

Old Curriculum for B.Tech. (Electronics and Communication Engineering)

1st Semester

Course Code	Course name	Lecture (L)	Tutorial (T)	Practical (P)	Credit
PH 11101	Physics-I	3	1	-	4
HS 11101	English Language and Composition	2	1	-	3
MA 11101	Mathematics-I	3	1	-	4
HS 11102	Communication Skill Workshop	1	-	1.5	1
PH 11201	Physics Lab	1	-	1.5	1
HS 11201	Language Lab	-	-	3	2
AM 11101	Engineering Mechanics	3	1	-	4
ME 11102	Workshop	1	-	3	3
AM 11201	Engineering Mechanics Lab	-	-	3	2
	Total	14	4	12	24

2nd Semester

Course Code	Course name	Lecture (L)	Tutorial (T)	Practical (P)	Credit
CY 12101	Chemistry	3	1	-	4
ME 12101	Engineering Graphics	1	-	3	3
PH 12102	Physics-II	3	1	-	4
CS 12101	Computer Programming	2	1	-	3
MA 12101	Mathematics-II	3	1	-	4
CE 12101	Environment and Ecology	2	-	-	2
HS 12102	Communication Skill Workshop	1	-	1.5	1
HS 11201	Language Lab	-	-	3	2
CY 12201	Chemistry Lab	-	-	3	2
PH 12201	Physics Lab	1	-	1.5	1
CS 12201	Computer Programming Lab	-	-	3	2
	Total	16	4	15	28

3rd Semester

Course Code	Course name	L	T	P	Credit
EC-13101	Basic Electronics	3	1	0	4
MA-13101	Mathematics-III	3	1	0	4
CS-13101	Data Structures and Operating Systems	3	0	0	3
MA-13103	Numerical Methods and Statistical Techniques	3	0	0	3
EE-13112	Principles of Electrical Engineering and Measurement	3	0	0	3
EC-13102	Signals and Systems	3	0	0	3
EC-13201	Electronics Engineering Lab	0	0	3	2
EE-13211	Electrical Engineering and Measurement Lab	0	0	3	2
CS-13202	Data Structure Lab	0	0	3	2
	Total	18	2	9	26

4th Semester

Course Code	Course name	L	T	P	Credit
EC-14101	Principle of Communication Engineering	3	1	0	4
EC-14102	Digital Electronics	3	1	0	4
EE-14111	Networks & Systems	3	0	0	3
EC-14103	Electromagnetic Theory	3	1	0	4
EC-14104	Solid State Devices and Circuits	3	0	0	3
HS-14101	Principles of Management	3	0	0	3
EC-14201	Communication Systems Lab	0	0	3	2
EC-14202	Digital Electronics Lab	0	0	3	2
EC-14203	Electronic Devices and Circuits Lab	0	0	3	2
	Total	18	3	9	27

5th Semester

Course Code	Course name	L	T	P	Credit
EC-15101	VLSI Technology	3	0	0	3
EC-15102	Microprocessors and Its Applications	3	0	0	3
EC-15103	Antenna and Wave Propagation	3	0	0	3
EC-15104	Electronic Circuit Design	3	1	0	4
EC-15105	Digital Communication	3	0	0	3
EE-15111	Automatic Control Systems	3	0	0	3
EC-15201	Microprocessors Lab	0	0	3	2
EC-15202	Electronic Circuit Design Lab	0	0	3	2
EC-15203	Digital Communication Lab	0	0	3	2
EE-15210	Automatic Control Systems Lab	0	0	3	2
	Total	18	1	12	27

6th Semester

Course Code	Course name	L	T	P	Credit
EC-16101	Digital Signal Processing	3	0	0	3
EC-16102	RF and Microwave Engineering	3	0	0	3
EC-16103	Data Communication and Networks	3	1	0	4
EC-16104	Optical Communication	3	0	0	3
EC-16105	VLSI Design	3	0	0	3
EC-16106	Computer Architecture	3	0	0	3
HS-16201	Communication Skill Workshop	0	0	2	0
EC-16201	Digital Signal Processing Lab	0	0	3	2
EC-16202	Optical and Microwave Engineering Lab	0	0	3	2
EC-16203	VLSI Design Lab	0	0	3	2
	Total	18	1	11	25

7th Semester

Course Code	Course name	L	T	P	Credit
EC-17101	Mobile and Wireless Communication	3	0	0	3
OE-17501 to 17505	Open Elective – I	3	0	0	3
EC-17301 to 17310	Professional Elective – I	3	1	0	4
EC-17311 to 17320	Professional Elective – II	3	1	0	4
EC-17201 to 17205	Lab Elective	0	0	3	2
EC-17601	Project	0	0	12	6
	Total	12	2	15	22

8th Semester

Course Code	Course name	L	T	P	Credit
EC-18101	Advance Digital Signal and Image Processing	3	1	0	4
OE-18501 to 18505	Open Elective – II	3	0	0	3
EC-18301 to 18310	Professional Elective – III	3	1	0	4
EC-18311 to 18320	Professional Elective – IV	3	1	0	4
EC-18201	Advanced Digital Signal and Image Processing Lab	0	0	3	2
EC-18601	Project	0	0	12	6
	Total	12	3	15	23

Open Elective

1. EC 17501 Optical and Mobile Communication
2. EC 18501 Digital Electronics & Microprocessor

Professional Elective I

1. EC17301 Advanced Computer Architecture
2. EC17302 Embedded Systems
3. EC 17303 Micro-Computer Based System Design
4. EC17304 MEMS and Integrated Sensors

Professional Elective II

1. EC17311 Radar & Satellite Communication
2. EC17312 Electromagnetic Interference and Compatibility
3. EC17313 Digital Transmission
4. EC17314 VLSI for Telecommunications and Signal Processing

Lab Elective

1. EC17201 Advanced Wireless and Optical Communication Lab
2. EC17202 Advanced Microprocessors Lab
3. EC17203 Advanced VLSI Lab
4. EC17204 FPGA Lab

Professional Elective III

1. EC18301 Digital Hardware Design
2. EC18302 Switching Circuits and Finite Automata Theory
3. EC18303 Low Power VLSI Design
4. EC18304 Advanced DSP Architecture

Professional Elective IV

1. EC18311 Information Theory and Coding
2. EC18312 WDM Optical Networks
3. EC18313 Multimedia Communication
4. EC18314 Mixed-Mode Signal Processing

[Detailed course structure with syllabus](#)

New Curriculum for B.Tech. (Electronics and Communication Engineering) effective from Academic session 2022-23 (NEP)

DEGREE FORMAT AND NOMENCLATURE

Sl. No.	Program Category	Branch	Nomenclature
1	4 Year Undergraduate Program	ECED	B Tech (Electronics and Communication Engineering)
2	4 Year Undergraduate Program with Minor	For Other Branches	B Tech (XXXX) and Minor in (VLSI Design)
3	4 Year Undergraduate Program with Minor	For Other Branches	B Tech (XXXX) and Minor in (Signal Processing)
4	4 Year Undergraduate Program with Minor	For Other Branches	B Tech (XXXX) and Minor in (Digital Systems)
5	4 Year Undergraduate Program with Minor	For Other Branches	B Tech (XXXX) and Minor in (Communication Systems)
6	4 Year Undergraduate Program with Honours	ECED	B Tech Honours (Electronics and Communication Engineering)
7	4 Year Undergraduate Program with Research	ECED	B Tech (Electronics and Communication Engineering) with Research (in VLSI)
8	4 Year Undergraduate Program with Research	ECED	B Tech (Electronics and Communication Engineering) with Research (in Signal Processing)
9	4 Year Undergraduate Program with Research	ECED	B Tech (Electronics and Communication Engineering) with Research (in Communication Systems)

CREDIT MATRIX AT VARIOUS LEVELS

Sl. No.	Program Category	Credit Distribution				Total
		Base Credit	Minor	Honours	Research	
1	B Tech (Electronics and Communication Engineering)	168	--	--	--	168
2	B Tech (XXXX) Minor in (VLSI Design)	160-170 (From Other Branches)	17	--	--	177-187
3	B Tech (XXXX) Minor in (Signal Processing)	160-170 (From Other Branches)	16	--	--	176-186
4	B Tech (XXXX) Minor in (Digital Systems)	160-170 (From Other Branches)	16	--	--	176-186
5	B Tech (XXXX) Minor in (Communication Systems)	160-170 (From Other Branches)	20	--	--	180-190
6	B Tech Honours (Electronics and Communication Engineering) (Honours Programme will be offered in 5 th , 6 th and 7 th semesters)	168	--	20	--	188
7	B Tech (Electronics and Communication Engineering) with Research (in VLSI)	168	--	--	20	188
8	B Tech (Electronics and Communication Engineering) with Research (in Signal Processing)	168	--	--	20	188
9	B Tech (Electronics and Communication Engineering) with Research (in Communication Systems)	168	--	--	20	188

Credits of B Tech ECE Courses as per proposed requirement

Course Category Nomenclature	Courses offered in First Year as per the recommendations of First Year Course Committee May2022 (Accepted)	Reference Total Credits for 4 Years B Tech	Credits 1 st year (Accepted)	Balance Credits for remaining 3 years	Total Credits of B Tech ECE for 4 Years
PCE (Professional competence enhancing Courses)	Professional Communication, Extra Academic Activities-A, Professional ethics and Social Values	14 (8.3%)	05	09 (Balanced)	14(8.3%)
	Introduction to Artificial Intelligence and Machine Learning, Engg. Graphics, Workshop and Manufacturing Processes	23 (13.7%)	07	NIL	23 (13.7%)
CEF (Core Engineering Foundation courses)	Physics, Chemistry, Mathematics- I, Mathematics-II		16		
CES	Core Engineering Supporting Courses	111 (66.1%)	03	99 (Balanced)	111 (66.1%)
CEE	Core Engineering Essential Courses, Electives		09		
Extra Academic Activity Related Courses (EAA)- Group B	Extra Academic Activity (EAA)- Group B	06 (3.6%)	02	04 (Balanced)	06 (3.6%)
	Industrial Training/ Group Project	14 (8.3%)	--	14 (Balanced)	14 (8.3%)
TOTAL		168	42	126	168 (100.00%)

First Semester

Sl. No.	Course name	Cat	L	T	P	Credit	Contact Hours	Remarks
1	Physics/Chemistry	CEF	2	1	2	4	5	Branch Specific Physics and Chemistry Courses (Alternatively in each semester)
2	Mathematics-I	CEF	3	1	0	4	4	Common Course for all Branches
3	Professional Communication/Introduction to Artificial Intelligence and Machine Learning	PCE	2	0	2	3	4	Common Course for all Branches As per the clause 23.13 of the NEP 2020
4	Core Engineering Essential Course I (Flexible L-T-P) Basic Electronics	CEE	2	0	2	3	4	Branch Specific Course of that branch only here ECE
5	Core Engineering Essential Course II (Flexible L-T-P) Digital Electronics	CEE	2	0	2	3	4	Branch Specific Course of that branch only here ECE
6	Electronics Workshop and Manufacturing Processes/CAD for Electronics	PCE / CEE	1	0	2	2	3	Common Course (Alternatively in each semester) If any department does not want to adopt this/these course(s) for the specific branch, the department may float branch specific course(s) in that/those places here ECE
7	Environment and Climate Change	PCE	2	0	0	0	2	Common Course for all Branches (This is an Audit Course)
8	Extra Academic Activity-A/ Extra Academic Activity-B	EAA	0	0	4	2	4**	Common Course for all Branches (With different titles) *Engagement beyond Academic Activity Duration *Evaluation of Grading system to be worked on
	Total		14	2	14	21	26+4**	

Second Semester

Sl. No.	Course name	Cat	L	T	P	Credit	Contact Hours	Remarks
1	Chemistry/Physics	CEF	2	1	2	4	5	Branch Specific Physics and Chemistry Courses (Alternatively in each semester)
2	Mathematics-II	CEF	3	1	0	4	4	Branch Specific Mathematics Course
3	Introduction to Artificial Intelligence and Machine Learning/ Professional Communication	PCE	2	0	2	3	4	Common Course for all Branches As per the clause 23.13 of the NEP 2020
4	Core Engineering Supporting Course (Flexible L-T-P) Principles of Electronics Engineering	CES	2	0	2	3	4	Course to be floated by each department (here ECE) only for the students of other Branches
5	Core Engineering Essential Course III (Flexible L-T-P) Principles of Communication Engineering	CEE	2	0	2	3	4	Branch Specific Course of that branch only here ECE
6	CAD for Electronics/ Electronics Workshop and Manufacturing Processes	CEE/P CE	1	0	2	2	3	Common Course (Alternatively in each semester) If any department does not want to adopt this/these course(s) for the specific branch, the department may float branch specific course(s) in that/those places here ECE
7	Extra Academic Activity-A/ Extra Academic Activity-B	EAA	0	0	4	2	4**	Common Course for all Branches (With different titles) *Engagement beyond Academic Activity Duration *Evaluation of Grading system to be worked on
	Total		12	2	14	21	24+4**	

N.B. Course Structure and Curriculum for B Tech First Year comprising of First and Second Semesters have already been finalized and accepted at Institute level.

Third Semester

Course Code	Course name	L	T	P	Credit
ECN13101	Electromagnetic Theory	3	0	0	3
ECN13102	Signals and Systems	3	0	0	3
CSN13404	Data Structures and Operating Systems	3	0	2	4
EEN13401	Networks and Systems	3	0	0	3
ECN13103	Microprocessor and Its Applications	3	0	2	4
ECN13104	Solid State Devices and Circuits	3	0	2	4
HSN13602	Business Economics	3	0	0	3
EAN13700	Extra Academic Activity-B-II	0	0	4	2
	Total	21	0	10	26

Fourth Semester

Course Code	Course name	L	T	P	Credit
ECN14101	VLSI Technology	3	0	0	3
ECN14102	Digital Communication	3	0	2	4
EEN14401	Automatic Control Systems	3	0	2	4
ECN14103	Antenna and Wave Propagation	3	0	0	3
ECN14104	Microcontrollers and Embedded Systems	3	0	2	4
HSN14601	Management Concepts and Applications	3	0	0	3
EAN14700, 14701, 14702	Extra Academic Activity-B-II (Choice based Course)	0	0	4	2
	Total	18	0	10	23

Fifth Semester

Course Code	Course name	L	T	P	Credit
ECN15101	Digital Signal Processing	3	1	2	5
ECN15102	Computer Architecture	3	0	0	3
ECN15103	Data Communication Networks	3	0	0	3
ECN15104	Electronic Circuit Design	3	1	2	5
ECN15105	Optical Communication	3	0	0	3
ECN15106	VLSI Design	3	0	2	4
ECN15250,15251,15252,15253, 15254, 15255	Elective-I	3	0	0	3
	Total	21	2	6	26

Sixth Semester

Course Code	Course name	L	T	P	Credit
ECN16101	Digital Image Processing	3	0	2	4
ECN16102	RF and Microwave Engineering	3	0	2	4
ECN16103	Semiconductor Devices and Modeling	3	0	0	3
HSN16XXX	Soft Skills and Personality Development	3	0	0	3
ECN16250,16251, 16252, 16253,16254,16255, 16256, 16257	Elective-II	3	0	0	3
ECN16275,16276,16277,16278, 16279, 16280, 16281, 16282	Elective-III	3	0	0	3
	Total	18	0	4	20

Seventh Semester

Course Code	Course name	L	T	P	Credit
ECN17101	Mobile and Wireless Communication	3	1	0	4
ECN17102	Nano Electronics and Its Applications	3	0	0	3
ECN17250,17251,17252,17253,17254,17255, 17256	Elective – IV	3	0	0	3
ECN17275,17276,17277,17278,17279, 17280, 17281	Elective-V	3	0	0	3
ECN17351	Project	0	0	4	4
	Total	12	1	4	17

Eighth Semester

Course Code	Course name	L	T	P	Credit
ECN18351	Project/Internship	0	0	14	14
	Total	0	0	14	14

Professional Elective I

Communication

ECN15250 Modern Radar Systems

ECN15251 Multimedia Communication

Signal Processing

ECN15252 Advanced Microcontrollers

VLSI

ECN15253 Advanced Analog Design

ECN15254 MEMS and Integrated Sensors

ECN15255 Emerging Technologies, Devices and Applications

Professional Elective-II

Communication

ECN16250 Advanced Digital transmission

ECN16251 Satellite Communication

ECN16252 Optical Wireless Communication

Signal Processing

ECN16253 VLSI for Signal Processing

ECN16254 Adaptive Signal Processing

VLSI

ECN16255 Testing & Verification of VLSI Circuits

ECN16256 VLSI Interconnects

ECN16257 Design of Current Mode Circuits

Professional Elective-III

Communication

ECN16275 Wireless Communication Network

ECN16276 Intelligent Communication Systems

Signal Processing

ECN16277 Two-dimensional Signals and Systems

ECN16278 Mathematics for Signal Processing

ECN16279 Switching Circuits and Finite Automata Theory

VLSI

ECN16280 VLSI Physical Design & Automation

ECN16281 Low Power VLSI Design

ECN16282 Optoelectronic Devices and Applications

Professional Elective-IV

Communication

ECN17250 WDM Optical Networks

ECN17251 Advanced Wireless Communication

Signal Processing

ECN17252 Advanced DSP Architecture

ECN17253 Advanced Computer Architecture

VLSI

ECN17254 Mixed Mode VLSI Design

ECN17255 RF IC Design

ECN17256 Memory Design and Testing

Professional Elective-V

Communication

ECN17275 Adaptive and Smart Antenna

ECN17276 Electromagnetic Interference and Compatibility

Signal Processing

ECN17277 Pattern Recognition and Analysis

ECN17278 Signal Compression Techniques

VLSI

ECN17279 VLSI for IOT

ECN17280 Organic Electronics

ECN17281 Wearable Electronic Device

MINOR BASKETS

The following Undergraduate Programs (with Sl. No. 2, 3, 4 and 5) are exclusively applicable for the students of other Disciplines other than ECE.

1. PROGRAM: B Tech (XXXX) Minor in VLSI Design

Minor courses in VLSI Design will be offered for B.Tech students of other branches in 5th, 6th, and 7th semesters.

MINOR in VLSI Design

Sl. No.	Course Code	Course	Credit	Core/Elective
1.	ECN13104	Solid State Devices and Circuits	4	Core
2.	ECN14101	VLSI Technology	3	Core
3.	ECN15104/ ECN15106	Electronic Circuit Design/ VLSI Design	4	Core
4.	ECN15250-15255/ECN16250- 16257	Elective-I/Elective-II	3	Elective
5.	ECN16275-16282	Elective-III	3	Elective
Total			17	

N.B. Course contents and other details of this Program are available in the respective regular semester courses in B Tech ECE Program. Elective courses are of VLSI wing.

2. PROGRAM: B Tech (XXXX) Minor in Signal Processing

Minor courses in Signal Processing will be offered for B.Tech students of other branches in 5th, 6th, and 7th semesters.

Minor in Signal Processing

Sl. No.	Course Code	Course	Credit	Core/Elective
1.	ECN13102	Signals & Systems	3	Core
2.	ECN15101	Digital Signal Processing	5	Core
3.	ECN16104	Digital Image Processing	5	Core
4.	ECN15250-15255/ECN16250-16257	Elective-I/Elective-II	3	Elective
Total			16	

N.B. Course contents and other details of this Program are available in the respective regular semester courses in B Tech ECE Program. Elective courses are of Signal Processing wing.

3. PROGRAM: B Tech (XXXX) Minor in Digital Systems

Minor courses in Digital Systems will be offered for B.Tech students of other branches in 5th, 6th, and 7th semesters.

Minor in Digital Systems

Sl. No.	Subject Code	Subject	Credit	Core/Elective
1.	ECN11102	Digital Electronics	4	Core
2.	ECN14XXX	Microprocessors	4	Core
3.	EC-15102	Computer Architecture	4	Core
4.	EC-15401/EC-17401/EC-17402/EC-XXXXXX*	Elective-I/Elective-II	4	Elective
Total			16	

N.B. Course contents and other details of this Program are available in the respective semester courses in B Tech ECE Program. Elective courses are of Signal Processing wing.

4. PROGRAM: B Tech (XXXX) Minor in Communication Systems

Minor courses in Communication Systems will be offered for B.Tech students of other branches in 5th, 6th, and 7th semesters.

Minor in Communication Systems

Sl. No.	Subject Code	Subject	Credit	Core/Elective
1.	EC-13102	Signals & Systems	03	Core
2.	EC-14102	Digital Communication	04	Core

3.	EC-16102	RF and Microwave Engineering	04	Core
4.	EC-17101	Mobile & Wireless Communication	03	Core
5.	EC-15103/EC-15105	Elective-I/Elective-II	03	Elective
Total			17	

N.B. Course contents and other details of this Program are available in the respective semester courses in B Tech ECE Program. Elective courses are of Communication Systems wing.

5. PROGRAM: B Tech Honours (Electronics and Communication Engineering)

Honours Programme courses will be offered in 5th, 6th, and 7th

semesters This Undergraduate Program is applicable to ECE

students only.

Sl. No.	Subject Code	Subject	Credit	Core/Elective
1.	ECN16105	Multidimensional Digital Signal Processing	4	Core
2.	ECN17296	Advanced Communication Systems	4	Core
3.	ECN15108	VLSI Circuits and Systems	4	Core
4.	ECN17260, 17261,17262	Statistical Signal Processing/Advanced Analog IC Design/ /Information theory and coding	4	Elective VI
5.	ECN17290,17291, 17292	Speech Signal Processing/Low Power VLSI Design/Antenna Design and MIMO Systems	4	Elective VII
Total			20	

N.B. Course contents and other details of this Honours Program are available in the respective semester courses in M Tech Communication Systems, M Tech Signal Processing and M Tech Micro Electronics and VLSI Design Programs.

RESEARCH BASKET

The following Undergraduate Programs (with Sl. No. 7, 8 and 9) are applicable to students of ECE Discipline only.

6. PROGRAM: B Tech (Electronics and Communication Engineering) with Research (in VLSI

Design) The Research courses in VLSI Design will be offered in 5th,6th, and 7th semesters.

Sl. No.	Course Code	Course	L	T	P	Credits	Core/Elective
1.	ECN15108	VLSI Circuits and Systems	3	1	0	04	Core
2.	ECN16106/ECN17291	Nanoelectronic Devices and Engineering	3	1	0	04	Core
3.	ECN16260-16264	Elective VIII	3	1	0	04	Elective
4.	ECN16260-16264	Elective VIII	3	1	0	04	Elective
5.	ECN17352	Research Project				04	Elective
Total						20	

N.B. These specialization courses in B Tech Research (Electronics and Communication Engineering, VLSI Design) Program are of M Tech Microelectronics and VLSI design Program.

7. PROGRAM: B Tech (Electronics and Communication Engineering) with Research (in Signal Processing)

The Research courses in Signal Processing will be offered in 5th,6th, and 7th semesters.

Sl. No.	Course Code	Course	L	T	P	Credit	Core/Elective
1.	ECN15109	Advances in Digital Signal Processing	3	1	0	04	Core
2.	ECN16107	DSP Processors and Architecture	3	1	0	04	Core
3.	ECN16105	Multidimensional Digital Signal Processing	3	1	0	04	Core
4.	ECN17293-17298	Elective IX	3	1	0	04	Elective
5.	ECN17353	Research Project				04	Elective
Total						20	

N.B. The specialization courses in B Tech Research (Electronics and Communication Engineering, Signal Processing) Program are of M Tech Signal Processing Program.

8. PROGRAM: B Tech (Electronics and Communication Engineering) with Research (in Communication Systems)

The Research Programme courses in Communication Systems will be offered in 5th,6th, and 7th semesters.

Sl. No.	Subject Code	Subject	L	T	P	Credit	Core/Elective
1.	ECN17296/ECN15110	Detection and Estimation Theory	3	1	0	04	Core
2.	ECN16108	Advanced Communication Systems	3	1	0	04	Core
3.	ECN16109	Communication Networks	3	1	0	04	Core
4.	ECN17265-17268/ECN17292, 17294,17295	Elective X	3	1	0	04	Elective
5.	ECN17354	Research Project				04	Elective
Total						20	

N.B. The specialization courses in B Tech Research (Electronics and Communication Engineering, Communication Systems) Program are of M Tech Communication Systems Program.

[Detailed course structure with syllabus](#)