

Indian Institute of Information Technology Allahabad

Department of Electronics and Communication Engineering

B.Tech-M.Tech Dual Degree (ECE) (Credits: 200)

(With effect from July 2026 batch)

NEP-2020- New Education Policy- 2020

L-T-P (hr)

Lecture-L: 1 Credit = 1 hr/ week

Tutorial-T: 1 Credit = 1 hr/week

Practical-P: 1 Credit = 2 hr/week

Self Study: 1 Credit = 1 hr/week

1. Degree: Dual Degree B.Tech-M.Tech ECE
2. Duration: The total duration of the program will be 5 years.

Type of Courses

Programme Core Course (PCC)
Programme Elective Course (PEC)
Open/School Elective (OE/SE) other than particular program
Multidisciplinary Minor (MDM)
Ability Enhancement Course (AEC-01)
Indian Language (AEC-02)
Entrepreneurship/Economics/ Management Courses
Indian Knowledge System (IKS)
Value Education Course (VEC)
Internship
Dissertation/Thesis
Community Engagement Activity (CEA)/Field Project
Co-curricular & Extracurricular Activities (CCA)

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Semester 1					Total Credit: 20
Sl. No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Engineering Physics	AS101	BSC	4	3-0-2-0
2	Linear Algebra	AS102	BSC	4	3-1-0-0
3	Problem Solving with Programming	IT101	ESC	5	3-0-4-0
4	Fundamentals of Electrical & Electronics Engineering	EC101	ESC	4	3-0-2-0
5	Technical Communication Skills		HSMC (AEC)	2	1-0-2-0
6	Constitution of India		HSMC (VEC)	1	1-0-0-0
	Universal Human Values				
	Professional Ethics				
	Art of Living				
	Any Other				
Total				20	14-1-10-0
					25

Semester 2					Total Credit: 21
Sl. No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Electronic Workshop	EC102	VSEC	2	0-0-4-0
2	Digital Logic Design with HDL	EC103	PCC	3	2-0-2-0
3	Electronic Devices and Circuits	EC104	ESC	3	2-0-2-0
4	Electronic Measurements and Instrumentation	EC105	PCC	3	2-0-2-0
5	Data Structures and Algorithms	IT104	ESC	4	3-0-2-0
6	Network Synthesis & Analog Filters	EC106	PCC	3	2-1-0-0
7	Principles of Management	MS102	HSMC(AEC)	2	2-0-0-0
8	Constitution of India		HSMC(VEC)	1	1-0-0-0
	Environmental Studies				
	Professional Ethics				
	Physical Education (Sports)				
	Any Other				
Total				21	14-1-12-0
					27

Exit: After successful completion of the first two semesters, a student may opt for an exit (Certificate in ECE) as per the Ordinance. They need to complete 6 additional Skill-based credits offline in the summer before exit. The department will provide a list of such courses.

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Semester 3					Total Credit: 22	
Sl. No.	Course Name	Code	Type	Credit	Hours	
					L-T-P-S	
1	Electromagnetic Field and Waves	EC201	PCC	3	3-0-0-0	
2	Signal and Systems	EC202	PCC	4	3-1-0-0	
3	Analog Electronics & Linear ICs	EC203	PCC	4	3-0-2-0	
4	Microprocessor Interface and Programming	EC204	PCC	3	2-0-2-0	
5	Biology for Engineers	AS301	BSC	2	2-0-0-0	
6	Multi-Disciplinary Minor-1		MDM	3	3-0-0-0	
7	Entrepreneurship Development		HSMC (AEC)	2	2-0-0-0	
8	Community Services		HSMC (CEA)	1	0-0-0-1	
	NCC					
	NSS					
	Yoga					
	Unnat Bharat Abhiyaan					
	Ek Bharat Shreshtha Bharat					
	NGO					
	Prayas					
	Other Courses					
Total				22	18-1-4-1	
					24	

Semester 4					Total Credit: 24
Sl. No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Control Systems	EC205	PCC	4	3-0-2-0
2	Analog Communication	EC206	PCC	3	2-0-2-0
3	CMOS VLSI Design	EC207	PCC	3	2-0-2-0
4	Probability and Statistics	AS201	BSC	4	3-1-0-0
5	Antenna and Wave Propagation	EC208	PCC	4	3-0-2-0
6	Integrated Circuit Technologies	EC209	PCC	3	3-0-0-0
7	Multi-Disciplinary Minor-2		MDM	3	3-0-0-0
Total				24	19-1-8-0
					28

Exit: After successful completion of the four semesters, a student may opt for an exit (Diploma in ECE) as per the Ordinance. They need to complete 6 additional Skill-based credits offline in the summer before exit. The department will provide a list of such courses.

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Semester 5					Total Credit: 23
Sl. No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Digital Signal Processing	EC301	PCC	4	3-0-2-0
2	Embedded System Design	EC302	PCC	3	2-0-2-0
3	Microwave Engineering	EC303	PCC	4	3-0-2-0
4	Digital Communication	EC304	PCC	4	3-0-2-0
5	Elective-1 A. Electrical Machines B. Advanced Computer Architectures C. AI & ML Techniques D. Solid State Devices E. Any Other	ECXXX	PEC	3	3-0-0-0
6	Multi-Disciplinary Minor-3		MDM	3	3-0-0-0
7	Design Thinking and Innovation	EC305	HSMC (AEC)	2	1-0-2-0
Total				23	18-0-10-0
					28

Specialization Choice exercise: The student will exercise their M.Tech ECE specialization choice at the start of the 6th Semester.

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Semester 6					Total Credit: 18	
Sl. No.	Course Name	Code	Type	Credit	Hours	
					L-T-P-S	
1	Data Communication & Networking	EC306	PCC	3	2-0-2-0	
2	Mobile and Wireless Communication	EC307	PCC	3	2–0–2-0	
3	Elective-2 F. Power Electronics G. Testing & Verification H. Optical Communication I. Detection & Estimation Theory J. Physics of Nanoscale Devices K. Any Other Subject	ECXXX	PEC	3	3–0–0-0	
4	Mini Project	EC308	ELC	4	0-0-8-0	
5	Multi-Disciplinary Minor-4		MDM	3	3–0–0-0	
6	Indian language (I1-I10)		HSMC (AEC)	2	1-0-2-0	
	Sanskrit					
	(I2-I10)					
	Foreign language (F1-F10)					
	German					
	Japanese					
	French					
	(F4-F10)					
	Regional Language (R1-R10)					
	(R1-R10)					
Total				18	11-0-14-0	
					25	

Exit option: After successful completion of six semesters, a student may get an exit option (B.Sc Engg. In ECE) as per the Ordinance. They need to complete **6 additional Skill-based credits** offline in the summer before exit. The department will provide a list of such courses.

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Semester 7					Total Credit: 22
Sl. No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Core -1*	M.Tech based	PCC	4	3-0-2-0
2	Core -2*	M.Tech based	PCC	4	3-0-2-0
3	Open Elective-1		OEC	3	3-0-0-0
4	Research Methodology and IPR	EC506	ELC	2	2-0-0-0
5	Tools and Techniques for Research Practices	EC505	ELC	3	0-1-4-0
6	History of Indian Civilizations		HSMC (IKS)	2	2-0-0-0
	Kautilya's Arthashastra				
	Vedic Mathematics				
	Vedic Corpus				
	Wisdom from the Ages				
	Panini's Grammar				
	Any Other Subject				
8	Minor Project	EC401	ELC	4	0-0-8-0
Total				22	13-1-16-0
					30

***Core-1 and Core-2 of M. Tech Specialization allotted to students.**

Semester 8				Total Credit: 17	
S. No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Core – 3*	M.Tech based	PCC	4	3–0-2-0
2	Core - 4 *	M.Tech based	PCC	4	3–0–2-0
3	Elective - 3	ECXXX	PEC	3	3–0–0-0
4	Dissertation-I	EC550	ELC	3	0-0-6-0
5	Independent Study#	ECE551* (*Title of the study)	ELC	3	0-0-0-3
Total				17	9-0-10-3
					22

***Core-3 and Core-4 of M. Tech Specialization allotted to students.**

Advised by the Supervisor

Exit option 1 : After successful completion of eight semesters, a student may get an exit option (B.Sc Engg. in ECE with PG Diploma in ECE with Specialization) as per the ordinance.

Exit option 2: After successful completion of 8th Semester, students may opt for exit with B.Tech ECE by completing one additional semester 9A as per the requirements of B.Tech Degree (refer Ordinance).

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Summer Semester					Total Credit: 3
Sl. No.	Course Name	Code	Type	Credit	
1	Internship	EC552	ELC	3	Credit will be added in 9 th /9A Sem.

Note: The internship will be evaluated at the beginning/during the ninth semester. Its credit and grades will be reflected on the 9th-semester Grade sheet.

Semester 9					Total Credit: 18
S. No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Elective - 4	ECXXX	PEC	3	3-0-0-0
2	Elective – 5	ECXXX	PEC	3	3-0-0-0
3	Elective – 4##	ECXXX	PEC	3	0-0-0-3
4	Dissertation-II	EC650	ELC	6	0-0-12-0
5	Internship	EC552	ELC	3	0-0-0-3
Total				18	6-0-12-6
					24

Course based on Thesis Theme advised by Supervisor from MOOC/NPTEL/SWAYAM approved by the department

Semester 10					Total Credit: 15
S. No	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Thesis	EC651	ELC	15	0-2-26-0
Total				15	0-2-26-0
					28

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Semester 9A (This semester is Only for Exit Option 2 after 8th Semester)					
Sl.No.	Course Name	Code	Type	Credit	Hours
					L-T-P-S
1	Major Project#	EC403	ELC	6	0-0-12-0 0-0-0-6 *
2	Elective-4**	ECXXX	PEC	3	3-0-0-0 0-0-0-3 *
3	Open Elective-2**		OEC	3	3-0-0-0 0-0-0-3 *
4	Internship	EC402	ELC	3	0-0-0-3
Total				15	6-0-12-3/ 0-0-0-15**
					21/15**

**8th-semester courses may be allowed to join via MOOCs/NPTEL, etc. Major projects may be completed as an internship cum project as per the following options:

For the Major Project, the students will have 3 options:

Option 1- The student will do an internship in a company, and the same work will be presented as the project without concealing any code/module

Option 2- The student will do an internship in a company, but a separate project will be registered with the IITA faculty in the department

Option 3- The student will opt for a project only with the IITA faculty in the department.

1. Electives of ECE will be floated for electives up to 7th Semester
2. Electives of M. Tech ECE will be floated in 8th, 9th and 10th Semesters