B.Sc., ELECTRONICS

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ACADEMIC YEAR 2023-2024 ONWARDS

Programme Outcomes

PO1: Disciplinary knowledge: A comprehensive knowledge and understanding phenomena of one or more disciplines that form a part of an undergraduate programme of study

PO2: Communication Skills: Ability to express thoughts and ideas effectively in writing and orally; Communicate with others confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically and present complex information in a clear and concise manner to different groups.

PO3: Critical thinking: Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.

PO4: Problem solving: Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations.

PO5: Analytical reasoning: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyse and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.

PO6: Research-related skills: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation

PO7: Cooperation/Team work: Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team

PO8: Scientific reasoning: Ability to analyseinterprets and draws conclusions from quantitative/qualitative data; and critically evaluates ideas, evidence and experiences from an open-minded and reasoned perspective.

PO9: Reflective thinking: Critical sensibility to lived experiences, with self-awareness and reflexivity of both self and society.

PO10 Information/digital literacy: Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data.

PO 11 Self-directed learning: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion.

PO 12 Multicultural competence: Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.

PO 13: Moral and ethical awareness/reasoning: Ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demonstrating the ability to identify ethical issues related to ones work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work.

PO 14: Leadership readiness/qualities: Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way.

PO 15: Lifelong learning: Ability to acquire knowledge and skills, how to learn, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/reskilling.

Programme Specific Outcomes:

PSO1: Disciplinary Knowledge: Understand the fundamental principles, concepts and theories related to electronics science. Also, exhibit proficiency in performing experiments in the laboratory.

PSO2: Critical Thinking: Analyse complex problems, evaluate information, synthesize information, apply theoretical concepts to practical situations, identify assumptions and biases, make informed decisions and communicate effectively

PSO3: Problem Solving: Employ theoretical concepts and critical reasoning ability with physical, mathematical and technical skills to solve problems, acquire data, analyse their physical significance and explore new design possibilities.

PSO4: Analytical & Scientific Reasoning: Apply scientific methods, collect and analyse data, test hypotheses, evaluate evidence, apply statistical techniques and use computational models.

PSO5: Research related skills: Formulate research questions, conduct literature reviews, design and execute research studies, communicate research findings and collaborate in research projects.

PSO6: Self-directed &Lifelong Learning: Set learning goals, manage their own learning, reflect on their learning, adapt to new contexts, seek out new knowledge, collaborate with others and to continuously improve their skills and knowledge, through ongoing learning and professional development, and contribute to the growth and development of their field.

Core -1 -BASICELECTR ONICDEVICES

Course Outcomes		
Course Outcomes	On completion of this course, students can able to	
CO1	Study the basic semiconductor devices and their characterisation.	PO5, PO6, PO10
CO2	Gain the knowledge of detailed functions of semiconductors.	PO10
CO3	Understand the various types of semiconductor devices behaviours, different types of semiconductors	PO11
CO4	Explain the principles and working mechanism of different types of semiconductors and the scope of application.	PO4, PO11
CO5	Understand the concept of device functionalities andhelp the students to understand the basic electronic devices	PO4, PO11

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					M	M				M	
CO2										M	M
CO3											S
CO4				M							S
CO5				M							S

BASIC ELECTRONIC DEVICES LAB

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Practice with active and passive semiconductor devices	PO4, PO7, PO8, PO9, PO11
CO2	Learn the semiconductor device characteristics.	PO4, PO7, PO8, PO9
CO3	Understand the basic semiconductor components working principles and methodology used inside the laboratory environment	PO4, PO7, PO8, PO9, PO11
CO4	Design, construct the electronic circuits and observe the characteristics.	PO4, PO7, PO8, PO9
CO5	Study and compare semiconductor device characterisation	PO4, PO7, PO8, PO9

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				M			L	M	L		M
CO2				S			L	L	L		
CO3				S			M	M	L		M
CO4				S			M	L	L		
CO5				S			M	L	L		

INTRODUCTION OF C LANGUAGE Allied Course – 1

Course Outcomes		
Course Outcomes	On completion of this course, students can able to:	
CO1	Study the concept of basic C-programming language.	PO5, PO6, PO10
CO2	Gain the knowledge of data types.	PO10
CO3	Understand the various types of statements	PO11
CO4	Define, Explain and Need of a function	PO4, PO11
CO5	Understand the Arrays and Strings of C-program	PO4, PO11

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					M	M				M	
CO2										M	M
CO3											S
CO4				M							S
CO5				M							S

INTRODUCTION OF ROBOTICS AND AUTOMATION - Discipline Specific Elective I(DSE-I)

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Explain the robotics and automation	PO1
CO2	Differentiate the essential and non-essential automation and logic controls	PO1
CO3	Assess the intelligent robots and sensors	PO4, PO5, PO6
CO4	Discuss and evaluate the end effectors	PO4, PO5, PO6
CO5	Appraise the PLC logics	PO5, PO6, PO9

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	M										
CO2	M										
CO3				S	S	S					
CO4				S	S	S					
CO5					S	S			S		

CONSUMER ELECTRONIC APPLIANCES

Skill enhancement Course (SEC-1)

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Identify the consumer electronic application	PO1, PO5, PO6
CO2	Associate various digitally made instruments	PO1, PO2, PO3, PO5, PO6, PO9
CO3	Choose the appropriate digital services	PO1, PO5, PO6

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S				S	S					
CO2	S	S		M	S	S			M		
CO3				M	S	S					
CO4	S			S	S	M					
CO5	S				S	S					

FOUNDATION OF ELECTRONICS& COMPUTERS

Skill enhancement (Foundation Course)

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Identify the basics of computer and electronic applications	PO1, PO5, PO6
CO2	Understand and differentiate the concepts of basic semiconductors	PO1, PO2, PO3, PO5, PO6, PO9
CO3	Learn amplifiers and circuit theory	PO1, PO5, PO6
CO4	Acquire the knowledge of problem-solving concepts	PO4, PO5, PO6
CO5	Recommend the usage of software's in electronic devices	PO1, PO5, PO6

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S				S	S					
CO2	S	S		M	S	S			M		
CO3				M	S	S					
CO4	S			S	S	M					
CO5	S				S	S					

DIGITAL ELECTRONICS

Core Course III

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Describe the outcomes of number systems.	PO6, PO9
CO2	Know the concept of logical families.	PO6, PO7, PO9
CO3	Explain the methods of arithmetic circuits.	PO6, PO9
CO4	Describe latches, registers and memories.	PO6, PO9
CO5	Elaborate on the digital logic families	PO6, PO9

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1						M			M		
CO2						M	L		M		
CO3						M			M		
CO4						M			M		
CO5						M			M		

DIGITAL ELECTRONICS LAB

CORE PRAC TICAL II

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Describe and verify logic gates truth tables.	PO6, PO7, PO8, PO9, PO11
CO2	Demonstrate logic gates using NAND and NOR gates.	PO6, PO7, PO8, PO9, PO11
CO3	Construct and verify theorems.	PO6, PO7, PO8, PO9, PO11
CO4	Demonstrate Adder, Subtractor, Multiplexor, Encoder, Decoder	PO6, PO7, PO8, PO9, PO11
CO5	Describe Flip-flops, shift registers, clock generation using ICs.	PO6, PO7, PO8, PO9, PO11

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1						M	L	M	L		M
CO2						M	M	L	M		L
CO3						L	M	M	L		M
CO4						L	M	M	M		M
CO5						M	M	M	M		M

INTRODUCTION TO PYTHON LANGUAGE

Allied Course – 2 (AL-2)

Course Outcomes		
Course Outcomes	On completion of this course, students can able to:	
CO1	Study the concept of basic python programming language.	PO5, PO6, PO10
CO2	Gain the knowledge of data types.	PO10
CO3	Understand the various types of files and exceptions	PO11
CO4	Define, Explain and Need of python program	PO4, PO11
CO5	Understand the tuples and GUI interfaces of python	PO4, PO11

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					M	M				M	
CO2										M	M
CO3											S
CO4				M							S
CO5				M							S

OPERATIONAL AMPLIFIERS AND ITS APPLICATIONS

Elective Generic /Discipline Specific Elective II

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Gain knowledge about the basics of OPAMP	PO1, PO4, PO11
CO2	Exemplify the applications of OPAMP	PO4, PO10, PO11
CO3	Acquire square wave using different modes of 555 timer IC	PO4, PO7, PO11
CO4	Design application-oriented circuits using Op-amp ICs.	PO7, PO8, PO11
CO5	Understand the non-ideal behaviour by parameter measurement of Op-amp	PO10, PO11

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	L			M							S
CO2				L						M	S
CO3				L			M				S
CO4							S	S			S
CO5										M	S

ELECTRONIC TROUBLE SHOOTING

Skill Enhance ment Course SEC-2 (NME)

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Learn the importance of analog and digital electronic troubleshooting	PO5, PO6, PO7, PO8, PO10
CO2	Study the precautions and preparations of trouble shooting	PO5, PO6, PO7, PO8, PO10
CO3	Know the methods of trouble shooting	PO5, PO6, PO7, PO8, PO10
CO4	Learn the importance and necessary of testing components	PO5, PO6, PO7, PO10
CO5	Create awareness and motivation of starting a new career to service industries	PO5, PO6, PO7, PO10

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					S	M	M	M		S	
CO2					S	M	M	M		S	
CO3					S	M	M	M		S	
CO4					S	S	L			S	
CO5					S	S	M			S	

COMPUTER HARDWARE

Skill Enhanceme nt Course SEC-3

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Discuss the overall aspects of PC Hardware system	PO1, PO5, PO7
CO2	Familiarize with the recent technologies of computer drives.	PO1, PO2
CO3	Explain the hardware system and understand with the latest device practices.	PO1, PO5
CO4	Understand very well about the computer motherboard architectures and peripherals.	PO7, PO8, PO10
CO5	Understand the essentials of computer hardware's	PO5, PO7, PO8

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S				S		S				
CO2	M				S						
CO3	S				S						
CO4							S	S		S	
CO5					S		S	S			