE UNDERGONE AFTER VI SEMESTER)	0	0	2	1	25	25	50
CLUB0101	P	CA	CO-CURRICULAR ACTIVITY				1	25		25
	E	PE	ELECTIVE-VIII	4	0	0	4	50	100	150
	E	GE	ELECTIVE-B**	4	0	0	4	50	100	150
TOTAL				17	1	14	26	425	650	1075

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

ELECTIVES

MODULE CODE	ELECTIVE-VIII
ECEN4208	MODERN WIRELESS COMMUNICATION SYSTEM
ECEN4209	TELECOMMUNICATION SYSTEM

** To be chosen from Generic Electives offered by departments other than the parent Department.

Only advisory support shall be provided by the faculty.

SEMESTER - VIII

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN4110	E	PD	SPECIALIZED MAJOR PROJECT (INDIVIDUAL) ^{##}	0	0	16	8	200	200	400
ENVS0101	P	AE	ENVIRONMENTAL SCIENCES	2	0	0	2	25	50	75
MGMT0103	M		ENTREPRENEURSHIP	4	0	0	4	50	100	150
TOTAL				6	0	16	14	275	350	625

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

Only advisory support shall be provided by the faculty.