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 2022

Semester	Course	CO	CO statement
	140311 Electronic s Circuits Design	CO1	**Design** regulated power supply.
		CO2	**Design** single stage and multi stage amplifier using BJT.
		CO3	**Design** oscillators using BJT.
		CO4	**Design** of the basic Op-Amp Circuits.
		CO5	**Design** digital circuits such as flip slop, registers, and counters.
		CO6	**Design** analog to digital converter and digital to analog converter.
	140312 Digital Circuits & 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.
	140313 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 solvin 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.
	140314 Analog Communi cation	CO1	Analyze the frequency domain representation of various signals.
		CO2	Describe amplitude modulation, their generation & detection methods.
		CO3	Explain the generation and detection techniques for angle modulated signal.
		CO4	Evaluate the statistical parameters for general PDF/CDF.
		CO5	Evaluate the effects of noise on modulation techniques

V	**140511 Data Science**	CO1	Define different Data Science techniques.
		CO2	Illustrate various tools used for Data Science technique.
		CO3	Build exploratory data analysis for Data Science methods.
		CO4	Apply data visualization techniques to solve real world problems.
		CO5	Apply Data Science techniques for solving real world problems.
	140512 Microprocessor & Interfacing	CO1	Explain the architecture and organization of microprocessor 8086, advance microprocessors and microcontroller 8051
		CO2	Develop skill in assembly language programming for 8086 and 8051.
		CO3	Interface memory and I/O devices using different logic devices and interfacing chips/PPI,s
		CO4	Analyze basic idea about interrupt processing, the data transfer schemes and its applications.
		CO5	Distinguish between different types of general purpose programmable peripheral devices viz 8254, PIT,8259 ,PIC,8257 DMA and 8251USART .
		CO6	Design some specific embedded systems using microcontrollers.
	140513 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.
	140514 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.
		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.
	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 2023

Semester	Course	CO	CO Statement
Semester - II	2140221 Digital Circuits & Systems	CO1	Implement the Boolean expression using basic and universal logic gates.
		CO2	Design different combinational logic circuits
		CO3	Design various latches and flip-flops
		CO4	Design count ers
		CO5	Analyze different types of logic families, semiconductor memories, & multivibrators.
	2140222 Electronic Circuits	CO1	Design different diode circuits
		CO2	Design the biasing circuits for BJTs.
		CO3	Examine the working of BJT amplifiers.
		CO4	Analyze the different parameters of feedback amplifiers
		CO5	Design the Oscillator and Tuned amplifier circuits. Examine the working of BJT amplifiers.
	2140223 Signals & Systems	CO1	Analyze different types of logic families, semiconductor memories, & multivibrators
		CO2	Determine the spectral characteristics of continuous-time and discrete time signals using Fourier transform.

		CO3	Determine the spectral characteristics of continuous-time and discrete time signals using Fourier transform.
		CO4	Determine the spectral characteristics of continuous-time and discrete time signals using Fourier transform.
		CO5	Calculate the convolution.
		CO6	Determine the spectral characteristics of continuous-time and discrete time signals using Fourier transform.
IV SEM	2140224 Python Programming	CO1	Understand basic python programming constructs
		CO2	Analyse va ious data structures
		CO3	Understand Functions
		CO4	Apply the different File handling operations Analyze and Programming using Matplotlib Python libraries.
		CO5	Understand Functions
	140416 Digital Communication	CO1	Explain the process of sampling and pulse modulation
		CO2	Analyze digital modulation systems and line coding schemes.
		CO3	Describe the different band pass data transmission techniques with spectral analysis.
		CO4	Determine the base band pulse transmission techniques and error probability.
		CO5	Illustrate the concepts of information theory and source coding.
	140417 Linear Control Theory	CO1	Determine the transfer function of linear control system.
		CO2	Evaluate the time domain response of control system for different standard inputs.

		CO3	Compute the steady state error for type 0,1,2 systems.
		CO4	Analyze the stability of control system using time and frequency domain methods.
		CO5	Design proportional, integral, and derivative controller, PD, PI, PID controllers.
	140418 Analog Integrated Circuits	CO1	Compare the efficiency of various power amplifiers.
		CO2	Compare the efficiency of various power amplifiers.
			Design Multivibrator circuits using IC 555.
		CO3	Design the electronic circuits using Operational amplifier.
		CO4	Implement the active filters based on given specifications.
		CO5	Compare the efficiency of various power amplifiers.
Semester - VI	140615 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.
	140616 VLSI Design	CO1	Analyze the working of CMOS Transistors in different Modes of Operation.
		CO2	Derive the Static Characteristics of Resistive Load, N-Type MOSFET Load CMOS Inverters.

		CO3	Evaluate the Propagation Delay and Power Dissipation of a CMOS Inverter.
		CO4	Design a CMOS Logic Circuit and Layout Design for a Given Boolean Function.
		CO5	Analyze the Design and Operation of Various Semiconductor Memories.
	40617Artificial ntelligence & Machine earning	CO1	Define basic concepts of Artificial Intelligence & Machine Learning.
		CO2	Illustrate various techniques for search and processing..
		CO3	.Identify various types of machine learning problems and techniques.
		CO4	.Analysis various techniques in Artificial Intelligence, ANN & Machine Learning.
		CO5	Apply AI and ML techniques to solve real world problems
	1000007 Intellectual Property Right	CO1	Imbibe the knowledge of Intellectual Property and its protection through various laws
		CO2	Apply the knowledge of IPR for professional development
		CO3	Apply the knowledge of IPR for professional development
		CO4	Create awareness amidst academia and industry of IPR and Copyright compliance
		CO5	Deliver the purpose and function of IPR and patenting.
	900116 (OC-I) Embedded Systems	CO1	Explain the architecture of embedded system and 8051
		CO2	Explain the architecture of embedded system and 8051

		CO3	Analyze the concept of Timers/Counters, Serial communication and interrupt handling processes of 8051 microcontroller.
		CO4	Interface memory and I/O devices with 8051microcontroller.
		CO5	Interface Arduino with LED, Switches, Light dependent resistor (LDR), PWM, 16*2 LCD, Serial, L293D for motor interfacing, ADC
	900117 (OC-I) Intelligent Control	CO1	Explain the fundamental principle behind adaptive control.
		CO2	Design multi stage switching structures involving time and space switching stages
		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
		CO5	Design fuzzy logic based control system