Madhav Institute of Technology and Science, Gwalior
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)
Department of Computer Science & Engineering and Information Technology

CO Attainment of B. Tech. Computer Science & Engineering
(Session: July-Dec. 2018 Semester)

	Course Name		Course outcomes	Direct Attainment %	Indirect Attainment %	Total Attainment %	Target	Gap	Action Taken/Required
semester 1	100203:Basic Computer Engineering	CO1	Define the fundamentals of computer system.	68	46	63.6	60	-	-
		CO2	Outline the various components of computer system.	75	51	70.2	60	-	
		CO3	Design, implement, test and debug the computer programs using programming language.	58	76	61.6	60	-	
		CO4	Analyze the usage of various system & application softwares to manage computer system and data.	49	58	50.8	60	9.2	
		CO5	Develop the ability to design computer programs to solve real world problems.	57	76	60.8	60	-	
		CO6	Elaborate the working of Internet.	63	55	61.4	60	-	
	100203: Basic Computer Engineering LAB	CO1	Demonstrate the fundamentals of computer programming	62	59	61.4	60	-	-
		CO2	Read, understand and trace the execution of program	75	67	73.4	60	-	
		CO3	Develop Conditional and Iterative Statements	53	58	54	60	6	
		CO4	Design the program using functions	62	73	64.2	60	-	
		CO5	Implement the programs using Derived and User defined data types	68	75	69.4	60	-	
		CO6	Design program for a given problem using computer programming	63	66	63.6	60	-	
	150301: Digital Electronics	CO1	Illustrate various number systems, Binay codes and its application in digital design.	88	72	84.8	60	-	Proper coverage & assignment of COs in the question paper is required
		CO2	Identify the logic functions, circuits, truth tables and also apply the laws of Boolean algebra to simplify circuits and expressions.	84	76	82.4	60	-	
		CO3	Develop the formal procedures for the analysis and design of combinational circuits.	42	59	45.4	60	14.6	
		CO4	Analyse sequential circuit's components and their usability in digital circuits.	68	59	66.2	60	-	
		CO5	Compare the concept of memories, programmable devices and digital ICs.	70	61	68.2	60	-	
		CO6	Design and analyze circuits for digital arithmetic.	19	53	25.8	60	34.2	

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Course	CO	Description						Remarks
150302: Data Structures	CO1	Outline the basics of algorithms and their performance criteria.	85	72	82.4	60	-	Proper coverage & assignment of COs in the question paper is required
	CO2	Explain the working of linear and non-linear data structures.	77	74	76.4	60	-	
	CO3	Identify the appropriate data structure to solve the specific problems.	61	56	60	60	-	
	CO4	Analyse the performance of various data structures and their applications.	32	49	35.4	60	**24.6**	
	CO5	Evaluate the time and space complexities of various data structures and their applications.	68	78	70	60	-	
	CO6	Design the optimal algorithmic solutions for various problems	71	62	69.2	60	-	
150304: OOPs and methodology	CO1	Relate the concepts and significance of OOPs in real world.	75	70	74	60	-	Arrangement of Extra Classes
	CO2	Demonstrate adeptness of object oriented programming to solve problems using Object oriented concepts	56	83	61.4	60	-	
	CO3	Apply object oriented programming to develop solutions of problems using standard language constructs.	59	65	60.2	60	-	
	CO4	Analyze data flow diagrams and flow charts for small/moderate problems	35	82	44.4	60	**15.6**	
	CO5	Determine how to simulate the problem in field of Operating system, Computer networks and real world problems.	58	85	63.4	60	-	
	CO6	Develop software using concepts of objects, associations and integrity constraint.	57	83	62.2	60	-	
150303: Computer Graphics and Multimedia	CO1	Illustrate the fundamental concepts of Computer Graphics, hardware & software components and its applications.	59	65	60.2	60	-	Arrangement of Extra Classes
	CO2	Explain various graphical image genration & manipulation methods and algorithms.	63	60	62.4	60	-	
	CO3	Apply various methods of generation & manipulation of images for creating graphical images and color models.	70	62	68.4	60	-	
	CO4	Explain various rendering, illumination and color models of realistic image or pictures using image processing techniques.	93	80	90.4	60	-	
	CO5	Discuss various methods to create natural seen & realistic images in 2D &3D space.	63	55	61.4	60	-	
	CO6	Design & analysis of various graphical image processing techniques and animation.	21	50	26.8	60	**33.2**	
	CO1	Retrieve the engineering application problems to related course content	31	35	31.8	60	**28.2**	

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semester 3	**100001: Engineering Mathematics-II**	CO2	Describe the basic concept of Complex Variable , Linear Programming Problem and Numerical Methods	20	44	24.8	60	**35.2**	Proper coverage & assignment of COs in the question paper is required. Arrangement of Extra classes
		CO3	Classify Complex Variable , Linear Programming Problem and Numerical Methods so as to apply the knowledge in solving routine problems	35	52	38.4	60	**21.6**	
		CO4	Inculcate analytical and computational skill to interpret the topics for engineering problems	38	43	39	60	**21**	
		CO5	Analyze the Complex Variable, Linear Programming Problem and Numerical Methods to examine the real world problem	44	61	47.4	60	**12.6**	
		CO6	Evaluate and Implement suitable techniques relevant for industries and contribute to the society	30	32	30.4	60	**29.6**	
	150302: Data Structure LAB	CO1	Outline the basics of algorithms and their performance criteria.	80	75	79	60	-	-
		CO2	Explain the working of linear and non-linear data structures.	64	71	65.4	60	-	
		CO3	Identify the appropriate data structure to solve the specific problems.	68	66	67.6	60	-	
		CO4	Analyse the performance of various data structures and their applications.	92	82	90	60	-	
		CO5	Evaluate the time and space complexities of various data structures and their applications.	76	66	74	60	-	
		CO6	Design the optimal algorithmic solutions for various problems	76	68	74.4	60	-	
	150303: Computer Graphics LAB	CO1	Demonstrates the fundamental concepts of Computer Graphics and its applications.	76	64	73.6	60	-	-
		CO2	Explain and use hardware's and software's component of computer graphics	88	69	84.2	60	-	
		CO3	Apply various image generation, manipulations and color model techniques in coding.	80	88	81.6	60	-	
		CO4	Implement algorithms for create and manipulate image in programs.	76	73	75.4	60	-	
		CO5	Develop the ability to write computer programs for create image and animation using graphics concepts.	80	84	80.8	60	-	
		CO6	Develop application programs and projects in terms of image and animation using computer graphics.	84	91	85.4	60	-	
	ted	CO1	Select proper arithmetic, logical, relational, and string manipulation expressions to process data.	72	65	70.6	60	-	

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	CO	Description						
150304: Object Orien Programming LAB	CO2	Demonstrate the use of various OOPs concepts with the help of programs.	92	84	90.4	60	-	-
	CO3	Apply validation techniques to build a reliable solution to a given problem.	64	75	66.2	60	-	
	CO4	Analyze and write programs to solve more complicated problems using the concepts of Object Oriented Methodology.	88	79	86.2	60	-	
	CO5	Choose appropriate programming concepts as and when required in the future application development.	72	81	73.8	60	-	
	CO6	Construct a complete class definition with in the class definition, write class and instance methods including the constructor and overloaded methods.	64	61	63.4	60	-	
150305: Hardware LAB	CO1	Explain basics of different computer peripherals and interfaces.	40	55	43	60	**17**	-
	CO2	Demonstrate architecture of various computer hardware devices and their functioning.	72	79	73.4	60	-	
	CO3	Demonstrate the details of system buses, memory system, and I/O interfaces.	60	72	62.4	60	-	
	CO4	Identify the existing configuration of the computers peripherals and creating wireless network through the access point.	58	69	60.2	60	-	
	CO5	Analyze progress in contemporary peripherals and bus systems.	84	83	83.8	60	-	
	CO6	construct a networking based on IPv4 address scheme.	64	75	66.2	60	-	
BCSL505: Theory of Computation	CO1	Explain the basic concepts of switching and finite automata theory and languages.	26	53	31.4	60	**28.6**	Proper coverage & assignment of COs in the question paper is required. Arrangement of Extra classes
	CO2	Relate practical problems to languages, automata, computability, and complexity.	25	67	33.4	60	**26.6**	
	CO3	Construct abstract models of computing and analyse their power to recognize the languages.	26	43	29.4	60	**30.6**	
	CO4	Construct and analyze the grammar.	25	55	31	60	**29**	
	CO5	Apply mathematical models and descriptors in various computing theories	25	74	34.8	60	**25.2**	
	CO6	Solve problems in computer science using mathematical and formal techniques.	26	66	34	60	**26**	
re	CO1	List various software models with respect to their accuracy and needs of the customer requirement.	62	65	62.6	60	-	

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Semester 5	**BCSL503: Software Engineering**	CO2	Explain the real world problems using software engineering concepts.	68	75	69.4	60	-	Proper coverage & assignment of COs in the question paper is required
		CO3	Develop the technique and results with customer expectations.	67	54	64.4	60	-	
		CO4	Identify and how to use various cost estimation techniques used in software engineering.	19	45	24.2	60	**35.8**	
		CO5	Compare design of a system, component, or process to meet desired needs within realistic constraints	66	52	63.2	60	-	
		CO6	Develop the techniques, skills and software engineering tools necessary for engineering domain.	15	42	20.4	60	**39.6**	
	BCSL504: Microprocessor & Interfacing	CO1	Classify the concepts of different advanced microprocessors and microcontroller.	54	64	56	60	**4**	-
		CO2	Illustrate the various peripheral interfaces, controllers and bus standards.	69	52	65.6	60	-	
		CO3	Build a system using peripheral devices and controllers for 8086 microprocessor.	64	76	66.4	60	-	
		CO4	Distinguish the interface with various devices to the microprocessor.	69	64	68	60	-	
		CO5	Design an interface for various devices on 8086/8051 based systems.	77	82	78	60	-	
		CO6	Develops skills in assembly language programming for 8051 & 8086 applications.	63	56	61.6	60	-	
	BCSL502: Networking with TCP/IP	CO1	Define the basic concept of computer network and various layered architecture.	57	72	60	60	-	Arrangement of Extra Classes
		CO2	Identify the different types of network devices and their functions within a network	62	70	63.6	60	-	
		CO3	Identify and evaluate the Classless and Class full addressing.	59	64	60	60	-	
		CO4	Explain various protocols of computer networks and how they can be used to assist in network design and implementation.	78	70	76.4	60	-	
		CO5	Explain Client server paradigm and their protocols	60	66	61.2	60	-	
		CO6	Elaborate various security issues and their protocol	44	50	45.2	60	**14.8**	
	heory of on LAB	CO1	Judge various model of computation.	84	88	84.8	60	-	
		CO2	Construct abstract models of computing.	58	68	60	60	-	
		CO3	Infer the power of abstract models in computing to recognize the languages.	57	75	60.6	60	-	

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	CO	Description						
BCSP502: T Computati	CO4	Demonstrate analytical thinking and intuition for problem solving situations in related areas of theory of computation.	63	68	64	60	-	-
	CO5	Explain the limitations of computation in solving problems.	52	52	52	60	**8**	
	CO6	Define set of rules for syntax verification	56	81	61	60	-	
BCSP503: Software Engineering LAB	CO1	Define basic concepts of UML.	72	66	70.8	60	-	-
	CO2	Illustrate the software development process using different tools.	92	84	90.4	60	-	
	CO3	Apply the UML to solve different common modeling problems.	64	72	65.6	60	-	
	CO4	Utilize the knowledge of Software engineering and project management.	88	78	86	60	-	
	CO5	Analyze the vocabulary, rules, and idioms of the UML and learn how to model it effectively.	72	81	73.8	60	-	
	CO6	Design the systems, from concept to executable artifact, using object oriented techniques.	64	66	64.4	60	-	
BCSP504: Microprocessor and interfacing LAB	CO1	Explain types of instructions and addressing modes.	36	42	37.2	60	**22.8**	Proper coverage & assignment of COs in the End semester Exam is required
	CO2	Make use of Hex code needed in assembly language	56	78	60.4	60	-	
	CO3	Experiment with various peripheral devices to interface with microprocessor.	61	58	60.4	60	-	
	CO4	Simplify the arithmetic, Logical, etc. problems using instruction set of 8086/8051 microprocessor.	40	38	39.6	60	**20.4**	
	CO5	Determine the process required in interfacing with 8086/8051.	62	75	64.6	60	-	
	CO6	Develop the assembly language programs in 8086/8051 to solve a real world problem.	56	78	60.4	60	-	
BCSP 506: Java Programming LAB	CO1	Define the fundamentals, features, packages and functionalities of java programming.	76	85	77.8	60	-	Proper coverage & assignment of COs in the End semester Exam is required
	CO2	Explain exceptional handling, thread, multithreading, database connectivity and networking concepts.	57	74	60.4	60	-	
	CO3	Outline the block diagram of control statements.	57	72	60	60	-	
	CO4	Construct programs using concepts of java.	62	56	60.8	60	-	
	CO5	Analyze and compare the existing programs for improvement.	80	79	79.8	60	-	
	CO6	Create java programs/ project for real problems.	36	44	37.6	60	**22.4**	

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semester 7	**BCSL-701: Artificial Intelligence and Expert Systems**	CO1	Tell the fundamental concepts of Artificial Intelligence and its real-world applications.	58	68	60	60	-	Arrangement of Remedial Classes
		CO2	Illustrate the various seraching algorithms used to solve AI problems.	55	82	60.4	60	-	
		CO3	Utilize the several techniques of Knowledge Representation to deal with AI problems.	63	51	60.6	60	-	
		CO4	Analyze the performance of various algorithm used in AI.	62	62	62	60	-	
		CO5	Evaluate programming methods and algorithmic principles in puzzle solving techniques.	50	53	50.6	60	**9.4**	
		CO6	Formulate an strategy to solve the real-world problems by various applications of AI.	45	43	44.6	60	**15.4**	
	BCSL702: Distributed System	CO1	Demonstrate knowledge of the basic elements and concepts related to distributed system technologies	63	53	61	60	-	Proper coverage & assignment of COs in the question paper is required
		CO2	Explain various architectures used to design distributed systems, such as client-server and peer to peer.	77	85	78.6	60	-	
		CO3	Build distributed systems using various interprocess communication techniques, such as remote method invocation, remote events, and tuple spaces.	79	82	79.6	60	-	
		CO4	Analyze a problem and form a plan on how to work towards a solution.	25	53	30.6	60	**29.4**	
		CO5	Explain various distributed algorithms, such as logical clocks and leader election.	28	38	30	60	**30**	
		CO6	Propose own reflections and attitudes in regard to the area of research	62	57	61	60	-	
	BCSL703: Digital Forensics	CO1	List various cyber Crimes and various categories.	99	80	95.2	60	-	Proper coverage & assignment of COs in the question paper is required
		CO2	Explain different cybercrime issues and investigation techniques.	59	65	60.2	60	-	
		CO3	Identify various tools used in digital forensics.	30	45	33	60	**27**	
		CO4	Discover Cyber Laws and Acts.	29	50	33.2	60	**26.8**	
		CO5	Determine the limitations imposed by data privacy laws.	98	70	92.4	60	-	
		CO6	Design tools for faithful preservation of data on disks for analysis.	62	60	61.6	60	-	
	Adhoc	CO1	List various design and implementation issues, and available solutions of mobile ad hoc networks.	62	65	62.6	60	-	
		CO2	Summarize the basics of Infrastructure less networks and their importance in the future directions for wireless communications	43	63	47	60	**13**	

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BCSL704: Networl	CO3	Model different adhoc networks.	65	70	66	60	-	Arrangement of Extra Classes
	CO4	Analyze various technologies associated with Ad Hoc networks.	63	55	61.4	60	-	
	CO5	Explain and analyze adhoc networks and compute various parameters associated with it.	56	78	60.4	60	-	
	CO6	Develop various security mechanisms for Ad hoc networks.	55	80	60	60	-	
BCSL-705: E-Commerce	CO1	Recall basics of HTML, HTML tags, Javascript and concepts of computer Networks.	67	55	64.6	60	-	Proper coverage & assignment of COs in the question paper is required
	CO2	Demonstrate and unserstand the foundations and importance of E-commerce.	55	85	61	60	-	
	CO3	Compare different buisness models for E-commerce.	27	48	31.2	60	**28.8**	
	CO4	Illustrate the working and usability of Electronic Data Interchange.	25	56	31.2	60	**28.8**	
	CO5	Utilize applied cryptographic technology and web security protocols.	66	45	61.8	60	-	
	CO6	Elaborate different types of E-commerce payment systems, legal issues and Privacy.	63	65	63.4	60	-	
BCSP706: Artificial Intelligence LAB	CO1	Find out the real-world problems based on AI.	86	91	87	60	-	-
	CO2	Demonstarte the knowledge of the building blocks of AI.	66	68	66.4	60	-	
	CO3	Apply the concepts of Natural Language Processing to solve AI problems.	76	81	77	60	-	
	CO4	Inspect intelligent system for Game palying.	73	80	74.4	60	-	
	CO5	Choose different search or game based techniques to solve real world problems.	68	73	69	60	-	
	CO6	Develop intelligent algorithms for constraint satisfaction problem.	42	56	44.8	60	**15.2**	