



**Vidya Vikas Education Trust's
Universal College of Engineering, Kaman Road, Vasai
Department of Electronics & Telecommunication Engineering**

Course Outcomes

SE SEM III

APPLIED MATHEMATICS- III

At the end of the course, students would be able to

- CO1** - To understand the basic concept of Laplace Transformation
- CO2** - To solve Fourier Transformation
- CO3** - To solve Vector differentiation and integration
- CO4** - To understand basic knowledge of Complex Variable and Bessel's Function

ELECTRONIC DEVICES AND CIRCUITS I

At the end of the course, students would be able to

- CO1** - Understand the basic components like resistor, capacitor, inductor and analyze the Characteristics of PN junction Diodes
- CO2** - Student will be able to do analysis design of rectifiers with filters and design of Zener voltage regulator
- CO3** - Understand operation of BJT and design and analyse different configuration of the BJT amplifier
- CO4** - Understand operation of JFET and design and analyse the FET amplifier

DIGITAL SYSTEM DESIGN

At the end of the course, students would be able to

- CO1** - understand various number systems and codes and their inter conversions, Also perform arithmetic operations
- CO2** - Understand Boolean algebra for minimization and implementation of logic functions and various Combinational circuits
- CO3** - Analyze design and implement sequential logic circuits
- CO4** - Analyze digital systems using PLD and Simulate and Implement Combinational and sequential circuits using VHDL systems.

CIRCUIT THEORY AND NETWORKS

At the end of the course, students would be able to

- CO1** - To apply their knowledge in analysing circuits by using network theorems.
- CO2** - student will be able to apply the time and frequency method of analysis.
- CO3** – To find the various parameters of two port network.
- CO4** - To apply network topology for analyzing the circuit.



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ELECTRONIC INSTRUMENTATION AND CONTROL

At the end of the course, students would be able to

CO1 - Students will be able to understand the various types of sensors and transducers as well.

CO2 - Students will get the idea about data acquisition system. And will be able to find the transfer function of a system.

CO3 - Student will be able to find time domain and frequency domain analysis of system and the stability using root locus technique as well.

CO4 - Student will be able to find stability using bode plot method and will understand Different stability analysis methods.

SE SEM IV

Applied Mathematics IV

At the end of the course, students would be able to

CO1 - To understand Euler's Lagrange's equation and higher order derivatives

CO2 - To understand importance of vector spaces in electronics and telecommunication engineering

CO3 - Students will be able to apply method of calculus of variations to specific systems, demonstrate ability to manipulate matrices and compute eigenvalues and eigenvectors

CO4 - To understand the relevance of complex variables in various facets of engineering

ANALOG ELECTRONICS II

At the end of the course, students would be able to

CO1 - Students will get to know about the various frequency responses of BJT and MOSFET amplifiers. They also got the idea of the effects of various capacitors along with the merger of various configurations.

CO2 - Students will learn about the basic difference between the implementation of BJT and MOSFET based differential amplifiers. They also got the idea of the CMRR along with the small signal analysis.

CO3 - Students will be able to do analysis of BJT, MOSFET current sources. They will also be able to overcome the drawbacks of two transistor current sources by using the special ones.

CO4 - Students will be able to distinguish between the various types of power amplifiers which would help them design the required ones according to the given specifications.

CO5 - Students will get the idea of the effect of HF and its impact on op-amp gain. They will also be able to use them in many practical applications where the demand of voltage gain would be very high.

CO6 - Students will get the idea of voltage regulators in different configurations.



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SIGNALS AND SYSTEMS

At the end of the course, students would be able to

CO1 - Students will be able to understand types of signals in the time and frequency domains and its significance.

CO2 - Students will be able to understand system, classification of system and analysis of system using Laplace transform.

CO3 - Students will be able to find the z transform of signals and Fourier series of continuous and discrete time signals as well.

CO4 - Students will get the idea about continuous time Fourier transform and discrete time Fourier transform which is useful in understanding behavior of Electronics circuits and communication system.

CONTROL SYSTEMS

At the end of the course, students would be able to

CO1 - Students will understand the fundamental concepts of control system, types of models, signals and their response.

CO2 - Students will be able to find the mathematical modeling of system, Controllability and Observability of the system

CO3 - Students will understand the stability analysis in time and frequency domain.

CO4 - Students will get the idea about optimal and adaptive control system

MICROPROCESSORS AND PERIPHERALS

At the end of the course, students would be able to

CO1 - Students will get the idea of Architecture of 8085 and 8086 Microprocessor

CO2 - Students will understand Instruction set and programming of 8086 and students will be able to do interfacing with 8086 and applications.

CO3 - Students will get the knowledge of ADC, DAC interfacing with 8086 and its application

CO4 - Students will be able to do 8086 Microprocessor interfacing, also get the basic idea of advanced microprocessors.

WAVE THEORY AND PROPAGATION

At the end of the course, students would be able to

CO1 - Students will get the understanding of basic laws of electrostatics and magnetostatics in vector form.

CO2 - Students will get the understanding of the propagation of wave in different media like dielectric and conducting media by solving wave equation and find parameters of media



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CO3 - Students shall be able to calculate energy transported by means of electromagnetic waves from one point to another and to study polarization of waves.

CO4 - Students shall be able to solve electromagnetic problems using different numerical methods.

CO5 - Students shall get acquainted with the propagation of the waves by different types such as ground waves and space waves.

CO6 - Students shall get acquainted with the factors affecting the wave during its propagation and understand sky wave propagation; related parameters such as MUF, skip distance and critical frequency

TE SEM V

MICROCONTROLLERS AND APPLICATIONS

At the end of the course, students would be able to

CO1 - Get the idea of difference between microprocessor and microcontroller, purpose advantages of microcontroller 8051.

CO2 - To understand different operations, instructions, assembly programming and applications of 8051 microcontroller hardware and software.

CO3 - Understand architecture of ARM7, data types, different codes, movement operations, loops, assembly programming for ARM7 as well.

CO4 - Get the idea about embedded system, its applications digital camera, stepper motor controller.

ANALOG COMMUNICATION

At the end of the course, students would be able to

CO1 - Students will the idea about basics of communication system and understand the need of modulation and demodulation.

CO2 - Students will get knowledge of amplitude modulation of demodulation and angle modulation and demodulation as well.

CO3 - To understand different types of radio receiver and the sampling techniques for different types of signals.

CO4 - To understand the concept of different pulse modulation techniques, TDM and FDM



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RANDOM SIGNAL ANALYSIS

At the end of the course, students would be able to

CO1 - Apply theory of probability in identifying and solving relevant problems

CO2 - Define and differentiate between random variables through the use of Cumulative distribution function CDF and probability distribution function PDF as well as marginal and conditional CDF, PDF.

CO3 – Get the basic idea of functions random process and will be able to determine the response of a linear time invariant system to a random process

CO4 – Get the basic idea of sequence of random variables, convergence, markov chain and queuing theory

RF MODELING AND ANTENNAS

At the end of the course, students would be able to

CO1 -Students will be able to design lumped and distributed element filters

CO2 - Students will be able to identify basic antenna parameters required for the analysis of simple wire antennas

CO3 - Students will be able to describe various antenna structures and differentiate them on the basis of their application and performance.

CO4 - Students will be able to analyze and design antenna arrays and study wireless transmit-receive systems

INTEGRATED CIRCUITS

At the end of the course, students would be able to

CO1 - To understand the fundamentals and areas of applications for the Integrated Circuits using OPAMP.

CO2 - To design filters, oscillators and non-linear application like generators, rectifiers and comparators

CO3 - Design Special Purpose Integrated Circuits like 555 timer with real time applications

CO4 – To understand the differences among different voltage regulators and their uses and analyze Counters, Shift Registers and ALU



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TE SEM VI

DIGITAL COMMUNICATION

At the end of the course, students would be able to

- CO1** - Understand the basics of information theory and coding techniques
- CO2** - Determine methods to mitigate inter symbol interference in baseband transmission system
- CO3** - Describe and determine the performance of different error control coding schemes for the reliable transmission of digital representation of signals and information over the channel
- CO4** - Understand various spreading techniques and determine bit error performance of various digital communication systems

DISCRETE TIME SIGNAL PROCESSING

At the end of the course, students would be able to

- CO1** - To understand Transform Analysis of Linear Time Invariant System
- CO2** - To design filters and their implementation using various techniques
- CO3** - To understand multi rate signal processing
- CO4** - To understand various techniques for approximations in digital signal processing parlance and applications of the same.

COMPUTER COMMUNICATION AND TELECOM NETWORKS

At the end of the course, students would be able to

- CO1** - To understand various principles of network applications
- CO2** - To understand the transport layer protocols and their reliability
- CO3** - To understand various network layer services and protocols
- CO4** - To understand various data link layer services, protocols and physical layer services

TELEVISION ENGINEERING

At the end of the course, students would be able to

- CO1** - Students will get the understanding of the basics of Analog TV systems
- CO2** - Students will get the understanding of the basics of picture transmission and reception
- CO3** - Students shall be able to become well conversant with new development in video engineering.
- CO4** - Students shall be able to Understand, use and working principles of latest display like HDTV, LCD, LED, Plasma and large plat panel monitors.



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OPERATING SYSTEMS

At the end of the course, students would be able to

CO1 - Understand the role of an operating system and Compare between different algorithms used for management and scheduling of processes, Memory and input-output operation."

CO2 - To understand File Management and Input Output Management

CO3 - To understand Unix and Linux Operating System

CO4 - To understand Real time operating systems

VLSI Design

At the end of the course, students would be able to

CO1 - Students get basic idea of scaling and its effect, fabrication steps and Lambda rules

CO2 - Students get the idea about the different design styles and the difference between them

CO3 - Students shall be able to design different types of inverters with static and dynamic analysis

CO4 - Students get the idea about the static and dynamic RAM, different flash memories, read and write process in the memory

BE SEM VII

IMAGE AND VIDEO PROCESSING

At the end of the course, students would be able to

CO1 - Understand basics of Image and video processing and use various transforms to interpret and analyze 2D signals

CO2 - perform time and frequency domain image enhancement and image restoration

CO3 - Understand methods for image segmentation and various morphological tools used for practical applications.

CO4 - Understand basics of video processing and various methods of motion estimation

MOBILE COMMUNICATION

At the end of the course, students would be able to

CO1 - To get the idea of different multiple access techniques, basics of cellular system and processes in cellular systems.

CO2 - To understand the idea of different 2G technologies i.e. GSM, IS-95 CDMA, architecture and channels in CDMA



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CO3 - Students get the idea of evolution of GSM to 3G technology, Architecture of IMT 2000

CO4 - To understand the difference in 3G/4G technology, mobile ad-hoc network, mobility management, wireless sensor network and RFID technology.

OPTICAL COMMUNICATION AND NETWORKS

At the end of the course, students would be able to

CO1 - Get the idea about properties of light, types of fiber

CO2 - Get the idea about the structure of light sources, detectors & multiplexers.

CO3 - Get the knowledge of various components used in optical network system & losses in optical fiber.

CO4 - To know the designing & operating principals of modern communication system.

MICROWAVE AND RADAR ENGINEERING

At the end of the course, students would be able to

CO1 - Students get the idea about Microwave frequency, their bands and application.

CO2 - Students get the idea about the different types of waveguides and the microwave components with the help of Scattering parameters

CO3 - Students will be able to design different matching methods using Z & ZY Smith chart. The different matching are Lumped matching, single stub matching and Double stub matching.

CO4 - Students get the idea about the principle of RADAR, its range equation, Doppler effect and various types of RADAR and different application

DATA COMPRESSION & ENCRYPTION

At the end of the course, students would be able to

CO1 - To compress any given text sequence using various techniques

CO2 - To understand various image, audio and video compression standards.

CO3 - To understand various security goals and encryption standards

CO4 - To understand symmetric and asymmetric key cryptography techniques and their implications in network security

SEM VIII

WIRELESS NETWORKS

At the end of the course, students would be able to

CO1 - Describe the phases of planning and design of mobile wireless networks



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CO2 - and compare personal area network (PAN) technologies such as Zigbee, Bluetooth etc

CO3 - To understand details of sensor network architecture, traffic related protocols , transmission technology etc

CO4 - To Understand middleware protocol and network management issues of sensor networks

SATELLITE COMMUNICATION AND NETWORKS

At the end of the course, students would be able to

CO1 - Students get the idea about basic concept of satellite system & launching techniques.

CO2 - Students get the idea of space segment subsystems & earth segment.

CO3 - Students shall be able to analyze link budget for satellite link.

CO4 - Students get knowledge of various access methods & satellite applications.

INTERNET AND VOICE COMMUNICATION

At the end of the course, students would be able to

CO1 - To understand TCP/IP networking model and configuration of Application Layer

CO2 - To understand Transport layer and its underlining functions in TCP Protocol

CO3 - To understand the Internet Protocol and its various standards and services

CO4 - To understand the real time working of audio and video in communication

TELECOM NETWORK MANAGEMENT

At the end of the course, students would be able to

CO1 - Demonstrate broad knowledge of fundamental principles and technical standards underlying telecom networks

CO2 - To understand Internet Management using SNMP Protocol

CO3 - To understand various broadband networks and services

CO4 - To understand various network and telecommunication management principles