

Part II: Course Structure & Semester wise Credit Distribution

First Semester (First Year)

Mandatory Induction Program- 3 Weeks Duration

Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	BS	BS-M101	Mathematics-I	3	1	0	4
2	BS	BS-CH101	Chemistry	3	0	0	3
3	ES	ES-EE101	Basic Electrical and Electronics Engineering	2	1	0	3
4	HM	HM-HU101	Communication Skill (JeevanKaushal-I)	2	0	0	2
5	HM	HM-HU102	Introduction to Indian Knowledge System (Indian Knowledge System-I)	2	0	0	2
Total Theory				12	2	0	14
Practical/ Sessional/ Audit Course							
1	BS	BS-CH191	Chemistry Laboratory	0	0	3	1.5
2	ES	ES-EE191	Basic Electrical and Electronics Engineering Laboratory	0	0	4	2
3	ES	ES-ME192	Workshop/Manufacturing Practices	0	0	4	2
4	HM	HM-HU191	Communication Skill Laboratory (JeevanKaushal-I)	0	0	2	1
Total Practical/ Sessional/ Audit Course				0	0	11	6.5
Total of First Semester				12	2	11	20.5

Second Semester (First Year)

Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	BS	BS-M201	Mathematics-II	3	1	0	4
2	BS	BS-PH201	Physics	3	1	0	4
3	ES	ES-CS201	Programming for Problem Solving	3	0	0	3
4	HM	HM-HU203	Inculcation of Human Values and Professional Ethics (MulyaPravah)	2	0	0	2
Total Theory				11	2	0	13

Practical/ Sessional/ Audit Course							
1	AU	AU271	NSS/NCC	2	0	0	0
2	BS	BS-PH291	Physics Laboratory	0	0	3	1.5
3	ES	ES-CS291	Programming for Problem Solving Laboratory	0	0	4	2
4	ES	ES-ME291	Engineering Graphics & Design	0	0	4	2
5	PW	PW-BS281	Ideation Laboratory	0	0	2	1
<i>Total Practical/ Sessional/ Audit Course</i>				2	0	13	6.5
Total of Second Semester				13	2	13	19.5

Third Semester (Second Year)							
Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	PC	PC-EC301	Electronic Devices	3	0	0	3
2	PC	PC-EC302	Analog Electronic Circuits	3	0	0	3
3	PC	PC-EC303	Signals and Systems	3	0	0	3
4	PC	PC-EC304	Network Theory	3	0	0	3
5	PC	PC-EC305	Data Structure and Algorithm	3	0	0	3
6	ES	ES-EC301	Numerical Techniques	2	0	0	2
Total Theory				17	0	0	17
Practical/ Sessional/ Audit Course							
1	AU	AU-BS371	Environmental Science	2	0	0	0
2	PC	PC-EC391	Electronic Devices Laboratory	0	0	2	1
3	PC	PC-EC392	Analog Electronic Circuits Laboratory	0	0	2	1
4	PC	PC-EC394	Network Theory Laboratory	0	0	2	1
5	PC	PC-EC395	Data Structure Laboratory	0	0	2	1
6	ES	ES-EC391	Numerical Techniques Laboratory	0	0	2	1
Total Practical/ Sessional/ Audit Course				2	0	10	5
Total of Third Semester				19	0	10	22

Fourth Semester (Second Year)							
Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	PC	PC-EC401	Digital System Design	3	0	0	3
2	PC	PC-EC402	Microprocessor and Microcontrollers	3	0	0	3
3	PC	PC-EC403	Control Systems	3	0	0	3
4	ES	ES-EC401	Design Thinking	2	0	0	2
5	BS	BS-M401	Vedic Mathematics (Indian Knowledge System-II)	2	0	0	2
6	BS	BS-BIO401	Biology for Engineers	2	0	0	2
7	HM	HM-HU401	Leadership Skill and Management (JeevanKaushal-III)	2	0	0	2
Total Theory				17	0	0	17
Practical/ Sessional/ Audit Course							
1	PC	PC-EC491	Digital System Design Laboratory	0	0	2	1
2	PC	PC-EC492	Microprocessor and Microcontrollers Laboratory	0	0	2	1
3	PC	PC-EC493	Control Systems Laboratory	0	0	2	1
4	PW	PW-EC481	Micro Project	0	0	4	2
5	AU	AU-EC492	Idea Laboratory	2	0	4	0
Total Practical/ Sessional/ Audit Course				2	0	14	5
Total of Fourth Semester				19	0	14	22

Fifth Semester (Third Year)							
Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	PC	PC-EC501	Analog and Digital Communication	3	0	0	3
2	PC	PC-EC502	Electromagnetic Waves and Transmission Line	3	0	0	3
3	PC	PC-EC503	Computer Architecture	3	0	0	3
4	PE	PE-EC501	Professional Elective-I	3	0	0	3
5	OE	OE-XXXXX	Open Elective -I	2	0	0	2

6	BS	BS-M501	Basics of Indian Astronomy (Indian Knowledge System-III)	2	0	0	2
<i>Total Theory</i>				16	0	0	16
Practical/ Sessional/ Audit Course							
1	HM	HM-HU571	Aptitude Skill Development-I	1	0	0	1
2	PC	PC-EC591	Analog and Digital Communication Laboratory	0	0	2	1
3	PC	PC-EC592	Electromagnetic Waves and Transmission Line Laboratory	0	0	2	1
4	PC	PC-EC593	Computer Architecture Laboratory	0	0	2	1
5	OE	OE-XXXXX	Open Elective -I Laboratory	0	0	2	1
6	HM	HM-HU591	Professional Skill (JeevanKaushal-II)	1	0	2	2
<i>Total Practical/ Sessional/ Audit Course</i>				1	0	10	7
Total of Fifth Semester				18	0	10	23

Sixth Semester (Third Year)							
Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	PC	PC-EC601	Computer Networks	3	0	0	3
2	PC	PC-EC602	Embedded System and VLSI Design	3	0	0	3
3	PC	PC-EC603	Operating System	2	0	0	2
4	PC	PC-EC604	Digital Signal Processing	3	0	0	3
5	PE	PE-EC601	Professional Elective-II	3	0	0	3
Total Theory				14	0	0	14
Practical/ Sessional/ Audit Course							
1	HM	HM-HU671	Aptitude Skill Development-II	1	0	0	1
2	PC	PC-EC691	Computer Networks Laboratory	0	0	2	1
3	PC	PC-EC692	Embedded System and VLSI Design Laboratory	0	0	2	1
4	PC	PC-EC693	Operating System Lab	0	0	2	1
5	PC	PC-EC694	Digital Signal Processing Laboratory	0	0	2	1
6	PW	PW-EC681	Mini Project	0	0	6	3
Total Practical/ Sessional/ Audit Course				0	0	14	7
Total of Sixth Semester				15	0	14	22

Seventh Semester (Fourth Year)							
Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	PE	PE-EC701	Professional Elective-III	3	0	0	3
2	PE	PE-EC702	Professional Elective-IV	3	0	0	3
3	OE	OE-XXXXX	Open Elective-II	2	0	0	2
4	OE	OE-XXXXX	Open Elective-III	3	0	0	3
Total Theory				11	0	0	11
Practical/ Sessional/ Audit Course							
1	PW	PW-EC781	Seminar	0	0	2	1
2	PW	PW-EC782	Internship	0	0	4	2
3	PW	PW-EC783	Project-I	0	0	4	2
4	OE	OE-XXXXX	Open Elective-II Laboratory	0	0	2	1
Total Practical/ Sessional/ Audit Course				0	0	12	6
Total of Seventh Semester				11	0	12	17

Eighth Semester (Fourth Year)							
Sl. No.	Category	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	OE	OE-XXXXX	Open Elective-IV	2	0	0	2
2	BS	BS-M801	Introduction to Indian Astronomy (Indian Knowledge System-IV)	2	0	0	2
3	HM	HM-HU801	Universal Human Value-II (JeevanKaushal-IV)	2	0	0	2
Total Theory				6	0	0	6
Practical/ Sessional/ Audit Course							
1	PW	PW-EC881	Project-II	0	0	12	6
2	PW	PW-EC882	Comprehensive Viva Voce	0	0	0	1
3.	OE	OE-XXXXX	Open Elective-IV Laboratory	0	0	2	1
Total Practical/ Sessional/ Audit Course				0	0	14	8
Total of Eighth Semester				6	0	14	14

Part III: Specializations and corresponding List of Elective Papers

A. Specialization in Microelectronics and VLSI

Sl. No.	Semester	Course Code	Course Name	Course Title	Contact Hours			Credits
					L	T	P	
Theory								
1	V	PE-EC501A	Professional Elective-I	A. Analog VLSI Circuits B. Advanced Electronic Devices	3	0	0	3
2	VI	PE-EC601A	Professional Elective-II	A. Digital VLSI B. Microelectronics and Optoelectronic Devices	3	0	0	3
3	VII	PE-EC701A	Professional Elective-III	A. Low Power VLSI B. Processor Architecture for VLSI Design	3	0	0	3
4	VII	PE-EC702A	Professional Elective-IV	A. Analog and Mixed Signal IC Design B. VLSI Design and Testing	3	0	0	3
Total Theory					12	0	0	12
Practical/ Sessional Course								
Total Practical/ Sessional Course					0	0	0	0
Total					12	0	0	12

B. Specialization in Embedded System Design

Sl. No.	Semester	Course Code	Course Name	Course Title	Contact Hours			Credits
					L	T	P	
Theory								
1	V	PE-EC501B	Professional Elective-I	A. Sensors and Transducers B. Advanced Microcontroller and Its Applications C. Photonics	3	0	0	3
2	VI	PE-EC601B	Professional Elective-II	A. FPGA based System Design B. Image Processing	3	0	0	3

				and its applications				
3	VII	PE-EC701B	Professional Elective-III	A. Introduction to MEMS B. Material Science	3	0	0	3
4	VII	PE-EC702B	Professional Elective-IV	A. Real Time Embedded Systems B. System On Chip (SoC)	3	0	0	3
<i>Total Theory</i>					12	0	0	12
Practical/ Sessional Course								
<i>Total Practical/ Sessional Course</i>					0	0	0	0
Total					12	0	0	12

C. Specialization in Advanced Communication and Signal Processing

Sl. No.	Semester	Course Code	Course Name	Course Title	Contact Hours			Credits
					L	T	P	
Theory								
1	V	PE-EC501C	Professional Elective-I	A. Railway Signal Engineering B. Microwave Engineering C. Photonics	3	0	0	3
2	VI	PE-EC601C	Professional Elective-II	A. Automatic Train Protection System B. Mobile Communication and networks C. Antenna and Radiating System	3	0	0	3
3	VII	PE-EC701C	Professional Elective-III	A. Image and Video Processing B. Satellite Communication C. 5G Communication	3	0	0	3
4	VII	PE-EC702C	Professional Elective-IV	A. Fiber Optic Communication B. Wireless Sensor Networks C. Radar and Navigation System	3	0	0	3
Total Theory					12	0	0	12
Practical/ Sessional Course								
Total Practical/ Sessional Course					0	0	0	0
Total					12	0	0	12

Part IV: List of Open Elective Papers

Open Elective Papers offered by ECE department

Sl. No.	Semester	Course Code	Course Name	Course Title	Contact Hours			Credits
					L	T	P	
Theory								
1	V	OE-EC501A	Open Elective-I	Microprocessor and Microcontroller	2	0	0	2
2	V	OE-EC501B		Automotive Embedded System	2	0	0	2
3	V	OE-EC501C		Computer Architecture	2	0	0	2
4	V	OE-EC501D		Railway Signaling System	2	0	0	2
5	VI	OE-EC601A	Open Elective-II	Digital Signal Processing I	2	0	0	2
6	VI	OE-EC601B		Automatic Train Protection System	2	0	0	2
7	VII	OE-EC701A	Open Elective-III	Digital Signal Processing II	2	0	0	2
8	VII	OE-EC701B		Internet of Things	2	0	0	2
9	VII	OE-EC701C		5G Communication	3	0	0	3
10	VII	OE-EC701D		Mechatronics	2	0	0	2
11	VIII	OE-EC801A	Open Elective-IV	Digital Signal Processing	3	0	0	3
12	VIII	OE-EC801B		VLSI Design	3	0	0	3
13	VIII	OE-EC801C		Adhoc Sensor Network	3	0	0	3
Total Theory					30	0	0	30
Practical/ Sessional Course								
1	V	OE-EC591A	Open Elective-I	Microprocessor and Microcontroller Laboratory	0	0	2	1
2	V	OE-EC591B		Automotive Embedded System Lab	0	0	2	1
3	V	OE-EC591C		Computer Architecture Lab	0	0	2	1
4	VI	OE-EC691A	Open Elective-II	Digital Signal Processing I Laboratory	0	0	2	1
5	VII	OE-EC791A	Open Elective-III	Digital Signal Processing II Laboratory	0	0	2	1
6	VII	OE-EC791B		Internet of Things Laboratory	0	0	2	1
7	VII	OE-EC791D		Mechatronics Laboratory	0	0	2	1
Total Practical/ Sessional Course					0	0	14	7
Total					30	0	14	37

Part V: Curriculum Structure for Minor Degree

A. Minor Degree in IoT

Sl. No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	III	MN-EC301A	Introduction to Internet of Things	3	0	0	3
2	IV	MN-EC401A	Introduction to Security of Cyber-Physical Systems	3	0	0	3
3	V	MN-EC501A	Ubiquitous Sensing, Computing and Communication	3	0	0	3
4	VI	MN-EC601A	Embedded Systems for IoT	3	0	0	3
5	VI	MN-EC602A	IoT with Arduino, ESP, and Raspberry Pi	3	0	0	3
Total Theory				15	0	0	15
Practical/ Sessional Course							
1	III	MN-EC391A	IoT Lab	0	0	2	1
2	IV	MN-EC491A	Cyber-Physical Systems Laboratory	0	0	2	1
3	V	MN-EC591A	Sensing, Computing and Communication Laboratory	0	0	2	1
4	VI	MN-EC681A	Project	0	0	4	2
Total Practical/ Sessional Course				0	0	10	5
Total				15	0	10	20

B. Minor Degree in VLSI Design and Technology (for students of other departments only)

Sl. No.	Semester	Course Code	Course Name	Contact Hours			Credits
				L	T	P	
Theory							
1	III	MN-EC301B	Electronic materials and Devices	3	0	0	3
2	IV	MN-EC401B	Analog VLSI	3	0	0	3
3	V	MN-EC501B	Digital VLSI	3	0	0	3
4	V	MN-EC502B	Introduction to Microfabrication	3	0	0	3
5	VI	MN-EC601B	Low Power VLSI	3	0	0	3
Total Theory				15	0	0	15

Practical/ Sessional Course							
1	IV	MN-EC491B	Analog VLSI Design Laboratory	0	0	2	1
2	V	MN-EC591B	Digital VLSI and Microfabrication Laboratory	0	0	2	1
3	VI	MN-EC681B	Project	0	0	6	3
<i>Total Practical/ Sessional Course</i>				0	0	10	5
Total				15	0	10	20