

INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS) (Deemed to be University Estd. u/s 3 of the UGC Act, 1956) PALLAVARAM - CHENNAI ACCREDITED BY NAAC WITH 'A' GRADE Marching Beyond 30 Years Successfully INSTITUTION WITH UGC 12B STATUS

B.E.

Electronics and Communication Engineering

Curriculum and Syllabus

Regulation 2022

(Based on Choice Based Credit System (CBCS) and Outcome Based Education (OBE)

> Effective from the Academic year 2022 – 2023

Department of Electronics and Communication Engineering School of Engineering VISTAS

SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

VISION OF THE DEPARTMENT

To be a centre of excellence in the field of Electronics and Communication Engineering (ECE) equipped with the state of art technologies to produce highly competent, resourceful and ethical young professionals who create innovative solutions to the needs of the society and excel in the varied professional trends globally.

MISSION OF THE DEPARTMENT

- M1: To impart strong theoretical and experimental fundamentals in electronics and communication engineering that enable students to be competent in the growing technical demands and challenges.
- M2: To facilitate appropriate technical exposure on the latest and cutting-edge technological trends through academic and collaborative interactions with industry, academia and research organizations.
- M3: To foster an environment of excellence in theoretical and applied research evident through product development, patents, projects, publications in SCI and WOS journals, books and conferences.
- M4: To participate in the development of the nation through social and ethical commitments by promising innovation, research and entrepreneurship.

SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO 1: Implement the acquired sound technical knowledge in core and specialized subjects of Electronics & Communication Engineering to be creative and innovative in solving engineering problems in the current scenario.
- PEO 2: Professionally competent with a high degree of employability in National and International Industries with the ability to handle any complicated technical issues.
- PEO 3: Induce critical thinking with the awareness of recent and future technological developments to contribute effectively towards Research and Development.
- PEO4: Inculcate Life-long learning, Collective responsibility, Managerial capabilities and Leadership qualities by adapting to new technologies for societal benefits.

SCHOOL OF ENGINEERING DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAMME OUTCOMES (POs)

- PO 1: *Engineering Knowledge:* Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO 2: *Problem Analysis:* Identity, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3: *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.
- PO 4: *Conduct Investigations of Complex Problems:* Use researchbased knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions
- PO 5: *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.

- PO 6: *The Engineering 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.
- PO 7: *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.
- PO 8: *Ethics:* Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO 9: *Individual and Team Work:* Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO 10: *Communication:* 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.
- PO 11: *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.
- PO 12: *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.

SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- PSO 1: Design and analyze the concepts and applications in the field of Communication, Cognitive Networks, Signal & Image processing, Embedded systems, Data Science and Artificial Intelligence to find solutions to the real-world problems.
- PSO 2: Demonstrate the acquired professional and competitive skills for successful carrier, demonstrating the practice of Professional Ethics and the concerns for Social and Environmental impact technologies.

COMPETANCIES AND PERFORMANCE INDICATORS

PO 1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

1.1	Demonstrate competence in mathematical	1.1.1	Apply mathematical techniques such as Calculus, Linear Algebra, Probability theory and Random process, Fourier series, Fourier Transform, Laplace Transform, and Z-Transform to solve problems.
	modennig	1.1.2	Apply advanced mathematical techniques to model and solve Electronics and Communication engineering problems.
1.2	Demonstrate competence in basic sciences	1.2.1	Apply laws of natural science to an engineering problem.
1.3	Demonstrate competence in engineering fundamentals	1.3.1	Apply fundamental engineering concepts to solve engineering problems
1.4	Demonstrate competence in specialized engineering knowledge to the program	1.4.1	Apply Electronics and Communication engineering concepts to solve engineering problems.

PO 2: Problem Analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

	Demonstrate an ability to	2.1.1	2.1.1 Articulate problem statements and identify
			objectives
		212	2.1.2 Identify engineering systems, variables, and
2.1	complex engineering	4.1.4	parameters to solve the problems
	problem		2.1.3 Identify the mathematical, engineering and
	problem	2.1.3	other relevant knowledge that applies to a given
			problem
	Demonstrate an ability to formulate a solution plan and methodology for an engineering problem	221	Reframe complex problems into interconnected
		4.4.1	sub-problems
		2.2.2	Identify, assemble and evaluate information and
			resources.
2.2		2.2.3	Identify existing processes/solution methods for
			solving the problem, including forming justified
			approximations and assumptions
		224	Compare and contrast alternative solution
		2.2.4	processes to select the best process.

2.3	Demonstrate an ability to formulate and interpret a model	2.3.1	Combine scientific principles and engineering concepts to formulate model/s (mathematical or otherwise) of a system or process that is appropriate interms of applicability and required accuracy.
		2.3.2	Identify assumptions (mathematical and physical) necessary to allow modeling of a system at the level of accuracy required.
2.4	Demonstrate an ability to execute a solution process and analyze results	2.4.1	Apply engineering mathematics and computations to solve mathematical models
		2.4.2	Produce and validate results through skillful use of contemporary engineering tools and models
		2.4.3	Identify sources of error in the solution process, and limitations of the solution.
		2.4.4	Extract desired understanding and conclusions consistent with objectives and limitations of the analysis

PO 3: 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 public health and safety, and cultural, societal, and environmental considerations.

		3.1.1	Recognize that need analysis is key to good
		212	Elicit and document, engineering requirements
		3.1.2	from stakeholders
		3.1.3	Synthesize engineering requirements from a
3.1	Demonstrate an ability to define a complex/ open- ended problem in engineering terms	3.1.4	Extract engineering requirements from relevant engineering Codes and Standards such as IEEE, ISO, ITU-R, ITU-T etc.
		3.1.5	Explore and synthesize engineering requirements considering health, safety risks, environmental, cultural and societal issues
		3.1.6	Determine design objectives, functional requirements and arrive at specifications
3.2	Demonstrate an ability to generate a diverse set of alternative design solutions	3.2.1	Apply formal idea generation tools to develop multiple engineering design solutions
		3.2.2	Build models/prototypes to develop a diverse set of design solutions
		3.2.3	Identify suitable criteria for the evaluation of alternate design solutions

2.2	Demonstrate an ability to select an optimal design scheme for further development	3.3.1	Apply formal decision-making tools to select optimal engineering design solutions for further development
3.3		3.3.2	Consult with domain experts and stakeholders to select candidate engineering design solution for further development
3.4 Demor design	Demonstrate an ability to	3.4.1	Refine a conceptual design into a detailed design within the existing constraints (of the resources)
	advance an engineering design to defined end state 3.4.	3.4.2	Generate information through appropriate tests to improve or revise the design

PO 4: Conduct Investigations of Complex Problems: 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.

4.1 Dem cond tech with kno und	Demonstrate an ability to conduct investigations of technical issues consistent with their level of knowledge and understanding	4.1.1	Define a problem, its scope and importance for purposes of investigation
		4.1.2	Examine the relevant methods, tools and techniques of experiment design, system calibration, data acquisition, analysis and presentation
		4.1.3	Apply appropriate instrumentation and/or software tools to make measurements of physical quantities
		4.1.4	Establish a relationship between measured data and underlying physical principles.
4.2	Demonstrate an ability to design experiments to solve open-ended problems	4.2.1	Design and develop an experimental approach, specify appropriate equipment and procedures
		4.2.2	Understand the importance of the statistical design of experiments and choose an appropriate experimental design plan based on the study objectives
	4.3 Demonstrate an ability to analyze data and reach a valid conclusion	4.3.1	Use appropriate procedures, tools and techniques to conduct experiments and collect data
4.3		4.3.2	Analyze data for trends and correlations, stating possible errors and limitations
		4.3.3	Represent data (in tabular and/or graphical forms) so as to facilitate analysis and explanation of the data, and drawing of conclusions
		4.3.4	Synthesize information and knowledge about the problem from the raw data to reach appropriate conclusions

PO 5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

5.1	Demonstrate an ability to identify/ create modern	5.1.1	Identify modern engineering tools and techniques and resources for engineering activities.
	engineering tools, techniques and resources	5.1.2	Create/adapt/modify/extend tools and techniques to solve engineering problems
5.2	Demonstrate an ability to select and apply discipline- specific tools, techniques, and resources	5.2.1	Identify the strengths and limitations of tools for (i) acquiring information, (ii) modeling and simulating, (iii) monitoring system performance, and (iv) creating engineering designs. Demonstrate proficiency in using discipline- specific tools
5.3	Demonstrate an ability to evaluate the suitability	5.3.1	Discuss limitations and validate tools, techniques, and resources
	and limitations of tools used to solve an engineering problem	5.3.2	Verify the credibility of results from tool use with reference to the accuracy and limitations, and the assumptions inherent in their use.

PO 6: 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.

6.1	Demonstrate an ability to describe engineering roles in a broader context, e.g. pertaining to the environment, health, safety, legal and public welfare	6.1.1	Identify and describe various engineering roles; particularly as pertains to protection of the public and public interest at the global, regional and local level
6.2	Demonstrate an understanding of professional engineering regulations, legislation and standards	6.2.1	Interpret legislation, regulations, codes, and standards relevant to your discipline and explain its contribution to the protection of the public

PO 7: Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and the need for sustainable development.

7.1 UI in	Demonstrate an inderstanding of the mpact of engineering and	7.1.1	Identify risks/impacts in the life-cycle of an engineering product or activity
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	industrial practices on social, environmental and in economic contexts	7.1.2	Understand the relationship between the technical, socio-economic and environmental dimensions of sustainability
	7.2 Demonstrate an ability to apply principles of sustainable design and development	7.2.1	Describe management techniques for sustainable development
7.2		7.2.2	Apply principles of preventive engineering and sustainable development to an engineering activity or product relevant to the discipline

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

8.1	Demonstrate an ability to recognize ethical dilemmas	8.1.1	Identify situations of unethical professional conduct and propose ethical alternatives
8.2	Demonstrate an ability to apply the Code of Ethics	8.2.1	Identify tenets of the IEEE professional code of ethics.
		8.2.2	Examine and apply moral & ethical principles to known case studies

PO 9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

9.1	Demonstrate an ability to form a team and define a role for each member	9.1.1	Recognize a variety of working and learning preferences; appreciate the value of diversity on a team
		9.1.2	Implement the norms of practice (e.g., rules, roles, charters, agendas, etc.) of effective team work, to accomplish a goal.
9.2	Demonstrate effective individual and team operations- communication, problem- solving, conflict resolution and leadership	9.2.1	Demonstrate effective communication, problem- solving, conflict resolution and leadership skills
		9.2.2	Treat other team members respectfully
		9.2.3	Listen to other members
	skills	9.2.4	Maintain composure in difficult situations
9.3	Demonstrate success in a team-based project	9.3.1	Present results as a team, with smooth integration of contributions from all individual efforts

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with the 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

10.1	Demonstrate an ability to comprehend technical	10.1.1	Read, understand, and interpret technical and non- technical information.		
	literature and document	10.1.2	Produce clear, well-constructed, and well-		
	project work	10.1.2	supported written engineering documents.		

		10.1.3	Create flow in a document or presentation - a logical progression of ideas so that the main point is clear.
10.2	Demonstrate competence in listening, speaking, and presentation	10.2.1	Listen to and comprehend information, instructions, and viewpoints of others
		10.2.2	Deliver effective oral presentations to technical and non-technical audiences
10.3	Demonstrate the ability to	10.3.1	Create engineering-standard figures, reports and drawings to complement writing and presentations
10.3	of communication	10.3.2	Use a variety of media effectively to convey a message in a document or a presentation

PO 11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

	Demonstrate an ability to	11.1.1	Describe various economic and financial costs/benefits of an engineering activity		
11.1	financial performance of an engineering activity	11.1.2	Analyze different forms of financial statements to evaluate the financial status of an engineering project		
11.2	Demonstrate an ability to compare and contrast the costs/benefits of alternate proposals for an engineering activity	11.2.1	Analyzeandselectthemostappropriateproposalbase doneconomicandfinancial considerations.		
11.3	Demonstrate an ability to plan/manage an engineering activity within time and budget constraints	11.3.1	Identify the tasks required to complete an engineering activity, and the resources required to complete the tasks.		
		11.3.2	Use project management tools to schedule an engineering project, so it is completed on time and on budget.		

PO 12: Life-Long Learning: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

12.1	Demonstrate an ability to	12.1.1	Describe the rationale for the requirement for continuing professional development
	knowledge and a strategy to close these gaps	12.1.2	Identify deficiencies or gaps in knowledge and demonstrate an ability to source information to close this gap
12.2	Demonstrate an ability to identify changing trends	12.2.1	Identify historic points of technological advance in engineering that required practitioners to seek education in order to stay current

	in engineering knowledge and practice	12.2.2	Recognize the need and be able to clearly explain why it is vitally important to keep current
12.3	Demonstrate an ability to identify and access sources for new information	12.3.1	Source and comprehend technical literature and other credible sources of information
		12.3.2	Analyze sourced technical and popular information for feasibility, viability, sustainability, etc.

PSO 1: Design and analyze the concepts and applications in the field of Communication, Cognitive Networks, Signal & Image processing, Embedded systems, Data Science and Artificial Intelligence to find solutions to the real world problems.

13.1	Demonstrate an ability to investigate complex problems	13.1.1	Identify problem statements in the various applications of Electronics and Communication Techniques
13.1		13.1.2	Articulate the problems to the listeners with probable solutions for the same
	Demonstrate an ability to design and evaluate solutions systematically	13.2.1	Systematically evaluate and choose the optimal solution
13.2		13.2.2	Investigate all the probable solutions towards the solution of the identified problem
		13.2.3	Specify the design tools that may help in finding the solution

PSO 2: Demonstrate the acquired professional and competitive skills for successful carrier, demonstrating the practice of Professional Ethics and the concerns for Social and Environmental impacttechnologies.

	Demonstrate an ability to	14.1.1	Describe the rationale forchoosing solutions based on engineering principles		
14.1	develop solutions using engineering principles and practices	14.1.2	Conduct feasibility analysis, cost-benefit analysis for finding solutions		
14.2	Demonstrate an ability to understand the social and economic impact of technology	14.2.1	Design solutions for engineering problems by considering its effect and society and environment		
		14.2.2	Recognize the economic impact of the various process and methods in designing solutions.		

Members of Board of Studies

S. NO	NAME	AFFILIATION	ROLE
1.	Dr. V. Rajendran	Professor & Director /ECE	Convener
2.	Dr. P. Vijayakumar	Professor, School of Electronics Engineering, Vellore Institute of Technology, Chennai.	Academic Expert
3.	Dr. R. Srinivasan	Scientist- F, Ocean Electronics Group National Institute of Ocean Technology (NIOT), Pallikaranai, Chennai.	Industrial Expert
4.	Mr. S. Mahesh	NFVi – Cloud Infrastructure Engineer, Nokia Solution Network Pvt Ltd, Navalur, Chennai.	Alumni
5.	Dr. S. Jerritta	Professor and Head/ECE	Member
6.	Dr. G. R. Jothilakshmi	Professor/ECE	Member
7.	Mr. C. Arul Stephen	Assistant Professor/ECE	Member
8.	Dr. T. Jaya	Associate Professor/ECE	Member
9.	Dr. A. Vijayalakshmi	Professor/ECE	Member
10.	Dr. R. Kumudham	Associate Professor/ECE	Member

B.E. – ELECTRONICS AND COMMUNICATION ENGINEERING COURSES OF STUDY AND SCHEME OF ASSESSMENT (MINIMUM CREDITS TO BE EARNED: 170)

Category	SEMESTER I		Hou	Max	Maximum Marks			
	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total
BSC	Chemistry	3	-	-	3	40	60	100
BSC	Mathematics-I (Calculus and Linear Algebra)	3	1	-	4	40	60	100
ESC	Programming for Problem solving	3	-	-	3	40	60	100
ESC	Basic Civil and Mechanical Engineering	3	-	-	3	40	60	100
ESC	Workshop and Manufacturing Practices	1	-	4	3	40	60	100
BSC	Chemistry Laboratory	-	-	2	1	40	60	100
ESC	Programming for problem solving Laboratory	-	-	2	1	40	60	100
МС	Student Induction Program	-	-	-	-	-	-	-
MC	Universal Human Values: Understanding Harmony	2	-	-	-	-	-	100
		15	1	8	18			

CA - Continuous Assessment

SEE - Semester End Examination

Category	SEMESTER II		Hours/	Weeks		Maximum Marks		
	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total
HSC	English	2	-	-	2	40	60	100
BSC	Physics (Oscillations Waves and Optics)	3	-	-	3	40	60	100
BSC	Mathematics-II (Calculus, Ordinary Differential Equations and Complex Variable)	3	1	-	4	40	60	100
ESC	Basic Electrical and Electronics Engineering	3	-	-	3	40	60	100
ESC	Engineering Graphics & Design	1	-	4	3	40	60	100
HSC	English Laboratory	-	-	2	1	40	60	100
BSC	Physics Laboratory	-	-	2	1	40	60	100
ESC	Basic Electrical and Electronics Engineering Laboratory	-	-	2	1	40	60	100
MC	Constitution of India	2	-	-	-	-	-	100
		14	1	10	18			

CA - Continuous Assessment

Category	SEMESTER III	Hours/Weeks					Maximum Marks			
	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total		
BSC	Mathematics-III (Fourier Series and Transforms)	3	1	-	4	40	60	100		
PCC	Signals and Systems	3	-	-	3	40	60	100		
PCC	Electronic Devices	3	1	-	4	40	60	100		
PCC	Digital System Design	3	1	-	4	40	60	100		
PCC	Network Theory	3	-	2	4	40	60	100		
PCC	Electronic Devices Laboratory	-	-	2	1	40	60	100		
PCC	Digital System Design Laboratory	-	-	2	1	40	60	100		
HSC	Personality Development-I	2	-	-	2	40	60	100		
MC	Basic Life Skills	2	-	-	-	-	-	100		
		19	3	6	23					

CA - Continuous Assessment

SEE - Semester End Examination

Category	SEMESTER IV		Hours	Maximum Marks				
	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total
BSC	Mathematics-IV (Probability and Random Processes)	3	1	-	4	40	60	100
PCC	Control Systems	3	-	-	3	40	60	100
PCC	Communication Systems	3	-	-	3	40	60	100
PCC	Analog Electronic Circuits	3	-	-	3	40	60	100
PCC	Linear Integrated Circuits	3	-	2	4	40	60	100
PCC	Communication Systems Laboratory	-	-	2	1	40	60	100
PCC	Analog Electronic Circuits Laboratory	-	-	2	1	40	60	100
HSC	Personality Development - II	2	-	-	2	40	60	100
BSC	Environmental Science and Engineering	3	-	-	3	40	60	100
МС	Gender, Institution and Society	2	-	-	-	-	-	100
		22	1	6	24			

CA - Continuous Assessment

	SEMESTER V		Hours	/Weeks		Max	timum I	Marks
Category	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total
PCC	Electromagnetic Waveguides and Applications	3	1	-	4	40	60	100
PCC	Digital Signal Processing	3	1	-	4	40	60	100
PEC	Professional Elective Course - I	3	-	-	3	40	60	100
OEC	Open Elective Course - I	3	-	-	3	40	60	100
РСС	Microprocessors and Microcontrollers	3	-	2	4	40	60	100
РСС	Electromagnetic Waveguides and Applications Laboratory	-	-	2	1	40	60	100
PCC	Digital Signal Processing Laboratory	-	-	2	1	40	60	100
HSC	Personality Development - III	2	-	-	2	40	60	100
РСС	Industrial Training/ Mini Project / MOOC Course (NPTEL/ SWAYAM / Course Era/ Mathworks) - Minimum 4 weeks	-	-	4	2	-	-	100
		17	2	10	24			

CA - Continuous Assessment

SEE - Semester End Examination

Category	SEMESTER VI	Hours/Weeks				Maximum Marks		Marks
Category	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total
PCC	VLSI Design	3	-	-	3	40	60	100
PCC	Computer Networks	3	-	-	3	40	60	100
PEC	Professional Elective Course - II	3	-	-	3	40	60	100
PEC	Professional Elective Course - III	3	-	2	4	40	60	100
OEC	Open Elective Course - II	3	-	-	3	40	60	100
PCC	Computer Networks Laboratory	-	-	2	1	40	60	100
PCC	VLSI Design Laboratory	-	-	2	1	40	60	100
HSC	Personality Development - IV	2	-	-	2	40	60	100
PCC	Summer Internship (4 weeks)	-	-	4	2	-	-	100
		17	0	10	22			

CA - Continuous Assessment

Category	SEMESTER VII		Hours/	/Weeks		May	kimum N	Aarks
Category	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total
PCC	Optical and Microwave Engineering	3	-	-	3	40	60	100
OEC	Open Elective Course - III	3	-	-	3	40	60	100
OEC	Open Elective Course - IV	3	-	-	3	40	60	100
PEC	Professional Elective Course - IV	3	-	-	3	40	60	100
PEC	Professional Elective Course - V	3	-	2	4	40	60	100
PCC	Optical and Microwave Laboratory	-	-	2	1	40	60	100
Project	Project Phase - I	-	-	10	5	40	60	100
		15	0	12	22			

CA - Continuous Assessment

SEE - Semester End Examination

Category	SEMESTER VIII	Hours/Week				Maximum Marks		
	Course Title	Lecture	Tutorial	Practical	Credits	CA	SEE	Total
PEC	Professional Elective Course -VI	3	-	-	3	40	60	100
OEC	Open Elective Course - V	3	-	-	3	40	60	100
OEC	Open Elective Course - VI	3	-	-	3	40	60	100
Project	Project Phase - II	-	-	20	10	40	60	100
		9	0	20	19			

CA - Continuous Assessment

LIST OF COURSES

HUMANITIES AND SOCIAL SCIENCES

Codo No	Course Title		Cradita		
Code No.	Course Inte	Lecture	Tutorial	Practical	Credits
HSC-01	English	2	-	-	2
HSC-02	English Laboratory	-	-	2	1
HSC-03	Personality Development-I	2	-	-	2
HSC-04	Personality Development-II	2	-	-	2
HSC-05	Personality Development-III	2	-	-	2
HSC-06	Personality Development-IV	2	-	-	2

BASIC SCIENCES

Code No	Course Title]	k	Credits	
Code No.	Course Title	Lecture	Tutorial	Practical	Creatts
BSC-01	Chemistry	3	-	-	3
BSC-02	Mathematics-I (Calculus and Linear Algebra)	3	1	-	4
BSC-03	Chemistry Laboratory	-	-	2	1
BSC-04	Physics (Oscillations, Waves and Optics)	3	-	-	3
BSC-05	Mathematics-II (Calculus, Ordinary Differential Equations and Complex Variable)	3	1	-	4
BSC-06	Physics Laboratory	-	-	2	1
BSC-07	Mathematics-III (Fourier Series and Transforms)	3	1	-	4
BSC-08	Mathematics-IV (Probability and Random Processes)	3	1	-	4
BSC-09	Environmental Science and Engineering	3	-	-	3

Codo No	Course Title	I	Credits		
Coue No.	Course The	Lecture	Tutorial	Practical	Creatis
ESC01	Programming for Problem Solving	3	-	-	3
ESC-02	Basic Civil and Mechanical Engineering	3	-	-	3
ESC-03	Workshop and Manufacturing Practices	1	-	4	3
ESC-04	Programming for Problem Solving Laboratory	-	-	2	1
ESC05	Basic Electrical and Electronics Engineering	3	-	-	3
ESC-06	Engineering Graphics & Design	1	-	4	3
ESC07	Basic Electrical and Electronics Engineering Laboratory	-	-	2	1

ENGINEERING SCIENCES

PROFESSIONAL CORE COURSES

Code No	Course Title	H	k	Credits	
Coue No.	Course The	Lecture	Tutorial	Practical	Creuits
PCC-01	Signals and Systems	3	-	-	3
PCC-02	Electronic Devices	3	1	-	4
PCC-03	Digital System Design	3	1	-	4
PCC-04	Network Theory	3	-	2	4
PCC-05	Electronic Devices Laboratory	-	-	2	1
PCC-06	Digital System Design Laboratory	-	-	2	1
PCC-07	Control Systems	3	-	-	3
PCC-08	Communication Systems	3	-	-	3
PCC-09	Analog Electronic Circuits	3	-	-	3
PCC-10	Linear Integrated Circuits	3	-	2	4
PCC-11	Communication Systems Laboratory	-	-	2	1
PCC-12	Analog Electronic Circuits Laboratory	-	-	2	1
PCC-13	Electromagnetic Waveguides and Applications	3	1	-	4
PCC-14	Digital Signal Processing	3	1	-	4
PCC-15	Microprocessors & Microcontrollers	3	-	2	4
PCC-16	Electromagnetic Waveguides and Applications Laboratory	-	-	2	1
PCC-17	Digital Signal Processing Laboratory	-	-	2	1

PCC-18	Industrial Training/ Mini Project/ MOOC Course (NPTEL/ SWAYAM/ Coursera / Mathworks) - Minimum 4 weeks	-	-	4	2
PCC-19	VLSI Design	3	-	-	3
PCC-20	Computer Networks	3	-	-	3
PCC-21	Computer Networks Laboratory	-	-	2	1
PCC-22	VLSI Design Laboratory	-	-	2	1
PCC-23	Summer Internship (4 weeks)	-	-	4	2
PCC-24	Optical and Microwave Engineering	3	-	-	3
PCC-25	Optical and Microwave Laboratory	-	-	2	1

PROFESSIONAL ELETIVE COURSES

Code No.	Course Title	Н	ek	Credits	
Couc 110.	course rule	Lecture	Tutorial	Practical	Creatis
PEC-01	Antennas and Wave Propagation	3	-	-	3
PEC-02	Microstrip Antennas	3	-	-	3
PEC-03	Mobile Communication and Networks	3	-	-	3
PEC-04	Information Theory and Coding	3	-	-	3
PEC-05	Adaptive Signal Processing	3	-	-	3
PEC06	Digital Image and Video Processing	3	-	-	3
PEC07	Wavelet Transforms and Techniques	3	-	-	3
PEC-08	Introduction to MEMS	3	-	-	3
PEC-09	Bio-Medical Electronics	3	-	-	3
PEC-10	CMOS Design	3	-	-	3
PEC–11	High Speed Electronics	3	-	-	3
PEC-12	Nano Electronics	3	-	-	3
PEC-13	Transmission Lines and Waveguides	3	-	-	3
PEC-14	Electromagnetic Interference and Compatibility	3	-	-	3
PEC-15	Computer Architecture and Organization	3	-	-	3

PEC-16	Wireless Networks	3	-	-	3
PEC-17	Mobile Ad-hoc Networks	3	-	-	3
PEC–18	Satellite Communication	3	-	-	3
PEC-19	Wireless Sensor Networks	3	-	-	3
PEC-20	Cognitive Radio Networks	3	-	-	3
PEC-21	Cryptography and Network Security	3	-	-	3
PEC-22	Medical Signal and Image Processing	3	-	-	3
PEC-23	Embedded Systems	3	-	-	3
PEC–24	Electronic System Design	3	-	-	3
PEC-25	Robotics	3	-	-	3
PEC-26	Optical Network	3	-	-	3
PEC-27	Underwater Communication Systems	3	-	-	3
PEC-28	Software Defined Networks	3	-	-	3
PEC-29	High Speed Networks	3	-	-	3
PEC-30	Quantum Mechanics	3	-	-	3
PEC-31	5G and Beyond 5G	3	-	-	3
PEC-32	Advanced Mobile Communication	3	-	-	3
PEC-33	Professional Ethics in Engineering	3	-	-	3

PROJECT/DISSERTATION

Code No.	Course Title		Credite		
		Lecture	Tutorial	Practical	Creans
Project-01	Project Phase-I	-	-	10	5
Project-02	Project Phase-II	-	-	20	10

MANDATORY COURSES

Code No.	Course Title	Hours / Week			Credite
		Lecture	Tutorial	Practical	Creuits
MC-01	Student Induction Program	-	-	-	-
MC-02	Universal Human Values: Understanding Harmony	2	-	-	-
MC-03	Constitution of India	2	-	-	-
MC-04	Basic Life Skills	2	-	-	-
MC-05	Gender, Institution and Society	2	-	-	-

OPEN ELECTIVES

Code No.	Course Title	Hours / Week			Credita
		Lecture	Tutorial	Practical	Creans
OEC-01	High Speed Networks	3	-	-	3
OEC-02	Mobile Ad-hoc Networks	3	-	-	3
OEC-03	Remote Sensing	3	-	-	3
OEC-04	Robotics	3	-	-	3
OEC-05	Satellite Communication	3	-	-	3
OEC-06	Wireless Sensor Networks	3	-	-	3
OEC-07	Introduction to MATLAB	3	-	-	3
OEC-08	Radar and Navigational Aids	3	-	-	3
OEC-09	Cognitive Radio Networks	3	-	-	3
OEC-10	Cryptography and Network Security	3	-	-	3
OEC-11	Medical Signal and Image Processing	3	-	-	3
OEC-12	VHDL and Verilog HDL Programming	3	-	-	3
OEC-13	Electronic Devices and Circuits	3	-	-	3
OEC-14	Analog and Digital Communication	3	-	-	3
OEC-15	Embedded Systems	3	-	-	3
OEC-16	VLSI Circuits	3	-	-	3
OEC-17	Advanced Digital Signal Processing	3	-	-	3
OEC-18	5G based Internet of Things	3	-	-	3
OEC-19	Digital Image processing	3	-	-	3
OEC-20	Wavelet Transforms and Techniques	3	-	-	3
OEC-21	Microcontroller based System Design	3	-	-	3
OEC-22	Digital Electronics	3	-	-	3
OEC-23	Digital Signal Processing	3	-	-	3