

MADHAV INSTITUTE OF TECHNOLOGY AND SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute, Affiliated to R.G.P.V. Bhopal)

Department of Electronics Engineering

Statement for all COs for courses being offered in the academic session July- December 2019

Semester	Subject Name/ Code		CO Statement
III	*140302* Electronics – I	CO1	Analyze the characteristics of various engineering materials.
		CO2	Design any diode, and transistor circuits.
		CO3	Analyze any transistorized circuits for any given specification.
		CO4	Design Analog circuits.
		CO5	Examine the working of transistor based circuits.
		CO6	Examine basic construction of feedback circuits and their application.
	140303 Digital Circuits And Systems	CO1	Simplify Boolean expression using K-Map, & Its Implementation using logic gates.
		CO2	Design any logic circuit using Universal Gate.
		CO3	Design various sequential and combinational circuits.
		CO4	Assemble the various Shift register using flip flops.
		CO5	Analyze the different types of semiconductor memories.
		CO6	Design transistor based digital circuits.
	140304 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.
	140305 Signals And 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.
	140502 Electromagnetic Fields (DC 9)	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.
	140504 Linear Control Theory (DC 11)	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	CO1	Describe the various aspects of sampling theorem viz. Aliasing, signal distortion.

	Communication (DC 12)	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.
	140503 Data Communication (DC 10)	CO1	Explain the evolution of computer network and basic concepts of data communication system
		CO2	Describe the services of the DATA link layer provided in controlling transmission errors and flow of data
		CO3	Analyze the various techniques to alleviate the problem of medium allocation in broadcast network like ALOHA, CSMA etc.
		CO4	Explain the principle and protocol for route calculation and be able to perform such calculation in Network layers
		CO5	Explain the services and features of transport layer of data networks
		CO6	Describe the skills of synchronization in data communication
VII	ELL-701: Advanced Control System	CO1	Describe quantitatively the basics of digital control system.
		CO2	Examine the stability analysis of closed loop system in Z plane.
		CO3	Demonstrate an understanding of nonlinear control system
		CO4	Examine the stability of control system using Root Locus technique.
		CO5	Represent any system by state space model
		CO6	Design PID controller to meet system performance.
	ELL702: 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, H-plane tee, Magic tee, directional coupler.
		CO4	Design isolator, basic microwave amplifiers, particularly klystrons, magnetron, and RF filters, basic RF oscillator and mixer models.
		CO5	Enumerate and demonstrate application of different diodes in microwave circuits.
		CO6	Analyze different types of transmission lines and measurement parameters related to microwave circuits.
	ELL703: Cellular	CO1	Build the concepts of wireless communication and cellular systems.

	Mobile Communication	CO2	Analyze mobile radio propagation models and parameters related to it.
		CO3	Describe about cell splitting, sectoring, cell-site antenna and frequency management for cellular system.
		CO4	Differentiate TDMA and FDMA.
		CO5	Analyze GSM system architecture and its frame structure.
		CO6	Describe spread spectrum multiple access and CDMA.
	ELL704: 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.
	BETL/ELL710 /7445 CMOS Technology	CO1	Describe the CMOS logic circuits.
		CO2	Design different MOS Models.
		CO3	Classify the CMOS Process technology and layout design rules for CMOS circuits.
		CO4	Describe MOS transistor characteristics and its various performance, Parameters that effect the operation the of CMOS circuits.
		CO5	Examine the Semiconductors Memories.
		CO6	Design problems related to programmable logic array.

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Department of Electronics Engineering

CO Statement for the session January - June 2020

Semester	Course	CO	CO Statement
Semester - IV	14040 Electronics-II	CO1	Design the Tuned Amplifier with the given Parameters.
		CO2	Differentiate between the Voltage and Power Amplifier.
		CO3	Design the Multistage Amplifiers.
		CO4	Design the Various Electronics Circuits using Operational Amplifier.
		CO5	Realize Active Filters According to Butterworth and Chebyshev Polynomials.
	140402 Analog Communication	CO1	Apply the Concept of Multiplexing and Modulation in Communication Engineering
		CO2	Analyze the Amplitude Modulation and Angle Modulation with their Waveforms
		CO3	Explain the Generation and Detection for Various Modulation Techniques.
		CO4	Explain the Working of Transmitter and Receiver.
		CO5	Evaluate the Statistical Parameters for General PDF/CDF.
		CO6	Evaluate the Effects of Noise on Different Modulation Techniques.
	140403 Communication Network	CO1	Compute the Various Parameters of Different Passive Networks.
		CO2	Design the Symmetrical and Asymmetrical Attenuators.
		CO3	Synthesize the Network for A Given Positive and Minimum Positive Real Function.
		CO4	Design Passive Filters for the Given Specifications
		CO5	Analyze the Characteristics of Various Transmission Lines.
		CO6	Calculate the Impedance and SWR Graphically /Analytically.
	140404	CO1	Discuss Performance Characteristics of an Instrument

Semester VI	Electronics Measurement and Instrumentation	CO2	Explain the Working Principle and Applications of Bridges and Transducers .
		CO3	Analyze the Working Principle of Digital Instruments and Display Devices
		CO4	Measure Different Parameters using Various Circuits.
		CO5	Design of A/D and D/A Converter.
	140601 Microprocessor and Interfacing	CO1	Explain the Architecture and Organization of 8085 Microprocessors.
		CO2	Develop Assembly Language Programming Skill for 8085.
		CO3	Design the Interfacing Circuitry of Memory and I/O Devices Using Interfacing Chips/Pics with 8085.
		CO4	Discuss the Architecture and Organization of 8086 Microprocessors.
		CO5	Describe the Instruction Set and Architecture of 8051 Microcontroller.
	140602 Digital Signal Processing	CO1	Analyze Discrete Time System using Transform Methods.
		CO2	Compute DFT Using FFT Algorithms.
		CO3	Design IIR Filters.
		CO4	Design FIR Filters.
		CO5	Apply the Concept of Multi-Rate Signal Processing in Practical Applications.
	140603 Optical Communication (DE-1)	CO1	Explain the Basic Elements of Optical Fiber Transmission.
		CO2	Discuss Fiber Fabrication, Splicing and Optical Connectors.
		CO3	Describe the Working of Optical Sources and Optical Detectors.
		CO4	Calculate the Channel Impairments Like Losses and Dispersion.

	140613 Antenna and Wave Propagation(DE-1)	CO5	Discuss Coherent Optical Transmission System and Optical Networks.
		CO1	Evaluate Various Parameters of the Antenna.
		CO2	Analyze the Design Parameters and Radiation Mechanism of Wire Antennas.
		CO3	Design Antenna Array for the Given Radiation Characteristics.
		CO4	Analyze the Design Parameters and Radiation Characteristics of Aperture and Special Antennas.
	140615 OC-1 (Intelligent Control)	CO5	Describe Effects of Earth and its Atmosphere on Radio Wave Propagation.
		CO1	Explain the Fundamental Principle Behind Adaptive Control.
		CO2	Estimate Various Parameter of Control System Using Artificial Neural Network
		CO3	Apply the Concept of Artificial Neural Network to the Field of Control
		CO4	Optimize the Throughput of the System using Optimization Methods Like Genetic Algorithm
	140605 OC-2 (Embeded System)	CO5	Design Fuzzy Logic Based Control System
		CO1	Explain the Architecture of Embedded System and 8051
		CO2	Develop Assembly Language Programming Skill for 8051
		CO3	Analyze the Concept of Timer/Counters , Serial Communication and Interrupt Handling Process of 8051 Microcontroller
		CO4	Interface Memory and I/O Devices with 8051 Microcontroller
Semester - VIII	BELL/BETL 801 Fiber Optics & Optical Communication	CO5	Interface Arduino with LED, Switches, LDR, PWM 16 X 2 LCD, Serial , L-293D For Motor Interfacing ADC.
		CO1	Learn the Basic Elements of Optical Fiber Transmission Link, Fiber Modes Configurations and Fabrication Techniques.
		CO2	Classify Various Optical Sources, Fiber Splicing Techniques, Optical Connectors with their Principles
		CO3	Analyze Different Optical Receivers and their Noise Performances
		CO4	Calculate the Channel Impairments Like Losses and Dispersion

		CO5	Discuss Coherent Optical Transmission System, the Installation and Performance Verification of Digital Optical Fiber Link
		CO6	Discriminate Between Different Amplifiers and Learn Variety of Networking Aspects, FDDI, SONET, WDM
	BELL/BETL 802 Satellite Communication	CO1	Explain Basic Concepts and Terminologies of Satellite Communication
		CO2	Calculate the Link Power Budget.
		CO3	Analyze the Different Multiple Access Schemes for Satellite Communication.
		CO4	Classify Different Propagation Effects in Satellite
		CO5	Solve Problems Related to Channel Coding Techniques.
		CO6	Distinguish Different Satellite System
	BELL/BETL 803 TV and RADAR Engineering	CO1	Explain the Various Components of the Composite Video Signal, TV Camera Tube, and Picture Tube.
		CO2	Characterize Various Types of Monochrome and Color TV Systems.
		CO3	Analyze Basic Factors Required for Successful Transmission and Reception of TV Signals
		CO4	Explain the Advanced Topics in Digital TV and High Definition TV
		CO5	Evaluate the Various Performance Factor Related to the RADAR.
		CO6	Explain Target Detection and Tracking Using RADAR Systems.
	BELL/BETL 804 Neural Networks and Fuzzy Systems	CO1	Explain the Basic Concepts of Neural Networks.
		CO2	Analyze the Concept of Human Neural Structure and ANN.
		CO3	Analyze the Various Feed Forward/Feedback Neural Networks.
		CO4	Examine Different Learning Methodologies
		CO5	Explain the Concept of Fuzziness Involved in Various Systems and Fuzzy Set Theory.