MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
Department of Electronics and Telecommunication Engineering

(For batch admitted in Year 2021)

CO Attainment

Year	2021-2025			CO Attainment		
Semester	Course Code and Name		Course Outcome Statements	Direct Attainment	Indirect Attainment	Total Attainment
Semester-II	200211 Electronic Devices	CO1	Analyze the properties of semiconductor materials	2.9	2.5	**2.77**
		CO2	Describe the construction and working of different diodes.	2.7	2.3	**2.57**
		CO3	Analyze the operation of Bi-polar junction transistors.	2.7	2.3	**2.57**
		CO4	Examine the working of Field Efect Transistors.	2.6	2.0	**2.41**
		CO5	Analyze the working of power electronics devices.	2.4	1.9	**2.26**
	200212 Engineering Materials	CO1	Classify engineering materials.	2.9	2.2	**2.68**
		CO2	Analyze the characteristics of diclecric materials.	2.7	2.4	**2.58**
		CO3	Analyze the characteristics of semi-conducing materials.	2.7	2.4	**2.60**
		CO4	Describe the energy level for semiconductor materials.	2.6	2.3	**2.50**
		CO5	Describe nano-materials with their applications.	2.6	2.0	**2.38**
Semester-III	200311 Electronics Circuit Design	CO1	Design different diode circuits.	2.9	2.6	**2.80**
		CO2	Design the biasing circuits for BJTs.	2.8	2.6	**2.75**
		CO3	Examine the working of BJT amplifiers.	2.8	2.3	**2.62**
		CO4	Analyze the different parameters of feedback amplifiers.	2.8	2.2	**2.63**
		CO5	Design the Oscillator and Tuned amplifier circuits.	2.6	2.1	**2.46**
	200311 Electronics Circuit Design (lAB)	CO1	Design the voltage regulator with specific voltage range.	2.8	2.0	**2.56**
		CO2	Design the BJT as a switch	2.7	2.2	**2.55**
		CO3	Implement the voltage amplifier using BJT.	2.8	2.3	**2.65**
		CO4	Analyse the RC and LC oscillator using BJT	2.6	2.2	**2.48**
		CO5	Plot and draw the frequency response of the Tuned amplifier.	2.7	2.1	**2.52**
		CO6	test the software through different approaches.			**0.00**
	200318 Network Theory	CO1	Analyze the circuits using Kirchoff's laws.	2.8	2.3	**2.65**
		CO2	Apply Network theorems and concept of graph theory for simplification of	2.7	2.3	**2.59**
		CO3	Evaluate transient response and steady state response.	2.5	2.6	**2.53**
		CO4	Apply the Laplace transform to linear circuits and systems.	2.6	2.4	**2.54**
		CO5	Determine ABCD, Z, Y and h parameter of an electrical circuits.	2.7	1.7	**2.39**
	200318 Network Theory (Lab)	CO1	Analyze the Thevenin's equivalent circuits and linear superposition and ap	2.8	2.9	**2.83**
		CO2	Relate physical observations and measurements involving electrical circuit	2.7	2.8	**2.73**
		CO3	Predict and measure the transient and sinusoidal steady-state responses of	2.8	2.8	**2.80**
		CO4	Teamwork skills for working effectively in groups and develop analytical	2.6	2.7	**2.63**
		CO5	Prepare and present an organized written engineering report on electronic	2.6	2.7	**2.63**
	200319 Digital Circuits and Systems	CO1	Implement the Boolean expression using basic and universal logic gates.	2.8	2.1	**2.59**
		CO2	Design different combinational logic circuits.	2.7	2.2	**2.54**
		CO3	Design various latches and flip-flops	2.9	2.5	**2.77**
		CO4	Design various shift registers and counters using flip-flops	2.7	2.3	**2.59**

				2.6	2.2	**2.47**
		CO5	Analyze different types of logic families, semiconductor memories, & mul	2.6	2.2	**2.47**
	200319 Digital Circuits and Systems (Lab)	CO1	Verify the operation of basic logic gates and DE Morgan's theorem using	2.8	2.6	**2.74**
		CO2	Construct the basic gates by using universal gates.	2.7	2.3	**2.58**
		CO3	Develop half adder and full adder circuits using their truth table.	2.7	2.6	**2.67**
		CO4	Develop the D, RS and JK flip-flops and verify their operation.	2.7	2.4	**2.61**
		CO5	Design Counters and Registers.	2.6	2.3	**2.51**
	200320 Analog Communications	CO1	Analyze the frequency domain representation of various signals.	2.7	2.2	**2.55**
		CO2	Describe amplitude modulation, their generation & detection methods.	2.7	2.1	**2.52**
		CO3	Explain the generation and detection techniques for angle modulated signa	2.6	2.3	**2.51**
		CO4	Evaluate the statistical parameters for general PDF/CDF.	2.6	2.4	**2.54**
		CO5	Evaluate the effects of noise on modulation techniques	2.6	2.3	**2.51**
	1000005 Project Management and Financing	CO1	Refer various technical recourses available from multiple field.	2.8	2.6	**2.74**
		CO2	Adhere to deadlines and commitment to complete the assignment.	2.8	2.5	**2.71**
		CO3	Improve his/her performance in self-learning domain.	2.7	2.4	**2.61**
		CO4	Acquire additional knowledge helpful for competitive examinations.	2.6	2.4	**2.54**
Semester - IV	**200416 Digital Communication**	CO1	Explain the process of sampling and pulse modulation.	2.7	2.7	**2.70**
		CO2	Analyze digital modulation systems and line coding schemes.	2.8	2.7	**2.77**
		CO3	Describe the different band pass data transmission techniques with spectra	2.6	2.5	**2.57**
		CO4	Determine the base band pulse transmission techniques and error probabili	2.7	2.4	**2.61**
		CO5	Describe the concepts of information theory and source coding.	2.6	2.3	**2.51**
	200417 Linear Control Theory	CO1	Determine the transfer function of linear control system.	2.8	2.5	**2.71**
		CO2	Evaluate the time domain response of control system for different standard	2.7	2.4	**2.61**
		CO3	Compute the steady state error for type 0,1,2 systems.	2.7	2.3	**2.58**
		CO4	Analyze the stability of control system using time and frequency domain n	2.8	2.1	**2.59**
		CO5	Design proportional, integral, and derivative controller, PD, PI, PID contro	2.5	2.1	**2.38**
	200418 Analog Integrated Circuits	CO1	Compare the efficiency of various power amplifiers.	2.7	2.5	**2.64**
		CO2	Analyze the parameters of multistage amplifiers.	2.6	2.4	**2.54**
		CO3	Design Multivibrator circuits using IC 555.	2.6	2.5	**2.57**
		CO4	Design the electronic circuits using Operational amplifier.	2.6	2.4	**2.54**
		CO5	Implement the active filters based on given specifications.	2.5	2.3	**2.44**
	200419 Software Lab Introduction to Matlab	CO1	Design engineering problem and validate the results using MATLAB envi	2.9	2.4	**2.75**
		CO2	Validate the concepts of network theorems by writing MATLAB codes	2.8	2.5	**2.71**
		CO3	Analyze the waveforms on parameter variation of PV Array module using	2.7	2.4	**2.61**
		CO4	Compare the performance of basic converters using MATLAB environme	2.6	2.5	**2.57**
		CO5	Prepare an engineering report on electronic testing of digital circuits.	2.6	2.4	**2.54**
	200511 Data Science	CO1	Define different Data Science techniques.	2.7	2.7	**2.70**
		CO2	Illustrate various tools used for Data Science technique	2.7	2.6	**2.67**
		CO3	Build exploratory data analysis for Data Science methods.	2.6	2.3	**2.51**
		CO4	Apply data visualization techniques to solve real world problems.	2.5	2.2	**2.41**
		CO5	Apply Data Science techniques for solving real world problems.	2.4	2.1	**2.31**
	200512 Microprocessor & Interfacing	CO1	Explain the architecture and organization of 8085 microprocessors.	2.9	2.4	**2.75**
		CO2	Develop assembly language programming skill for 8085.	2.8	2.4	**2.68**
		CO3	Design the Interfacing circuitry of memory and I/O devices using interfaci	2.8	2.6	**2.74**
		CO4	Discuss the architecture and organization of 8086 microprocessors.	2.6	2.5	**2.57**

		CO5	Describe the instruction set and architecture of 8051 microcontroller.	2.6	2.5	**2.57**
	200515 Electromagnetic Theory	CO1	Solve the problems associated with static electromagnetic fields in differer	2.8	2.5	**2.71**
		CO2	Describe static and dynamic electric and magnetic field.	2.7	2.4	**2.61**
		CO3	Apply boundary conditions for electric and magnetic fields at the interface	2.6	2.5	**2.57**
		CO4	Solve diverse engineering problems with the help of Maxwell equations.	2.7	2.4	**2.61**
		CO5	Analyze the behavior of plane waves in different media.	2.7	2.8	**2.73**
		CO6	Examine the phenomenon of wave propagation and reflection in different	2.6	2.7	**2.63**
	200519 Data Communication	CO1	Analyze the error and flow control in communication network.	2.8	2.7	**2.77**
		CO2	Explain the concepts of MAC layer.	2.7	2.7	**2.70**
		CO3	Identify the different types of routing used in IP	2.7	2.3	**2.57**
		CO4	Classify the transport mechanism in TCP/UDP.	2.5	2.4	**2.47**
		CO5	Explore the different application protocol used in internetworking.	2.6	2.4	**2.54**
	200520 Digital Signal Processing	CO1	Analyze discrete time system using transform methods.	2.8	2.5	**2.71**
		CO2	Compute DFT using FFT algorithms.	2.7	2.5	**2.64**
		CO3	Design IIR Filters	2.6	2.4	**2.54**
		CO4	Design FIR Filters.using FFT.	2.6	2.4	**2.54**
		CO5	Apply the concept of multi-rate signal processing in practical applications.	2.5	2.3	**2.44**
	200516 Minor Project-I	CO1	Identify electronics components and their testing.	2.8	2.7	**2.77**
		CO2	Operate measuring instruments (such as multi-meter) and electronics equip	2.7	2.7	**2.70**
		CO3	Design the electronics circuits on bread-board.	2.8	2.3	**2.65**
		CO4	Perform soldering and de-soldering of the circuit components properly.	2.7	2.3	**2.58**
		CO5	Troubleshoot a not working electronic circuit and to rectify it.	2.5	2.4	**2.47**
	200518 Summer Internship Project II (Institute Level Evaluation)	CO1	Know the characteristics of industrial environment.	2.8	2.7	**2.77**
		CO2	Apply the technical knowledge in real industrial situations.	2.7	2.6	**2.67**
		CO3	Write the report in technical work/project.	2.6	2.6	**2.60**
		CO4	Show engineer's responsibilities & ethics.	2.6	2.5	**2.57**
	1000006 Disaster Management	CO1	Identify disaster prevention and mitigation approaches.	2.8	2.4	**2.68**
		CO2	Classify global and national disasters, their trends and profiles.	2.7	2.6	**2.67**
		CO3	Determine the impacts of various disasters.	2.6	2.5	**2.57**
		CO4	Apply Disaster Risk Reduction in management.	2.5	2.4	**2.47**
		CO5	Infer the linkage between disasters, environment and development.	2.4	2.2	**2.34**
Semester-VI	**200619 Mobile Communication & 5G Networks**	CO1	Describe the concept of cellular mobile communication system.	2.7	2.5	**2.64**
		CO2	Explain the concept of channel models	2.7	2.5	**2.64**
		CO3	Describe modulation techniques for mobile communication system.	2.7	2.4	**2.61**
		CO4	Analyze modern cellular standards.	2.6	2.3	**2.51**
		CO5	Describe the overview of 5G Technology and their benefits	2.6	2.2	**2.48**
	200616 VLSI Design	CO1	Analyze the working of CMOS Transistors in different Modes of Operatio	2.8	2.6	**2.74**
		CO2	Derive the Static Characteristics of Resistive Load, N-Type MOSFET Loa	2.7	2.6	**2.67**
		CO3	Evaluate the Propagation Delay and Power Dissipation of a CMOS Inverte	2.6	2.5	**2.57**
		CO4	Design a CMOS Logic Circuit and Layout Design for a Given Boolean Fu	2.5	2.2	**2.41**
		CO5	Analyze the Design and Operation of Various Semiconductor Memories.	2.7	2.4	**2.61**
	200617 MC Artificial Intelligence & Machine Learning	CO1	Define basic concepts of Artificial Intelligence & Machine Learning	2.8	2.6	**2.73**
		CO2	Analyse techniques for search and processing.	2.7	2.6	**2.67**
		CO3	Identify various types of machine learning problems and techniques.	2.6	2.3	**2.51**

		CO4	Analysis various techniques in Artificial Intelligence, ANN & Machine Le	2.6	2.3	**2.52**
		CO5	Apply AI and ML techniques to solve real world problems.	2.5	2.3	**2.45**
	Minor-II	CO1	Formulate the real world problems.	2.8	2.6	**2.74**
		CO2	Express the technical ideas, strategies & methodologies.	2.7	2.6	**2.67**
		CO3	Utilize the new tools and techniques to obtain solution of the project.	2.6	2.5	**2.57**
		CO4	Prepare project report and oral demonstrations.	2.6	2.4	**2.54**
		CO5	Develop skills towards social needs	2.5	2.3	**2.44**
Semester-VII	**200711 Satellite and Radar Communication Systems**	CO1	Explain the terminologies of Satellite Communication	2.8	2.7	**2.77**
		CO2	Analyze the working of Earth Station and Space Craft Sub Systems	2.7	2.5	**2.64**
		CO3	Calculate the Link Power Budget Including Propagation Effects in Satellit	2.6	2.4	**2.53**
		CO4	Evaluate the RADAR performance factors.	2.6	2.5	**2.58**
		CO5	Distinguish CW and MTI RADAR.	2.5	2.5	**2.49**
	910217 Consumer Electronics	CO1	Describe various types of Audio Systems.	2.8	2.7	**2.77**
		CO2	State the working principle of Television System.	2.7	2.6	**2.67**
		CO3	Analyze the operation of a Landline Telephone System.	2.5	2.6	**2.53**
		CO4	Explain the working of Cellular and Mobile System.	2.6	2.5	**2.57**
		CO5	Explain the working of various Consumer Electronic appliances.	2.5	2.4	**2.47**
	200704 Embedded Systems Design Lab	CO1	Develop 8051 assembly language programming skills for the various arith	2.8	2.8	**2.80**
		CO2	Demonstrate interfacing of 8051 microcontroller board with various interf	2.7	2.6	**2.67**
		CO3	Design Arduino board based automated electronic systems.	2.7	2.4	**2.61**
		CO4	Design Interfacing circuitry for memory and I/O devices using different in	2.7	2.5	**2.64**
		CO5	Develop skill in programming for Arduino with different peripherals	2.6	2.6	**2.60**
Semester-VIII	**200804 Internship**	CO1	Formulate the real world problems.	2.8	2.8	**2.80**
		CO2	Express the technical ideas, strategies & methodologies.	2.7	2.6	**2.67**
		CO3	Utilize the new tools and techniques to obtain solution of the project.	2.7	2.6	**2.67**
		CO4	Prepare project report and oral demonstrations.	2.5	2.5	**2.50**
		CO5	Develop skills towards social needs	2.5	2.6	**2.53**
	200804 Project	CO1	Formulate the real world problems.	2.8	2.8	**2.80**
		CO2	Express the technical ideas, strategies & methodologies.	2.7	2.6	**2.67**
		CO3	Utilize the new tools and techniques to obtain solution of the project.	2.7	2.8	**2.73**
		CO4	Prepare project report and oral demonstrations.	2.5	2.6	**2.53**
		CO5	Develop skills towards social needs	2.5	2.6	**2.53**
	200805 Professional Development#	CO1	Develop intellectual curiosity, competency and skills	2.8	2.8	**2.80**
		CO2	Develop critical thinking, creativity and effective communication	2.7	2.6	**2.67**
		CO3	Display professionalism and ownership of professional growth and learnin	2.7	2.6	**2.67**