MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COs

3rd Semester

ETMA 201	Applied Mathematics III
	Upon completion of the course, the Upon completion of the course, the students will be able to:
CO1	Create Fourier series and represent its applications in signal processing and boundary value problems.
CO2	Generate difference equations and Z Transforms for discrete variables and carrying out their applications to various practical problems.
CO3	Distinguish numerical techniques for solving algebraic and transcendental equations, and also simultaneous linear equations to acquire the results to required degree of accuracy.
CO4	Illustrate numerical integration and differentiation to explicit functions given in the form of data values and carrying out numerical techniques to evaluate first order initial value problems.

ETEC 203	AE-I THEORY
	Upon completion of the course, the students will be able to:
CO1	Understand the concept of bias stabilization and bias stability for single stage amplifier circuit.
CO2	Implement the small signal and large signal models of transistor in amplifier circuits.
CO3	Compare the concept of positive and negative feedback in analog circuits.
CO4	Able to learn design of power amplifier and its classifications.

ETEC-205	Switching Theory & Logic Design
	Upon completion of the course, the students will be able to:
CO1	Develop an understanding of number system, codes, switching theory and logic families.
CO2	Design and implement Combinational & Sequential Circuits.
CO3	Design and analyze Finite State Machines
CO4	Evaluate fault models for Sequential and Combinational circuits

ETEC - 207	Electronic Instruments and Measurement
	Upon completion of the course, the students will be able to:
CO1	Identify and analyze different performance characteristics of instruments in details.
CO2	Analyze/Illustrate the working of various basic meters such as voltmeter and ammeter.
CO3	Implement the working of different types of oscilloscopes with their applications.
CO4	Explain about different types of signal analyzers and transducers along with Data Acquisition System.

ETCS- 209	Data Structures
	Upon completion of the course, the students will be able to:
CO1	Recall and understand the basic concepts of Primitive data structures and algorithms.
CO2	Understand elementry data structures such as stack, queue and linked list.
CO3	Explore the terminology and operations associated with binary tree and its variants.
CO4	Apply the concept of basic data structure on advanced tree structure, graph representation and various traversal methods.
CO5	Apply the basic concepts of data structure on sorting and searching techniques.

ETEC 211	Signal & System
	Upon completion of the course, the students will be able to:
CO1	Classify signals and systems based on their properties and determine the response of LTI system using convolution
CO2	Analyze the spectral characteristics of signals and systems using Fourier analysis
CO3	Apply the Laplace transform and Z- transform for analysis of signals and systems.
CO4	Understand the process of sampling and the effects of under sampling.

ETEC 251	AE-I Lab
	Upon completion of the course, the students will be able to:
CO1	Understand the input and output characteristics of transistors and SCR.
CO2	Able to design single stage BJT amplifiers.
CO3	Understand the effect on gain and bandwidth in multi stage amplifiers.
CO4	Observe the effect of feedback on gain of single stage amplifiers.

ETEC-253	Switching Theory & Logic Design Lab
	Upon completion of the course, the students will be able to:
CO1	Design and analyze combinational circuits using basic gate ICS
CO2	Design and analyse Combinational circuits using MUX ICs
CO3	Implement and analyze various sequential circuits using logic gate ICS and flip flip ICs
CO4	Implement small projects related to digital circuitry

ETCS-255	Data Structure lab
	Upon completion of the course, the students will be able to:
CO1	Understand the basic data organization techniques and implementation of different operations on 1-D, 2-D and m-D arrays.
CO2	Understand the basic concept of dynamic memory allocation via Linked list.
CO3	Write a program to implement stack and queues with contiguous and non-contiguous data storage mechanism.
CO4	Understand the basic tree operations and write a program to implement different operations on binary trees.
CO5	Understanding graphs and the implementation of traversal techniques in graphs.
	Understanding the basic concept of sorting and the implementation of different sorting techniques on 1-D array.

ETEC - 257	Electronic Instruments and Measurement
	Upon completion of the course, the students will be able to:
CO1	Understanding the working of various instruments & equipments used for various electronic engineering parameters like voltage, current etc.
CO2	Analyze the working of different types of transducers viz. temperature, pressure, LVDT.
CO3	Demonstrate the ability to use CRO/DSO for calculation of different electrical parameters like frequency, phase etc.
CO4	To enable students to think in terms of innovative ideas to improve existing technology in field of electronics in terms of accuracy, precision.

ETEC 259	Signal & System Lab
	Upon completion of the course, the students will be able to:
CO1	Familiarization with SCILAB and understanding of the basic matrix operations
CO2	Generation of standard signals and convolution/ correlation between two signals
CO3	Apply DTFT on discrete signals and plot of the magnitude and phase spectra
CO4	Analysis of the discrete and continuous systems by applying the Laplace transform and Z-transform

4th Semester

ETMA 202	Applied Mathematics IV
	Upon completion of the course, the students will be able to:
CO1	Create and solve partial differential equations.
CO2	Understand probability theory in terms of conditional probability and to understand the significance of moments in application of statistical parameters.
CO3	Generate linear and parabolic curve of best fit and calculate a linear regression for a given data and also make use of statistical tests in testing hypothesis
CO4	Formulate and solve linear programming problems using simplex method and extend the concept of linear programming to solve transportation and assignment problems.

ETEC 204	AE-II THEORY
	Upon completion of the course, the students will be able to:
CO1	Analyze the working of building blocks used in Analog IC.
CO2	Design the Op Amp Application circuits.
CO3	Understand the characteristics OTA and design OTA-C application circuits.
CO4	Understand the working of PLL and Current Conveyor and their application.

ETEC-206	Network Analysis & Synthesis
	Upon completion of the course, the students will be able to:
CO1	Understand the system and signal's classification and response using Laplace transformation.
CO2	Acquire knowledge of R-L-C series and parallel network's transient response using Laplace transformation and Classical method.
CO3	Comprehend concept of two port networks by learning about their interconnection.
CO4	Identify realizable network function and synthesize them to apply in design of passive filters.

ETEE-212/208	Communication Systems
	Upon completion of the course, the students will be able to:
CO1	Identify and Solve Basic random variable and random process based problem
CO2	Use of different analog modulation and demodulation techniques in communication systems
CO3	Analyze and comparison of generation and detection circuits of different methods
CO4	Identify sustainable design issues and development of radio receiver circuits.

ETEE 210	EMFT
	Upon completion of the course, the students will be able to:
CO1	Retrieve knowledge of vectors and coordinate systems
CO2	Explain laws and theorem of electrostatics and magneto statics
CO3	Apply Maxwell's equation for deriving and solving Maxewell's wave equations
CO4	Select transmission lines for various applications

ETCS-204	Computer Organization and Architecture
	Upon completion of the course, the students will be able to:
CO1	Understand the concept of bus system, system registers, memory and register transfer language with the basic computer and bus architecture and recall the hierarchy of programming languages
CO2	Explain the architecture of 8085, demonstrate the hardware implementation of micro-operations and make use of 8085 instruction set to explain RTL
CO3	Explain the design of simple computer with respect of addressing modes, instruction cycle, register set, input-output configuration and interrupt cycle.
CO4	Explain the CPU design using the concept of parallelism using pipelining and flynn's classification and Recall the concepts of data representation such as IEEE 754 and construct the hardware of arithmetic operations.
CO5	Discuss various memories used in computer system and compare the various input/output interfaces and modes of data transfer.

ETMA 252	Applied Mathematics Lab
	Upon completion of the course, the students will be able to:
CO1	To perform various matrix operations.
CO2	To find the solution of transcendental and algebraic equations and compute integration numerically.
CO3	To solve the differential equations and initial value problems using numerical methods.
CO4	To write program using Scilab for various statistical methods and ploting of curves using Scilab.

ETEC 254	AE-II Lab
	Upon completion of the course, the students will be able to:
CO1	Understand the characteristics of IC 741Op Amp.
CO2	Design basic Op Amp application circuits.
CO3	Analyse the design of Analog filters.
CO4	Design sine wave and square wave generators circuits.

ETEC-256	Communication Systems
	Upon completion of the course, the students will be able to:
CO1	Identify and Understand the Basic communication circuit
CO2	Analyze different analog modulation and demodulation techniques
CO3	Demonstrate the sampling theory and its uses in Pulse modulation
CO4	Identify different design issues of radio receiver circuits and role of AGC

ETEC-258	NAS LAB
	Upon completion of the course, the students will be able to:
CO1	Determine the theoretical and practical values of 2-port network.
CO2	Analyze the interconnection of various 2-port networks
CO3	Analyze the transient behavior of electrical circuit.
CO4	Model the electrical network using Sci-Lab.

ETEC-260	Linux Programming and Administration Lab
	Upon completion of the course, the students will be able to:
CO1	Work efficiently on the simulator GNU sim8085 and will also be able to identify the basic elements and architecture of 8085.
CO2	Understand the basic instruction set of 8085 microprocessors.
CO3	Write an assembly language code dealing with the data transfers within the registers, memory and the stack.
CO4	Write an assembly language code using the arithmetic instructions of 8085 microprocessor instruction set to solve various problems.
CO5	Write an assembly language code to solve various problems using logical Instructions of 8085 microprocessor instruction set.
CO6	Write an assembly language code to solve various problems using branching Instruction of 8085 microprocessor instruction set.