# **Department of Electronics and Telecommunication Engineering**

# B.E. 3rd Sem

# Course: Engineering Mathematics – III Course Code: (3ETC01)

At the end of Engineering Mathematics – III course, the students will be able:

- **CO 1:** To demonstrate the knowledge of differential equations to solve engineering problems of analog systems.
- **CO 2:** To apply Laplace transform to solve differential equations.
- **CO 3:** To apply knowledge of vector calculus.
- **CO 4:** To comprehend knowledge of complex analysis in terms of complex variables, harmonic functions and conformal mapping.
- **CO 5:** To apply numerical methods to obtain approximate solutions to mathematical problems.
- **CO 6:** To identify and solve certain forms of partial difference equations as applied to discrete systems.

# Course: Electronic Devices and Circuits Course Code: (3ETC02)

At the end of Electronic Devices and Circuits course, the students will be able:

- **CO 1:** To comprehend the knowledge of diode and its applications in rectifier and regulator circuits.
- **CO 2:** To analysis of wave shaping Circuits for various signals.
- **CO 3:** To understand basics of BJT and its operational parameters.
- **CO 4:** To understand feedback concept, topologies and their applications.
- **CO 5:** To elaborate the different types of multistage amplifiers.
- **CO 6:** To understand the JFET, MOSFET and UJT.

#### **Course: Digital System Design**

#### **Course Code: (3ETC03)**

At the end of Digital System Design course, the students will be able :

- **CO1:** To understand number systems and its conversions, arithmetic functions.
- **CO2:** To use Boolean algebra and to apply minimization techniques to solve logic functions.
- **CO3:** To identify, analyze and design combinational Logic Circuits.
- **CO4:** To identify, analyze and design Sequential Logic Circuits.
- **CO5:** To understand digital logic families, their characteristics, semiconductor memories and mapping of memories, programmable logic devices.
- **CO6:** To analyze the clocked sequential circuits.

### **Course: Electromagnetic Waves**

# **Course Code: (3ETC04)**

At the end of Electromagnetic Waves course, the students will be able:

- **CO 1:** To understand the coordinate systems and vector integrals.
- **CO 2:** To evaluate Electric Field Intensity for different charge distributions.
- **CO 3:** To evaluate Magnetic Field Intensity due to current carrying conductors.
- **CO 4:** To understand scientifically about Maxwell's equations & Boundary conditions.
- **CO 5:** To characterize uniform plane wave & can calculate reflection and transmission coefficient of waves at media interface.
- **CO 6:** To understand principle of radiation and radiation characteristics of theoretical & practical antennas.

# Course: Object Oriented Programming Course Code: (3ETC05)

At the end of Object Oriented Programming course, the students will be able:

- **CO 1:** To justify the basic concepts of object-oriented programming such as data types, functions, classes, objects, constructors, inheritance, overloading etc.
- **CO 2:** To design, implement, test, and debug simple programs in C++.
- **CO 3:** To describe how the class mechanism supports encapsulation and information hiding.
- **CO 4:** To know the concept of operator overloading.
- **CO 5:** To understand inheritance in C++.
- **CO 6:** To design and test the implementation of Java programming concepts.

# B.E. 4<sup>th</sup> Sem

## Course: Analog and Digital Communication Course Code: (4ETC01)

At the end of Analog and Digital Communication course, the students will be able:

- **CO1:** To understand the necessity of modulation and identify the various components of analog and digital communication systems.
- **CO 2:** To compare and contrast the strengths and weaknesses of various communication systems.
- **CO 3:** To apply the concepts of Probability theory in communication systems.
- CO 4: To analyze the performance of various pulse modulation scheme
- **CO 5:** To understand basic building blocks of digital communication system and formatting of digital signal.
- **CO 6:** To understand concepts of information theory and analyze information transmission over communication channel.

#### **Course: Analog Circuits**

#### **Course Code: (4ETC02)**

At the end of Analog Circuits course, the students will be able:

- **CO 1:** To understand the basics and internal structure of Op-amp.
- **CO 2:** To analyze and design linear application of Op-amp.
- **CO 3:** To analyze and design nonlinear application of Op-amp.
- **CO 4:** To understand and design concepts of voltage regulator.
- CO 5: To study and synthesize the waveform generators using IC 555 and IC 565.
- CO 6: To comprehend the knowledge of PLL, its applications and design of filter.

#### **Course: Network Theory**

# **Course Code: (4ETC03)**

At the end of Network Theory course, the students will be able:

- **CO 1:** To analyze electrical circuits using Mesh and Node analysis.
- **CO 2:** To apply suitable Network Theorem to analyze electrical circuits.
- **CO 3:** To draw oriented Graph of the network to determine their currents and voltages.
- CO 4: To implement the concept of Laplace Transform for electrical circuit analysis.
- **CO 5:** To apply Two-Port network theory for electrical network analysis.
- **CO 6:** To evaluate different Network Functions.

### **Course: Signals And Systems**

#### **Course Code: (4ETC04)**

At the end of Signals and Systems course, students will be able:

- **CO 1:** To understand the continuous time signals and systems mathematically and their classification along with the mathematical operations that can be performed on them.
- **CO 2:** To understand the spectral characteristics of continuous-time periodic signals using Fourier series.
- **CO 3:** To analyze the spectral characteristics of continuous-time aperiodic signals and systems using Fourier Transform.
- **CO 4:** To apply the Laplace transform for analysis of continuous-time systems.
- **CO 5:** To understand the Discrete Time signals and systems mathematically and understand their classification along with the mathematical operations that can be performed on them.
- **CO 6:** To analyze the spectral characteristics of Discrete Time signals and systems using Discrete Time Fourier Transform.

## **Course: Values & Ethics**

## **Course Code: (4ETC05)**

At the end of Values & Ethics course, students will be able:

- **CO 1:** To create an awareness on Engineering Ethics and Human Values.
- **CO 2:** To distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
- **CO 3:** To understand the role of a human being in ensuring harmony in society and nature.
- CO 4: To understand social responsibility of an engineer
- **CO 5:** To appreciate ethical dilemma while discharging duties in professional life.
- **CO 6:** To apply what they have learnt to their own self in different day-to- day settings.