

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(Deemed University)

(Declared Under Distinct Category by Ministry of Education, Government of India)

NAAC Accredited with A++ Grade

Department of Electronics and Telecommunication Engineering

List of subject wise Course Outcomes for 2021 admitted batch

Semester	Subject Code & Name	Course Outcomes
I	200111 Electronic Workshop (Lab)	CO1. Evaluate the parameters of basic electronic components. CO2. Calculate the phase shift between two waveforms. CO3. Design small electronics circuits.
II	200211 Electronic Devices	CO1. Analyze the properties of semiconductor materials. CO2. Explain construction and working of different diodes. CO3. Analyze the operation of Bi-polar junction transistors. CO4. Examine the working of Field Effect Transistors. CO5. Analyze the working of power electronics devices.
	200212 Engineering Materials	CO1. Classify engineering materials. CO2. Analyze the characteristics of conducting, dielectric and insulating materials. CO3. Analyze the characteristics of semi-conducting materials. CO4. Describe the energy level for semiconductor materials. CO5. Describe nano-materials with their applications.
	100115 Energy, Ecology, Environment & Society	CO1. Describe energy resources, their conversion to electrical power and role in technological & economic development. CO2. Explain national/international power status and renewable power development targets & missions. CO3. Recognize the impact of pollution on the ecosystem and control policies adopted at national/international levels. CO4. Describe the concepts of ecosystems and their conservation. CO5. Solve practical problems of society in a sustainable and ethical manner. CO6. Fulfil professional duties keeping in mind the environmental safety, health, and welfare of public.
	200211 Electronic Devices (Lab)	CO1. Verify the characteristics of Diode, BJT and MOSFET CO2. Implement the clipper, clamper and rectifier circuits. CO3. Calculate the load and line regulation of zener regulator circuit. CO4. Troubleshoot the already fabricated circuits.
III	200311 Electronics Circuit Design	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.
	200311 Electronics Circuit Design (Lab)	CO1 Design the voltage regulator with specific voltage range. CO2 Design the BJT as a switch CO3 Analyse the voltage amplifier using BJT. CO4 Analyse the RC and LC oscillator using BJT. CO5 Draw the frequency response of the Tuned amplifier.
	200318 Network Theor	CO1 Analyze the circuits using Kirchoff's laws. CO2 Apply Network theorems and concept of graph theory for simplification of circuits. CO3 Evaluate transient response and steady state response. CO4 Apply the Laplace transform to linear circuits and systems. CO5 Determine ABCD, Z, Y and h parameter of an electrical circuits.
	200319 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 various shift registers and counters using flip-flops. CO5 Analyze different types of logic families, semiconductor memories, & multivibrators.

	200319 Digital Circuits & Systems (Lab)	CO1 Verify the operation of basic logic gates and DE Morgan's theorem using standard combinational logic. CO2 Construct the basic gates by using universal gates. CO3 Develop half adder and full adder circuits using their truth table. CO4 Develop the D, RS and JK flip-flops and verify their operation. CO5 Design Counters and Registers.
	200320 Analog Communication	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
	200420 Analog Communication (Lab)	CO1. Differentiate modulation and demodulation techniques. CO2. Calculate the modulation index for a given modulated wave. CO3. Generate AM, DSB, SSB and FM signals.
IV	200416 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: Describe the concepts of information theory and source coding. CO6: Apply error correcting codes in digital communication.
	200417 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.
	200418 Analog Integrated Circuits	CO1. Compare the efficiency of various power amplifiers. CO2. Analyze the parameters of multistage amplifiers. CO3. Design Multivibrator circuits using IC 555. CO4. Design the electronic circuits using Operational amplifier. CO5. Implement the active filters based on given specifications.
	200416 Digital Communication (Lab)	CO1 Understand sampling theorem. CO2 Perform lines coding technique. CO3 Construct different pulse modulation technique. CO4 Implement different digital modulation technique CO5 Evaluate the performance of the digital communication system using MATLAB.
	200418 Analog Integrated Circuits (Lab)	CO1. Design various applications using Op-Amp. CO2. Troubleshoot the already fabricated circuit individually or in a team. CO3. Design various amplifier circuits.
	200419 Software Lab Introduction to MATLAB	CO1.Design engineering problem and validate the results using MATLAB environment. CO2. Validate the concepts of network theorems by writing MATLAB codes CO3. Analyze the waveforms on parameter variation of PV Array module using MATLAB Environment CO4. Compare the performance of basic converters using MATLAB environment CO5. Prepare an engineering report on electronic testing of digital circuits.
V	200511 Data Science	CO1. Illustrate 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.
	200512 Microprocessor & 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
	200515 Electromagnetic Fields	CO1. Solve the problems associated with static electromagnetic fields in different engineering situation. CO2. Describe static and dynamic electric and magnetic field. CO3. Apply boundary conditions for electric and magnetic fields at the interface of two different media. CO4. Solve diverse engineering problems with the help of Maxwell equations. CO5. Analyze the behavior of plane waves in different media.

	200519 Data Communication	CO1. Analyze the error and flow control in communication network. CO2. Explain the concepts of MAC layer. CO3. Identify the different types of routing used in IP. CO4. Classify the transport mechanism in TCP/UDP. CO5. Explore the different application protocol used in internetworking.
	200520 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.
	200511 Data Science Lab	CO1. Write a program in Python. CO2. Analyze and evaluate datasets using Python for data science tasks.
	200512 Microprocessor & Interfacing (Lab)	CO1. Develop the assembly language programs for the different arithmetic and logical operations using 8085, 8086 microprocessor and 8051 microcontroller. CO2. Design interfacing circuits for different I/O devices using PPIs with 8085, 8086 microprocessors and 8051 microcontroller.
	200516 Minor Project-I	CO1. Identify electronics components and their testing. CO2. Operate measuring instruments (such as multi-meter) and electronics equipments likes CRO, dual-power tracking power supply & function generator. CO3. Design the electronics circuits on bread-board. CO4. Perform soldering and de-soldering of the circuit components properly. CO5. Troubleshoot a not working electronic circuit and to rectify it.
VI	200619 Mobile Communication & 5G Networks	CO1: Describe the concept of cellular mobile communication system. CO2: Explain the concept of channel models. CO3: Describe modulation techniques for mobile communication system. CO4: Analyze modern cellular standards. CO5: Describe the overview of 5G Technology and their benefits
	200616 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.
	200617 Artificial Intelligence & Machine Learning	CO1. Define basic concepts of Artificial Intelligence & Machine Learning. CO2. Analyse 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. CO6. Build AI enabled intelligent systems for solving real world problems.
	Intelligent Control (900117) (OC-1)	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. CO5. Design fuzzy logic based control system.
	Embedded System (900116) (OC-1)	CO1. Explain the architecture of embedded system and 8051. CO2. Develop assembly language programming skills for 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.
	200616 VLSI Design (Lab)	CO1. Demonstrate a clear Understanding in hardware design language (SPICE). CO2. Model a Combinational circuit using SPICE Netlist. CO3. Simulate and validate the functionality of the CMOS VLSI circuits using CAD tools
	200617 Artificial Intelligence & Machine Learning (Lab)	CO1. Perform the fundamental operations on Python built-in data types. CO2. Develop problem-solving skills using decision and looping statements in Python. CO3. Perform Data Handling with Python Built-in Types and NumPy. CO4. Import, manipulate, and analyze data using Pandas DataFrames. CO5. Implement machine learning models using the scikit-learn package in Python.
	200606 Minor Project-II	CO1. Design & fabricate project. CO2. To impart skills in fault finding and troubleshooting.

VII	200711 Satellite & Radar Communication	CO1. Explain the terminologies of Satellite Communication CO2. Analyze the working of Earth Station and Space Craft Sub Systems CO3. Calculate the Link Power Budget in Satellite communication. CO4. Evaluate the RADAR performance factors. CO5. Distinguish CW and MTI RADAR.
	200715 Embedded System Design	CO1. Explain the features of the embedded system and 8051 microcontroller. CO2. Develop programming skill for 8051 microcontroller. CO3. Describe the 32-bit pipelined architecture of ARM microcontroller & their applications. CO4. Design Interfacing circuitry for memory and I/O devices using different interfacing with 8051. CO5. Develop skill in programming for Arduino with different peripherals.
	200716 Stochastic Processes	CO1: Calculate the probability of events. CO2: Compute the probability distribution for random variables. CO3: Analyze Statistical Average of random variables. CO4: Differentiate between stationary and nonstationary random processes. CO5: Analyze spectral density function.
	200716 Telecommunication Switching and Networks	CO1. Describe fundamentals of telecommunication systems and associated technologies CO2. Design multi stage switching structures involving time and space switching stages CO3. Evaluate the fundamental telecommunication traffic models. CO4. Examine the working of Telephone Networks. CO5. Demonstrate broad knowledge of fundamental principles and technical standards underlying Data Networks.
	900207 Consumer Electronics (OC-2)	CO1 Describe various types of Audio Systems. CO2 Describe the working principle of Television System. CO3 Analyze the operation of a Landline Telephone System. CO4 Explain the working of Cellular and Mobile System. CO5 Explain the working of various Consumer Electronic appliances.
	200703 Creative Problem Solving	CO1. Write a program in Network Simulator for various topologies. CO2. Design a network using NS2 or QualNet. CO3. Design an antenna of given specification.
	200704 Embedded Systems Design Lab	CO1. Develop 8051 assembly language programming skills for the various arithmetic and logical operations. CO2. Demonstrate interfacing of 8051 microcontroller board with various interfacing devices. CO3. Design Arduino board based automated electronic systems.
VIII	200804 Internship/ Project	CO1. Formulate the real world problems. CO2. Express the technical ideas, strategies & methodologies. CO3. Utilize the new tools and techniques to obtain solution of the project. CO4. Prepare project report and oral demonstrations. CO5. Develop skills toward
	200805 Professional Development	CO.1 Develop intellectual curiosity, competency and skills CO2. Develop critical thinking, creativity and effective communication CO3. Display professionalism and ownership of professional growth and learning