SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

Department of Electronics and Communication Engineering (ECE)

COURSE STRUCTURE

4 – Year B. Tech. ECE

4 – Year B.Tech. ECE (with specialization: VLSI Design and Embedded Systems)

4 – Year B.Tech. ECE (with specialization: AI & ML)

Effective Batch 2025-29

GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA

Course Type and Definitions

Course Code	Definition
L	Lecture
P	Practical
T	Tutorial
DSC	Department Specific Core
DSE	Department Specific Elective
DSM	Department Specific Minor
MDC	Multidisciplinary Course
SEC	Skill Enhancement Course
AEC	Ability Enhancement Course
VAC	Value Added Course
HSM	Humanities and Social Sciences including Management Courses
BSC	Basic Science Courses
ESC	Engineering Science courses including workshop, drawing, basics of electronics/electrical/mechanical/computer etc.
EC	Professional core courses
PE	Professional Elective courses relevant to chosen specialization/branch
OE/ VAC	Open subjects – Electives from other technical and /or emerging subjects

Course Structure

Semester I						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	CS101	Problem Solving Using C	3	0	0	3
2	MA111	Applied Mathematics I	3	1	0	4
3	ICT01	Electronics and Electrical Engineering	3	1	0	4
4	ES101	Environmental Studies	3	1	0	4
5	EN101	English Proficiency	2	0	0	2
6	CS183	Problem Solving Using C Lab	0	0	2	1
7	ICT85	Electronics and Electrical Engineering Lab	0	0	2	1
8	ICTV1	Career Skills	2	0	0	2
9	ICT81	ICT Workshop I	0	0	2	1
Total			**16**	**3**	**6**	**22**

Semester II						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	EC102	Problem Solving using Python	2	0	0	2
2	MA112	Applied Mathematics II	3	1	0	4
3	EC104	Digital Logic Design	3	1	0	4
4	EC106	Applied Linear Algebra	3	0	0	3
5	PH102	Engineering Physics	3	1	0	4
6	EC180	Digital Logic Design Lab	0	0	2	1
7	EC182	Problem Solving using Python Lab	0	0	2	1
8	PH104	Engineering Physics Lab	0	0	2	1
9	ICT82	ICT Workshop II	0	0	2	1
10	ICTV2	Career Skills Lab	0	0	2	1
Total			**14**	**3**	**10**	**22**

Semester III						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	ECE201	Electronic Devices and Circuits	3	0	0	3
2	ECE203	Electromagnetic Waves	3	1	0	4
3	ECE205	Signals and Systems	3	1	0	4
4	ECE207	Network Theory	3	1	0	4
5	ECE281	Electronic Devices Lab	0	0	2	1
6	ECE283	Network Theory Lab	0	0	2	1
7	AAAXXX	Slot for AEC	3	0	0	3
8	SSSXXX	Slot for SEC	3	0	0	3
9	VVVXXX	Slot for VAC	2	0	0	2
Total			**20**	**3**	**4**	**25**

Semester IV						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	ECY2XX	Specialization Core-1	3	0	0	3
2	ECY2XX	Specialization Core-2	3	0	0	3
3	ECE202	Communication Systems	3	1	0	4
4	ECE204	Computer Architecture and Organization	3	0	0	3
5	ECY2XX	Specialization Elective-1	3	0	0	3
6	ECY2XX	Specialization Core Lab-1	0	0	2	1
7	ECY2XX	Specialization Core Lab-2	0	0	2	1
8	ECE280	Communication Systems Lab	0	0	2	1
9	VVVXXX	Slot for VAC	2	0	0	2
Total			**17**	**1**	**6**	**21**

** Exit Option for 2 Year UG Diploma						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	ECE292	Internship-II	0	0	8	4
Total			0	0	8	**4**

**Note:

1. Exit Option as per NEP2020: Students exiting the programme after securing 80 credits will be awarded UG Diploma in the relevant Discipline /Subject provided they secure additional 4 credit in skill based vocational courses during first year or second year summer term.

Semester V						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	ECY3XX	Specialization Core-3	3	0	0	3
2	ECY3XX	Specialization Core-4	3	0	0	3
3	ECE301	Control Systems	3	0	0	3
4	ECY3XX	Specialization Core-5	3	0	0	3
5	ECY3XX	Specialization Elective-2	3	0	0	3
6	ECY3XX	Specialization Elective-3	3	0	0	3
7	ECY3XX	Specialization Core Lab-3	0	0	2	1
8	ECY3XX	Specialization Core Lab-4	0	0	2	1
9	ECY3XX	Specialization Core Lab-5	0	0	2	1
Total			**18**	**0**	**6**	**21**

Semester VI						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	ECY3XX	Specialization Core-6	3	0	0	3
2	ECY3XX	Specialization Core-7	3	0	0	3
3	ECY3XX	Specialization Elective-4	3	0	0	3
5	ECY3XX	Specialization Elective-5	3	0	0	3
6	XXXXXX	Open Elective-1	3	0	0	3
7	ECY3XX	Specialization Core Lab-6	0	0	2	1
8	ECY3XX	Specialization Core Lab-7	0	0	2	1
9	ECE390	Capstone Project-1	0	0	4	2
Total			**15**	**0**	**8**	**19**

@@ Note:

1. Students who want to undertake 3-year UG programme will be awarded UG Degree in the relevant Discipline /Subject upon securing 120 credits.
2. The students who wish to leave the studies after completion/ end of 3rd year, can exercise exit option for B.Sc. Degree in Electronics and Communication during the registration of 6th semester.
3. **Students who have not exercised exit option shall be required to pursue "Industrial Training" for 6 weeks duration (4 credits course) during summer vacation after end of exams of 6th semester. The evaluation or viva-voce of this course (ECE493) will be done with the end semester exam of 7th semester.**

Semester VII						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	ECY4XX	Specialization Elective-6	3	0	0	3
4	XXXXXX	Slot for HSM Course	3	0	0	3
2	XXXXXX	Open Elective-2	3	0	0	3
3	XXXXXX	Open Elective-3	3	0	0	3
4	ECE491	Capstone Project-2	0	0	8	4
5	ECE493	Industrial Training	0	0	4	2
Total			**12**	**0**	**12**	**18**

Semester VIII						
S.No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	ECE494	Internship	0	0	24	12
Total			**0**	**0**	**24**	**12**

SPECIALIZATION CORE BASKET

Course Type	Semester	Course Code	Track	Course	L	P	T	Credits
Specialization Core-1	**IV**	ECE206	ECE Core, ECE VLSI Design	Linear Integrated Circuits	3	1	0	4
		ECE282	ECE Core, ECE VLSI Design	Linear Integrated Circuits Lab	0	0	2	1
		ECA200	ECE AI & ML	Database Management System	3	1	0	4
		ECA280	ECE AI & ML	Database Management System Lab	0	0	2	1
Specialization Core-2	**IV**	ECE210	ECE AI & ML	Data Structures and Algorithm	3	0	0	3
		ECE284	ECE AI & ML	Data Structures and Algorithm Lab	0	0	2	1
		ECE212	ECE Core, ECE VLSI Design	Antenna and Wave Propagation	3	0	0	3
		ECE286	ECE Core, ECE VLSI Design	Antenna and Wave Propagation Lab	0	0	2	1
Specialization Core-3	**V**	ECE303	ECE Core	Digital Signal Processing	3	1	0	4
		ECE381	ECE Core	Digital Signal Processing Lab	0	0	2	1
		ECA301	ECE AI & ML	Introduction to Data Science	3	1	0	4
		ECA381	ECE AI & ML	Introduction to Data Science Lab	0	0	2	1
		ECV301	ECE VLSI Design	Introduction to HDL Programming	3	1	0	4
		ECV381	ECE VLSI Design	HDL Programming Lab	0	0	2	1
Specialization Core-4	**V**	ECE305	ECE Core	Microprocessor and Microcontroller	3	1	0	4
		ECE383	ECE Core	Microprocessor and Microcontroller Lab	0	0	2	1
		ECV303	ECE VLSI Design	CMOS Digital VLSI Design	3	1	0	4
		ECV383	ECE VLSI Design	CMOS Digital VLSI Design Lab	0	0	2	1
		ECA303	ECE AI & ML	Introduction to Machine Learning	3	1	0	4
		ECA383	ECE AI & ML	Introduction to Machine Learning Lab	0	0	2	1

Specialization Core-5	**V**	ECE307	ECE Core, ECE AI & ML	Data Communication Networks	3	0	0	3
		ECE385	ECE Core, ECE AI & ML	Data Communication Networks Lab	0	0	2	1
		ECV305	ECE VLSI Design	Digital IC Design	3	0	0	3
		ECV385	ECE VLSI Design	Digital IC Design Lab	0	0	2	1
Specialization Core-6	**VI**	ECE300	ECE Core, ECE VLSI Design	Embedded Systems	3	0	0	3
		ECE382	ECE Core, ECE VLSI Design	Embedded Systems Lab	0	0	2	1
		ECA300	ECE AI & ML	Deep Learning and Neural Networks	3	0	0	3
		ECA380	ECE AI & ML	Deep Learning and Neural Networks Lab	0	0	2	1
Specialization Core-7	**VI**	ECE304	ECE Core	Wireless Communication	3	0	0	3
		ECE384	ECE Core	Wireless Communication Lab	0	0	2	1
		ECA302	ECE AI & ML	Internet of Things	3	0	0	3
		ECA382	ECE AI & ML	Internet of Things Lab	0	0	2	1
		ECV300	ECE VLSI Design	CMOS Analog VLSI Design	3	0	0	3
		ECV380	ECE VLSI Design	CMOS Analog VLSI Design Lab	0	0	2	1

SPECIALIZATION ELECTIVE BASKET

Course Type	Semester	Course Code	Track	Course	L	P	T	Credits
Specialization Elective-1	**IV**	ECE222	ECE Core	Electronic Instrumentation	3	0	0	3
		ECE224	ECE Core, ECE AI & ML, ECE VLSI	Object-Oriented Programming	3	0	0	3
		ECV220	ECE VLSI	Advanced Electronic Materials	3	0	0	3
		ECV224	ECE VLSI	Semiconductor Device Physics and Modelling	3	0	0	3
		ECV226	ECE VLSI	Introduction to VLSI Life Cycle	3	0	0	3
Specialization Elective-2	**V**	ECE321	ECE Core	Digital Image Processing	3	0	0	3
		ECA321	ECE AI & ML	Natural Language Processing	3	0	0	3
		ECE325	ECE Core	Advanced Digital Communication Techniques	3	0	0	3
		ECV321	ECE VLSI	Nanoscale Devices and Circuits	3	0	0	3
		ECV323	EC VLSI	VLSI Design Automation	3	0	0	3
Specialization Elective-3	**V**	ECE327	ECE Core, ECE VLSI	Power Electronics	3	0	0	3
		ECV325	ECE VLSI	Introduction to MEMS	3	0	0	3
		ECV327	ECE VLSI	IC Fabrication	3	0	0	3
		ECE329	ECE Core, ECE AI & ML	Wireless Sensor Networks	3	0	0	3
Specialization Elective-4	**VI**	ECA320	ECE AI & ML	Computer Vision	3	0	0	3
		ECE324	ECE Core	Satellite Communication	3	0	0	3
		ECE326	EC Core, EC VLSI	Biomedical Instrumentation	3	0	0	3
		ECV320	EC VLSI	VLSI Testing and Verification	3	0	0	3

Specialization Elective-5	**VI**	ECE328	ECE Core	Microwave Theory and Techniques	3	0	0	3
		ECV322	EC VLSI	Nanoscale RF Devices and Circuits	3	0	0	3
		ECV324	EC VLSI	Semiconductor Packaging and Testing	3	0	0	3
		ECA320	ECE AI & ML	Mobile Communication	3	0	0	3
Specialization Elective-6	**VII**	ECE421	ECE Core, ECE AI & ML, ECE VLSI	Introduction to RAMS	3	0	0	3
		ECV421	EC VLSI	Low Power VLSI Design	3	0	0	3
		ECV423	EC VLSI	Mixed Signal VLSI Design	3	0	0	3
		ECV425	EC VLSI	Reconfigurable Hardware Design	3	0	0	3

OPEN ELECTIVE SUBJECTS OFFERED TO OTHER DEPARTMENTS

Semester	Course Code	Course Name	L	P	T	Credits
Odd Semester	ECE101	Electronics and Electrical Engineering	3	0	0	3
	ECE201	Electronic Devices and Circuits	3	0	0	3
	ECE203	Electromagnetic Waves	3	1	0	4
	ECE205	Signals and Systems	3	1	0	4
	ECE207	Network Theory	3	1	0	4
	ECE301	Control Systems	3	0	0	3
	ECE303	Digital Signal Processing	3	1	0	4
	ECA301	Introduction to Data Science	3	1	0	4
	ECA303	Introduction to Machine Learning	3	1	0	4
	ECE321	Digital Image Processing	3	0	0	3
	ECE329	Wireless Sensor Networks	3	0	0	3
	ECE421	Introduction to RAMS	3	0	0	3
Even Semester	ECE102	Problem Solving using Python	2	0	0	2
	ECE104	Digital Logic Design	3	0	0	3
	ECE106	Applied Linear Algebra	3	0	0	3
	ECE202	Communication Systems	3	1	0	4
	ECE204	Computer Architecture and Organization	3	0	0	3
	ECA200	Database Management System	3	1	0	4
	ECE210	Data Structures and Algorithm	3	0	0	3
	ECA300	Deep Learning and Neural Networks	3	0	0	3
	ECE304	Wireless Communication	3	0	0	3
	ECA302	Internet of Things	3	0	0	3
	ECE222	Electronic Instrumentation	3	0	0	3
	ECE224	Object-Oriented Programming	3	0	0	3
	ECA320	Computer Vision	3	0	0	3
	ECE421	Introduction to RAMS	3	0	0	3