

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.

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	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ENGL0101		ENGLISH	3	0	0	3	25	75	100
MATH0101		APPLIED MATHEMATICS - I	3	1	0	3.5	50	100	150
CHEM0101		INDUSTRIAL CHEMISTRY	3	0	0	3	25	75	100
CHEM0102		INDUSTRIAL CHEMISTRY LAB	0	0	2	1	25	25	50
PHYS0101		APPLIED PHYSICS – I	3	1	0	3.5	50	100	150
PHYS0102		APPLIED PHYSICS – I LAB	0	0	2	1	25	25	50
ECEN1101		ELECTRICAL TECHNOLOGY	2	0	0	2	25	50	75
ECEN1102		ELECTRICAL TECHNOLOGY LAB	0	0	2	1	25	25	50
CSEN0101		FUNDAMENTALS OF COMPUTERS AND	4	0	0	4	50	100	150
CSEN0102		FUNDAMENTALS OF COMPUTERS AND	0	0	2	1	25	25	50
		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	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
PHYS0103		APPLIED PHYSICS-II	3	1	0	3.5	50	100	150
PHYS0104		APPLIED PHYSICS-II LAB	0	0	2	1	25	25	50
ECEN1103		ANALOG ELECTRONICS	2	0	0	2	25	50	75
ECEN1104		ANALOG ELECTRONICS LAB	0	0	2	1	25	25	50
MECH0102		BASICS OF MECHANICAL ENGINEERING	2	0	0	2	25	50	75
MECH0103		BASICS OF MECHANICAL ENGINEERING LAB	0	0	2	1	25	25	50
MECH1102		WORKSHOP TECHNOLOGY LAB	0	0	2	1	25	25	50
CIVL0101		BASICS OF CIVIL ENGINEERING	2	0	0	2	25	50	75
CIVL0102		BASICS OF CIVIL ENGINEERING LAB	0	0	2	1	25	25	50
MATH0116		APPLIED MATHEMATICS-II	4	1	0	4.5	50	100	150
MATH0117		NUMERICAL METHODS	3	0	0	3	25	75	100
VALU0109		VALUE EDUCATION	2	0	0	2	25	50	75
CSEN1103		PC LAB	0	0	2	1	25	25	50
		FOREIGN LANGUAGE PART- II #	2	0	0	2	25	50	75
TOTAL			20	2	12	27	400	675	1075

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FOREIGN LANGUAGE

One foreign language out of the following

MODULE CODE	MODULE NAME
LANF0104	French
LANG0105	German
LANS0106	Spanish

SEMESTER -

III

MODULE CODE	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN2101	PC	ELETROMAGNETIC FIELD THEORY	3	0	0	3	25	75	100
ECEN2102	PC	NETWORK ANALYSIS AND SYNTHESIS	4	0	0	4	50	100	150
ECEN2103	PC	NETWORK ANALYSIS AND SYNTHESIS LAB	0	0	2	1	25	25	50
ECEN2104	PC	ELECTRONIC DEVICES AND CIRCUITS	3	0	0	3	25	75	100
ECEN2105	PC	ELECTRONIC DEVICES AND CIRCUITS LAB	0	0	2	1	25	25	50
VALU0119	AE	APTITUDE I	2	0	0	2	25	50	75
MGMT0101		MANAGEMENT & PROFESSIONAL LEADERSHIP	3	0	0	3	25	75	100
VALU0123	SE	PROFESSIONAL COMMUNICATION-I	2	0	0	2	25	50	75
ENGL0009	AE	ACADEMIC WRITING	0	0	2	1	25	25	50
	AE	^YOGA/NCC/NSS	0	0	2	1	25	25	50
	PE	ELECTIVE-I	4	0	0	4	50	100	150
	PE	ELECTIVE-II	4	0	0	4	50	100	150
			23	0	10	29	375	725	1100

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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	MODULE NAME
VALU0118	YOGA
VALU0121	NCC
VALU0122	NSS

SEMESTER - IV

MODULE CODE	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN2110	PC	ELECTRONIC MEASUREMENT AND INSTRUMENTATION	4	0	0	4	50	100	150
ECEN2111	PC	DIGITAL ELECTRONICS	3	1	0	3.5	50	100	150
ECEN2112	PC	DIGITAL ELECTRONICS LAB	0	0	2	1	25	25	50
ECEN2113	PC	ANALOG ELECTRONICS CIRCUITS	3	0	0	3	25	75	100
ECEN2114	PC	ANALOG ELECTRONICS CIRCUITS LAB	0	0	2	1	25	25	50
ECEN2115	PC	COMMUNICATION SYSTEM	3	1	0	3.5	50	100	150
ECEN2116	PC	COMMUNICATION SYSTEM LAB	0	0	2	1	25	25	50
ECEN2117	PC	ELECTRONIC WORKSHOP AND PCB DESIGN LAB	0	0	2	1	25	25	50
	PE	ELECTIVE- III	4	0	0	4	50	100	150
	PE	ELECTIVE-IV	4	0	0	4	50	100	150
TOTAL			21	2	8	26	375	675	1050

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ELECTIVES

MODULE CODE	ELECTIVE-III
ECEN2218	NANOTECHNOLOGY
ECEN2219	MEMS

MODULE CODE	ELECTIVE-IV
ECEN2220	DATA COMMUNICATION
ECEN2221	COMPUTER NETWORKS

SEMESTER - V

MODULE CODE	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN3101	PC	SIGNALS & SYSTEMS	3	1	0	3.5	50	100	150
ECEN3102	PC	INFORMATION THEORY AND CODING	3	0	0	3	25	75	100
ECEN3103	PC	CONTROL SYSTEM ENGINEERING	3	1	0	3.5	50	100	150
ECEN3104	PC	CONTROL SYSTEM ENGINEERING LAB	0	0	2	1	25	25	50
ECEN3105	PC	MICROPROCESSORS AND MICROCONTROLLERS	3	1	0	3.5	50	100	150
ECEN3106	PC	MICROPROCESSORS AND MICROCONTROLLERS LAB	0	0	2	1	25	25	50
ECEN3107	PD	INDUSTRIAL TRAINING I (TO BE UNDERGONE AFTER IV SEMESTER)	0	0	0	1	50		50
ECEN3108	PD	SPECIALIZED MINOR PROJECT (GROUP)	0	0	4	2	50	50	100
VALU0136	AE	APTITUDE II	2	0	0	2	25	50	75
VALU0140	SE	PROFESSIONAL COMMUNICATION-2	0	0	0	2	25	50	75
	PE	ELECTIVE-V	4	0	0	4	50	100	150
	PE	ELECTIVE-VI	4	0	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	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN3113	PC	MICROWAVE AND RADAR ENGINEERING	3	0	0	3	25	75	100
ECEN3114	PC	MICROWAVE AND RADAR ENGINEERING LAB	0	0	2	1	25	25	50
ECEN3115	PC	ANTENNA AND WAVE PROPAGATION	3	0	0	3	25	75	100
ECEN3116	PC	ANTENNA AND WAVE PROPAGATION LAB	0	0	2	1	25	25	50
ECEN3117	PC	DIGITAL SIGNAL PROCESSING	3	0	0	3	25	75	100
ECEN3118	PC	DIGITAL SIGNAL PROCESSING LAB	0	0	2	1	25	25	50
ECEN3119	PD	SPECIALIZED MINOR PROJECT (individual)	0	0	8	4	100	100	200
	CI	[§] CREATIVITY AND INNOVATION/ACADEMIC WRITING			0	1	25	25	50
	PE	ELECTIVE-VII	4	0	0	4	50	100	150
	GE	ELECTIVE-A**	4	0	0	4	50	100	150
TOTAL			17	0	14	25	375	625	1000

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ELECTIVES		[§] MODULE		MODULE NAME
ELECTIVE-VII	MODULE CODE			
DIGITAL LOGIC DESIGN	ECEN3120			CREATIVITY AND INNOVATION
MOBILE COMPUTING	ENGL0110			ACADEMIC WRITING
**GENERIC ELECTIVE - A				
SAP (MM) ^ψ				
SAP (SD) ^ψ				
SAP (HCM) ^ψ				
ONE / TWO MOOCS MODULE				

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

SEMESTER - VII

MODULE CODE	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN4101	PC	WIRELESS COMMUNICATION	3	0	0	3	25	75	100
ECEN4102	PC	EMBEDDED SYSTEM DESIGN	3	1	0	3.5	50	100	150
ECEN4103	PC	EMBEDDED SYSTEM DESIGN LAB	0	0	2	1	25	25	50
ECEN4104	PC	VLSI DESIGN	3	1	0	3.5	50	100	150
ECEN4105	PC	VLSI DESIGN LAB	0	0	2	1	25	25	50
ECEN4106	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	CA	CO-CURRICULAR ACTIVITY				1	25		25
	PE	ELECTIVE-VIII	4	0	0	4	50	100	150
	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	SUB-CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
ECEN4110	PD	SPECIALIZED MAJOR PROJECT (INDIVIDUAL) ^{##}	0	0	16	8	200	200	400
ENVS0101	AE	ENVIRONMENTAL SCIENCES	2	0	0	2	25	50	75
MGMT0103		ENTREPRENEURSHIP	4	0	0	4	50	100	150
TOTAL			6	0	16	14	275	350	625

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T = Tutorial
P = Practical
C = Credit Point

^{##} Only advisory support shall be provided by the faculty.