



School of Electronics Engineering (SENSE)

B.Tech (Electronics & Communication Engineering)

CURRICULUM

[Curriculum for Applied Learning (CAL)]

(2017 – 18 onwards)

Sl. No	Category	Total number of Credits
1	University Core (UC)	70
2	Program Core (PC)	59
3	Program Elective (PE)	39
4	University Elective (UE)	12
Total Number of Credits		180

Discipline	%	Credits	UC	PC	PE	UE
Engineering	63	114	33	42	39	0
Science	23	41	21	17	0	03
Humanities	08	15	12	0	0	03
Management	06	10	4	0	0	06
Total	100	180	70	59	39	12

University Core- 70 Credits

L- Lecture

T – Tutorial

P – Practical

J – Project

C - Credits

No	Course Code	Course Title	L	T	P	J	C	Category
1	PHY1701	Engineering Physics	3	0	2	0	4	Science
2	PHY1999	Introduction to Innovative Projects	1	0	0	4	2	Science
3	ENG1011	English for Engineers	0	0	4	0	2	Humanities
4	CHY1701	Engineering Chemistry	3	0	2	0	4	Science
5	CHY1002	Environmental Science	3	0	0	0	3	Science
6	MAT1011	Calculus for Engineers	3	0	2	0	4	Science
7	MAT2001	Statistics for Engineers	3	0	2	0	4	Science
8	CSE1001	Problem solving and programming	0	0	6	0	3	Engineering
9	CSE1002	Problem solving with Object Oriented Programming	0	0	6	0	3	Engineering
10	HUM1021	Ethics and Values	2	0	0	0	2	Humanities
11	MGT1022	Lean Start-up Management	1	0	0	4	2	Management
12	STS4097	Soft Skills	0	0	0	0	6	Humanities
13	FLC4097	Foreign Language Course basket	2	0	0	0	2	Humanities
14	EXC4097	Personality Development(extra & co - curricular activities)	0	0	0	0	2	Management
15	ECE3999	Tech Answers for Real world Problems (TARP)	1	0	0	8	3	Engineering
16	ECE3099	Industrial Internship	0	0	0	0	2	Engineering
17	ECE4098	Comprehensive Examination	0	0	0	0	2	Engineering
18	ECE4099	Co-op / Capstone Project	0	0	0	0	20	Engineering
		TOTAL					70	

Program Core- 59 Credits

L- Lecture

T – Tutorial

P – Practical

J – Project

C - Credits

No.	Course Code	Course Title	L	T	P	J	C	Category	Pre-Requisite
1.	ECE1001	Fundamentals of Electrical Circuits	2	0	2	0	3	Engineering	None
2.	ECE1002	Semiconductor Devices and Circuits	3	0	2	0	4	Engineering	None
3.	ECE1003	Electromagnetic Field Theory	3	0	0	0	3	Science	PHY1001 / PHY1701
4.	ECE1004	Signals and Systems	2	0	0	4	3	Science	MAT1011
5.	ECE1005	Sensors and Instrumentation	1	0	0	4	2	Engineering	PHY1001 / PHY1701
6.	ECE2001	Network Theory	3	0	0	0	3	Engineering	ECE1001
7.	ECE2002	Analog Electronic Circuits	2	0	2	4	4	Engineering	ECE1002
8.	ECE2003	Digital Logic Design	2	0	2	0	3	Engineering	ECE1002
9	ECE2004	Transmission lines and Waveguides	3	0	0	0	3	Engineering	ECE1003
10.	ECE2005	Probability Theory and Random Processes	3	0	0	0	3	Science	ECE1004
11.	ECE2006	Digital Signal Processing	2	0	2	4	4	Engineering	ECE1004
12.	ECE3001	Analog Communication Systems	3	0	2	0	4	Engineering	ECE2002
13.	ECE3002	VLSI System Design	3	0	2	0	4	Engineering	ECE2003
14.	ECE3003	Microcontroller and its applications	2	0	2	4	4	Engineering	ECE2003
15.	ECE4001	Digital Communication Systems	3	0	2	0	4	Engineering	ECE3001
16.	MAT2002	Applications of Differential and Difference Equations	3	0	2	0	4	Science	MAT1011
17.	MAT3004	Applied Linear Algebra	3	1	0	0	4	Science	MAT2002
		TOTAL					59		

Program Elective- 39 Credits

		L- Lecture	T – Tutorial	P – Practical	J – Project			C - Credits			
No.	Course Code	Course Title			L	T	P	J	C	Category	Pre-Requisite
1	CSE2003	Data Structures and Algorithms			2	0	2	4	4	Engineering	None
2	CSE2005	Operating Systems			2	0	2	4	4	Engineering	None
3	ECE1006	Introduction to Nano Science and Nano Technology			2	0	0	4	3	Engineering	PHY1001 / PHY1701
4	ECE1007	Optoelectronics			3	0	0	0	3	Engineering	PHY1001 / PHY1701
5	ECE1008	Electronics Hardware Trouble Shooting			0	0	2	0	1	Engineering	None
6	ECE2008	Robotics and Automation			2	0	0	4	3	Engineering	ECE1005
7	ECE2010	Control Systems			3	0	0	4	4	Engineering	ECE1004
8	ECE3004	Computer Organization and Architectures			3	0	0	0	3	Engineering	ECE2003
9	ECE3005	Digital Image Processing			3	0	2	0	4	Engineering	ECE2006
10	ECE3009	Neural Networks and Fuzzy Control			3	0	0	4	4	Engineering	ECE2006
11	ECE3010	Antennas and wave propagation			3	0	0	0	3	Engineering	ECE2004
12	ECE3011	Microwave Engineering			3	0	2	4	5	Engineering	ECE2004
13	ECE3013	Linear Integrated Circuits			3	0	2	0	4	Engineering	ECE2002
14	ECE4002	Advanced Microcontrollers			3	0	0	4	4	Engineering	ECE3003
15	ECE4003	Embedded System Design			2	0	2	4	4	Engineering	ECE3003
16	ECE4004	Embedded C and Linux			3	0	2	4	5	Engineering	ECE3003
17	ECE4005	Optical Communication and Networks			2	0	2	4	4	Engineering	ECE4001
18	ECE4007	Information Theory and Coding			3	0	0	4	4	Engineering	ECE4001
19	ECE4008	Computer Communication			3	0	2	0	4	Engineering	ECE4001
20	ECE4009	Wireless and Mobile communication			3	0	2	4	5	Engineering	ECE4001
21	ECE4010	Satellite Communication			3	0	0	0	3	Engineering	ECE4001
22	ECE4011	Wireless Sensor Networks			2	0	2	4	4	Engineering	ECE4001
23	ECE4013	Cryptography and Network Security			3	0	0	0	3	Engineering	ECE2005
24	MAT3005	Applied Numerical Methods			3	1	0	0	4	Science	MAT2002
25	PHY1002	Material Science			3	0	2	0	4	Science	PHY1001 / PHY1701

University Electives- 12 Credits

University Electives are meant to develop interdisciplinary skills among the students. So the students can take any courses other than their University and Program core courses as their University elective courses. Student should have completed minimum of 12 credits under university electives to fulfill their requirements to complete their B.Tech Degree.

B. Tech - ECE (Honors) – (15 Credits)

(Choose any five courses from the list)

No	Course Code	Course Title	L	T	P	J	C	Category	Prerequisite
1	ECE2008	Robotics and Automation	2	0	0	4	3	Engineering	ECE1005
2	ECE3005	Digital Image Processing	3	0	2	0	4	Engineering	ECE2006
3	ECE3009	Neural Networks and Fuzzy Control	3	0	0	4	4	Engineering	ECE2006
4	ECE4010	Satellite Communication	3	0	0	0	3	Engineering	ECE4001
5	ECE4011	Wireless Sensor Networks	2	0	2	4	4	Engineering	ECE4001
6	ECE4013	Cryptography and Network Security	3	0	0	0	3	Engineering	ECE2005

Program Migration Requirements

No	Course Code	Course Title	L	T	P	J	C	Category	Prerequisite
1	ECE1001	Fundamentals of Electrical Circuits	2	0	2	0	3	Engineering	None
2	ECE1002	Semiconductor Devices and Circuits	3	0	2	0	4	Engineering	None

Minor in Electronics Engineering – (15 Credits)

(Choose any five courses from the list)

No	Course Code	Course Title	L	T	P	J	C	Category	Prerequisite
1	ECE1002	Semiconductor Devices and Circuits	3	0	2	0	4	Engineering	None
2	ECE2002	Analog Electronic Circuits	2	0	2	4	4	Engineering	ECE1002
3	ECE2003	Digital Logic Design	2	0	2	0	3	Engineering	ECE1002
4	ECE3013	Linear Integrated Circuits	3	0	2	0	4	Engineering	ECE2002
5	ECE3003	Microcontroller and its Applications	2	0	2	4	4	Engineering	ECE2003
6	ECE3002	VLSI System Design	3	0	2	0	4	Engineering	ECE2003

Minor in Communication Engineering – (15 Credits)

(Choose any five courses from the list)

No	Course Code	Course Title	L	T	P	J	C	Category	Prerequisite
1	ECE1002	Semiconductor Devices and Circuits	3	0	2	0	4	Engineering	None
2	ECE2002	Analog Electronic Circuits	2	0	2	4	4	Engineering	ECE1002
3	ECE3001	Analog Communication Systems	3	0	2	0	4	Engineering	ECE2002
4	ECE4001	Digital Communication Systems	3	0	2	0	4	Engineering	ECE3001
5	ECE4007	Information Theory and Coding	3	0	0	4	4	Engineering	ECE4001
6	ECE4008	Computer Communication	3	0	2	0	4	Engineering	ECE4001
7	ECE4009	Wireless and Mobile communication	3	0	2	4	5	Engineering	ECE4001



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School of Electronics Engineering (SENSE)

B.Tech (Electronics and Communication Engineering)

PROGRAMME EDUCATIONAL OBJECTIVES (PEO's)

1. Graduates will be engineering practitioners and leaders, who would help solve industry's technological problems.
2. Graduates will be engineering professionals, innovators or entrepreneurs engaged in technology development, technology deployment, or engineering system implementation in industry.
3. Graduates will function in their profession with social awareness and responsibility.
4. Graduates will interact with their peers in other disciplines in industry and society and contribute to the economic growth of the country.
5. Graduates will be successful in pursuing higher studies in engineering or management.
6. Graduates will pursue career paths in teaching or research.



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STUDENT LEARNING OUTCOMES (SLO's)

- 1) Having an ability to apply mathematics and science in engineering applications
- 2) Having a clear understanding of the subject related concepts and of contemporary issues
- 3) Having an ability to be socially intelligent with good SIQ (Social Intelligence Quotient) and EQ (Emotional Quotient)
- 4) Having Sense-Making Skills of creating unique insights in what is being seen or observed (Higher level thinking skills which cannot be codified)
- 5) Having design thinking capability
- 6) Having an ability to design a component or a product applying all the relevant standards and with realistic constraints
- 7) Having computational thinking (Ability to translate vast data in to abstract concepts and to understand database reasoning)
- 8) Having Virtual Collaborating ability
- 9) Having problem solving ability- solving social issues and engineering problems
- 10) Having a clear understanding of professional and ethical responsibility
- 11) Having interest in lifelong learning
- 12) Having adaptive thinking and adaptability
- 13) Having cross cultural competency exhibited by working in teams
- 14) Having an ability to design and conduct experiments, as well as to analyze and interpret data
- 15) Having an ability to use the social media effectively for productive use
- 16) Having a good working knowledge of communicating in English
- 17) Having an ability to use techniques, skills and modern engineering tools necessary for engineering practice
- 18) Having critical thinking and innovative skills
- 19) Having a good cognitive load management skills
- 20) Having a good digital footprint



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MAPPING OF PEOS WITH STUDENT LEARNING OUTCOMES (SLO's):

PEO's	Student Learning Outcomes (SLO's)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	√	√			√	√			√				√	√			√	√	√	
2	√	√		√	√	√		√		√		√	√	√	√		√	√	√	√
3			√					√	√	√		√	√			√			√	
4			√	√		√		√	√			√	√							
5	√	√		√							√	√					√			
6	√	√				√	√				√	√				√				√



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Mapping of Students Learning Outcomes

Category	S.No.	Course Code	Students Learning Outcomes (SLO's)																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
UC	1	CHY1002	*	*									*									
	2	CHY1701	*	*											*							
	3	CSE1001	*								*					*						
	4	CSE1002	*								*								*			
	5	ENG1011			*													*		*		
	6	HUM1021		*								*	*	*								
	7	MAT1011	*	*							*											
	8	MAT2001	*	*						*												
	9	ECE3099												*						*		*
	10	ECE3999									*										*	
	11	ECE4098	*								*											
	12	ECE4099					*	*														*
	13	MGT1022		*		*															*	*
	14	PHY1701	*	*		*																
	15	PHY1999		*			*														*	
	16	EXC4097									*											
	17	FLC4097											*	*			*	*				
	18	STS4097			*					*	*	*	*	*	*	*	*	*	*	*	*	*



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Mapping of Students Learning Outcomes

Category	S.No	Course Code	Students Learning Outcomes (SLO's)																				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
PC	1	ECE1001	*	*												*							
	2	ECE1002	*					*								*							
	3	ECE1003		*			*				*												
	4	ECE1004	*	*																*			
	5	ECE1005		*				*									*						
	6	ECE2001	*	*							*												
	7	ECE2002		*			*										*						
	8	ECE2003		*			*													*			
	9	ECE2004		*		*									*								
	10	ECE2005	*								*										*		
	11	ECE2006		*			*													*			
	12	ECE3001		*										*		*							
	13	ECE3002		*			*									*							
	14	ECE3003		*												*				*			
	15	ECE4001	*	*												*							
	16	MAT2002	*	*							*												
	17	MAT3004	*	*						*													

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Mapping of Students Learning Outcomes

Category	S.No	Course Code	Students Learning Outcomes (SLO's)																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PE	1	CSE2003	*				*				*											
	2	CSE2005		*											*				*			
	3	ECE1006	*	*							*											
	4	ECE1007	*	*			*															
	5	ECE1008	*												*					*		
	6	ECE2008		*											*				*			
	7	ECE2010	*	*			*															
	8	ECE3004	*	*		*																
	9	ECE3005	*	*												*						
	10	ECE3009	*	*			*															
	11	ECE3010		*			*				*											
	12	ECE3011	*	*												*						
	13	ECE3013	*	*												*						
	14	ECE4002		*			*								*							
	15	ECE4003		*			*									*						
	16	ECE4004		*											*	*						
	17	ECE4005	*	*																*		
	18	ECE4007	*	*																	*	
	19	ECE4008	*	*												*						
	20	ECE4009	*	*												*						
	21	ECE4010	*	*																*		
	22	ECE4011		*												*				*		
	23	ECE4013	*	*																	*	
	24	MAT3005	*	*						*												
	25	PHY1002	*	*		*																