Course outcomes

Department of Electronics

Semester I

Paper: ELE-HC-1016: Basic Circuit Theory & Network Analysis

Course Outcomes:

By the end of this course, students will be able to

- explain basics of electrical circuits and calculate node voltage and branch current of circuits with KVL and KCL
- simplify complex network to simpler equivalents by employing network theorems
- determine time response of circuits with Classical as well as Laplace transform methods
- analyze 2 port networks, transfer functions and frequency response of passive filters

Paper: ELE-HC-1026: Mathematics Foundation for Electronics

Course Outcomes:

By the end of this course, students will be able to

- Explain the fundamental theories and physical significances of differential equations and special functions & Matrices, Sequences and series and complex variables
- Solve problems applied mathematical problems on these topics

Paper: ELE-HG-1016: Network Analysis and Analog Electronics

Course outcomes:

By the end this course, students will be able to

- explain fundamental theory of KCL, KVL, Network theorems and basic semiconductor devices
- design and analyze basic electronic circuits and networks
- solve basic mathematical problems related to networks and electronic devices

Semester II

Paper: ELE-HC-2016: Semiconductor Devices

Course Outcome:

By the end of this course, students will be able to

- Explain physics of energy band theory and carrier statistics in semiconductors compare tothose of conductors and dielectrics
- Analyze characteristic of diodes, transistors (BJT, JFET & MOSFET) and power electronicdevices
- Illustrate mathematical models of semiconductor devices and perform basic experiments

Paper: ELE-HC-2026: Applied Physics

Course Outcome:

By the end of this course, students will be able to

- explain theories and significances of basic Quantum Physics and crystal lattice in explainingelectrical properties of semiconductors
- analyze mechanical, thermal, magnetic and electrical properties of materials used in electronicdevices and systems

Paper: ELE-HG-2016 : Linear and Digital Integrated Circuits

Course Outcomes:

By the end of this course, students will be able to

- Explain operation and electrical characteristics of basic analog and digital integrated electronic devices.
- Design analog and digital circuits with integrated circuits
- Solve mathematical problems on analog and digital circuits

Semester III

Paper: ELE-HC-3016: Electronic Circuits

Course Outcome:

By the end of this course, students will be able to

- explain theories and working of active & passive electronic devices
- design and analyze circuits for DC power supply, small signal amplifiers, power amplifierand oscillators

Paper: ELE-HC-3026: Digital Electronics with VHDL

Course Outcome:

By the end of this course, students will be able to

- Explain number system and operation of combinational and sequential logic circuits
- Design combinational and sequential logic circuits
- Write VHDL program for modeling basic logic circuits

Paper: ELE-HC-3036: C Programming & Data Structure

Course Outcomes:

By the end of this course, students will be able to

- Explain syntax of C language, data types and various operators etc.
- Develop algorithm and flowchart of different problems and write correspondingprogram in C
- Write C programs for data structure related applications

Paper: ELE-SE-3016: Design and Fabrication of Printed Circuit Boards

Course Outcome: By the end of this course, students will be able to

- Explain the fundamentals of PCB making process
- Design PCB of a given schematic circuits by using students version of proprietary software or open source CAD tools & fabricate PCB by using low cost methods at home

Paper: ELE-HG-3016(Communication System)

Course Outcome:

By the end of this course, students will be able to

- Describe functional blocks of electronic communication system and sources of noise
- Compare and contrast amplitude, frequency and angle modulation systems
- Illustrate pulse modulation and digital communication techniques

Semester IV

Paper: ELE-HC-4016: Operational Amplifiers & Applications

Course Outcome:

By the end of this course, students will be able to

- explain and differentiate ideal and real characteristics of operational amplifier
- design and analyze signal processing and conditioning circuits with op-amp

Paper: ELE-HC-4026: Signals & System

Course Outcome:

By the end of this course, students will be able to

- Explain different types of signals
- Determine Laplace transform, and Fourier series and transform of different signals
- Describe and analyze properties of LTI systems and their responses

Paper: ELE-HC-4036: Electronic Instrumentation

Course Outcome:

By the end of this course, students will be able to

- explain accuracy, precision, sources of error in measurement
- demonstrate the working principle and application of basic test and measuring instruments
- describe fundamentals of sensors and transducers

Paper: ELE-SE-4016: Programming with Lab VIEW

Course Outcome:

By the end of this course, students will be able to

- Explain the concept of virtual instrumentation
- Design Lab VIEW based VI for signal processing and data acquisition

Paper: ELE-HG-4016: Microprocessor & Microcontroller

Course Outcomes:

By the end of this course, students will be able to

- Compare and contrast microprocessor and microcontroller
- Develop algorithm and write assembly language program for 8085 and 8051
- Interface basic I/O devices with microprocessor and microcontroller

Semester V

Paper: ELE-HC-5016: Microprocessors & Microcontrollers

Course Outcome:

By the end of this course, students will be able to

- Compare and contrast microprocessor and microcontroller
- Develop algorithm and write assembly language program for 8085 and 8051
- Interface basic I/O devices with microprocessor and microcontroller
- Design microcontroller based circuits

Paper: ELE-HC-5026: Electromagnetics

Course Outcome:

By the end of this course, students will be able to

- Explain different coordinate systems, vector algebra, concept of potentials, flux, divergences
- Solve electrostatic and magneto static problems based on Poisson's and Laplace equations
- Describe physical significance of Maxwell's equations and applications in plane wave propagation and guidance

Paper: ELE-HE-5016: Power Electronics

Course Outcome:

By the end of this course, students will be able to

- Explain characteristics of power electronics devices
- Design power converter circuits, choppers etc.
- Analyze performance of basic electrical machines related to power electronics

Paper: ELE-HE-5026: Digital Signal Processing

Course Outcome:

By the end of this course, students will be able to

- Explain characteristics of discrete time systems
- Determine DFT and Z-transform of the transfer function of discrete time system
- Design digital filters

Semester VI

Paper: ELE-HC-6016: Communication System

Course outcomes:

By the end of this course, students will be able to

- Describe functional blocks of electronic communication system and sources of noise
- Compare and contrast amplitude, frequency and angle modulation systems
- Illustrate pulse modulation and digital communication techniques
- Design basic circuits for communication system

Paper: ELE-HC-6026: Photonics

Course Outcomes:

By the end of this course, students will be able to

- Explain propagation of light wave in different media
- Illustrate interference and diffraction of light waves
- Demonstrate use of LED, LASER, photodetectors and optical fiber as dielectric wave guide

Paper: ELE-HE-6016 (Control System)

Course Outcome:

By the end of this course, students will be able to

- Explain difference between open loop and closed loop control systems, signal flow graph andreduction techniques

- analyze time domain and frequency domain response of control systems and their stability
- Illustrate state variable analysis of control system

ELE-HE-6026: Project Work /Dissertation

Course Outcome:

By the end of this course, students will be able to

- demonstrate creativity and critical thinking ability
- gain confidence in application of theoretical knowledge to practical aspects
- Design circuits, PCB and solder components on the PCB