

# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.)

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

## Department of Electronics Engineering

### CO Statement for the session July - Dec 2021

Semester	Course	CO	CO Statement
III	140301 Electronics Circuits Design	CO1	<b>Design</b> regulated power supply.
		CO2	<b>Design</b> single stage and multi stage amplifier using BJT.
		CO3	<b>Design</b> oscillators using BJT.
		CO4	<b>Design</b> of the basic Op-Amp Circuits.
		CO5	<b>Design</b> digital circuits such as flip flop, registers, and counters.
		CO6	<b>Design</b> analog to digital converter and digital to analog converter.
	140302 Electronics Measurement & Instrumentation	CO1	<b>Discuss</b> various performance characteristics of an instrument
		CO2	<b>Explain</b> the working principle and applications of various bridges in measurement.
		CO3	<b>Differentiate</b> various transducers
		CO4	<b>Analyze</b> the working principle of various digital instruments and display devices.
		CO5	<b>Measure</b> different parameters using various CROs.
		CO6	<b>Design</b> the A/D and D/A converter.
	140303 Network Theory	CO1	Apply the fundamental concepts in solving and analyzing different Electrical networks
		CO2	Design the coupled circuits.
		CO3	Select appropriate and relevant technique for solving the Electrical network in different conditions.
		CO4	Evaluate the steady state response and transient response of circuit.
		CO5	Apply mathematics in analyzing and synthesizing the networks in time and frequency domain.
		CO6	Examine the performance of any circuit using two port network.
	140304 Signals & Systems	CO1	Analyze the basic signal and their mathematical description.
		CO2	Analyze the spectral characteristics of continuous-time and discrete time signals.
		CO3	Evaluate the properties of continuous-time and discrete time signals.
		CO4	Analyze the properties of LTI continuous-time and discrete time systems using transform.
		CO5	Evaluate the convolution and response of continuous-time and discrete time systems with respect to any input.
		CO6	Design a block diagram of LTI system corresponding to given differential/difference equation.

V	140502 EMT	CO1	Describe static and dynamic electric and magnetic fields for technologically important structures.
		CO2	Apply vector calculus to static electric-magnetic fields in different engineering situations.
		CO3	Use boundary conditions for electric and magnetic fields at the interface of two different media.
		CO4	Analyze Maxwell equations in different forms (differential and integral) and apply them to diverse engineering problems.
		CO5	Evaluate Poynting vector and apply Poynting vector theorem in problems.
		CO6	Examine the phenomena of wave propagation in different media and describe the phenomena of reflection of such waves in plane boundaries between homogeneous media.
	140503 Data Communication	CO1	<b>Examine</b> the Concept of Different Layers in Data Communication Networks
		CO2	<b>Analyze</b> the Error and Flow Control in Communication Network
		CO3	<b>Explain</b> the Concepts of MAC Layer
		CO4	<b>Identify</b> the Different Type of Routing Used in IP
		CO5	<b>Discuss</b> the Transport Mechanism in TCP/UDP
	140504 Linear Control Theory	CO1	Calculate the transfer function of feedback control system using Block diagram and Signal flow graph method..
		CO2	Evaluate the time domain response of first & Second order system for different standard inputs.
		CO3	Distinguish various controllers.
		CO4	Calculate steady state error for type 0,1,& 2 system.
		CO5	Determine the (absolute) stability of a closed-loop control system using various methods.
		CO6	Solve control system equations in state variable form.
	140505 Digital Communication	CO1	Describe the various aspects of sampling theorem viz. Aliasing, signal distortion.
		CO2	Design the concepts of Digital Communication System.
		CO3	Apply the digital modulation techniques in communication systems.
		CO4	Analyze the performance of digital communication system in terms of error rate and spectral efficiency.
		CO5	Design the concepts of matched filter and correlator detector.
		CO6	Solve problems of efficient source coding and channel coding in communications systems.
VII	DE-3 Microwave Engineering	CO1	Analyze modes and dominant mode in rectangular waveguide and cylindrical waveguide.
		CO2	Calculate S-Matrix parameters for different port networks, and Microwave resonator.
		CO3	Explain Microwave Network representations, Hplane tee, Magic tee, directional coupler.

		CO4	Design isolator, basic microwave amplifiers, particularly klystrons, magnetron, and RF filters, basic RF oscillator and mixer models.
			Enumerate and demonstrate application of different diodes in microwave circuits.
		CO5	
		CO6	Analyze different types of transmission lines and measurement parameters related to microwave circuits.
	DE-3 Sattelite & RADAR Communication	CO1	Explain Basic Concepts and Terminologies of Satellite Communication
		CO2	Design the Earth Station and Space Craft System
		CO3	Calculate the Link Power Budget Including Propagation Effects in Satellite.
		CO4	Evaluate the Various Performance Factors Related to the RADAR
		CO5	Explain target Detection and Tracking using Radar Systems.
	DE-3 VLSI Design	CO1	Design different VLSI Circuits.
		CO2	Describe MOSFET fundamentals its manufacturing and fabrication process.
		CO3	Design inverter, parallel and series equivalent circuits and VLSI interconnects.
		CO4	Illustrate circuit diagram, stick diagrams and layouts design rules for MOS.
		CO5	Describe MOS transistor characteristics and its various Performance parameters.
		CO6	Design CMOS subsystems and Semiconductors memories- SRAM DRAM SRAM SPICE models.
	OC-3 (MEMS)	CO1	Describe MEMS, their types and applications.
		CO2	Analyze the Mechatronics system.
		CO3	Analyze the performance characteristics of Sensors and Actuators.
		CO4	Interface Sensors and Actuators using control unit such as Microcontroller and PLC.
		CO5	Construct the prototype of manual Robotic Arm.

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### CO Statement for the session January - June 2022

Semester	Course	CO	CO Statement
Semester - II	140211  Electronics Devices	CO1	<b>Analyze</b> the properties of semiconductor materials.
		CO2	<b>Understand</b> construction and working of different diodes.
		CO3	<b>Analyze</b> the operation of Bi-polar junction transistors.
		CO4	<b>Examine</b> the working of Field Effect Transistors.
		CO5	<b>Analyze</b> the working of power electronics devices.
	140212  Engineering Materials	CO1	<b>Classify</b> engineering materials.
		CO2	<b>Analyze</b> the characteristics of conducting, dielectric and insulating materials.
		CO3	<b>Analyze</b> the characteristics of semi-conducting materials.
		CO4	<b>Describe</b> the energy level for semiconductor materials.
		CO5	<b>Describe</b> nano-materials with their applications.
	140015	CO1	<b>Describe</b> various energy resources, their conversion to electrical power and role in technological & economic development.
	EEES	CO2	<b>Understand</b> the basic concepts of sustainable engineering practices.

Semester - IV		CO3	<b>Recognize</b> the impact of pollution on the ecosystem and control policies adopted at national/international levels.
		CO4	<b>Illustrate</b> the concepts of ecosystems and their conservation.
		CO5	<b>Solve</b> practical problems of society in a sustainable and ethical manner.
		CO6	<b>Fulfill</b> professional duties keeping in mind the environmental safety, health, and welfare of public.
	140411 Digital Circuits & Systems	CO1	<b>Implement</b> the Boolean expression using basic and universal logic gates
		CO2	<b>Design</b> different combinational logic circuits
		CO3	<b>Design</b> various latches and flip-flops
		CO4	<b>Design</b> various shift registers and counters using flip-flops
		CO5	<b>Analyze</b> different types of logic families, semiconductor memories, & multivibrators.
	140412 Analog Integrated Circuits	CO1	<b>Compare</b> the efficiency of various power amplifiers.
		CO2	<b>Analyze</b> the parameters of multistage amplifiers.
		CO3	<b>Design</b> Multivibrator circuits using IC 555.
		CO4	<b>Design</b> the electronic circuits using Operational amplifier.
		CO5	<b>Implement</b> the active filters based on given specifications.
	140413 Analog	CO1	<b>Analyze</b> the amplitude modulation, their generation & detection methods.
		CO2	<b>Explain</b> the generation and detection techniques for angle modulated signal.

	Communication	CO3	<b>Explain</b> the working of transmitter and receiver
		CO4	<b>Evaluate</b> the statistical parameters for general PDF/CDF
		CO5	<b>Evaluate</b> the effects of noise on modulation techniques.
	140414 Communicati on Networks	CO1	<b>Design</b> the symmetrical and asymmetrical attenuators.
		CO2	<b>Synthesize</b> the network for a given positive and minimum positive real function.
		CO3	<b>Design</b> passive filters for the given specifications.
		CO4	<b>Analyze</b> the characteristics of various transmission lines.
		CO5	<b>Calculate</b> the impedance and SWR graphically /analytically.
Semester - VI	140601 Microprocess or  Interfacing	CO1	<b>Explain</b> the architecture and organization of 8085 microprocessors.
		CO2	<b>Develop</b> assembly language programming skill for 8085.
		CO3	<b>Design</b> memory and I/O interfacing circuits using 8255, 8253/8254, 8257/8237 and 8259A with 8085 microprocessor
		CO4	<b>Illustrate</b> 8086 microprocessor architecture and programming skills.
		CO5	<b>Discuss</b> 8051 microcontroller architecture and its application in Embedded systems.
	140602  Digital Signal Processing	CO1	<b>Analyze</b> discrete time system using transform methods
		CO2	<b>Compute</b> DFT using FFT algorithms.

		CO3	To <b>Design</b> IIR Filters
		CO4	To <b>Design</b> FIR Filters.
		CO5	<b>Apply</b> the concept of multi-rate signal processing in practical applications.
	140603 Data Communicati on	CO1	<b>Analyze</b> the error and flow control in communication network.
		CO2	<b>Explain</b> the concepts of MAC layer.
		CO3	<b>Identify</b> the different types of routing used in IP.
		CO4	<b>Classify</b> the transport mechanism in TCP/UDP.
		CO5	<b>Explore</b> the different application protocol used in internetworking.
	DE-1 Optical Communicati on	CO1	<b>Explain</b> the basic elements of optical fiber transmission.
		CO2	<b>Discuss</b> fiber fabrication, splicing and optical connectors.
		CO3	<b>Describe</b> the working of optical sources and optical detectors.
		CO4	<b>Calculate</b> the channel impairments like losses and dispersion.
		CO5	<b>Discuss</b> Coherent optical transmission system and optical networks
	DE-1 Antenna	CO1	<b>Evaluate</b> various parameters of the antenna.

		CO2	<b>Analyze</b> the design parameters and radiation mechanism of wire antennas.
		CO3	<b>Design</b> antenna array for the given radiation characteristics.
		CO4	<b>Analyze</b> the design parameters and radiation characteristics of Aperture and special antennas.
		CO5	<b>Describe</b> effects of earth and its atmosphere on radio wave propagation.
	DE-1 Telecommuni cation Switching Network	CO1	<b>Describe</b> fundamentals of telecommunication systems and associated technologies
		CO2	<b>Design</b> multi stage switching structures involving time and space switching stages
		CO3	<b>Analyze</b> and evaluate the fundamental telecommunication traffic models.
		CO4	<b>Examine</b> the working of Telephone Networks.
		CO5	<b>Demonstrate</b> broad knowledge of fundamental principles and technical standards underlying Data Networks.