

Madhav Institute of Technology & Science, Gwalior- 474 005
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Department :		Information Technology		
Year	2017-2021			
Semester 3	160301: Digital Electronics	CO1	Illustrate various number systems, Binary codes and its application in digital design.	
		CO2	Identify the logic functions, circuits, truth tables and also apply the laws of Boolean algebra to simplify circuits and expressions.	
		CO3	Develop the formal procedures for the analysis and design of combinational circuits.	
		CO4	Analyse sequential circuit's components and their usability in digital circuits.	
		CO5	Compare the concept of memories, programmable devices and digital ICs.	
		CO6	Design and analyze circuits for digital arithmetic.	
			160301: Digital Electronics	
	160302: Data Structures	CO1	Outline the basics of algorithms and their performance criteria.	
		CO2	Explain the working of linear and non-linear data structures.	
		CO3	Identify the appropriate data structure to solve the specific problems.	
		CO4	Analyse the performance of various data structures and their applications.	
		CO5	Evaluate the time and space complexities of various data structures and their applications.	
		CO6	Design the optimal algorithmic solutions for various problems	
			160302: Data Structures	
	160304: OOPs and methodology	CO1	Relate the concepts and significance of OOPs in real world.	
		CO2	Demonstrate adeptness of object oriented programming to solve problems using Object oriented concepts	
		CO3	Apply object oriented programming to develop solutions of problems using standard language constructs.	
		CO4	Analyze data flow diagrams and flow charts for small/ moderate problems	
		CO5	Determine how to simulate the problem in field of Operating system, Computer networks and real world problems.	
		CO6	Develop software using concepts of objects, associations and integrity constraint.	
			160304: OOPs and methodology	
	160303: Computer Graphics and Multimedia	CO1	Illustrate the fundamental concepts of Computer Graphics, hardware & software components and its applications.	
		CO2	Explain various graphical image generation & manipulation methods and algorithms.	
		CO3	Apply various methods of generation & manipulation of images for creating graphical images and color models.	
		CO4	Explain various rendering, illumination and color models of realistic image or pictures using image processing techniques.	
		CO5	Discuss various methods to create natural seen & realistic images in 2D & 3D space.	
		CO6	Design & analysis of various graphical image processing techniques and animation.	
		160303: Computer Graphics and Multimedia		

	160302: Data Structure LAB	CO1	Outline the basics of algorithms and their performance criteria.	
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		CO3	Identify the appropriate data structure to solve the specific problems.	
		CO4	Analyse the performance of various data structures and their applications.	
		CO5	Evaluate the time and space complexities of various data structures and their applications.	
		CO6	Design the optimal algorithmic solutions for various problems	
			160302: Data Structure LAB	
	160303: Computer Graphics LAB	CO1	Demonstrates the fundamental concepts of Computer Graphics and its applications.	
		CO2	Explain and use hardware's and software's component of computer graphics	
		CO3	Apply various image generation, manipulations and color model techniques in coding.	
		CO4	Implement algorithms for create and manipulate image in programs.	
		CO5	Develop the ability to write computer programs for create image and animation using graphics concepts.	
		CO6	Develop application programs and projects in terms of image and animation using computer graphics.	
			160303: Computer Graphics LAB	
	160304: Object Oriented Programming LAB	CO1	Select proper arithmetic, logical, relational, and string manipulation expressions to process data.	
		CO2	Demonstrate the use of various OOPs concepts with the help of programs.	
		CO3	Apply validation techniques to build a reliable solution to a given problem.	
		CO4	Analyze and write programs to solve more complicated problems using the concepts of Object Oriented Methodology.	
		CO5	Choose appropriate programming concepts as and when required in the future application development.	
		CO6	Construct a complete class definition with in the class definition, write class and instance methods including the constructor and overloaded methods.	
			160304: Object Oriented Programming LAB	
	160305: Hardware LAB	CO1	Explain basics of different computer peripherals and interfaces.	
		CO2	Demonstrate architecture of various computer hardware devices and their functioning.	
		CO3	Demonstrate the details of system buses, memory system, and I/O interfaces.	
CO4		Identify the existing configuration of the computers peripherals and creating wireless network through the access point.		
CO5		Analyze progress in contemporary peripherals and bus systems.		
CO6		construct a networking based on IPv4 address scheme.		
		160305: Hardware LAB		
160401: Design and Analysis of Algorithm	CO1	Define the basic properties of algorithm.		
	CO2	Analyze the complexity of an algorithm.		
	CO3	Apply mathematical preliminaries to analyse and design stages of different types of algorithms.		
	CO4	Examine algorithms for a number of important computational problems.		
	CO5	Compare different design techniques to develop algorithms for various computational problems.		
	CO6	Build the general principles and good algorithm design techniques to develop efficient computer algorithms.		
			160401: Design and Analysis of Algorithm	
Database Management system	CO1	Demonstrate the concepts of different type of database system.		
	CO2	Apply Relational algebra concepts to design database system.		
	CO3	Make use of queries to design and access database system.		

Semester 4

160402 manager	CO4	Analyze the evaluation of transaction processing and concurrency control.
	CO5	Determine the optimize database for real world applications.
	CO6	Design a database system for a real world application.
		160402: Database management system
160403: Operating system	CO1	Outline the basic concept of operating systems
	CO2	Analyze the working of operating system
	CO3	Examine the working of various scheduling/allocation approaches
	CO4	Measure the performance of various scheduling/allocation approaches
	CO5	Compare the various operating system problems/issues
	CO6	Develop the Solution of various operating system problems/issues
		160403: Operating system
160404: Computer System Organization	CO1	Demonstrate the computer architecture for defining basic component and functional unit.
	CO2	Recall different number system and solve the basic arithmetic operations of signed and unsigned numbers.
	CO3	Develop the fundamental concept to understand the working of microprocessor.
	CO4	Explain the basic concept of input output organization.
	CO5	Compare various memory and mapping techniques.
	CO6	Develop the skill of writing assembly language programming.
		160404: Computer System Organization
160401: Design and Analysis of Algorithm Lab	CO1	Label basic algorithms and different problem solving strategies.
	CO2	Demonstrate methods to solve non-conventional problems and expertise for analysing existing solutions.
	CO3	Experiment with the algorithms as a precise mathematical concept.
	CO4	Examine the design algorithms; establish their correctness, their efficiency and memory requirements.
	CO5	Solve the problems using different algorithm solving paradigm.
	CO6	Develop programming skills to practice well-known algorithms and design data structures to solve real-life problems.
		160401: Design and Analysis of Algorithm Lab
160402: Database management system Lab	CO1	Construct database schema for a given problem domain.
	CO2	Apply integrity constraints on a database schema using a state-of-the-art RDBMS.
	CO3	Apply SQL queries using DDL and DML to design and access database system.
	CO4	Make use of operators and functions used in query.
	CO5	Distinguish Tables and Views for database system.
	CO6	Develop a small project for real world scenario.
		160402: Database management system Lab
160405: Programming Lab	CO1	Demonstrate the fundamentals of computer programming
	CO2	Read, understand and trace the execution of program
	CO3	Develop Conditional and Iterative Statements
	CO4	Design the program using functions
	CO5	Implement the programs using Derived and User defined data types
	CO6	Design program for a given problem using computer programming

	160503: Theory of Computation		160405: Programming Lab	
		CO1	Explain the basic concepts of switching and finite automata theory and languages.	
		CO2	Relate practical problems to languages, automata, computability, and complexity.	
		CO3	Construct abstract models of computing and analyse their power to recognize the languages.	
		CO4	Construct and analyze the grammar.	
		CO5	Apply mathematical models and descriptors in various computing theories	
		CO6	Solve problems in computer science using mathematical and formal techniques.	
				160503: Theory of Computation
	160502: Software Engineering	CO1	List various software models with respect to their accuracy and needs of the customer requirement.	
		CO2	Explain the real world problems using software engineering concepts.	
		CO3	Develop the technique and results with customer expectations.	
		CO4	Identify and how to use various cost estimation techniques used in software engineering.	
		CO5	Compare design of a system, component, or process to meet desired needs within realistic constraints	
		CO6	Develop the techniques, skills and software engineering tools necessary for engineering domain.	
				160502: Software Engineering
	160504: Microprocessor & Interfacing	CO1	Classify the concepts of different advanced microprocessors and microcontroller.	
		CO2	Illustrate the various peripheral interfaces, controllers and bus standards.	
		CO3	Build a system using peripheral devices and controllers for 8086 microprocessor.	
		CO4	Distinguish the interface with various devices to the microprocessor.	
		CO5	Design an interface for various devices on 8086/8051 based systems.	
		CO6	Develops skills in assembly language programming for 8051 & 8086 applications.	
				160504: Microprocessor & Interfacing
	160501: Discrete Structures	CO1	understand the basic concepts of set theory, propositional logic, graph theory, discrete numeric function and algebraic structure.	
		CO2	Illustrate the knowledge of course content and distinguish between them in terms of their applications.	
		CO3	Implement the course content to solve the problems.	
		CO4	Apply the concept of studied topics with suitable technique faced in engineering problems.	
		CO5	Analyze the basic concepts of set theory, propositional logic, graph theory, discrete numeric function and algebraic structure to examine the real world	
		CO6	Design the analytical skill and interpret applications of engineering beneficial in real time troubleshooting.	
				160501: Discrete Structures
	160503: Theory of Computation LAB	CO1	Judge various model of computation.	
		CO2	Construct abstract models of computing.	
		CO3	Infer the power of abstract models in computing to recognize the languages.	
		CO4	Demonstrate analytical thinking and intuition for problem solving situations in related areas of theory of computation.	
CO5		Explain the limitations of computation in solving problems.		
CO6		Define set of rules for syntax verification		
			160503: Theory of Computation LAB	
160502: Software Engineering LAB	CO1	Define basic concepts of UML.		
	CO2	Illustrate the software development process using different tools.		
	CO3	Apply the UML to solve different common modeling problems.		
	CO4	Utilize the knowledge of Software engineering and project management.		
	CO5	Analyze the vocabulary, rules, and idioms of the UML and learn how to model it effectively.		

Semester 6	160504: Microprocessor and interfacing LAB	CO6	Design the systems, from concept to executable artifact, using object oriented techniques.	
		160502: Software Engineering LAB		
		CO1	Explain types of instructions and addressing modes.	
		CO2	Make use of Hex code needed in assembly language	
		CO3	Experiment with various peripheral devices to interface with microprocessor.	
		CO4	Simplify the arithmetic, Logical, etc. problems using instruction set of 8086/8051 microprocessor.	
		CO5	Determine the process required in interfacing with 8086/8051.	
	CO6	Develop the assembly language programs in 8086/8051 to solve a real world problem.		
	160504: Microprocessor and interfacing LAB			
	160601: Compiler Design	CO1	Recall the concepts of finite automata and context free grammar	
		CO2	Build the concept of working of compiler	
		CO3	Examine various parsing techniques and their comparison	
		CO4	Compare various code generation and code optimization techniques.	
		CO5	Analyze different tools and techniques for designing a compiler	
CO6		Design various phases of compiler		
160601: CompilerDesign				
160602: Computer Networks	CO1	Define Security and its requirement at different levels & in different cases.		
	CO2	What are security principles and how they can be achieved.		
	CO3	Outline the characteristics and working of infected/ malicious system or person.		
	CO4	Analyze the different attacks and perform security algorithm/ solution accordingly.		
	CO5	Explain the mechanisms/ techniques for various attacks against security or more specifically principles of security.		
	CO6	Justify the role of Government and thirty party in security.		
160602: Computer Networks				
160602: Agile Methodology	CO1	Demonstrate Scrum Release Planning and Scrum Sprint Planning		
	CO2	Apply user stories into tasks and ideal day estimates.		
	CO3	Classify a Sprint with Sprint Reviews and Sprint Retrospectives		
	CO4	Examine the Scrum with multiple team or distributed project teams.		
	CO5	Design test driven and agile principle based software.		
	CO6	Develop any application using agile methodology.		
160602: Agile Methodology				
160611: Network and Web security	CO1	Explain cryptographic algorithms, hash algorithms and authentication mechanisms.		
	CO2	Illustrate fundamentals of number theory, attacks and security principles.		
	CO3	Apply number theory and various algorithms to achieve principles of security.		
	CO4	Analyze the cause for various existing network attacks and describe the working of available security controls		
	CO5	Examine the vulnerabilities in IT infrastructure.		
	CO6	Predict the attacks and controls associated with IP, transport-level, web and e-mail security.		
160611: Network and Web security				
7	160711	CO1	define the concept of computer network and various layered architecture.	
		CO2	compare the classless and class full addressing of IPV4 .	

Semester 7	160711: Networking with TCP/IP	C03	identify the different types of networking devices and their functions within a network.	
		C04	analyze various protocols of computer networks for assisting network design and implementation.	
		C05	design client server applications and communication model and protocols for communication.	
		C06	elaborate various TCP/IP protocol for achieving multimedia and security services.	
			160711: Networking with TCP/IP	
Semester 8	BITL801: Image Processing	C01	Explain different modalities and current techniques in image acquisition.	
		C02	Classify spatial and fequency domain techniques in image processing.	
		C03	Apply image processing techniques to enhance visual images.	
		C04	Analyze the constraints in image processing when dealing with real problems	
		C05	Evaluate various enhancement, restoration and retrieval techniques of image processing	
		C06	Design a system using mathematical models and principle of digital image processing for real world problems	
				BITL801: Image Processing
	BITL802: Data warehouse and data Mining	C01	Identify various methods for storing & retrieving data from different data sources	
		C02	Classify various data bases and data models of data warehouse.	
		C03	Apply pre-processing techniques for construction of data warehouse	
		C04	Analyze data mining algorithms for knowledge discovery & prediction.	
		C05	Choose appropriate data mining method for finding of association rules from transactional databases.	
		C06	Develop various classification algorithms for data using data mining.	
				BITL802: Data warehouse and data Mining
	BITL803: Neural Network and Fuzzy systems	C01	Explain the concept of Artificial Neural Network and Fuzzy Logic.	
		C02	Illustrate various problems to be solved through Fuzzy Systems.	
		C03	Make use of single and multi-layer feed-forward neural networks.	
		C04	Analyze various Neural Networks in order to solve problems effectively and efficiently.	
		C05	Determine the roll of Neural Networks & Fuzzy Systems in problem solving.	
		C06	Develop and train different supervised and unsupervised networks.	
				BITL803: Neural Network and Fuzzy systems
	BITL804: Internet of things and Application	C01	Explain internet of things, evolution of IoT, applications of IoT	
		C02	classify IoT architecture, IoT service life cycle and application of device/cloud collaboration	
		C03	Apply the concept of IoT in real world scenario	
C04		Analyse security and privacy in the IoT		
C05		choose appropriate framework for distributed data analysis for IoT and anomaly detection		
C06		develop small low cost embedded systems		
			BITL804: Internet of things and Application	