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

B.Tech. Electronics and Computer Engineering

Curriculum and Syllabus

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 research-based 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.**

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO 1: **Design and analyze the concepts and applications in the field of Electronics, Cognitive Networks, Data Structure, Computer Architecture, Data Science and Artificial Intelligence to find solutions to the real-world problems.**

PSO 2: **Demonstrate the acquired professional and competitive skills for successful career, 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 modelling	1.1.1	Apply mathematical techniques such as Calculus, Linear Algebra, Probability theory and Random process, Fourier series, Fourier Transform, and Statistics to solve problems.
		1.1.2	Apply advanced mathematical techniques to model and solve Electronics and Computer engineering problems.
1.2	Demonstrate competence in basic sciences	1.2.1	Apply laws of natural science to a computing engineering problem.
1.3	Demonstrate competence in engineering fundamentals	1.3.1	Apply fundamental computing concepts to solve engineering problems
1.4	Demonstrate competence in specialized engineering knowledge to the program	1.4.1	Apply Electronics and Computer 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.			
2.1	Demonstrate an ability to identify and formulate complex engineering problem	2.1.1	2.1.1 Articulate problem statements and identify objectives
		2.1.2	2.1.2 Identify engineering systems, variables, and parameters to solve the problems
		2.1.3	2.1.3 Identify the mathematical, engineering and other relevant knowledge that applies to a given problem
2.2	Demonstrate an ability to formulate a solution plan and methodology for an engineering problem	2.2.1	Reframe complex problems into interconnected sub-problems
		2.2.2	Identify, assemble and evaluate information and resources.
		2.2.3	Identify existing processes/solution methods for solving the problem, including forming justified approximations and assumptions
		2.2.4	Compare and contrast alternative solution processes to select the best process.

2.3	Demonstrate an ability to formulate and interpret a model	2.3.1	Combine scientific principles and computer 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	Demonstrate an ability to define a complex/ open- ended problem in engineering terms	3.1.1	Recognize that need analysis is key to good problem definition
		3.1.2	Elicit and document, engineering requirements from stakeholders
		3.1.3	Synthesize engineering requirements from a review of the state-of-the-art
		3.1.4	Extract engineering requirements from relevant Electronics and Computer 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

3.3	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
		3.3.2	Consult with domain experts and stakeholders to select candidate engineering design solution for further development
3.4	Demonstrate an ability to advance an engineering design to defined end state	3.4.1	Refine a conceptual design into a detailed design within the existing constraints (of the resources)
		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	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
		4.3.2	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 engineering tools, techniques and resources	5.1.1	Identify modern Computer engineering tools and techniques and resources for engineering activities.
		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.
		5.2.2	Demonstrate proficiency in using discipline-specific tools
5.3	Demonstrate an ability to evaluate the suitability and limitations of tools used to solve an engineering problem	5.31	Discuss limitations and validate tools, techniques and resources
		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	Demonstrate an understanding of the impact of engineering and industrial practices on social, environmental and in economic contexts	7.1.1	Identify risks/impacts in the life-cycle of an engineering product or activity
		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
		7.2.2	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 leadershipskills	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
		9.2.4	Maintain composure in difficult situations
9.3	Demonstrate success ina 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 literature and document project work	10.1.1	Read, understand and interpret technical and non-technical information.
		10.1.2	Produce clear, well-constructed, and well-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 integrate different modes of communication	10.3.1	Create engineering-standard figures, reports and drawings to complement writing and presentations
		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.			
11.1	Demonstrate an ability to evaluate the economic and financial performance of an engineering activity	11.1.1	Describe various economic and financial costs/benefits 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	Analyzeandselectthemostappropriateproposalbased oneconomicandfinancial 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 identify gaps in knowledge and a strategy to close these gaps	12.1.1	Describe the rationale for the requirement for continuing professional development
		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 in engineering knowledge and practice	12.2.1	Identify historic points of technological advance in engineering that required practitioners to seek education in order to stay current
		12.2.2	Recognize the need and be able to clearly explain why it is vitally important to keep current regarding new developments in your field.
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
		13.1.2	Articulate the problems to the listeners with probable solutions for the same

13.2	Demonstrate an ability to design and evaluate solutions systematically	13.2.1	Systematically evaluate and choose the optimal solution
		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 impact technologies.			
14.1	Demonstrate an ability to develop solutions using engineering principles and practices	14.1.1	Describe the rationale for choosing solutions based on engineering principles
		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 of the Board Member	Designation	Role
1	Dr. V. Rajendran	Professor & Director, Dept of ECE, VISTAS	Convenor
2	Dr. P. Vijayakumar	Professor, Department of Electronics Engineering, Vellore Institute of Technology, Chennai	Academic Expert
3	Dr. R. Srinivasan	Scientist – F, Ocean Electronics Group, National Institute of Ocean Technology, Chennai.	Industrial Expert
4	Mr. Mahesh S	NFVi - Cloud Infrastructure Engineer, Nokia Solution Network Pvt Ltd, Chennai	Alumni
5	Dr. S. Jerritta	Professor & HoD, Dept. of ECE	Internal Expert
6	Dr. G.R. Jothilakshmi	Associate Professor Dept. of ECE	Internal Expert
7	Dr. T. Jaya	Associate Professor Dept. of ECE	Internal Expert
8	Dr. P. Vijayalakshmi	Associate Professor, Dept. of ECE	Internal Expert
9	Dr. M. Monisha	Assistant Professor, Dept. of ECE	Internal Expert

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

	SEMESTER I	Hours/Weeks				Maximum Marks		
Category	**Course Title**	**Lecture**	**Tutorial**	**Practical**	**Credits**	**CA**	**SEE**	**Total**
BSC	Engineering 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	Basics of 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
MC	Student Induction Program	-	-	-	-	-	-	-
MC	Universal Human Values	2	-	-	-			100
		14	**2**	**10**	**18**			

	SEMESTER II	Hours/Weeks				Maximum Marks		
Category	**Course Title**	**Lecture**	**Tutorial**	**Practical**	**Credits**	**CA**	**SEE**	**Total**
HSC	English	2	-	-	2	40	60	100
BSC	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 and 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 **SEE - Semester End Examination**

	SEMESTER III	Hours/Weeks				Maximum Marks		
Category	**Course Title**	**Lecture**	**Tutorial**	**Practical**	**Credits**	**CA**	**SEE**	**Total**
BSC	Mathematics-III (Fourier Series and Transforms)	3	1	-	4	40	60	100
PCC	Introduction to IoT	3	-	-	3	40	60	100
PCC	Electronic Devices	3	1	-	4	40	60	100
PCC	Digital Electronics	3	-	2	4	40	60	100
PCC	Data Structures	3	1	-	4	40	60	100
PCC	Electronic Devices Laboratory	-	-	2	1	40	60	100
PCC	Data Structures and algorithms Laboratory	-	-	2	1	40	60	100
HSC	Personality Development I (Effective Technical Communication)	2	-	-	2	40	60	100
MC	Basic Life Skills	2	-	-	-			100
		19	**3**	**6**	**23**			

	SEMESTER IV	Hours/Weeks				Maximum Marks		
Category	**Course Title**	**Lecture**	**Tutorial**	**Practical**	**Credits**	**CA**	**SEE**	**Total**
BSC	Probability and Random Processes	3	1	-	4	40	60	100
PCC	Operating Systems	3	-	-	3	40	60	100
PCC	Signals and Systems	3	-	-	3	40	60	100
PCC	Database Management Systems	3	-	-	3	40	60	100
PCC	Design and Analysis of Algorithms	3	-	2	4	40	60	100
PCC	Signals and Systems - Laboratory	-	-	2	1	40	60	100
PCC	Database Management Systems 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
MC	Gender, Institution and Society	2	-	-	-	-	-	100
		22	**1**	**6**	**24**	-	-	-

CA - Continuous Assessment **SEE - Semester End Examination**

	SEMESTER V	Hours/Weeks				Maximum Marks		
Category	**Course Title**	**Lecture**	**Tutorial**	**Practical**	**Credits**	**CA**	**SEE**	**Total**
PCC	Data Communication Networks	3	1	-	4	40	60	100
PCC	Introduction to AI & ML	3	-	2	4	40	60	100
PEC	Professional Elective Course– I	3	-	-	3	40	60	100
OEC	Open Elective Course - I	3	-	-	3	40	60	100
PCC	Microprocessors and Microcontrollers	3	1	-	4	40	60	100
PCC	Data Communication Networks Laboratory	-	-	2	1	40	60	100
PCC	Microprocessors and Microcontrollers Laboratory	-	-	2	1	40	60	100
HSC	Personality Development III	2	-	-	2	40	60	100
PCC	Industrial Training/ Mini Project/ MOOC Course (NPTEL/SWAYAM/ Coursera/Mathworks) - Minimum 4 weeks	-	-	4	2			100
		17	**2**	**10**	**24**			

	SEMESTER VI	Hours/Weeks				Maximum Marks		
Category	**Course Title**	**Lecture**	**Tutorial**	**Practical**	**Credits**	**CA**	**SEE**	**Total**
PCC	.Net Programming	3	-	-	3	40	60	100
PCC	Embedded Systems Design	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	.Net Programming Laboratory	-	-	2	1	40	60	100
PCC	Embedded Systems 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 **SEE - Semester End Examination**

	SEMESTER VII	Hours/Weeks				Maximum Marks		
Category	**Course Title**	**Lecture**	**Tutorial**	**Practical**	**Credits**	**CA**	**SEE**	**Total**
PCC	Industrial Electronics and Automation	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	Automation and Robotics Laboratory	-	-	2	1	40	60	100
Project	Project Phase I	-	-	8	5	40	60	100
		15	**0**	**12**	**22**	-	-	-

	SEMESTER VIII	Hours/Week				Maximum Marks		
Category	**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 **SEE - Semester End Examination**

LIST OF COURSES

HUMANITIES AND SOCIAL SCIENCES COURSES (HSC)

Code No.	Course Title	Hours / Week			Credits
		Lecture	Tutorial	Practical	
HSC – 01	English	2	-	-	2
HSC – 02	English Laboratory	-	-	2	1
HSC – 03	Personality Development I (Effective Technical Communication)	2	-	-	2
HSC – 04	Personality Development II	2	-	-	2
HSC – 05	Personality Development III	2	-	-	2
HSC – 06	Personality Development IV	2	-	-	2

BASIC SCIENCE COURSES (BSC)

Code No.	Course Title	Hours / Week			Credits
		Lecture	Tutorial	Practical	
BSC - 01	Chemistry	3	-	-	3
BSC - 02	Calculus and Linear Algebra	3	1	-	4
BSC - 03	Chemistry Laboratory	-	-	2	1
BSC - 04	Oscillations, Waves And Optics	3	-	-	3
BSC - 05	Calculus, Ordinary Differential Equations and Complex Variable	3	1	-	4
BSC - 06	Physics Laboratory	-	-	2	1
BSC - 07	Fourier Series and Transforms	3	1	-	4
BSC - 08	Probability and Random Processes	3	1	-	4
BSC - 09	Environmental Science and Engineering	3	-	-	3

ENGINEERING SCIENCE COURSES (ESC)

Code No.	Course Title	Hours / Week			Credits
		Lecture	Tutorial	Practical	
ESC - 01	Programming for Problem Solving	3	-	-	3
ESC- 02	Basics of Civil and Mechanical Engineering	3	-	-	3
ESC – 03	Workshop and Manufacturing Practices	1	-	4	3
ESC – 04	Programming for Problem Solving Laboratory	-	-	2	1
ESC - 05	Basic Electrical and Electronics Engineering	3	-	-	3
ESC – 06	Engineering Graphics and Design	1	-	4	3
ESC - 07	Basic Electrical and Electronics Engineering Laboratory	-	-	2	1

PROFESSIONAL CORE COURSES (PCC)

Code No.	Course Title	Hours / Week			Credits
		Lecture	Tutorial	Practical	
PCC-01	Introduction to IoT	3	-	-	3
PCC-02	Electronic Devices	3	1	-	4
PCC-03	Digital Electronics	3	1	-	4
PCC-04	Data Structures	3	-	2	4
PCC-05	Electronic Devices Laboratory	-	-	2	1
PCC-06	Data Structures and algorithms Laboratory	-	-	2	1
PCC-07	Operating Systems	3	-	-	3
PCC-08	Signals and Systems	3	-	-	3
PCC-09	Database Management Systems	3	-	-	3
PCC-10	Design and Analysis of Algorithms	3	-	2	4
PCC-11	Signals and Systems - Laboratory	-	-	2	1
PCC-12	Database Management Systems Laboratory	-	-	2	1
PCC-13	Data Communication Networks	3	1	-	4
PCC-14	Introduction to AI & ML	3	1	-	4

PCC-15	Microprocessors & Microcontrollers	3	-	2	4
PCC-16	Data Communication Networks Laboratory	-	-	2	1
PCC-17	Microprocessors & Microcontrollers Laboratory	-	-	2	1
PCC-18	Industrial Training/ Mini Project/ MOOC Course (NPTEL/SWAYAM/Course Era/ Mathworks) - Minimum 4 weeks	-	-	4	2
PCC-19	.Net Programming	3	-	-	3
PCC-20	Embedded System Design	3	-	-	3
PCC-21	Embedded System Design Laboratory	-	-	2	1
PCC-22	.Net Programming Laboratory	-	-	2	1
PCC-23	Summer Internship (4 weeks)	-	-	4	2
PCC-24	Industrial Electronics And Automation	3	-	-	3
PCC-25	Automation And Robotics Laboratory	-	-	2	1

PROFESSIONAL ELECTIVE COURSES

Code No.	Course Title	Hours / Week			Credits
		Lecture	Tutorial	Practical	
PEC–01	Information Theory and Coding	3	-	-	3
PEC–02	Digital Image and Video Processing	3	-	2	4
PEC–03	CMOS Design	3	-	-	3
PEC–04	High Speed Electronics	3	-	-	3
PEC–05	Wireless Networks	3	-	2	4
PEC–06	Mobile Ad-hoc Networks	3	-	-	3
PEC–07	Wireless Sensor Networks	3	-	-	3
PEC–08	Cognitive Radio Networks	3	-	2	4
PEC–09	Cryptography and Network Security	3	-	-	3
PEC–10	Electronic System Design	3	-	-	3
PEC–11	Robotics	3	-	-	3
PEC–12	Optical Network	3	-	-	3

PEC–13	Software Defined Network	3	-	-	3
PEC–14	High Speed Networks	3	-	-	3
PEC–15	Applied Cryptography	3	-	-	3
PEC–16	Big-Data Programming	3	-	2	4
PEC–17	Bioinformatics	3	-	-	3
PEC–18	Cyber Forensics	3	-	-	3
PEC–19	Data Warehousing And Data Mining	3	-	-	3
PEC–20	E- Commerce	3	-	-	3
PEC–21	Ethical Hacking	3	-	-	3
PEC–22	Game Programming	3	-	2	4
PEC–23	Information Retrieval Techniques	3	-	-	3
PEC–24	Object Oriented Analysis And Design	3	-	2	4
PEC–25	Software Engineering	3	-	-	3
PEC–26	Software Project Management	3	-	-	3
PEC–27	User Interface Design and Extension	3	-	2	4
PEC–28	Virtual Reality	3	-	-	3
PEC–29	Agile Methodologies	3	-	-	3
PEC–30	Information Security	3	-	-	3
PEC -31	Java Programming	3	-	-	3
PEC-32	Machine Learning Algorithms	3	-	-	3
PEC-33	Data Science	3	-	-	3
PEC -34	Natural Language Processing	3	-	-	3
PEC-35	Deep Learning	3	-	-	3
PEC -36	Cyber Security	3	-	-	3
PEC -37	Software Defined Radio	3	-	-	3
PEC-38	Cyber Physical Systems	3	-	-	3
PEC -39	Android and Web Development	3	-	-	3
PEC-40	Web of Things	3	-	-	3

PROJECT/DISSERTATION

Code No.	Course Title	Hours / Week			Credits
		Lecture	Tutorial	Practical	
Project–01	Project Phase I	-	-	8	5
Project–02	Project Phase II	-	-	20	10

MANDATORY COURSES

Code No.	Course Title	Hours / Week			Credits
		Lecture	Tutorial	Practical	
MC–01	Student Induction Program	-	-	-	-
MC–02	Universal Human Values – 2	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			Credits
		Lecture	Tutorial	Practical	
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	Internet Of Things	3	-	-	3
OEC–19	Digital Image processing	3	-	-	3
OEC–20	Wavelet Transform	3	-	-	3
OEC–21	Microcontroller based System Design	3	-	-	3
OEC–22	Digital Electronics	3	-	-	3
OEC–23	Digital Signal Processing	3	-	-	3