

CURRICULUM & SYLLABUS



CHOICE BASED CREDIT SYSTEM (CBCS)
FOR
BACHELOR OF TECHNOLOGY (B.Tech.)
(4 Year Undergraduate Degree Programme)
IN
ELECTRONICS AND COMMUNICATION
ENGINEERING
[w. e. f. 2023-2024]

FACULTY OF ENGINEERING AND TECHNOLOGY
SRM UNIVERSITY DELHI-NCR, SONEPAT
39, Rajiv Gandhi Education City, Sonapat
Haryana-131029

ENGINEERING GRADUATES EMPLOYABILITY ATTRIBUTES

Effective Communication	An Engineer should be able to communicate effectively on complex Engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
Sound Knowledge and Skills of Basic Sciences & Engineering Sciences	An Engineer should be able to apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
Problem Formulation, Analysis & Solving	An Engineer should be able to identify, formulate, review research literature, and analyze complex Engineering problems reaching substantiated conclusions using principles of mathematics, natural sciences, and engineering sciences.
Design and Development of a Solution	An Engineer must be able to design solutions for complex Engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
Investigation	An Engineer should use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
Modern Tools Usage	An Engineer should be able to create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
The Engineer and the Society	An Engineer should be able to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional Engineering practice.
Individual and Teamwork	An Engineer should be able to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
Lifelong Learning	An Engineer must recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
Environment and Sustainability	An Engineer must understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
Professional Ethics	An Engineer should be able to apply ethical principles and commit to professional ethics and responsibilities and norms of the Engineering practice.
Project Management and Finance	An Engineer must demonstrate knowledge and understanding of the engineering and management principles and apply these to Engineering work environment, as a member and leader in a team, to manage projects and in multidisciplinary environments.

SRM UNIVERISTY DELHI-NCR, SONEPAT
FACULTY OF ENGINEERING AND TECHNOLOGY

ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES (EPEOs)

1. Advancement to a professional position by virtue of their knowledge, skills and attitude.
2. Recognition for solving engineering problems and developing design solutions that consider safety and sustainability.
3. Work as successful professionals in diverse engineering disciplines and enterprises;
4. Increasing responsibilities of technical and managerial leadership in their work organizations;
5. Professional development through a commitment to career-long learning.

ENGINEERING PROGRAM LEARNING OUTCOMES (EPLOs)

1. An ability to identify, formulate, and solve real time engineering & socio-economic problems by applying principles of engineering, science, mathematics, humanities and social sciences
2. An ability to use the advanced skill enhancement techniques and modern engineering tools as per industry 4.0 necessary for engineering practice.
3. An ability to apply engineering design to produce solutions that meet specified needs with realistic considerations of environmental, ethical, health & safety and sustainability
4. an ability to adapt and work with multidisciplinary teams and communicate effectively;
5. An ability to function effectively on a team whose members together provide leadership, to create a collaborative environment, to establish goals and to execute plan tasks.
6. an understanding of professional and ethical responsibility;
7. An ability to acquire and apply new knowledge using appropriate learning strategies with inner quest to learn, unlearn and relearn.

**MAPPING MATRIX OF ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES
AND ENGINEERING PROGRAM LEARNING OUTCOMES**

ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES	ENGINEERING PROGRAM LEARNING OUTCOMES
Advancement to a professional position by virtue of their knowledge, skills and attitude.	<ol style="list-style-type: none"> 1. An ability to identify, formulate, and solve real time engineering and socio-economic problems by applying principles of engineering, science, mathematics, humanities and social sciences 2. An ability to use the advanced skill enhancement techniques and modern engineering tools as per industry 4.0 necessary for engineering practice.
Recognition for solving engineering problems and developing design solutions that consider safety and sustainability	<ol style="list-style-type: none"> 2. An ability to use the advanced skill enhancement techniques and modern engineering tools as per industry 4.0 necessary for engineering practice. 3. An ability to apply engineering design to produce solutions that meet specified needs with realistic considerations of environmental, ethical, health & safety and sustainability
Work as successful professionals in diverse engineering disciplines	<ol style="list-style-type: none"> 3. An ability to apply engineering design to produce solutions that meet specified needs with realistic considerations of environmental, ethical, health & safety and sustainability 4. an ability to adapt and work with multidisciplinary teams and communicate effectively;
Increasing responsibilities of technical and managerial leadership in their work organizations;	<ol style="list-style-type: none"> 4. an ability to adapt and work with multidisciplinary teams and communicate effectively; 5. An ability to function effectively on a team whose members together provide leadership, to create a collaborative environment, to establish goals and to execute plan tasks. 6. an understanding of professional and ethical responsibility;
Professional development through a commitment to career-long learning.	<ol style="list-style-type: none"> 6. an understanding of professional and ethical responsibility; 7. An ability to acquire and apply new knowledge using appropriate learning strategies with inner quest to learn, unlearn and relearn.

**MAPPING MATRIX OF ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES
AND ENGINEERING PROGRAM LEARNING OUTCOMES
(TABULAR FORMAT)**

MAPPING	EPELO1	EPELO2	EPELO3	EPELO4	EPELO5	EPELO6	EPELO7
EPEO1	X	X					
EPEO2		X	X				
EPEO3			X	X			
EPEO4				X	X	X	
EPEO5						X	X

B.TECH –ELECTRONICS AND COMMUNICATIONENGINEERING
GRADUATES EMPLOYABILITY ATTRIBUTES

EA 1:GRADUATES SHOULD HAVE KNOWLEDGE IN MATHEMATICAL SKILLS IN
FOURIER TRANSFORMS AND RANDOM THEORY & PROBABILITY

EA2 : GRADUATES ARE EFFECTIVE ELECTRONIC DESIGN PROBLEMS SOLVER,
ABILITY TO SOLVE ALL ANALYSIS AND SYNTHESIS OF ELECTRONIC CIRCUITS
AND COMMUNICATION SYSTEMS

EA3 : GRADUATES SHOULD DEVELOP THE PROGRAMMING SKILLS IN TELECOM
SOFTWARE, VLSI CODING AND C++

EA4 : GRADUATES SHOULD HAVE ENGINEERING MANAGEMENT SKILLS IN
INTEGRATING DIFFERENT COMPLEX SYSTEMS

B.TECH – ELECTRONICS AND COMMUNICATION ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES

EPO1. TO IMPART FOUNDATION ON MATHEMATICS, ENGINEERING ANALYSIS, ELECTRONICS AND COMMUNICATION INVOLVED IN ORDER TO ENHANCE THEIR DESIGN, MODELING AND PROBLEM SOLVING CAPABILITIES.

EPO2. TO CREATE ENGINEERS WHO ARE INDUSTRY READY BY EXPOSING THEM TO THE LATEST AREAS SUCH AS DEVICES MODELING ,EMBEDDED SYSTEMS AND SENSOR NETWORKS.

EPO3. TO KINDLE THE RESEARCH ABILITY IN THEM BY PROVIDING OPPORTUNITIES FOR THEM TO WORK IN RESEARCH LABS SUCH AS THE DEVICE MODELING LAB AND THE PROJECT LAB.

EPO4. TO INCULCATE THE HABIT OF WORKING TOGETHER AS A TEAM AND ALSO DEVELOP THE LEADERSHIP ABILITIES IN THEM BY INTRODUCING THEM TO THE VARIOUS TEACHING LEARNING TECHNIQUES AND COORDINATION PROGRAMMES.

EPO5. TO ENCOURAGE STUDENTS TO PARTICIPATE IN TECHNICAL AND NON-TECHNICAL ACTIVITIES TO DEVELOP INNOVATIVE, CREATIVE AND LEADERSHIP ABILITY.

EPO6. TO MAKE THEM GET INVOLVED IN THE NATION BUILDING PROCESS BY HELPING THEM TO DEVELOP INTER DISCIPLINARY PROJECTS AND SOCIO-ECONOMIC PROJECTS

B.TECH – ELECTRONICS AND COMMUNICATION ENGINEERING PROGRAMME LEARNING OUTCOMES

EPLO1. AN ABILITY TO IDENTIFY, FORMULATE, AND SOLVE COMPLEX ENGINEERING PROBLEMS BY APPLYING PRINCIPLES OF ENGINEERING, SCIENCE, AND MATHEMATICS

EPLO2.AN ABILITY TO ACQUIRE AND APPLY NEW KNOWLEDGE AS NEEDED, USING APPROPRIATE LEARNING STRATEGIES

EPL03. AN ABILITY TO ACQUIRE LEADERSHIP QUALITIES AND LEARN THE ART OF WORKING TOGETHER AS A TEAM BY THE VARIOUS ACTIVITIES.

EPL04. AN ABILITY TO GET MOTIVATED BY INVOLVING THEMSELVES IN RESEARCH AND DEVELOPMENT ACTIVITIES IN THE VARIOUS LABS SUCH AS DEVICE MODELING , EMBEDDED SYSTEMS AND SENSOR NETWORKS

EPLO5. AN ABILITY TO BE READY WITH INDUSTRY STANDARD BY EXPOSING THEM TO THE LATEST TECHNOLOGIES SUCH AS MICROELECTRONICS, EMBEDDED SYSTEMS AND SENSOR NETWORKS

EPLO6. AN ABILITY TO GET INVOLVED IN COMMUNITY BASED AND INTER OFESSIONAL PROJECTS WHICH INDUCE THEM TO SERVE THE SOCIETY.

MAPPING BETWEEN PROGRAM EDUCATIONAL OBJECTIVES (PEO) AND PROGRAM LEARNING OUTCOMES (PLO)

	EPLO1	EPLO2	EPLO3	EPLO4	EPLO5	EPLO6
EPO1	X	X				
EPO2		X	X			
EPO3			X	X		
EPO4			X	X	X	
EPO5				X	X	
EPO6					X	X

B.TECH – ELECTRONICS AND COMMUNICATION ENGINEERING

The Electronics and Communication Engineering curriculum is geared towards providing the student with a strong foundation in the discipline and the tools and competence to address new and challenging problems that they have not seen before. In order to earn a B. Tech. degree in Electronics and Communication Engineering, a student should earn a minimum of 155 credits in the course of their study. The credit requirements for their program of study is comprised of the following Programme Structure:

PROGRAMME STRUCTURE

SL.NO	CATERGORY OF COURSES	DENOTE	TOTAL NO. OF COURSES
1	Basic Applied Sciences	BAS	8
2	Engineering Sciences	ES	10
3	Professional Core Courses	PC	17
4	Professional Electives-Program Specific Specialization Electives	PE	7
5	Open Electives-Courses from Other Areas & Emerging Fields	OE	5
6	Skill Enhancement Courses(Technical &Soft Skills)	SEC	10
7	Practicals/Workshops	P/W	10
8	Live Projects & Industrial Visits and Summer Internship	LP	06
9	Humanities & Social Sciences including Management courses	HSS	04
	TOTAL NO.OF COURSES		77

BACHELOR OF TECHNOLOGY
(ELECTRONICS AND COMMUNICATION ENGINEERING)
DEGREE COURSE
PROGRAMME CREDIT STRUCTURE SEMESTERWISE

Semesters → Courses [2]	CATEGORY	I	II	III	IV	V	VI	VII	VIII	TOTAL	%
Basic Applied Sciences	BAS	9	9	4	4	0	0	0	0	26	14.28
Engineering Sciences	ES	9	9	0	0	0	0	0	0	18	9.89
Professional Core Courses	PC	0	0	14	12	13	9	7	0	55	30.22
Professional Electives-Program Specific Specialization Electives	PE	0	0	3	3	3	3	9	0	21	11.53
Open Electives-Courses from Other Areas & Emerging Fields	OE	0	0	2	2	3	3	3	0	13	7.14
Skill Enhancement Courses(Technical & Soft Skills)	SEC	0	0	2	2	2	2	2	0	10	5.49
Practicals/Workshops	P/W	0	0	2	2	2	3	1	0	10	5.49
Live Projects ,Industrial Visits and Summer Internship	LP/SI	0	0	0	1	1	1	5	12	20	10.99
Humanities & Social Sciences including Management courses	HSS	3	3	0	0	0	3	0	0	9	4.95
TOTAL		21	21	27	26	24	24	27	12	182	100.00

**PROGRAMME COURSES STRUCTURE SEMESTERWISE
COURSE CURRICULUM**

**BACHELOR OF TECHNOLOGY
(ELECTRONICS AND COMMUNICATION ENGINEERING)
SEMESTER - I**

S.No.	Category	Course Code	Course Name	L	T	P	Credits
Theory							
1	BAS	21AS101	Engineering Mathematics-I	3	1	0	4
2	BAS	21AS102/21AS103	Engineering Physics/Engineering Chemistry	3	1	0	4
3	ES	21EE101/21EC101	Basic Electrical Engineering /Basic Electronics Engineering	3	0	0	3
4	ES	21ME101/21CS101	Basic Mechanical Engineering / Fundamentals of Computer & C Programming	3	0	0	3
5	HSS	21HS101/21HS102	Communicative English/Indian Constitution & Polity	2	0	0	2
			Total Credits (Theory)	14	2	0	16
Practical							
6	BAS	21AS152/21AS153	Engineering Physics Lab/Engineering Chemistry Lab	0	0	2	1
7	ES	21EE151/21EC151	Basic Electrical Engineering Lab /Basic Electronics Engineering Lab	0	0	2	1
8	ES	21ME151/21CS151	Basic Mechanical Engineering Lab/ C Programming Lab	0	0	2	1
9	HSS	21HS151/21SE151	Communicative English Lab/NSS-Yoga-NCC	0	0	2	1
10	ES	21ME152/21ME153	Mechanical Workshop Lab/Engineering Graphics & Design Lab	0	0	2	1
			Total Credits (Practical)	0	0	10	5
			Total Credits (Theory + Practical)	14	2	10	21

L : Lecture	BAS : Basic Applied Sciences
T : Tutorials	ES : Engineering Sciences
P: Practical	HSS : Humanities & Social Sciences

SEMESTER – II

S.No.	Category	Course Code	Course Name	L	T	P	Credits
Theory							
1	BAS	21AS201	Engineering Mathematics-II	3	1	0	4
2	BAS	21AS202/21AS203	Engineering Physics/Engineering Chemistry	3	1	0	4
3	ES	21EE201/21EC201	Basic Electrical Engineering /Basic Electronics Engineering	3	0	0	3
4	ES	21ME201/21CS201	Basic Mechanical Engineering / Fundamentals of Computer & C Programming	3	0	0	3
5	HSS	21HS201/21HS202	Communicative English/ Indian Constitution & Polity	2	0	0	2
			Total Credits (Theory)	14	2	0	16
Practical							
6	BAS	21AS252/21AS253	Engineering Physics Lab/Engineering Chemistry Lab	0	0	2	1
7	ES	21EE251/21EC251	Basic Electrical Engineering Lab /Basic Electronics Engineering Lab	0	0	2	1
8	ES	21ME251/21CS251	Basic Mechanical Engineering Lab/C Programming Lab	0	0	2	1
9	HSS	21HS251/21SE251	Communicative English Lab/NSS-Yoga-NCC	0	0	2	1
10	ES	21ME251/21ME252	Mechanical Workshop Lab/Engineering Graphics & Design Lab	0	0	2	1
			Total Credits (Practical)	0	0	10	5
			Total Credits (Theory + Practical)	14	2	10	21

L : Lecture

T : Tutorials

P: Practical

BAS : Basic Applied Sciences

ES : Engineering Sciences

HSS : Humanities & Social Sciences

SEMESTER – III

Sl. No	Category	Code	Course	L	T	P	C
Theory							
1	OE	21FLGR301/ 21FLFR301	German Language Phase-I / French Language Phase-I	2	0	0	2
2	BAS	21AS301	Engineering Mathematics - III	3	1	0	4
3	PC	21EC301	Electromagnetic Field Theory	3	1	0	4
4	PC	21EC302	Fundamental of Electronics Devices	3	0	0	3
5	PC	21EC303	Digital Systems	3	0	0	3
6	PC	21EC304	Signals and Systems	3	1	0	4
7	PE		Professional Elective-I	3	1	0	3
TOTAL CREDITS (THEORY)				20	4	0	23
Practical							
8	P	21EC351	Electronics Devices Lab	0	0	2	1
9	P	21EC352	Digital Systems Lab	0	0	2	1
TOTAL CREDITS (PRACTICAL)				0	0	4	2
Skill Enhancement							
10	SEC	21SS351	Effective Communication Skills	0	0	2	1
11	SEC	21CS201	Essential of Block Chain & IOT- Level - I	0	0	2	1
TOTAL CREDITS (SKILL ENHANCEMENT)				0	0	4	2
TOTAL CREDITS (THEORY+PRACTICAL+SKILL ENHANCEMEN)				20	4	8	27

L : Lecture
T : Tutorials
P : Practical

PC : Professional Core
PE : Professional Electives
BAS : Basic Applied Sciences
OE : Open Electives
P/W : Practical / Workshop
HSS : Humanities & Social Sciences
SEC : Skills Enhancement Course
L.P : Live Projects & Industrial Visit

SEMESTER – IV

Sl. No	Category	Code	Course	L	T	P	C
Theory							
1	OE	21FLGR401 / 21FLFR401	German Language Phase-II / French Language Phase-II	2	0	0	2
2	BAS	21AS404	Probability and Random Process	3	1	0	4
3	PC	21EC401	Electronic Circuits	3	1	0	3
4	PC	21EC402	Analog Integrated Electronics	3	0	0	3
5	PC	21EC403	Transmission Lines and Waveguides	3	0	0	3
6	PC	21EC404	Communication Theory	3	0	0	3
7	PE		Professional Elective -II	3	1	0	3
TOTAL CREDITS (THEORY)				20	3	0	21
Practical							
8	P	21EC451	Electronic Circuits Lab	0	0	2	1
9	P	21EC452	Communication Lab	0	0	2	1
10	LP	21EC453	Live Project & Industrial Visits	0	0	1	1
TOTAL CREDITS (PRACTICAL)				0	0	5	3
Skill Enhancement							
11	SEC	21SS452	Teamwork & Interpersonal Skills	0	0	2	1
12	SEC	21CS202	Artificial Intelligence and Machine Learning - Level - II	0	0	2	1
TOTAL CREDITS (SKILL ENHANCEMENT)				0	0	4	2
TOTAL CREDITS (THEORY+PRACTICAL+SKILL ENHANCEMENT)				20	3	9	26

L : Lecture
T : Tutorials
P: Practical

PC : Professional Core
PE : Professional Electives
BAS : Basic Applied Sciences
OE : Open Electives
P/W : Practical / Workshop
SEC : Skills Enhancement Course
LP : Live Projects & Industrial Visit

SEMESTER – V

Sl. No	Category	Code	Course	L	T	P	C
Theory							
1	OE		Open Course Elective-III	3	0	0	3
2	PC	21EC501	Control Systems	3	1	0	3
3	PC	21EC502	Digital Communication	3	1	0	3
4	PC	21EC503	Antenna Theory and Wave Propagation	3	1	0	4
5	PC	21EC504	Hardware Programming	3	1	0	3
6	PE		Professional Elective -III	3	1	0	3
				18	5	0	19
TOTAL CREDITS (THEORY)							
Practical							
7	P	21EC551	Hardware Programming Lab	0	0	2	1
8	P	21EC552	Digital Communication Lab	0	0	2	1
9	LP	21EC553	Live Project & Industrial Visit	0	0	1	1
TOTAL CREDITS (PRACTICAL)				0	0	5	3
Skill Enhancement							
10	SEC	21SS553	Presentation & Speaking Skills	0	0	2	1
11	SEC	21CS301	Design Thinking and Augmented Virtual Reality – Level – II and III	0	0	2	1
TOTAL CREDITS (SKILL ENHANCEMENT)				0	0	4	2
TOTAL CREDITS (THEORY+PRACTICAL+SKILL ENHANCEMENT)				18	5	9	24

L : Lecture
T : Tutorials
P: Practical

PC : Professional Core
PE : Professional Electives
OE : Open Electives
P/W : Practical / Workshop
SEC : Skills Enhancement Course
LP : Live Projects & Industrial Visit

SEMESTER – VI

Sl. No	Category	Code	Course	L	T	P	C
Theory							
1	OE		Open Elective – IV	3	0	0	3
2	HSS	21BS301	Management and Organization Behaviour	3	0	0	3
3	PC	21EC601	RF and microwave Engineering	3	1	0	3
4	PC	21EC602	Optical Fibre Communication	3	1	0	3
5	PC	21EC603	CMOS VLSI Design and Technology	3	1	0	3
6	PE		Professional Elective -IV	3	0	0	3
TOTAL CREDITS (THEORY)				18	3	0	18
Practical							
7	P	21EC651	Microwave and Optical Communication Lab	0	0	2	1
8	P	21EC652	CMOS VLSI Design Lab	0	0	2	1
9	P	21EC653	Advance Simulation Lab	0	0	2	1
10	LP	21EC654	Live Projects & Industrial Visits	0	0	1	1
TOTAL CREDITS (PRACTICAL)				0	0	7	4
Skill Enhancement							
11	SEC	21SS655	Professional Writing Skills	0	0	2	1
12	SEC	21CS302	Big Data Analytics , Tools and Techniques – Level -III	0	0	2	1
TOTAL CREDITS (SKILL ENHANCEMENT)				0	0	4	2
TOTAL CREDITS (THEORY+PRACTICAL+SKILL ENHANCEMENT)				18	3	7	24

SEMESTER – VII

Sl. No	Category	Code	Course	L	T	P	C
Theory							
1	OE		Open Electives – V	3	0	0	3
2	PC	21EC701	Wireless Communication	3	1	0	4
3	PC	21EC702	Data Communication Networks	3	0	0	3
4	PE	21PE701	Professional Elective –V	3	1	0	3
5	PE	21PE702	Professional Elective -VI	3	0	0	3
6	PE	21PE703	Professional Elective – VII	3	0	0	3
TOTAL CREDITS (THEORY)				15	2	0	16
Practical							
7	P	21EC751	Network Simulation Lab	0	0	2	1
8	LP	21EC752	Minor Project	0	0	8	4
9	LP	21EC753	Live Projects & Industrial Visits	0	0	1	1
TOTAL CREDITS (PRACTICAL)				0	0	11	6
Skill Enhancement							
10	SEC	21SS756	Interpersonal Skills: Strategies	0	0	2	1
11	SEC	21SCS401	Data Structures and algorithms using C++	0	0	2	1
TOTAL CREDITS (SKILL ENHANCEMENT)				0	0	4	2
TOTAL CREDITS (THEORY+PRACTICAL+SKILL ENHANCEMENT)				15	2	15	24

SEMESTER – VIII

COURSE CODE	COURSE	CATEGORY	HOURS PER WEEK				CREDITS
			L	T	P	TOTAL	
21EC851	Major Project	LP/SI	0	0	24	24	12

* To be monitored at the Institute Level

** Teaching Load

L : Lecture T : Tutorials P: Practical	PC : Professional Core PE : Professional Electives BAS : Basic Applied Sciences OE : Open Electives P/W : Practical / Workshop HSS : Humanities & Social Sciences SEC : Skills Enhancement Course LP : Live Projects & Industrial Visit
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LIST OF SKILL ENHANCEMENT COURSES

Subject Code	Course	Category	L	T	P	Credits
Technical Training						
21CS0201	Essentials of Blockchain and IoT- Level -I	SEC	0	0	2	1
21CS0202	Artificial Intelligence and Machine Learning – Level- II	SEC	0	0	2	1
21CS0301	Design Thinking and Augmented Virtual Reality –Level-II&III	SEC	0	0	2	1
21CS0302	Big Data Analytics, Tools and Technique-Level -III	SEC	0	0	2	1
Soft Skill						
21SS251	Effective Communication Skills	SEC	0	0	2	1
21SS352	Teamwork & Interpersonal Skills	SEC	0	0	2	1
21SS453	Presentation & Speaking Skills	SEC	0	0	2	1
21SS554	Professional Writing Skills	SEC	0	0	2	1
21SS655	Interpersonal Skills : Strategies	SEC	0	0	2	1
21SS756	Emotional Quotient, Critical Thinking & Problem-Solving Skills	SEC	0	0	2	1

LIST OF OPEN ELECTIVE COURSES –
COURSES FROM OTHER TECHNICAL AREA & EMERGING FIELDS

Code	Category	Course	L	T	P	C
Open Elective-I						
21FLGR301	OE	German Language Phase-I	2	0	0	2
21FLFR301	OE	French Language Phase-I	2	0	0	2
Open Elective-II						
21FLGR401	OE	German Language Phase-II	2	0	0	2
21FLFR401	OE	French Language Phase-II	2	0	0	2
Open Elective-III , IV, V						
	OE	Sustainable Growth and Development	3	0	0	3
	OE	Entrepreneur and New Ventures	3	0	0	3
	OE	Waste Management	3	0	0	3

LIST OF PROFESSIONAL ELECTIVES

Code	Category	Course	L	T	P	C
Professional Elective-I						
21EC331	PE	Circuit Analysis & Synthesis	3	0	0	3
21EC332	PE	Introduction to Electrical Machines and Power Systems	3	0	0	3
21EC333	PE	Python Programming	3	0	0	3
Professional Elective-II						
21EC431	PE	Digital Signal Processing	3	0	0	3
22EC432	PE	Biomedical Signal Processing	3	0	0	3
22EC433	PE	Audio Signal Processing	3	0	0	3
Professional Elective-III						
21EC531	PE	Electronic Measurement and Instrumentation	3	0	0	3
22EC532	PE	Biomedical Instrumentation	3	0	0	3
22EC533	PE	Transducer and sensor system	3	0	0	3
Professional Elective-IV						
21EC631	PE	Information Theory and Coding	3	0	0	3
22EC632	PE	Analog and Mixed mode VLSI Circuits	3	0	0	3
22EC633	PE	Network Architecture and Protocol	3	0	0	3
22EC634	PE	MEMS	3	0	0	3

Professional Elective-V						
21EC731	PE	Mobile Communication	3	0	0	3
22EC732	PE	System on Chip (SoC) Design	3	0	0	3
21EC734	PE	Wireless and Ad-hoc Sensor Network	3	0	0	3
22EC735	PE	Cognitive Radio Communication	3	0	0	3
Professional Elective-VI						
21EC736	PE	Satellite Communication	3	0	0	3
21EC737	PE	ASIC and FPGA Systems Design	3	0	0	3
22EC738	PE	Network Security	3	0	0	3
22EC739	PE	Radar And Navigation	3	0	0	3
Professional Elective-VII						
23EC740	PE	Spread Spectrum Techniques	3	0	0	3
21EC741	PE	Low Power VLSI Circuits	3	0	0	3
21EC742	PE	Network Management	3	0	0	3
21EC743	PE	Embedded Systems Design	3	0	0	3
23EC744	PE	Quantum Computing and Nano electronics	3	0	0	3
23EC745	PE	Computer Aided Design for VLSI circuits	3	0	0	3
23EC746	PE	Network Programming	3	0	0	3