SRM TRP Engineering College, Trichy - 621105

Department of Electronics and Communication Engineering

CO-PO matrices of courses

Regulations 2021

Department of Electronics and Communication Engineering

Vision and Mission - Institute

Vision

To carve the youth as dynamic competent, valued and knowledgeable Technocrats through research, innovation and entrepreneurial development for accomplishing the global expectations.

Mission

M1 : To Inculcate **academic excellence** in engineering education to create talented professionals

M2 : To Promote **research in basic sciences and applied engineering** among faculty and students to fulfill the societal expectations

M3 : To enhance the holistic development of students through meaningful **interaction with industry and academia**

M4 : To foster the students on par with **sustainable development goals** thereby contributing to the process of nation building

M5 : To nurture and retain conducive **lifelong learning environment t**owards professional excellence

Vision and Mission - Department of Electronics & Communication Engineering

Vision

To be a globally recognized centre for education and research in the field of electronics and communication engineering, by indulging students with their technological innovation to serve the society.

Mission

M1 : To provide students with an **excellent education** in core and associated disciplines of Electronics and Communication Engineering

M2 : To incite passion for excellence in **emerging research** areas among faculty and students.

M3 : To establish a bridge between academia and industry by incorporating **employable skills** among students.

M4 : To enrich the Students with **Broad Intellectual Spectra** Pertaining to the Sustainable Development Goals

M5 : To cultivate a passion for **lifelong learning** in technocrats to succeed in their chosen field.

Program Educational Objectives (PEO's)

The graduate of Electronics and Communication Engineering will have,

PEO 1 : To provide knowledge in mathematical, scientific and engineering concepts to achieve successful career path in corporate scenario.

PEO 2 : To enable students with the capability to analyze, design, develop, optimize and to implement electronic gadgets with domain knowledge of Electronics and Communication Engineering.

PEO 3 : To nurture and consolidate the knowledge in various domains that affords solutions for real time problems with an understanding on its economical, environmental and social impacts.

PEO 4 : To inculcate core knowledge with ethical values to work in a multi-fascinated environment exhibiting professionalism in career and to excel in every aspect with leadership.

PEO 5 : To imbibe persistent lifelong learning with amenable etiquette in emerging technologies to proliferate their skills for professional excellence and in research and innovations

Program Outcomes (PO`s)

The students after successful completion of the program will acquire:

PO1: Engineering knowledge: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: 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.

PO4: Investigation: 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.

PO5: Modern tool usage: 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.

PO6: The Engineer and society: 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.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communications: 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.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life Long Learning: 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.

Program Specific Outcomes (PSO's)

The graduates of Bachelor of Engineering in Electronics and Communication Engineering Programme will be able to:

PSO1: Design and develop electronic circuits assimilating Futuristic technologies of Signal Processing, Communication, VLSI and Embedded Systems using Modern Hardware and software tools to cater the expectation of solving real time problems.

PSO2: Instill the professional skill sets with ethical principles and tools for Networking, Communication and integrated circuits to provide Solutions for societal benefits.

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Department of Electronics and Communication Engineering

CO Mapping with POs - I to VIII SEMESTER

Course title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Professional English I	1.6	2.2	1.8	2.2	1.5	3.0	3.0	3.0	1.6	3.0	3.0	3.0	-	-
Matrices and Calculus	3.0	3.0	1.0	1.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0	3.0	-	-
Engineering Physics	3.0	3.0	1.6	1.2	1.8	1.0	-	-	-	-	-	1.0	-	-
Engineering Chemistry	2.8	1.3	1.6	1.0	-	1.5	1.8	-		-	-	1.5	-	-
Problem Solving and Python Programming	2.0	3.0	3.0	3.0	2.0	-	-	-	-	-	2.0	2.0	3.0	3.0
Heritage of Tamils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Problem Solving and Python Programming Lab.	2.0	3.0	3.0	3.0	2.0	-	-	-	-	-	2.0	2.0	3.0	3.0
Physics and Chemistry Laboratory	3.0	2.4	2.6	1.0	1.0									
English Laboratory	2.6	1.3	1.6	1.0	1.0	1.4	1.8	-	-	-	-	1.3	-	-
Professional English II	3.0	3.0	3.0	3.0	2.8	3.0	3.0	3.0	2.2	3.0	3.0	3.0	-	-
Statistics and Numerical Methods	3.0	3.0	1.0	1.0	1.0	0.0	0.0	0.0	2.0	0.0	2.0	3.0	-	-
Physics for Electronics Engineering	3.0	2.0	1.4	1.5	2.5	2.0	3.0					1.0		
Electrical and Instrumentation Engineering	2.0	1.0	1.0					1.0					-	-
Engineering Graphics	3.0	1.0	2.0	-	2.0	-	-	-	-	3.0	-	2.0	2.0	2.0
Circuit Analysis	3.0	3.0	3.0	2.0	-	-	-	1.0	-	1.0	-	-	-	-
Tamils and Technology	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0

Department of Electronics and Communication Engineering

Course														
Engineering Practices Laboratory	3.0	2.0			1.0	1.0	1.0					2.0	2.0	1.0
Circuit analysis Laboratory	3.0	3.0	3.0	2.0	-	-	-	1.0	-	1.0	-	-	-	-
Communication Laboratory	2.4	2.8	3.0	3.0	1.8	3.0	3.0	3.0	3.0	3.0	3.0	3.0	-	-
Random Processes and Linear Algebra	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	2.0	-	-
C programming and Data Structures	2.0	2.0	1.0	2.0	2.0	1.0	1.0	-	1.0	1.0	1.0	2.0	2.0	2.0
Signals and Systems	3.0	3.0	3.0	3.0	3.0	2.0	-	-	-	-	-	3.0	2.0	3.0
Electronic Devices and Circuits	3.0	3.0	3.0	3.0	2.0	2.0	-	-	-	-	-	1.0	2.0	1.0
Control Systems	3.0	3.0	3.0	3.0	2.0	2.0	-	-	-	-	2.0	3.0	3.0	3.0
Digital Systems Design	3.0	2.6	2.6	2.3	-	2.0	-	-	-	-	2.0	2.0	3.0	3.0
Electronic Devices and Circuits Laboratory	2.0	2.0	2.6	3.0	-	-	-	-	-	-	-	-	2.0	1.0
C programming and Data Structures Laboratory	2.0	2.0	1.0	2.0	2.0	1.0	1.0	-	1.0	1.0	1.0	2.0	2.0	2.0
Professional Development	2.6	1.3	1.6	1.0	1.0	1.3	1.3	-	-	-	-	1.3	-	-
Electromagnetic Fields	2.0	2.0	2.0	2.0	2.0	2.0	1.0	-	-	1.0	1.0	2.0	-	-
Networks and Security	2.0	2.0	1.0	1.0	1.0	1.0	-	-	-	1.0	-	1.0	3.0	2.0
Linear Integrated Circuits	1.4	2.5	3.0	2.2	-	-	-	-	-	-	1.0	3.0	2.0	1.0
Digital Signal Processing	3.0	3.0	2.0	2.0	2.0	2.0	-	-	-	-	1.0	1.0	2.0	2.0
Communication Systems	3.0	3.0	3.0	3.0	2.5	1.0	1.0	-	-	-	1.0	1.0	-	-

Department of Electronics and Communication Engineering

Environmental Sciences and Sustainability	2.8	1.8	1.0	1.0	-	2.2	2.4	-	-	-	-	1.8	-	-
Communication Systems Laboratory	3.0	3.0	3.0	3.0	3.0	2.5	-	-	-	1.0	1.0	1.0	-	-
Linear Integrated Circuits Laboratory	2.0	3.0	3.0	3.0	2.0	-	-	-	-	-	1.0	1.0	-	-
Wireless Communication	3.0	3.0	2.0	2.0	2.0	2.0	-	-	-	-	-	1.0	3.0	1.0
VLSI and Chip Design	2.0	2.0	2.0	2.0	1.0	1.5	-	-	-	-	1.0	2.0	3.0	3.0
Transmission Lines and RF Systems	3.0	3.0	3.0	3.0	2.0	1.0	-	-	-	1.0	-	1.0	2.0	1.0
Therapeutic Equipment	3.0	2.8	2.6	3.0	2.5	3.0	2.0	-	-	-	-	2.0	2.6	2.4
Image Processing	3.0	3.0	3.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.2	2.0	2.4
Body Area Networks	2.4	2.2	1.4	1.4	1.0	1.4	1.4	-	-	-	-	1.0	3.0	3.0
Disaster Risk Reduction and Management	3.0	3.0	3.0	3.0	-	-	2.0	2.0	-	-	2.0	-	2.0	1.0
VLSI Laboratory	2.2	2.2	2.2	2.2	1.0	-	-	-	-	-	1.0	1.0	2.0	2.0
Embedded systems and IoT design	3.0	3.0	2.6	2.2	2.2	-	-	-	-	-	-	-	2.8	2.0
Artificial Intelligence and Machine Learning	2.0	1.0	2.0	2.0	1.0	-	-	-	2.0	2.0	2.0	3.0	2.0	2.0
Renewable Energy System	3.0	2.0	-	-	-	-	-	-	-	-	-	2.0	3.0	3.0
Advanced Digital Signal Processing	3.0	2.8	2.6	2.6	2.0	-	-	-	-	-	-	-	1.8	1.6
Analog IC Design	3.0	3.0	2.6	2.2	1.8	1.8	-	-	-	-	-	2.2	2.4	2.0
Satellite Communication	3.0	3.0	3.0	3.0	2.0	3.0	1.0	1.0	-	1.0	-	1.0	3.0	3.0

Department of Electronics and Communication Engineering

Industrial Safety	3.0	3.0	3.0	2.0	1.0	3.0	2.0	2.0	3.0	2.0	1.0	3.0		3.0	3.0
Human Values and Ethics	2.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	2.0	3.0	1.0	1.0		1.0	1.0
Principles of Management	1.7	1.0	1.0	1.5	1.5	1.0	1.0	1.0	2.0	3.0	1.0	1.0		1.5	1.0
Robotic Process Automation	2.0	2.2	2.0	2.4	2.8	-	-	-	1.6	2.2	1.8	1.6		2.8	2.4
Remote Sensing Concepts	3.0	3.0	3.0	3.0	3.0									3.0	3.0	3.0
Sensors	3.0	3.0	2.0	0.8	0.8	0.8					0.8	2.0		3.0	2.0
Summer Internship	2.0	2.0	1.0	2.0	2.0	1.0	1.0	-	1.0	1.0	1.0	2.0		2.0	2.0
Project Work / Internship		3.0	3.0		3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0		3.0	3.0

Department of Electronics and Communication Engineering

Course Code / Title	HS3152 / Professional English-I
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Use appropriate words in a professional context	K2
CO2	Gain understanding of basic grammatic structures and use them in right context.	K1
CO3	Read and infer the denotative and connotative meanings of technical texts	K2
CO4	Read and interpret information presented in tables, charts and other graphic forms	K2
CO5	Write definitions, descriptions, narrations and essays on various topics	K1

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	1	1	1	1	1	3	3	3	1	3	-	3
CO2	1	1	1	1	1	3	3	3	1	3	-	3
CO3	2	3	2	3	2	3	3	3	2	3	3	3
CO4	2	3	2	3	2	3	3	3	2	3	3	3
CO5	2	3	3	3	-	3	3	3	2	3	-	3
CO	1.6	2.2	1.8	2.2	1.5	3	3	3	1.6	3	3	3

CO-PSO matrices

COs	PSO1	PSO2
CO1	0	0
CO2	0	0
CO3	0	0
CO4	0	0
CO5	0	0
CO	0.00	0.00

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	MA3151 / MATRICES AND CALCULUS
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Use the matrix algebra methods for solving practical problems	K3
CO2	Apply differential calculus tools in solving various application problems	K3
CO3	Able to use differential calculus ideas on several variable functions.	K1
CO4	Apply different methods of integration in solving practical problems.	K2
CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems	K2

CO-PSO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	1	1	0	0	0	0	2	0	2	3
CO2	3	3	1	1	0	0	0	0	2	0	2	3
CO3	3	3	1	1	0	0	0	0	2	0	2	3
CO4	3	3	1	1	0	0	0	0	2	0	2	3
CO5	3	3	1	1	0	0	0	0	2	0	2	3
CO	**3**	**3**	**1**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**3**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1.0**	**1.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	PH3151/Engineering Physics
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Understand the importance of mechanics	K2
CO2	Express their knowledge in electromagnetic waves	K2
CO3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers	K2
CO4	Understand the importance of quantum physics	K2
CO5	Comprehend and apply quantum mechanical principles towards the formation of energy bands	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	2	1	1	1	-	-	-	-	-	-
CO2	3	3	2	1	2	1	-	-	-	-	-	-
CO3	3	3	2	2	2	1	-	-	-	-	-	1
CO4	3	3	1	1	2	1	-	-	-	-	-	-
CO5	3	3	1	1	2	1	-	-	-	-	-	-
CO	**3**	**3**	**1.6**	**1.2**	**1.8**	**1**	**-**	**-**	**-**	**-**	**-**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	0
CO2	2	0
CO3	2	0
CO4	2	0
CO5	2	0
CO	**2.0**	**0.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	CY3151 / Engineering Chemistry
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water	K2
CO2	Identify and apply basic concepts of nanoscience and nanotechnology in designing thesynthesis of nanomaterials for engineering and technology	K2
CO3	Apply the knowledge of phase rule and composites for material selection requirements	K3
CO4	Recommend suitable fuels for engineering processes and applications	K2
CO5	Recognize different forms of energy resources and apply them for suitable applications in energy sectors	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	1	-	1	1	-	-	-	-	1
CO2	2	-	-	1	-	2	2	-	-	-	-	-
CO3	3	1	-	-	-	-	-	-	-	-	-	-
CO4	3	1	1	-	-	1	2	-	-	-	-	-
CO5	3	1	2	1	-	2	2	-	-	-	-	2
CO	2.8	1.3	1.6	1	-	1.5	1.8	-		-	-	1.5

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	-
CO2	1	-
CO3	-	-
CO4	-	-
CO5	1	-
CO	1.0	0.0

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3151 / Problem Solving and Python Programming
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Develop algorithmic solutions to simple computational problems.	K3
CO2	Develop and execute simple Python programs.	K3
CO3	Write simple Python programs using conditionals and loops for solving problems.	K2
CO4	Decompose a Python program into functions.	K4
CO5	Represent compound data using Python lists, tuples, dictionaries etc.	K3
CO6	Read and write data from/to files in Python programs.	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	2	-	-	-	-	-	2	2
CO2	3	3	3	3	2	-	-	-	-	-	2	2
CO3	3	3	3	3	2	-	-	-	-	-	2	-
CO4	2	2	-	2	2	-	-	-	-	-	1	-
CO5	1	2	-	-	1	-	-	-	-	-	1	-
CO6	2	2	-	-	2	-	-	-	-	-	1	-
CO	**2**	**3**	**3**	**3**	**2**	-	-	-	-	-	**2**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO6	1	1
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3152 / Heritage of Tamils
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain language families In India and development of tamil literature since ancient period.	K2
CO2	Write about Tamils heritage, rock art paintings to modern art and sculpture.	K1
CO3	Produce well organized essays about folk and martial arts of Tamils.	K2
CO4	Explain the details about thinai concepts of Tamils, Education and literacy, import and export during Sangam age.	K2
CO5	Summarize the contribution of Tamils to Indian national movement and Indian culture.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	-	-	-	-	-	-	-	1	-	1	-	-
CO2	1	-	1	-	-	-	-	-	-	1	1	-
CO3	-	-	-	-	-	-	-	-	1	1	-	-
CO4	-	-	-	-	-	-	-	1	-	1	-	-
CO5	1	-	-	-	1	1	1	-	-	1	1	-
CO	1	-	1	-	1	1	1	1	1	1	1	-

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	0.00	0.00

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3171 / Problem Solving and Python Programming Lab
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Develop algorithmic solutions to simple computational problems	K3
CO2	Develop and execute simple Python programs	K3
CO3	Implement programs in Python using conditionals and loops for solving problems	K3
CO4	Deploy functions to decompose a Python program	K4
CO5	Process compound data using Python data structures	K4
CO6	Utilize Python packages in developing software applications	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	3	-	-	-	-	-	3	2
CO2	3	3	3	3	3	-	-	-	-	-	3	2
CO3	3	3	3	3	2	-	-	-	-	-	2	-
CO4	3	2	-	2	2	-	-	-	-	-	1	-
CO5	1	2	-	-	1	-	-	-	-	-	1	-
CO6	2	-	-	-	2	-	-	-	-	-	1	-
CO	**2**	**3**	**3**	**3**	**2**	-	-	-	-	-	**2**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	3	3
CO2	3	-
CO3	3	-
CO4	3	-
CO5	2	-
CO6	2	-
CO	**3**	**3**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	BS3171 / Physics and Chemistry laboratory
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Understand the functioning of various physics laboratory equipment	K2
CO2	Use graphical models to analyze laboratory data.	K4
CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.	K2
CO4	Access, process and analyze scientific information.	K4
CO5	Solve problems individually and collaboratively	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	3	1	1	-	-	-	-	-	-	-
CO2	3	3	2	1	1	-	-	-	-	-	-	-
CO3	3	2	3	1	1	-	-	-	-	-	-	-
CO4	3	3	2	1	1	-	-	-	-	-	-	-
CO5	3	2	3	1	1	-	-	-	-	-	-	-
CO	3	2.4	2.6	1	1	-	-	-	-	-	-	-

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	0	0

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	BS3171 / Physics and Chemistry laboratory
Semester	I
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
C108.1	Analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.	K4
C108.2	Determine the amount of metal ions through volumetric and spectroscopic techniques	K2
C108.3	Analyse and determine the composition of alloys.	K4
C108.4	Learn simple method of synthesis of nanoparticles	K1
C108.5	Quantitatively analyse the impurities in solution by electroanalytical techniques	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	-	1	-	-	2	2	-	-	-	-	2
CO2	3	1	2	-	-	1	2	-	-	-	-	1
CO3	3	2	1	1	1	-	1	-	-	-	-	-
CO4	2	1	2	-	-	2	2	-	-	-	-	-
CO5	2	1	2	-	-	2	2	-	-	-	-	1
CO	2.6	1.3	1.3	1	1	1.4	1.8	-	-	-	-	1.3

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	0	0

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3172/ ENGLISH LABORATORY
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Listen to and comprehend general as well as complex academic information	K1
CO2	Listen to and understand different points of view in a discussion	K1
CO3	Perceive the speed-reading task to develop vocabulary and language	K2
CO4	Describe products and processes and explain their uses and purposes clearly and accurately	K2
CO5	Express their opinions effectively in both formal and informal discussions	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	1	3	3	3	3	3	3	3
CO2	3	3	3	3	1	3	3	3	3	3	3	3
CO3	3	3	3	3	1	3	3	3	3	3	3	3
CO4	3	3	3	3	1	3	3	3	3	3	3	3
CO5	3	3	3	3	1	3	3	3	3	3	3	3
CO	**3**	**3**	**3**	**3**	**1**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	**0.0**	**0.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	HS3252 / Professional English II
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Compare and contrast products and ideas in technical texts	K4
CO2	Identify and report cause and effects in events, industrial processes through technical texts	K1
CO3	Analyse problems in order to arrive at feasible solutions and communicate them in the written format	K4
CO4	Present their ideas and opinions in a planned and logical manner	K2
CO5	Draft effective resumes in the context of job search	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	3	3	3	3	2	3	3	3
CO2	3	3	3	3	3	3	3	3	2	3	3	3
CO3	3	3	3	3	3	3	3	3	2	3	3	3
CO4	3	3	3	3	2	3	3	3	2	3	3	3
CO5	-	-	-	-	-	-	-	-	3	3	3	3
CO	3	3	3	3	2.75	3	3	3	2.2	3	3	3

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	0.00	0.00

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	MA3251/ Statistics and Numerical Methods
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.	K3
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.	K3
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of	K3
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	K2
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.	K5

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	1	1	1	0	0	0	2	0	2	3
CO2	3	3	1	1	1	0	0	0	2	0	2	3
CO3	3	3	1	1	1	0	0	0	2	0	2	3
CO4	3	3	1	1	1	0	0	0	2	0	2	3
CO5	3	3	1	1	1	0	0	0	2	0	2	3
CO	**3**	**3**	**1**	**1**	**1**	**0**	**0**	**0**	**2**	**0**	**2**	**3**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	PH3254 / Physics for Electronics Engineering
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Know basics of crystallography and its importance for varied materials properties	K3
CO2	Gain knowledge on the electrical and magnetic properties of materials and their applications	K4
CO3	Understand clearly of semiconductor physics and functioning of semiconductor devices	K2
CO4	Understand the optical properties of materials and working principles of various optical devices	K2
CO5	Appreciate the importance of nanotechnology and nano devices	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	-	1	-	-	-	-	-	-	-	-	-
CO2	3	2	1	2	-	2	-	-	-	-	-	-
CO3	3	2	2	-	2	-	-	-	-	-	-	-
CO4	3	-	1	-	3	2	3	-	-	-	-	1
CO5	3	-	2	1	-	2	-	-	-	-	-	1
CO	**3**	**2**	**1.4**	**1.5**	**2.5**	**2**	**3**					**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	0
CO2	2	0
CO3	2	0
CO4	2	0
CO5	2	0
CO	**2.0**	**0.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	BE3254/ Electrical and Instrumentation Engineering
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain the working principle of electrical machines	K2
CO2	Analyze the output characterizes of electrical machines	K4
CO3	Choose the appropriate electrical machines for various applications	K3
CO4	Explain the types and operating principles of measuring instruments	K2
CO5	Explain the basic power system structure and protection schemes	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	1	-	-	-	-	1	-	-	-	-
CO2	2	1	1	-	-	-	-	1	-	-	-	-
CO3	2	1	1	-	-	-	-	1	-	-	-	-
CO4	2	1	1	-	-	-	-	1	-	-	-	-
CO5	2	1	1	-	-	-	-	1	-	-	-	-
CO	**2**	**1**	**1**	-	-	-	-	**1**	-	-	-	-

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO4	2	1
CO5	2	1
CO	**2.0**	**1.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3251/ Engineering Graphics
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Use BIS conventions and specifications for engineering drawing	K3
CO2	Construct the conic curves, involutes and cycloid	K3
CO3	Solve practical problems involving projection of lines	K1
CO4	Draw the orthographic, isometric and perspective projections of simple solids..	K3
CO5	Draw the development of simple solids	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	1	2	-	2	-	-	-	-	3	-	2
CO2	3	1	2	-	2	-	-	-	-	3	-	2
CO3	3	1	2	-	2	-	-	-	-	3	-	2
CO4	3	1	2	-	2	-	-	-	-	3	-	2
CO5	3	1	2	-	2	-	-	-	-	3	-	2
CO	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	2
CO2	2	2
CO3	2	2
CO4	2	2
CO5	2	2
CO	**2**	**2**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	C115/ EC3251/ Circuit Analysis
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh current and node voltage method for analysis of DC and AC	K3
CO2	Apply suitable network theorems and analyze AC and DC circuits	K3
CO3	Analyze steady state response of any R, L and C circuits	K4
CO4	Analyze the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits	K4
CO5	Analyze the coupled circuits and network topologies	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	1	1	-	-	-	1		1	-	-
CO2	3	3	2	2	-	-	-	1		1	-	-
CO3	3	3	3	3	-	-	-	1		1	-	-
CO4	3	3	3	3	-	-	-	1		1	-	-
CO5	3	3	3	2	-	-	-	1		1	-	-
CO	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**1**		**1**	**-**	**-**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO4	2	1
CO5	2	1
CO	**2.0**	**1.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	C116/ GE3252 / Tamils and Technology
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain the technology and culture of Tamils through waving and pottery.	K2
CO2	Know the architectural design from sangam period to present day.	K1
CO3	Know how Tamils have used different types of metals and beads.	K1
CO4	Explain irrigation technology and maritime knowledge of ancient Tamils.	K2
CO5	Know the development of scientific Tamil and the development of Tamil through the Internet.	K1

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	1	1	1	-	-	1	1	-	1	1	-	-
CO2	1	1	2	-	-	1	-	1	-	1	-	-
CO3	1	1	1	-	-	1	-	-	-	1	-	-
CO4	1	1	1	-	-	1	1	-	-	1	-	-
CO5	1	1	1	-	2	1	-	-	-	1	-	-
CO	**1**	**1**	**1.2**	-	2	**1**	**1**	1	**1**	**1**	-	-

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	**0.0**	**0.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3271 / Engineering Practices Lab
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood	K2
CO2	Wire various electrical joints in common household electrical wire work	K3
CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling,	K3
CO4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	-	-	1	1	1	-	-	-	-	2
CO2	3	2	-	-	1	1	1	-	-	-	-	2
CO3	3	2	-	-	1	1	1	-	-	-	-	2
CO4	3	2	-	-	1	1	1	-	-	-	-	2
CO	**3**	**2**	**-**	**-**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO4	2	1
CO	2	1

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3271/ Circuit Analysis Laboratory
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Design RL and RC circuits.	K6
CO2	Verify Thevenin & Norton theorem KVL & KCL, and Super Position Theorems.	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	1	1	-	-	-	1	-	1	-	-
CO2	3	3	2	2	-	-	-	1	-	1	-	-
CO	3	3	3	2	-	-	-	1	-	1	-	-

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO	1.0	1.0

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3272 / Communication Laboratory
Semester	II
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Speak effectively in group discussions held in formal/semi formal contexts.	K2
CO2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions	K4
CO3	Write emails, letters and effective job applications	K2
CO4	Write critical reports to convey data and information with clarity and precision	K2
CO5	Give appropriate instructions and recommendations for safe execution of tasks	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	3	3	1	3	3	3	3	3	3	3
CO2	2	3	3	3	1	3	3	3	3	3	3	3
CO3	2	2	3	3	1	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3
CO	2.4	2.8	3	3	1.8	3	3	3	3	3	3	3

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	0.0	0.0

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	MA3355/ Random Processes and Linear Algebra
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied	K3
CO2	Demonstrate accurate and efficient use of advanced algebraic techniques.	K2
CO3	Apply the concept of random processes in engineering disciplines.	K3
CO4	Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon.	K2
CO5	Understand the basic concepts of one and two dimensional random variables and apply them to model engineering problems.	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	0	0	0	0	0	0	3	0	0	2
CO2	3	3	0	0	0	0	0	0	3	0	0	2
CO3	3	3	0	0	0	0	0	0	3	0	0	2
CO4	3	3	0	0	0	0	0	0	3	0	0	2
CO5	3	3	0	0	0	0	0	0	3	0	0	2
CO	**3**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	CS3353/ C Programming and Data Structures
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Develop C programs for any real world/technical Application	K3
CO2	Apply advanced features of C in solving problems	K3
CO3	Write functions to implement linear and non–linear data structure operations	K6
CO4	Suggest and use appropriate linear/non–linear data structure operations for solving a given problem	K4
CO5	Appropriately use sort and search algorithms for a given application.	K5
CO6	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	1	2	2	1	1	-	1	2	1	3
CO2	1	2	1	2	2	-	-	-	1	1	1	2
CO3	2	3	1	2	3	-	-	-	1	1	1	2
CO4	2	1	-	1	1	-	-	-	2	1	1	2
CO5	1	2	1	2	2	1	1	-	1	2	1	3
CO6	2	2	1	2	2	1	1	-	1	1	1	2
CO	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**-**	**1**	**1**	**1**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO6	1	1
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3354/ Signals and Systems
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Determine if a given system is linear/causal/stable	K3
CO2	Determine the frequency components present in a deterministic signal	K3
CO3	Characterize continuous LTI systems in the time domain and frequency domain	K4
CO4	Characterize discrete LTI systems in the time domain and frequency domain	K3
CO5	Compute the output of an LTI system in the time and frequency domains	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	-	3	-	3	2	-	-	-	-	-	3
CO2	3	-	3	-	-	2	-	-	-	-	-	3
CO3	3	3	-	-	3	2	-	-	-	-	-	3
CO4	3	3	-	-	3	2	-	-	-	-	-	3
CO5	3	3	-	3	3	2	-	-	-	-	-	3
CO	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**3**

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	3
CO3	2	-
CO4	-	3
CO5	-	3
CO	**2**	**3**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3353/ Electronic Devices and Circuits
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain the structure and working operation of basic electronic devices	K2
CO2	Apply amplifier design principles to create and analyze circuits	K3
CO3	Analyze frequency response of BJT and MOSFET amplifiers	K4
CO4	Design and analyze feedback amplifiers and oscillator principles.	K4
CO5	Design and analyze power amplifiers and supply circuits	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	2	1	-	-	-	-	-	1
CO2	3	2	2	3	2	2	-	-	-	-	-	1
CO3	3	3	3	2	1	2	-	-	-	-	-	1
CO4	3	3	2	3	2	2	-	-	-	-	-	1
CO5	3	2	3	2	2	1	-	-	-	-	-	1
CO	**3**	**3**	**3**	**3**	**2**	**2**	-	-	-	-	-	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO4	2	1
CO5	2	1
CO	**2**	**1**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3351/ Control Systems
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Compute the transfer function of different physical systems.	K3
CO2	Analyze the time domain specification and calculate the steady state error.	K4
CO3	Illustrate the frequency response characteristics of open loop and closed loop system response.	K2
CO4	Analyze the stability using Routh and root locus techniques.	K4
CO5	Illustrate the state space model of a physical system and discuss the concepts of sampled data control system.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	2	2	2	-	-	-	-	2	3
CO2	3	3	3	3	2	3	-	-	-	-	2	2
CO3	3	2	3	3	2	2	-	-	-	-	2	3
CO4	3	3	3	2	2	2	-	-	-	-	2	2
CO5	2	2	3	3	2	3	-	-	-	-	2	3
CO	**3**	**3**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**3**

CO-PSO matrices

COs	PSO1	PSO2
CO1	3	3
CO2	3	3
CO3	3	2
CO4	3	3
CO5	2	2
CO	**3**	**3**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3352/ Digital Systems Design
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Use Boolean algebra and simplification procedures relevant to digital logic.	K2
CO2	Design various combinational digital circuits using logic gates.	K6
CO3	Analyze and design synchronous sequential circuits.	K4
CO4	Analyze and design asynchronous sequential circuits.	K4
CO5	Build logic gates and use programmable devices.	K5

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	2	-	2	-	-	-	-	3	3
CO2	-	-	-	-	-	-	-	-	-	-	2	1
CO3	-	3	3	2	-	2	-	-	-	-	2	2
CO4	-	-	-	-	-	-	-	-	-	-	3	2
CO5	-	3	3	3	-	-	-	-	-	-	2	2
CO	3	2.6	2.6	2.3	-	2	-	-	-	-	2	2

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO4	2	1
CO5	2	1
CO	2.0	1.0

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3361 / Electronic Devices and Circuits Laboratory
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Characteristics of PN Junction Diode and Zener diode.	K4
CO2	Design and Testing of BJT and MOSFET amplifiers.	K6
CO3	Operation of power amplifiers.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	3	3	2	1	-	-	-	-	-	1
CO2	2	2	3	3	2	1	-	-	-	-	-	1
CO3	2		2		1	1	-	-	-	-	-	1
CO	**2**	**2**	**2.6**	**3**	**2**	**1**	-	-	-	-	-	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO	**2**	**1**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	CS3362/ C Programming and Data Structures Laboratory
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Use different constructs of C and develop applications	K3
CO2	Write functions to implement linear and non-linear data structure operations	K2
CO3	Suggest and use the appropriate linear / non-linear data structure operations for a given problem	K3
CO4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval	K3
CO5	Implement Sorting and searching algorithms for a given application	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	1	2	2	1	1	-	1	2	1	3
CO2	1	2	1	2	2	-	-	-	1	1	1	2
CO3	2	3	1	2	3	-	-	-	1	1	1	2
CO4	2	1	-	1	1	-	-	-	2	1	1	2
CO5	1	2	1	2	2	1	1	-	1	2	1	3
CO6	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**-**	**1**	**1**	**1**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	2
CO3	2	1
CO4	2	3
CO5	2	2
CO6	**2**	**2**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3361/ Professional Development
Semester	III
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements	K3
CO2	Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding	K3
CO3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	1	1	2	2					2
CO2	3	1	2	1	1	1	1					1
CO3	2	1	1	1	1	1	1					1
CO4	**2.6**	**1.3**	**1.6**	**1**	**1**	**1.3**	**1.3**	**-**	**-**	**-**	**-**	**1.3**

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	**0.0**	**0.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3452 / Electromagnetic Fields
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Relate the fundamentals of vector, coordinate system to electromagnetic concepts.	K1
CO2	Analyze the characteristics of Electrostatic field.	K2
CO3	Interpret the concepts of Electric field in material space and solve the boundary conditions	K2
CO4	Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions.	K2
CO5	Determine the significance of time varying fields.	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	1	1	-	2	1	-	-	1	-	2
CO2	2	2	3	3	2	2	2	-	-	1	1	2
CO3	2	2	3	2	2	2	1	-	-	1	1	2
CO4	2	2	3	2	2	2	1	-	-	1	1	2
CO5	2	2	2	2	2	2	1	-	-	2	2	1
CO	**2**	**2**	**2**	**2**	**2**	**2**	**1**	-	-	**1**	**1**	**2**

CO-PSO matrices

Course code	PSO1	PSO2
CO1	1	2
CO2	1	2
CO3	1	2
CO4	1	2
CO5	1	2
CO	**1.0**	**2.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3401 /Networks and Security
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain the Network Models, layers and functions.	K2
CO2	Categorize and classify the routing protocols.	K4
CO3	List the functions of the transport and application layer.	K1
CO4	Evaluate and choose the network security mechanisms.	K5
CO5	Discuss the hardware security attacks and countermeasures.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	1	1	1	1	-	-	-	1	-	1
CO2	2	2	1	1	1	1	-	-	-	1	-	1
CO3	2	2	1	1	1	1	-	-	-	1	-	1
CO4	2	2	1	1	1	1	-	-	-	1	-	1
CO5	2	2	1	1	1	1	-	-	-	1	-	1
CO	**2**	**2**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**1**	**-**	**1**

CO-PSO matrices

Course code	PSO1	PSO2
CO1	3	2
CO2	3	2
CO3	3	2
CO4	3	2
CO5	3	2
CO	**3**	**2**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3451/ Linear integrated circuits
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Design linear and nonlinear applications of OP – AMPS	K3
CO2	Design applications using analog multiplier and PLL	K4
CO3	Design ADC and DAC using OP – AMPS	K4
CO4	Generate waveforms using OP – AMP Circuits	K3
CO5	Analyze special function ICs	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	-	-	-	-	-	-	-	-	-	1	-
CO2	2	3	3	2	-	-	-	-	-	-	-	-
CO3	1	-	-	2	-		-	-	-	-	-	-
CO4	1	-	-	2	-	-	-	-	-	-	-	-
CO5	1	2	3	3	-	-	-	-	-	-	-	3
CO	1.4	2.5	3	2.2	-	-	-	-	-	-	1	3

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	2
CO2	1	2
CO3	1	2
CO4	1	2
CO5	1	2
CO	1.0	2.0

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3492 / Digital Signal Processing
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Apply DFT for the analysis of digital signals and systems	K3
CO2	Design IIR and FIR filters	K4
CO3	Characterize the effects of finite precision representation on digital filters	K4
CO4	Design multirate filters	K3
CO5	Apply adaptive filters appropriately in communication systems	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	2	2	-	-	-	-	1	1
CO2	3	3	3	3	2	2	-	-	-	-	1	1
CO3	3	3	2	2	2	2	-	-	-	-	1	1
CO4	3	3	2	2	3	1	-	-	-	-	1	1
CO5	3	2	2	2	3	2	-	-	-	-	1	1
CO	**3**	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**1**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	3	3
CO2	2	2
CO3	1	2
CO4	2	2
CO5	2	2
CO	**2**	**2**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3491 / Communication systems
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Gain knowledge in amplitude modulation techniques	K1
CO2	Understand the concepts of Random Process to the design of communication systems	K2
CO3	Gain knowledge in digital techniques	K1
CO4	Gain knowledge in sampling and quantization	K1
CO5	Understand the importance of demodulation techniques	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	2	1	1	-	-	-	1	1
CO2	3	3	3	3	2	1	1	-	-	-	1	1
CO3	3	3	3	3	3	1	1	-	-	-	1	1
CO4	3	3	3	3	3	1	1	-	-	-	1	1
CO5	3	3	3	3	2	1	1	-	-	-	1	1
CO	**3**	**3**	**3**	**3**	**2.5**	**1**	**1**	**-**	**-**	**-**	**1**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	2
CO2	1	2
CO3	1	2
CO4	1	2
CO5	1	2
CO	**1.0**	**2.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	GE3451 / Environmental sciences and sustainability
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.	K2
CO2	Identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.	K1
CO3	Identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.	K3
CO4	Recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development	K2
CO5	Demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	-	-	-	2	3	-	-	-	-	2
CO2	3	2	-	-	-	3	3	-	-	-	-	2
CO3	3	-	1	-	-	2	2	-	-	-	-	2
CO4	3	2	1	1	-	2	2	-	-	-	-	2
CO5	3	2	1	-	-	2	2	-	-	-	-	1
CO	**2.8**	**1.8**	**1**	**1**	**-**	**2.2**	**2.4**	**-**	**-**	**-**	**-**	**1.8**

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	**0.0**	**0.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3461 / Communication Systems Laboratory
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Design AM, FM & Digital Modulators for specific applications.	K6
CO2	Compute the sampling frequency for digital modulation.	K3
CO3	Simulate & validate the various functional modules of Communication system.	K3
CO4	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes.	K2
CO5	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of Communication system.	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	3	3	-	-	-	1	1	1
CO2	3	3	3	3	3	2	-	-	-	1	1	1
CO3	3	3	3	3	3	2	-	-	-	1	1	1
CO4	3	3	3	3	3	3	-	-	-	1	1	1
CO5	3	3	3	3	3	2	-	-	-	1	1	1
CO	**3**	**3**	**3**	**3**	**3**	**2.5**	**-**	**-**	**-**	**1**	**1**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1.0**	**1.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3462 / Linear Integrated Circuits Laboratory
Semester	IV
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Analyze various types of feedback amplifiers	K4
CO2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators	K4
CO3	Design and simulate feedback amplifiers,oscillators, tuned amplifiers, wave- shaping circuits and multivibrators, filters using SPICE Tool	K4
CO4	Design amplifiers, oscillators, D-A converters using operational amplifiers	K4
CO5	Design filters using op-amp and perform an experiment on frequency response	K6

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	3	3	-	-	-	-	-	-	1	1
CO2	2	3	3	3	-	-	-	-	-	-	1	1
CO3	2	3	3	3	-	-	-	-	-	-	1	1
CO4	2	3	3	3	2	-	-	-	-	-	1	1
CO5	-	-	-	-	-	-	-	-	-	-	-	-
CO	2	3	3	3	2	-	-	-	-	-	1	1

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	-	-
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Code / Title	EC3501/ Wireless Communication
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Understand The Concept And Design Of A Cellular System.	K2
CO2	Understand Mobile Radio Propagation And Various Digital Modulation Techniques.	K2
CO3	Understand The Concepts Of Multiple Access Techniques And Wireless Networks	K2
CO4	Characterize a wireless channel and evolve the system design specifications	K4
CO5	Design a cellular system based on resource availability and traffic demands.	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	3	3	1	-	-	-	-	-	1
CO2	3	3	2	1	3	2	-	-	-	-	-	-
CO3	3	3	3	3	2	2	-	-	-	-	-	1
CO4	2	3	2	2	2	2	-	-	-	-	-	1
CO5	2	-	3	3	2	1	-	-	-	-	-	1
CO	**3**	**3**	**2**	**2**	**2**	**2**	-	-	-	-	-	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	2	1
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	EC3552/ VLSI and chip design
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	In depth knowledge of MOS technology	K2
CO2	Understand Combinational Logic Circuits and Design Principles	K5
CO3	Understand Sequential Logic Circuits and Clocking Strategies	K2
CO4	Understand Memory architecture and building blocks	K2
CO5	Understand the ASIC Design Process and Testing	K5

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	1	1	-	-	-	-	-	-	-	-	-	-
CO2	3	2	3	2	-	-	-	-	-	-	-	1
CO3	2	3	2	3	1	1	-	-	-	-	-	2
CO4	-	-	1	1	-	-	-	-	-	-	-	3
CO5	-	-	-	-	-	2	-	-	-	-	1	-
CO	2	2	2	2	1	1.5	-	-	-	-	1	2

CO-PSO matrices

Course code	PSO1	PSO2
CO1	2	2
CO2	2	2
CO3	2	2
CO4	2	2
CO5	2	2
CO	2.0	2.0

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	EC3551/ Transmission lines and RF systems
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain the characteristics of transmission lines and its losses.	K2
CO2	Calculate the standing wave ratio and input impedance in high frequency transmission lines.	K3
CO3	Analyze impedance matching by stubs using Smith Charts.	K4
CO4	Comprehend the characteristics of TE and TM waves.	K2
CO5	Design a RF transceiver system for wireless communication.	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	2	1	-	-	-	1	-	1
CO2	3	2	2	3	2	1	-	-	-	1	-	1
CO3	3	3	3	2	1	2	-	-	-	1	-	1
CO4	3	3	2	3	2	1	-	-	-	1	-	1
CO5	3	2	3	2	2	1	-	-	-	1	-	1
CO	3	3	3	3	2	1	-	-	-	1	-	1

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO4	2	1
CO5	2	1
CO	2	1

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	CBM368 / Therapeutic Equipment
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Suggest suitable therapeutic devices for ailments related to cardiology, pulmonology, neurology, etc	K2
CO2	Comprehend the principles of body care equipment	K2
CO3	Understand the operation of dental care equipment.	K2
CO4	Analyze the different types of therapies for suitable applications.	K4
CO5	Appreciate the application of lasers in biomedical applications.	K5

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	2	3	2	-	-	-	-	2
CO2	3	3	3	3	2	3	2				-	2
CO3	3	3	3	3	2	3	2	-	-	-	-	2
CO4	3	2	2	3	2	3	2	-	-	-	-	2
CO5	3	3	2	3	2	3	2	-	-	-	-	2
CO	**3**	**2.8**	**2.6**	**3**	**2.5**	**3**	**2**	**-**	**-**	**-**	**-**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1**	**1**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	CEC366 / Image Processing
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.	K2
CO2	Operate on images using the techniques of smoothing, sharpening and enhancement.	K3
CO3	Understand the restoration concepts and filtering techniques.	K4
CO4	Learn the basics of segmentation, features extraction, compression and recognition methods for color models.	K2
CO5	Comprehend image compression concepts.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	2	2	2	-	-	-	-	-	3
CO2	3	3	3	2	2	2	-	-	-	-	-	2
CO3	3	3	2	2	2	2	-	-	-	-	-	2
CO4	3	3	3	2	2	2	-	-	-	-	-	2
CO5	3	3	3	3	2	2	-	-	-	-	-	2
CO	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**

CO-PSO matrices

Course code	PSO1	PSO2
CO1	2	3
CO2	2	3
CO3	2	2
CO4	2	2
CO5	2	2
CO	**2**	**2**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	CBM341/ Body Area Networks
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Comprehend and appreciate the significance and role of this course in the present contemporary world.	K2
CO2	Design a BAN for appropriate application in medicine.	K4
CO3	Assess the efficiency of communication and the security parameters.	K5
CO4	Understand the need for medical device regulation and regulations followed in various regions.	K2
CO5	Extend the concepts of BAN for medical applications.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	1	1	1	1	1	-	-	-	-	1
CO2	3	3	3	3	1	2	2	-	-	-	-	1
CO3	3	2	1	1	1	1	1	-	-	-	-	1
CO4	2	2	1	1	1	1	1	-	-	-	-	1
CO5	2	2	1	1	1	2	2	-	-	-	-	1
CO	**2.4**	**2.2**	**1.4**	**1.4**	**1**	**1.4**	**1.4**	**-**	**-**	**-**	**-**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	3	3
CO2	3	3
CO3	3	3
CO4	3	3
CO5	3	3
CO	**3**	**3**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	MX3084/ Disaster Risk Reduction and Management
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)	K1
CO2	Enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction	K2
CO3	Develop disaster response skills by adopting relevant tools and technology	K2
CO4	Enhance awareness of institutional processes for Disaster response in the country and	K1
CO5	Develop rudimentary ability to respond to their surroundings with potential	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	2	3	-	-	2	2	-	-	2	-
CO2	3	3	3	3	-	-	2	1	-	-	2	-
CO3	3	3	3	3	-	-	2	2	-	-	-	-
CO4	3	3	2	3	-	-	2	1	-	-	2	-
CO5	3	3	2	3	-	-	2	2	-	-	2	-
CO	**3**	**3**	**3**	**3**	**-**	**-**	**2**	**2**	**-**	**-**	**2**	**-**

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	-
CO2	-	-
CO3	-	-
CO4	-	-
CO5	-	-
CO	**0.0**	**0.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	EC3561 / VLSI Laboratory
Semester	V
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Write HDL code for basic as well as advanced digital integrated circuit	K3
CO2	Import the logic modules into FPGA Boards	K3
CO3	Synthesize Place and Route the digital Ips	K3
CO4	Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools	K6
CO5	Test and Verification of IC design	K5

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	1	1	-	-	-	-	-	-	-	-
CO3	1	2	2	2	-	-	-	-	-	-	1	1
CO4	-	1	3	3	1	-	-	-	-	-	1	1
CO5	3	3	3	3	1	-	-	-	-	-	1	1
CO	**2.2**	**2.2**	**2.2**	**2.2**	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	3
CO2	2	1
CO3	2	2
CO4	2	2
CO5	2	2
CO	**2**	**2**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	ET3491 / Embedded Systems and IoT Design
Semester	VI
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Explain the architecture and features of 8051	K2
CO2	Develop a model of an embedded system	K3
CO3	List the concepts of real time operating systems	K1
CO4	Learn the architecture and protocols of IoT	K2
CO5	Design an IoT based system for any application	K5

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	2	2	-	-	-	-	-	-	-
CO2	3	3	3	2	2	-	-	-	-	-	-	-
CO3	3	3	2	2	2	-	-	-	-	-	-	-
CO4	3	3	2	2	2	-	-	-	-	-	-	-
CO5	3	3	3	3	3	-	-	-	-	-	-	-
CO	**3**	**3**	**2.6**	**2.2**	**2.2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

CO-PSO matrices

COs	PSO1	PSO2
CO1	3	2
CO2	3	2
CO3	2	1
CO4	3	3
CO5	3	3
CO	**2.8**	**2.2**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	CS3491 / Artificial Intelligence and Machine Learning
Semester	VI
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Use appropriate search algorithms for problem solving	K3
CO2	Apply reasoning under uncertainty	K3
CO3	Build supervised learning models	K4
CO4	Build ensembling and unsupervised models	K4
CO5	Build deep learning neural network models	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	3	1	3	2	-	-	-	-	1
CO2	3	2	2	3	1	3	2	-	-	-	-	1
CO3	1	2	1	3	2	3	2	-	-	-	-	1
CO4	1	2	3	1	3	3	2	-	-	-	-	1
CO5	2	2	2	-	3	3	2	-	-	-	-	1
CO	**2**	**2**	**2**	**2**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	3	3
CO2	3	2
CO3	3	2
CO4	1	2
CO5	2	1
CO	**2.4**	**2**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	OEE351 / Renewable Energy system
Semester	VI
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Attained knowledge about various renewable energy technologies	K1
CO2	Ability to understand and design a PV system	K2
CO3	Understand the concept of various wind energy system	K2
CO4	Gained knowledge about various possible hybrid energy systems	K1
CO5	Attained knowledge about various application of renewable energy technologies	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	-	-	-	-	-	-	-	-	-	-	2
CO2	3	2	-	-	-	-	-	-	-	-	-	2
CO3	3	2	-	-	-	-	-	-	-	-	-	2
CO4	3	2	-	-	-	-	-	-	-	-	-	2
CO5	3	2	-	-	-	-	-	-	-	-	-	2
CO	3	2	-	-	-	-	-	-	-	-	-	2

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	CEC332 / Advanced Digital Signal Processing
Semester	VI
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Comprehend multirate signal processing and demonstrate its applications	K2
CO2	Demonstrate an understanding of the power spectral density and apply to discrete random signals and systems	K3
CO3	Apply linear prediction and filtering techniques to discrete random signals for signal detection and estimation.	K3
CO4	Analyze adaptive filtering problems and demonstrate its application	K4
CO5	Apply power spectrum estimation techniques to random signals	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	2	2	2	-	-	-	-	-	1
CO2	3	3	3	2	2	2	-	-	-	-	-	2
CO3	3	3	3	2	2	2	-	-	-	-	-	2
CO4	3	3	3	2	2	2	-	-	-	-	-	2
CO5	3	3	2	2	1	1	-	-	-	-	-	1
CO	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	2
CO2	2	2
CO3	2	2
CO4	2	2
CO5	2	2
CO	**2.0**	**2.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	CEC352 / Satellite communication
Semester	VI
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Identify the satellite orbits	K2
CO2	Analyze the satellite subsystems	K4
CO3	Evaluate the satellite link power budget	K3
CO4	Identify access technology for satellite	K2
CO5	Design various satellite applications	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	2	3	1	1	-	1	-	1
CO2	3	2	2	3	2	3	-	-	-	-	-	1
CO3	3	3	3	2	1	3	-	-	-	-	-	1
CO4	3	3	2	3	2	3	-	-	-	-	-	1
CO5	3	2	3	2	2	1	-	-	-	-	-	1
CO	**3**	**3**	**3**	**3**	**2**	**3**	1	1	-	1	**-**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1.0**	**1.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	MX3089 / Industrial Safety
Semester	VI
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Understand the basic concept of safety	K2
CO2	Obtain knowledge of Statutory Regulations and standards	K2
CO3	Know about the safety Activities of the Working Place	K1
CO4	Analyze on the impact of Occupational Exposures and their Remedies	K4
CO5	Obtain knowledge of Risk Assessment Techniques	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	1	1	3	2	2	3	3	1	3
CO2	2	3	2	2	1	3	2	3	3	2	1	3
CO3	2	2	2	2	1	2	2	2	3	2	1	2
CO4	3	3	3	2	2	3	2	2	3	2	1	3
CO5	3	2	3	2	2	3	2	2	3	2	2	3
CO	3	3	3	2	1	3	2	2	3	2	1	3

CO-PSO matrices

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
CO	**1.0**	**1.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	GE3791 Human Values and Ethics
Semester	VII
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Identify the importance of democratic, secular and scientific values in harmonious functioning of social life	K2
CO2	Practice democratic and scientific values in both their personal and professional life.	K3
CO3	Find rational solutions to social problems	K2
CO4	Behave in an ethical manner in society	K2
CO5	Practice critical thinking and the pursuit of truth.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	1	2	2	1	-	-	-	-	-	-
CO2	2	1	1	2	2	1	-	-	-	-	-	-
CO3	2	1	1	2	2	1	-	-	-	-	-	-
CO4	2	1	1	2	2	1	-	-	-	-	-	-
CO5	2	1	1	2	2	1	-	-	-	-	-	-
CO	**2**	**1**	**1**	**2**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**

CO-PSO matrices

COs	PSO1	PSO2
CO1	-	1
CO2	-	1
CO3	-	1
CO4	-	1
CO5	-	1
CO	**-**	**1.0**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	GE3751 / Principles Of Management
Semester	VII
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling.	K2
CO2	Have same basic knowledge on international aspect of management.	K4
CO3	Ability to understand management concept of organizing.	K2
CO4	Ability to understand management concept of directing.	K2
CO5	Ability to understand management concept of controlling.	K2

CO-PSO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3		-	-	-	1	-	-	-	-	-	-
CO2	-	1	1	-	-	-	-	-	-	-	-	-
CO3	1		-	2	-	-	1	-	2	-	1	1
CO4	-	1	1	1	2	-	-	1	2	-	-	-
CO5	1		-	-	1	1	-	-	-	3	-	1
CO	**1.6**	**1**	**1**	**1.5**	**1.5**	**1**	**1**	**1**	**2**	**3**	**1**	**1**

CO-PSO matrices

COs	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	-	-
CO4	1	1
CO5	1	-
CO	**1.5**	**1**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	CCS361 / Robotic Process Automation
Semester	VII
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Understanding Basic Concepts of Robotic Process Automation (RPA)	K2
CO2	Exposure to Key RPA Design and Development Strategies and Methodologies	K3
CO3	Learning Fundamental RPA Logic and Structure:	K2
CO4	Exploration of Exception Handling, Debugging, and Logging Operations in RPA:	K4
CO5	Learning to Deploy and Maintain the Software Bot:	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	1	3	-	-	-	1	3	3	2
CO2	1	1	2	3	3	-	-	-	1	2	3	1
CO3	2	3	2	3	3	-	-	-	2	3	1	1
CO4	1	2	1	2	2	-	-	-	1	2	1	3
CO5	3	3	3	3	3	-	-	-	3	1	1	1
CO	**2**	**2.2**	**2**	**2.4**	**2.8**	**-**	**-**	**-**	**1.6**	**2.2**	**1.8**	**1.6**

CO-PSO matrices

Course code	PSO1	PSO2
CO1	2	2
CO2	3	2
CO3	3	3
CO4	3	3
CO5	3	2
CO	**2.8**	**2.4**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	OGI351 / Remote Sensing Concepts
Semester	VII
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Understand the concepts and laws related to remote sensing	K2
CO2	Understand the interaction of electromagnetic radiation with atmosphere and earth material	K2
CO3	Acquire knowledge about satellite orbits and different	K1
CO4	Understand the different types of remote sensors	K2
CO5	Gain knowledge about the concepts of interpretation of satellite imagery	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	-	-	-	-	-	-	-	-	-	-	3
CO2	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	3
CO4	3	3	3	3	3	-	-	-	-	-	-	3
CO5	3	3	3	3	3	-	-	-	-	-	-	3
CO	**3**	**3**	**3**	**3**	**3**	-	-	-	-	-	-	**3**

CO-PSO matrices

Course code	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	-	-
CO4	1	1
CO5	1	-
CO	**1.5**	**1**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	OMR353/ Sensors
Semester	VII
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Understand various sensor effects, sensor characteristics, signal types, calibration methods and obtain transfer function and empirical relation of sensors. They can also analyze the sensor response.	K2
CO2	Analyze and select suitable sensor for displacement, proximity and range measurement	K2
CO3	Analyze and select suitable sensor for force, magnetic field, speed, position and direction measurement.	K4
CO4	Analyze and Select suitable sensor for light detection, pressure and temperature measurement and also familiar with other miniaturized smart sensors.	K4
CO5	Select and design suitable signal conditioning circuit with proper compensation and linearizing element based on sensor output signal.	K2

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	2	-	-	-	-	-	-	-	1	2
CO2	3	3	2	1	1	1	-	-	-	-	1	2
CO3	3	3	2	1	1	1	-	-	-	-	1	2
CO4	3	3	2	1	1	1	-	-	-	-	1	2
CO5	3	3	2	1	1	1	-	-	-	-	1	2
CO	**3**	**3**	**2**	**0.8**	**0.8**	**0.8**	**-**	**-**	**-**	**-**	**0.8**	**2**

CO-PSO matrices

Course code	PSO1	PSO2
CO1	2	2
CO2	3	2
CO3	3	2
CO4	3	2
CO5	3	2
CO	**2.8**	**2.0**

1	Slight	2	Moderate	3	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	EC3711/ Summer Internship
Semester	VII
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	System-level design processes, verification and validation techniques, manufacturing and production processes in the firm or research facilities in the laboratory/research institute	K3
CO2	Analysis of industrial / research problems and their solutions	K4
CO3	Documentation of system specifications, design methodologies, process parameters, testing parameters and results	K3
CO4	Preparing of technical report and presentation	K3

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	1	2	2	1	1	-	1	1	1	2
CO2	2	2	1	2	2	1	1	-	1	1	1	2
CO3	2	2	1	2	2	1	1	-	1	1	1	2
CO4	2	2	1	2	2	1	1	-	1	1	1	2
CO5	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**-**	**1**	**1**	**1**	**2**

CO-PSO matrices

Course code	PSO1	PSO2
CO1	2	2
CO2	2	2
CO3	2	2
CO4	2	2
CO5	**2**	**2**

1	Slight	**2**	Moderate	**3**	Substantial

Department of Electronics and Communication Engineering

Course Name / Code / Title	EC3811/ Project Work/ Internship
Semester	VIII
Regulation	2021

COs	Course Outcome	Blooms Taxonomy Level
Students will be able to		
CO1	Formulate and analyze problem / create a new product/ process	K6
CO2	Design and conduct experiments to find solution	K6
CO3	Analyze the results and provide solution for the identified problem, prepare project report and make presentation.	K4

CO-PO matrices

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	3	3	3	3	3	3	2	3	3	3
CO2	3	3	3	3	3	3	3	3	2	3	3	3
CO3	3	3	3	3	3	3	3	3	2	3	3	3
CO	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**3**

CO-PSO matrices

COs	PSO1	PSO2
CO1	3	3
CO2	3	3
CO3	3	3
CO	**3**	**3**

1	Slight	**2**	Moderate	**3**	Substantial