COURSE OUTCOMES (CO) OF ELECTRONICS

SEMESTER – I

Course Code: ELE-100

Course Name: Electronics Devices and Circuits

COURSE OUTCOMES	
CO1	Understand a regulated power supply using rectifiers and filters.
CO2	Learn transistor biasing circuit for class A, B, AB and C amplifier.
CO3	Analyse a system as per the requirements and specifications.
CO4	Learn about FET/MOSFET as amplifier.

Course Code: ELE-111

Course Name: Analog Fundamentals - EDA

COURSE OUTCOMES	
CO1	Define the basic laws in circuit analysis and identify and state the role and functions of various electronic components.
CO2	Understand the working of diode, transistor and apply the same to build dc power supplies and transistor amplifiers.
CO3	Design filters and Oscillators using Op-Amp.
CO4	Develop skills in using EDA tools and analyse the performance of Analog circuits using EDA tools.

Course Code: ELE-131

Course Name: Introduction to Electricity

COURSE OUTCOMES	
CO1	Understand basics of electrical components.
CO2	Understand electrical wiring and safety measures.
CO3	Understand lighting and its applications
CO4	Apply the knowledge and techniques to design wiring and lightning for housing and commercial setup.
CO5	Get self-employed in ever growing battery industr4

Course Code: ELE-141

Course Name: Electronics For Beginners

COURSE OUTCOMES	
CO1	Understand the basics of Electronics.
CO2	Learn to draw schematics and also the implement the circuit on breadboards.
CO3	Implement electronics circuits of practical use.
CO4	Modify the implemented electronics circuits for some applications.

SEMESTER – II

Course Code: ELE-100

Course Name: Electronics Devices and Circuits

COURSE OUTCOMES	
CO1	Understand a regulated power supply using rectifiers and filters.
CO2	Learn transistor biasing circuit for class A, B, AB and C amplifier.
CO3	Analyse a system as per the requirements and specifications.
CO4	Learn about FET/MOSFET as amplifier.

Course Code: ELE-111

Course Name: : Analog Fundamentals - EDA

COURSE OUTCOMES	
CO1	Define the basic laws in circuit analysis and identify and state the role and functions of various electronic components.
CO2	Understand the working of diode, transistor and apply the same to build dc power supplies and transistor amplifiers.
CO3	Design filters and Oscillators using Op-Amp.
CO4	Develop skills in using EDA tools and analyse the performance of Analog circuits using EDA tools.

Course Code: ELE-132

Course Name: : Repair and Maintenance of Domestic Electrical Appliances

COURSE OUTCOMES	
CO1	Acquire the basic knowledge of electricity and domestic wiring.
CO2	Understand the working of basic electrical appliances and their safety precautions.
CO3	Able to do repair and maintenance of the basic electrical appliances.
CO4	Able to do repair and maintenance of the motorized and heating type electrical appliances.

Course Code: ELE-142

Course Name: PCB Designing and Fabrication

COURSE OUTCOMES	
CO1	Explain and describe the steps involved in schematic, layout, fabrication, and assembly process of PCB design.
CO2	Able to design a single- and double-layer PCB
CO3	Able to fabricate the single land double layer PCB
CO4	Able to design and troubleshoot the circuit over PCB.
CO5	Able to design his own circuit for any application.

SEMESTER – III

Course Code: ELE-200

Course Name: Basic Circuit Theory and Network Analysis

COURSE OUTCOMES	
CO1	Explain classification of electrical network circuits and theorems
CO2	Understand the Laplace transforms and s-domain analysis
CO3	Learn the transient response, dc response of RLC networks and different two-port networks
CO4	Apply the knowledge of basic circuit law to simplify the networks using network theorems.

Course Code: ELE-201

Course Name: Linear Integrated Circuits

COURSE OUTCOMES	
CO1	Understand the applications of Op-Amp in linear electronic circuits.
CO2	Analyse the various configurations of Op-Amp
CO3	Learn the filters and oscillators used in various electronic circuits
CO4	Learn to troubleshoot specified applications using various linear ICs

Course Code: ELE-211

Course Name: Digital Fundamentals - EDA

COURSE OUTCOMES	
CO1	Explain classification of digital electronic circuits, the logic gates and logic families.
CO2	Understand Boolean algebra and apply to design, analyse and build various digital circuits
CO3	Learn to Build the sequential circuits and understand the analog and digital converters
CO4	Develop skills in using EDA tools and analyse the performance of digital circuits using EDA tools.

Course Code: ELE-231

Course Name: : Computer troubleshooting and Maintenance

COURSE OUTCOMES	
CO1	Acquire knowledge of Finding Faults in Components
CO2	Install, Configure and maintain various components in computer systems and peripherals.
CO3	Diagnose faults of Different Component
CO4	Repair and maintain computer systems and its peripherals.

SEMESTER – IV

Course Code: ELE-241

Course Name: PLC and HMI

COURSE OUTCOMES	
CO1	Understand working principle PLC, HMI.
CO2	Understand working principle DCS and SCADA.
CO3	Develop necessary skill to implement consumer and industrial based applications using PLC.
CO4	Develop PLC based applications for various appliances and devices.

Course Code: ELE-202

Course Name: 8085 Microprocessor

COURSE OUTCOMES	
CO1	Understand the basics of Microprocessor Architecture.
CO2	Analyze addressing modes, Instruction categories, memory mapping.
CO3	Develop assembly programs using Microprocessor.
CO4	Build a microprocessor system to interface devices

Course Code: ELE-203

Course Name: : Transducers And Instrumentation

COURSE OUTCOMES	
CO1	Explain the Performance characteristics and compare the various types of standards used in measurements.
CO2	Explain the working principle of various transducers.
CO3	Explain the working principle of instruments used in electrical and electronics laboratory.

Course Code: ELE-204

Course Name: Electronic Communication

COURSE OUTCOMES	
CO1	Remember and recognize important terms, ideas and technologies in communication and navigation systems learned during the course.
CO2	Explain the working of various electronic communication techniques, and understand the importance of modulation and the working of navigation systems.
CO3	Analyze communication systems, apply techniques to modulate and demodulate signals.
CO4	Design Circuits for modulation of signal for various applications.

Course Code: ELE-205

Course Name: : Programming in C

COURSE OUTCOMES	
CO1	Define and explain fundamental programming concepts, and apply them to write programs in C
CO2	Develop skills for writing an algorithm and translating in C program to solve a given problem in structured manner.
CO3	Develop skills for writing an algorithm and translating in C program with Control Flow Statements.
CO4	Develop skills for writing an algorithm and translating in C program with Pointers and Structures.

Course Code: ELE-212

Course Name: Robotics

COURSE OUTCOMES	
CO1	Explain the basic concepts in robotics and constituents of the robotic system
CO2	Explain the various sensors and actuators to be used to develop robot applications
CO3	Develop robotic systems for various interfaces.
CO4	Develop robotic systems for various applications.

Course Code: ELE-261

Course Name: Repair and Maintenance of Electrical and Electronics equipment

COURSE OUTCOMES	
CO1	Understand the technical specifications of the equipment.
CO2	Analyze and understand the working principle of electrical and electronic equipment.
CO3	Identify the common faults that occur in electrical and electronic equipment.
CO4	Carry out minor repairs in the equipment

SEMESTER – V

Course Code: ELE-300

Course Name: 8051-Microcontroller

COURSE OUTCOMES	
CO1	Develop good knowledge and core expertise in the field of 8051 microcontroller
CO2	Understand key concepts of embedded systems like I/O, timers, interrupts, interaction with peripheral devices.
CO3	Develop Assembly programs language for Timers/Counters and Serial Communication for 8051.
CO4	Develop embedded systems in real world applications

Course Code: ELE-301

Course Name: Power Electronics

COURSE OUTCOMES	
CO1	Explain the working principle of Power Electronic devices.
CO2	Develop necessary skills for designing various Power Converters.
CO3	Explain the working principle of AC/DC Motors and Other applications of power electronics.
CO4	Demonstrate practical skills in implementing circuits using power electronic devices.

Course Code: ELE-302

Course Name: Operating Syatem

COURSE OUTCOMES	
CO1	Understand the role, responsibilities, features and design of an operating system.
CO2	Analyze the various process scheduling algorithms for uniprocessor, multi-processor and real-time scheduling.
CO3	Evaluate the process deadlock handling techniques
CO4	Understand the design of real time kernels.

Course Code: ELE-303

Course Name: Programming in Python

COURSE OUTCOMES	
CO1	Develop programmes using data types constructs and libraries.
CO2	Develop programming skills complex dataset.
CO3	Develop programming skills using python libraries for pandas.
CO4	Develop programming skills using python libraries for Keras, Tensorflow.

Course Code: ELE-311

Course Name: : Internet of Things & Application

COURSE OUTCOMES	
CO1	Define the fundamental IoT, characteristics, and historical milestones.
CO2	Explain the architecture of IoT
CO3	Differentiate physical and logical design, and grasp wireless communication principles.
CO4	Apply knowledge of IoT frameworks, implement development boards, and employ wireless protocols in practical IoT scenarios.

Course Code: ELE-361

Course Name: Internship

COURSE OUTCOMES	
CO1	Handle different kinds of instruments in electronic industries.
CO2	Understand industrial management and make a documentation.
CO3	Understand industrial quality assurance and make a documentation.
CO4	Understand industrial schedules and make a documentation.

SEMESTER – VI

Course Code: ELE-304

Course Name: Embedded Systems

COURSE OUTCOMES	
CO1	Define Embedded systems and explain the Architecture.
CO2	Explain the on-chip(internal) and external peripherals, including I/O Ports, Timers, and ADC, and demonstrate the interfacing of peripheral devices.
CO3	Explain the MSP430 Clock system, Low power modes, Resets & interrupts as well as communication protocols.
CO4	Develop programs for configuring and using the various on chip peripherals

Course Code: ELE-305

Course Name: Biomedical Instrumentation

COURSE OUTCOMES	
CO1	Understand the physiology of a biomedical system.
CO2	Analyse and measure the biomedical and physiological information.
CO3	Discuss the application of Electronics in diagnostics and therapeutic area.
CO4	Handon experience with various physiological signals

Course Code: ELE-306

Course Name: Computer Networking and System Administration

COURSE OUTCOMES	
CO1	Understand the computer hardware, computer networks and communication basics.
CO2	Describe and analyse related technical and administrative aspects of Windows Server 2012 R2.
CO3	Understand the IPAM Address management and DNS and name resolution in Windows Server 2012 R2.
CO4	Configure, install, manage and share resources in Windows Server 2012 R2

Course Code: ELE-307

Course Name: Project

COURSE OUTCOMES	
CO1	Understand the concept of System design.
CO2	Learn the idea of designing Circuit.
CO3	Troubleshooting the circuit under design.
CO4	Design an embedded system for any application

Course Code: ELE-312
Course Name: : Programming with MATLAB

COURSE OUTCOMES	
CO1	Understand the basics of collaborative MATLAB programming
CO2	Apply the knowledge in creating Arrays and basic mathematical operations using MATLAB
CO3	Analyze data and identify patterns using MATLAB's plotting functions and evaluate the control structures, such as loops and conditional statements in solving specific problems.
CO4	Build basic Simulink models to simulate and Analyze simple Electronics circuits

SEMESTER – VII

Course Code: ELE-400

Course Name: Augmented Reality and Virtual Reality

COURSE OUTCOMES	
CO1	Demonstrate an understanding of the foundational concepts of Augmented Reality (AR) and Virtual Reality (VR).
CO2	Apply development tools and engines for both Virtual Reality (VR) and Augmented Reality (AR).
CO3	Write code using programming languages such as C# or Python for AR and VR application development.
CO4	Set up hardware, configure development environments, and design and implement both VR and AR applications

Course Code: ELE-401

Course Name: Artificial Intelligence

COURSE OUTCOMES	
CO1	Understand the iterative and informed problem types and apply search strategies to solve them.
CO2	Apply Neural Network and Reinforcement learning algorithms in various applications.
CO3	Use Natural Language Processing in practice and development of various perceptron algorithm.
CO4	Implement different search algorithms and neural network algorithms for many applications.

Course Code: ELE-402

Course Name: Fundamentals of Signal processing

COURSE OUTCOMES	
CO1	Describe various types of continuous-time and discrete-time signals.
CO2	Understand Discrete-Time Fourier Series, Discrete Fourier Transform and Fast Fourier Transform.
CO3	Designing of various Analog filters.
CO4	Learn different structural representation of FIR and IIR digital filters

Course Code: ELE-403
Course Name: Optoelectronics

COURSE OUTCOMES	
CO1	Understand the basic working mechanism of the Optoelectronic devices.
CO2	Predict the most fundamental performance characteristics of a given optoelectronic device design.
CO3	Choose the most appropriate optoelectronic device for a specific application and understand possibilities and limitations offered by that particular device.
CO4	Understand the basic lasers operations and fiber devices

Course Code: ELE-411
Course Name: Mobile App Developments

COURSE OUTCOMES	
CO1	Understand the basic concepts of Apps Development.
CO2	Apply Android Services, Layouts, Graphic Resources, Data Management Concepts to Mobile App Development.
CO3	Design and Develop Mobile Apps for specific applications.
CO4	Design and Develop Mobile Apps with database

SEMESTER – VIII

Course Code: ELE-404
Course Name: : Remote Sensing in Agro-Electronics

COURSE OUTCOMES	
CO1	Understand the remote sensing principles and systems.
CO2	Know the concept of GIS and its tools.
CO3	Have knowledge on data input and analysis techniques.
CO4	Utilize these advanced techniques in addressing the real world problems like Agriculture

Course Code: ELE-405
Course Name: : Digital Image Processing

COURSE OUTCOMES	
CO1	Explain the fundamentals of Digital Image and Image enhancement in the spatial domain.
CO2	Explain the concepts of Image enhancement in frequency domain and Image restoration.
CO3	Explain the concepts of Color Image processing, Morphological Image Processing, and Image segmentation techniques.
CO4	Implementing image processing concepts using time and frequency concept

Course Code: ELE-406
Course Name: : VLSI Design

COURSE OUTCOMES	
CO1	Understand modern CMOS Technology.
CO2	Apply CMOS integrated circuit concepts in VLSI design.
CO3	Analyse CMOS logic electronics interface.
CO4	Design VLSI circuits.

Course Code: ELE-407
Course Name: : Industrial Automation

COURSE OUTCOMES	
CO1	Understand the working of control systems using mathematical models
CO2	Understand the working principle of PLC
CO3	Understand the working principle of SCADA.
CO4	Develop and implement industrial based applications using PLC and SCADA

Course Code: ELE-412
Course Name: : Pharmaceutical Instrumentation

COURSE OUTCOMES	
CO1	Explain the spectroscoping methods, principles and working.
CO2	Explain the principles and working of electron microscopy.
CO3	IR, Atomic emission and X-ray spectrometry.
CO4	Explain the principles and working of chromatography and electron microscopy.