



**ARMIET**  
**Alamuri Ratnamala**  
**Institute of Engineering and Technology**  
*(Run by Koti Vidya Charitable Trust)*  
**Accredited by NAAC with 'B+' Grade**  
**ISO 9001:2015 CERTIFIED**

## **COURSE OUTCOMES OF ELECTRONICS & TELECOMMUNICATION**

**ACADEMIC YEAR: 2019-20**



## **SECOND YEAR, SEMESTER-III**

### **SUBJECT: APPLIED MATHEMATICS-III (AM-III)**

#### **Course Outcomes:**

- Students will demonstrate basic knowledge of Laplace Transform. Fourier series, Bessel Functions, Vector Algebra and Complex Variable.
- Students will demonstrate an ability to identify and Model the problems of the field of Electronics and Telecommunication and solve it.
- Students will be able to apply the application of Mathematics in Telecommunication Engineering

### **SUBJECT: ELECTRONIC DEVICES AND CIRCUITS I**

#### **Course Outcomes:**

- Understand the current voltage characteristics of semiconductor devices,
- Analyze dc circuits and relate ac models of semiconductor devices with their physical Operation,
- Design and analyze of electronic circuits,
- Evaluate frequency response to understand behaviour of Electronics circuits.

### **SUBJECT: DIGITAL SYSTEM DESIGN,**

#### **Course Outcomes:**

- Develop a digital logic and apply it to solve real life problems.
- Analyze, design and implement combinational logic circuits.
- Classify different semiconductor memories.
- Analyze, design and implement sequential logic circuits.
- Analyze digital system design using PLD.
- Simulate and implement combinational and sequential circuits using VHDL systems.



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**SUBJECT: CIRCUIT THEORY AND NETWORKS**

**Course Outcomes:**

- Apply their knowledge in analysing Circuits by using network theorems.
- Apply the time and frequency method of analysis.
- Find the various parameters of two port network.
- Apply network topology for analyzing the circuit
- Synthesize the network using passive elements.

**SUBJECT: ELECTRONIC INSTRUMENTATION AND CONTROL**

**Course Outcomes:**

- Students will be able to explain principle of operation for various sensors.
- Students will be able to describe functional blocks of data acquisition system.
- Students will be able to find transfer functions for given system.
- Students will be able to calculate time domain and frequency domain parameter for given system
- Students will be able to predict stability of given system using appropriate criteria.

**SECOND YEAR, SEMESTER-IV**

**SUBJECT: APPLIED MATHEMATICS-IV (AM-IV)**

**Course Outcomes:**

- Demonstrate basic knowledge of Calculus of variation, Vector Spaces, Matrix Theory, Random Variables, Probability Distributions, Correlation and Complex Integration.
- Demonstrate an ability to identify and Model the problems in the field of Electronics and Telecommunication and solve it.
- Apply the application of Mathematics in Telecommunication Engineering.



## **SUBJECT: ELECTRONIC DEVICES AND CIRCUITS II**

### **Course Outcomes:**

- Design and analyse the basic operations of MOSFET.
- Know about the multistage amplifier using BJT and FET in various configuration to determine frequency response and concept of voltage gain.
- Know about different power amplifier circuits, their design and use in electronics and communication circuits.
- Know the concept of feedback amplifier and their characteristics.
- Design the different oscillator circuits for various frequencies

## **SUBJECT: LINEAR INTEGRATED CIRCUITS**

### **Course Outcomes:**

- Understand the fundamentals and areas of applications for the integrated circuits.
- Analyze important types of integrated circuits.
- Demonstrate the ability to design practical circuits that perform the desired operations.
- Understand the differences between theoretical, practical & simulated results in integrated circuits.
- Select the appropriate integrated circuit modules to build a given application.

## **SUBJECT: SIGNALS & SYSTEMS**

### **Course Outcomes:**

- Understand about various types of signals and systems, classify them, analyze them, and perform various operations on them,
- Understand use of transforms in analysis of signals and system in continuous and discrete time domain.
- Observe the effect of various properties and operations of signals and systems.
- Evaluate the time and frequency response of Continuous and Discrete time systems which are useful to understand the behavior of electronic circuits and communication systems



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**SUBJECT: PRINCIPLES OF COMMUNICATION ENGINEERING**

**Course Outcomes:**

- Use different modulation and demodulation techniques used in analog communication
- Identify and solve basic communication problems
- Analyze transmitter and receiver circuits
- Compare and contrast design issues, advantages, disadvantages and limitations of analog communication systems.

**THIRD YEAR, SEMESTER-V**

**SUBJECT: MICROPROCESSOR & PERIPHERALS**

**Course Outcomes:**

- Understand the architecture and software aspects of microprocessor 8086.
- Write Assembly language program in 8086.
- Know the Co-processor configurations.
- Interface peripherals for 8086.
- Design elementary aspect of microprocessor based system.

**SUBJECT: DIGITAL COMMUNICATION**

**Course Outcomes:**

- Understand random variables and random processes of signal,
- Apply the concepts of Information Theory in source coding,
- Evaluate different methods to eliminate Inter-symbol interference,
- Compare different band-pass modulation techniques,
- Evaluate performance of different error control codes.



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**SUBJECT: ELECTROMAGNETIC ENGINEERING**

**Course Outcomes:**

- Fields and energies in simple planar, cylindrical, and spherical geometries, Fields within Conducting and anisotropic media
- Electric and magnetic forces on charges, wires, and media Sinusoids and transients on TEM lines With mismatched impedances and tuning

**SUBJECT: DISCRETE TIME SIGNAL PROCESSING**

**Course Outcomes:**

- Understand the concepts of discrete-time Fourier transform and fast Fourier transform.
- Apply the knowledge of design of IIR digital filters to meet arbitrary specifications.
- Apply the knowledge of design of FIR digital filters to meet arbitrary specifications.
- Analyze the effect of hardware limitations on performance of digital filters.
- Apply the knowledge of DSP processors for various applications.

**SUBJECT: TV & VIDEO ENGINEERING**

**Course Outcomes:**

- Understand overview of TV system.
- Understand details of compression technique.
- Know about different dvb standards.
- Understand advanced digital systems
- Evaluate the design constraints for receiver

**THIRD YEAR, SEMESTER-VI**

**SUBJECT: MICROCONTROLLERS & APPLICATIONS**

**Course Outcomes:**

- Understand the detailed architecture of 8051 and ARM7 microcontroller.
- Study the in-depth working of the microcontrollers and their Instruction set.



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- Interface various peripheral devices to the microcontrollers.
- Write Assembly language and Embedded C program for microcontrollers.

**SUBJECT: COMPUTER COMMUNICATION NETWORKS**

**Course Outcomes:**

- Design a small or medium sized computer network including media types, end devices, and interconnecting devices that meets a customer's specific needs.
- Perform basic configurations on routers and Ethernet switches.
- Demonstrate knowledge of programming for network communications.
- Learn to simulate computer networks and analyse the simulation results.
- Troubleshoot connectivity problems in a host occurring at multiple layers of the OSI model.
- Develop knowledge and skills necessary to gain employment as computer network engineer and network administrator.

**SUBJECT: ANTENNA & RADIO WAVE PROPAGATION**

**Course Outcomes:**

- Define Basic antenna parameters like radiation pattern, directivity and gain.
- Derive the field equations for the basic radiating elements like linear wire antenna and loop antenna.
- Design of uniform linear and planar antenna arrays using isotropic and directional Sources.
- Implement special types of Antennas like microstrip antennas and reflectors.

**SUBJECT: IMAGE PROCESSING AND MACHINE VISION**

**Course Outcomes:**

- Understand theory and models in image processing.
- Interpret and analyze 2D signals in Spatial and frequency domain through image transforms.
- Apply quantitative models of image processing for segmentation and restoration for various applications.
- Find shape using various representation techniques and classify the object using different classification methods.



## **SUBJECT: RADAR ENGINEERING**

### **Course Outcomes:**

- Explain generalized concept of RADAR.
- Solve problems using radar equations.
- Describe different types of radar for specific application.
- Explain concept of tracking radar.
- Evaluate the design constraints for transmitter.
- Evaluate the design constraints for receiver.

## **B.E, SEMESTER-VII**

### **SUBJECT: MICROWAVE ENGINEERING**

#### **Course Outcomes:**

- Characterize devices at higher frequencies.
- Design and analyze microwave circuits.
- Design and analyze amplifiers and oscillators at microwave frequencies.
- Demonstrate skills of planning, design and deployment of microwave networks.

### **SUBJECT: MOBILE COMMUNICATION SYSTEM**

#### **Course Outcomes:**

- Explain the cellular fundamentals and estimate the coverage and capacity of cellular systems.
- Classify different types of propagation models and analyze the link budget.
- Illustrate the fundamentals and system architecture of GSM, 2.5G and IS-95.
- Apply the concepts of 3G technologies of UMTS and CDMA 2000.
- Elaborate the principles of 3GPP LTE.
- Identify the emerging technologies for upcoming mobile communication systems.





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**SUBJECT: OPTICAL COMMUNICATION**

**Course Outcomes:**

- List, write and explain fundamentals and transmission characteristics of optical fiber Communication.
- List, write and explain principles and characteristics of various sources, detectors and Various fiber optic components
- Calculate parameters for optical link budgeting and analyze the link

**SUBJECT: INTERNET COMMUNICATION ENGINEERING**

**Course Outcomes:**

- Explain the operation of the components of a router including, DHCP, NAT/PAT, Routing function, Switching function.
- Describe how DNS works in the global Internet including caching and root servers.
- Understand the current state-of-the-art developments in Internet technologies for multimedia communications.
- Understand the security protocol and services In the Internet
- Appreciate the principles used in designing multimedia protocols, and so understand why standard protocols are designed the way that they are.
- Understand the system design principles of multimedia communications systems.
- Solve problems and design simple networked multimedia systems.

**SUBJECT: CYBER SECURITY AND LAWS**

**Course Outcomes:**

- Understand the concept of cybercrime and its effect on outside world
- Interpret and apply IT law in various legal issues
- Distinguish different aspects of cyber law
- Apply Information Security Standards compliance during software design and development.



## **B.E, SEMESTER-VIII**

### **SUBJECT: RF DESIGN**

#### **Course Outcomes:**

- Design impedance matching networks and passive RF filters.
- Design and appraise RF amplifiers and oscillators.
- Analyze EMI and EMC in RF circuits.

### **SUBJECT: WIRELESS NETWORKS**

#### **Course Outcomes:**

- Explain the fundamentals, architecture, design issues and standards of wireless networks
- List and compare Body area network (BAN) and personal area network (PAN) technologies such as Zigbee, Bluetooth, UWB, RFID, NFC etc.
- Classify different LAN topologies and technologies
- Illustrate the fundamentals and architecture of wireless Metropolitan Area Networks (WMAN) and describe the phases of planning and design of wireless networks
- Discuss various wireless adhoc networks architecture, traffic related protocols and transmission technology
- Understand the basic architecture and working of IOT

### **SUBJECT: SATELLITE COMMUNICATION**

#### **Course Outcomes:**

- Explain basics of satellite communication, space segment and earth segment.
- Understand different satellite orbits and orbital parameters.
- Explain and analyze link budget of satellite signal for proper communication.
- Understand various applications of satellite communications.

### **SUBJECT: ENVIRONMENTAL MANAGEMENT**

#### **Course Outcomes:**

- Understand the concept of environmental management.
- Understand ecosystem and interdependence, food chain etc.
- Understand and interpret environment related legislations.