



Department of Electronics Engineering

Program Outcomes :

1. Graduate will **demonstrate** knowledge of Mathematics, Science & Engineering.
2. Graduate will be able to **identify**, formulate and solve electronics engineering problems.
3. Graduate will be enabled to **design** and conduct experiments, analyze and interpret the data.
4. Graduate will **acquire** skill to design electronic systems as per needs and specifications.
5. Graduate will **design** and implement hardware of the electronic systems.
- 6 Graduate will have **abilities** to use advanced software to design & analyze electronic systems.
- 7 Graduate will be **aware** of his professional and ethical responsibilities.
- 8 Graduate will be able to effectively communicate in global environment scenario.
- 9 Graduate will **develop** confidence for life-long learning in new development in engineering and technology.
10. Graduate will be able to design and develop network based communication systems
11. Graduate will be able to function on multidisciplinary work.
12. Graduate will be **aware** of the impact of technology on environment.



Program Educational Objectives : (Modified)

After the completion of course :-

1. Graduate will excel in technical education and research in electronics engineering.
2. Graduate will be competent with fundamentals of mathematics, basic science and electronic engineering.
3. Graduate will be enabled to innovate , design and develop new electronic systems.
4. Graduate will cultivate professional and ethical approach, effective communication and team work.
5. Graduate will be provided with an excellent academic environment for life - long learning.



Course Outcomes :

SE SEMESTER-I

C-203 Electronic Circuit Analysis and Design-1

Upon successful completion of this course, the student will be able to:

1. Analyze and design electronic circuits such as rectifiers, voltage regulators and transistorized amplifiers.
2. Apply knowledge of mathematics, in engineering to design, analyze and operation of electronic devices and circuits.
3. Design of simple applications using passive and active components like diodes, resistors, capacitors.
4. Detail analysis of transistorized amplifier for different input variables.
5. Student will be able to analyze and design basic building blocks in electronics engineering using discrete components.
6. Explain the hybrid model of transistor and analyze the transistor amplifier (CE, CB, CC) using h-parameters.

C-202 Electronic Measurement and Instrumentation

Upon successful completion of this course, the student will be able to:

1. Identify the principle and operation of measuring instruments.
2. Interpret different sources of errors in measuring instruments
3. Classify static & dynamic characteristics of instruments .
4. Familiarized to principle of operation of sensors and transducers.
5. Select the transducers for measurement of physical parameters.
6. Design bridge circuits.

C-205 Network Analysis

1. Students will learn to employ circuit analysis for the basic AC and DC circuits
2. Students will recognize network simplification , series-parallel reductions, voltage and current transformation.
3. Students will be able to formulate network function and understand significance of poles and zeros
4. Students will be able to describe the behavior of series and parallel RLC circuits for alternating input.
5. Students will be able to evaluate transient and steady state analysis of AC circuits

6. Student will be able to design of proto type, m-derived and composite filter.

C-201 – Engineering Mathematics – III

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

- 1.Solve linear differential equations.
- 2.Exercise the applications of linear differential equation to Electronics engineering.
- 3.Relate vector differential calculus to different applications.
- 4.Apply probability distributions to practical engineering problems.
- 5.Differentiate basic of Laplace Transform , Fourier series and Fourier Transform.
- 6.Analyze Electronics system using Laplace transform.

C.204 Analog Communication

Upon successful completion of this course, the student will be able to:

1. Demonstrate about various blocks in communication system.
2. Analyze the types of modulation, demodulation principles and techniques.
3. Calculate Power relations in Amplitude and Frequency modulated waves.
4. Calculate the effect of noise in analog modulations.
5. Demonstrate about various blocks in Transmitters and Receivers.
6. Demonstrate about Time and frequency division multiplexing techniques
7. Analyze the wave propagation and select antennas for various applications

SE SEMESTER-II

C-207: Linear Integrated Circuits

Students will be able to –

- 1) Select appropriate op-amp for given application from data sheet.
- 2) Design and implement op-amp based circuits.
- 3) Analyze frequency response, characteristics and parameters of op-amp.
- 4) Compute component values for signal conditioning filters, waveform generators.
- 5) Design analog part of any complex electronics system and instruments.

C-210 Digital Systems and Microprocessors

1. Students will be able to design of combinational and sequential logic circuit.
2. Students will be able to apply various reduction techniques to optimize logic design
3. Students will be able to demonstrate logical & debugging skills in designing small digital circuits
4. Students will implement basic building blocks for advanced digital systems like microprocessors .
5. Students will be able to write Assembly language program in 8085 .
6. Student will be able to exercise different interfacing techniques using 8085

C-209-Data Structures and Algorithms

1. Students will be able to select and implement appropriate data structure as per application
2. Students will be able to implement the concepts of basic data structure and operations during software development.
3. Students will be able to implement algorithm using a variety of data structures.
4. Student will be able to analyze the features and applications of stack and recursion
5. Student will be able to compare and contrast the abstract data type presentation
6. Students will be able to implement the non linear data structure like trees ,graphs and searching techniques during software development

C-208 Electronic Circuit Analysis and Design-2

Upon successful completion of this course, the student will be able to:

1. Analyze and design electronic circuits such as wave shaping circuits, multistage amplifiers, power amplifiers.
2. Explain basic analog electronic circuit design techniques using diodes, bipolar junction transistors and field effect transistors.
3. Demonstrate the analytical skills developed while designing the electronic circuits using

diodes, bipolar junction transistors and field effect transistors.

4. Student will be able to apply the skills for solving the real time applications.
5. Describe and design different types of oscillators and multivibrators as per given specifications and requirement using bipolar junction transistors and field effect transistors.
6. Able to select the appropriate power supplies for the computer systems.

C 211 Control Systems

1. Student will be able to derive the mathematical model of different type of control system.
2. Student will be able to formulate the dedicated control system.
3. Student will be able to analyze the control systems in time and frequency domain.
4. Student will be able to recognize the concept of stability
5. Student will be able to describe the concept of state space
6. Student will be able to design the conventional PID Controllers

TE SEMESTER-I

C-304: VLSI Design

Students will be able to –

- 1) Use VHDL language in designing combinational and sequential circuits.
- 2) Implement digital system in CPLD and FPGA.
- 3) To design MOS based circuits.
- 4) To analyze CMOS performance parameters.
- 5) Ability to design & implement custom based/ASCIC digital system.

C-302 - Microcontroller

Identify features of various Microcontrollers.

1. Write and execute ALP & Embedded C Program for given application.
2. Select appropriate Microcontroller for different applications
3. Design & interface Microcontroller with Hardware
4. Understand hardware and software interfacing.
5. Develop microcontroller based applications.

C-301-Signals and Systems

- 1) Students will be able to understand use of mathematics in signals and systems
- 2) Students will be able to represent signals and systems by mathematical equations.
- 3) Students will be able to solve different problems of signals with modification of variables
- 4) Students will be able to predict output of systems for different test signals.
- 5) Student will be able to realize system using block diagram
- 6) Student will be able to characterise and analyze CT and DT LTI systems using impulse response

C-303 Electromagnetic Engineering

Students will be able to –

- 1) Understand basic law's of electromagnetic waves.
- 2) Select appropriate antenna for given application.
- 3) Understand electromagnetic waves & types of propagation.
- 4) Know the characteristics & various parameters of transmission lines.

C305- Digital Communication

Upon successful completion of this course student will be able to

1. understand and analyze the design issues of digital communication system
2. Perform identification and reduction of various noise contents in digital communications.
3. describe different source coding techniques and data formats.
4. Design and implement various synchronisation methods.
5. identify digital modulation schemes and compute performance of these techniques.
6. explain the concept of optimum receiver and equalizer.

TE SEMESTER-II

C-311: Electronics Circuit Design

Students will be able to –

- 1) Use appropriate components & ICs in electronics systems.
- 2) Design and implement signal conditioning, sensors and actuators for industrial process control.
- 3) Design Microprocessor /Microcontroller based system.
- 4) Design and implement biomedical systems.
- 5) Design and implement switch mode power supply.
- 6) Design system with EMI, EMC considerations & EMI hazard free.

C-308- Video Engineering

Students will–

- 1) Understand CVS, H.Details, V.Details.
- 2) Draw and observe video waveforms from pattern generators.
- 3) Observe odd and even field practically.
- 4) Be able to detect the faults in TV.
- 5) Adjust response of VIF, SIF,& colour TV.

C-307 TE-II Digital Signal Processing

Student will be able to-

1. Design digital system for signal processing.
2. Implementation of digital system.
3. Test design using simulation software.
4. Select appropriate hardware / processor for DSP Systems.
5. Use MATLAB in development and testing of DSP systems.
6. Design types of digital filters.

C-309 : POWER ELECTRONICS

1. Student will be able to build simple Power Electronic circuits.
2. Student will be able to design various power converters for AC-DC machines
3. Student will be able to analyze and design Chopper.
4. Student will be able to formulate the design of SMPS, UPS.
5. Student will be able to implement the design methods to develop mini projects.
6. Student will be able to describe multidisciplinary converters.

C-310 : Computer Architecture

1. Student will be able to design and implement various blocks of arithmetic logic unit.
2. Student will be able to design and implement control unit and processor
3. Student will be able to give complete overview of O.S.
4. Student will be able to study the process management and issues
5. Student will be able to recognize classical I.P.C. Problems and solutions.
6. Student will be able to distinguish various memory management scheme.

BE SEMESTER-I

C 406 - Computer Network

Upon successful completion of this course graduate will be able to:

1. select networking components for designing network hardware.
2. install and maintain network operating system for different networks.
3. implement various protocols for internet.
4. operate and maintain network system.
5. program for various internetworking needs.
6. work on various layers and architectures of computer networks.

C-401- Information Theory and coding

- 1) Student will be able to analyze and design digital communication system using information theory.
- 2) Student will be able to evaluate channel capacity, redundancy and efficiency.
- 3) Student will be able to predict the output with the help of knowledge of probability and information theory.
- 4) Student will be able to design linear block code and cyclic code to minimize error in transmission.
- 5) Student will be able to implement various types of convolution coding techniques.
- 6) Student will be able to implement cryptography for secured communication.

C-401-Embededd system

- 1.Students will be able to understand organizational structure of ARM7TDMI processor
- 2.Students will be able to write assembly language programming using ARM Instruction set
- 3.Students will be able to implement data transfer techniques using different interrupt schemes
- 4.Students will be able to able to interface peripherals using serial, parallel ports
- 5.Students will be able to understand memory organization in ARM configuration
- 6 Students will be able to implement different data types in embedded C programming.

C-405 Biomedical Instrumentation

After the completion of the course the course student will be able to –

- 1) Understand the anatomy and function of subsystems of Human body.
- 2) Classify and indentify the different diagnostic and therapeutic equipment.

- 3) Understand the features of different biopotentials and bioelectrodes.
- 4) Design the basic instrumentation system for measurement of different biopotentials.
- 5) Understand the equipment in patient monitoring systems.
- 6) Learn about the safety measurements for designing of biomedical instrumentation.

C-404 IMAGE PROCESSING:

Upon successful completion of the course the student will be able to :-

- 1) Describe the fundamental steps in digital image processing.
- 2) Demonstrate image enhancement techniques in spatial domain.
- 3) Implement spatial and frequency domain filters for image filtering.
- 4) Write algorithms for morphological image processing.
- 5) Detect the image discontinuities and implement segmentation.
- 6) Exercise techniques for image compression.

BE SEMESTER-II

Microwave Engineering

Students will be able to –

- 1) Students are capable to understand & operations of various microwave tubes & semiconductor devices.
- 2) Students are able to do the various R-F measurements & analyze the operations of various waveguide components.
- 3) Students will be knowing th applications of microwave.
- 4) Students will be able to use the microwave antennas as per applications.

C-409-WIRELESS COMMUNICATION NETWORKS

After completion of the course, students will be able to

1. Demonstrate a deep theoretical understanding of wireless networks.
2. Analyze and solve complex practical industrial problems of the future in development of wireless communication.
3. Analyze the measure to increase the capacity in GSM system.
4. To analyze improved data services in cellular communication.
5. Apply the traffic analysis to design cellular network.
6. Design and develop complete cellular system.

C-402 : POWER ELECTRONICS AND DRIVES

Student will be able to

- 1) Analyze various single phase and three phase power converter circuits and their applications.
- 2) Design identifies basic requirements for power electronics based design application.
- 3) Design the firing circuits for AC –DC drives.
- 4) Use converter / chopper for AC –DC applications.
- 5) Design single and three phase inverter using IGBT's and thyristor's
- 6) Use application specific AC-DC drives.