Madhav Institute of Technology and Science, Gwalior
Deemed to be University
(Declared under Distinct Category by Ministry of Education, Government of India) NAAC ACCREDITED WITH A++ GRADE
Department of Information Technology

CO Attainment of B. Tech. Information Technology

Session: July- Dec 2023

	Course Name		Course outcomes	Level of Dire	Level of Indi	Overall leve	Target of	Gap	Attained/ Not Attained	Action Taken
SEMESTER I	3160121: Introdution to IT	CO1	define basic concepts of Information Technology	2.4	3.0	3.00	2.5	-0.50	Attained	Higher order thinking question related to data science and
		CO2	understand the role o IT professional	3.0	3.0	3.00	2.5	-0.50	Attained	More complex assignments, small projects and tutorials of data
		CO3	examining the cyber space and cyber crime	1.1	3.0	3.00	2.5	-0.50	Attained	Beyond the syllabus, some practical problem of pre-processing
		CO4	link the roles and opportunities of individual towards online social media	2.4	3.0	3.00	2.5	-0.50	Attained	More complex examples of data visualization should be
		CO5	reflect the applications of AI and ML for solving the problems over the real world	1.6	3.0	3.00	2.5	-0.50	Attained	Discuss more practical examples in class room session and
		CO6	develop the skills related to hardware, software reuired in IT.	1.8	3.0	3.00	2.5	-0.50	Attained	Real world problem will discuss to student and ask them to
	3160121: Computer Programming (Theory)	CO1	identify situations where computational methods and computers would be useful.	3.0	3.0	3.00	2.5	-0.50	Attained	More problem solving question related to class and objects will
		CO2	develop algorithms and flowchart for a given problem.	3.0	3.0	3.00	2.5	-0.50	Attained	Complex programming activities will include for better understanding the concepts of OOP.
		CO3	define the concepts of procedural programming.	3.0	3.0	3.00	2.5	-0.50	Attained	Beyond the syllabus, some practical problem will provide to students during class session and discuss important facts related to problem.
		CO4	explain the concepts of object oriented programming and its significance in the real world.	3.0	3.0	3.00	2.5	-0.50	Attained	Dicuss more programming solutions to student for improving problems solving skills.
		CO5	analyze the problems and choose suitable programming techniques to develop solutions.	3.0	3.0	3.00	2.5	-0.50	Attained	Discuss more practical examples in class room session and real world problems will dicuss.
		CO6	develop computer programs to solve real world problems.	3.0	3.0	3.00	2.5	-0.50	Attained	More complex real world programming problem will include in
	3160121: Computer Programming (Lab)	CO1	write, test, and debug simple Python programs.	3.0	3.0	3.00	3.0	0.00	Attained	More problem solving question related to class and objects will
		CO2	solve computational problem using python language.	3.0	3.0	3.00	3.0	0.00	Attained	Complex programming activities will include for better
		CO3	familiar with basics syntax and features of python programming language.	3.0	3.0	3.00	3.0	0.00	Attained	Beyond the syllabus, some practical problem will provide to
		CO4	use Python lists, tuples, dictionaries for representing compound data.	3.0	3.0	3.00	3.0	0.00	Attained	Dicuss more programming solutions to student for improving
		CO5	design a program utilizing the features of object oriented concept.	3.0	3.0	3.00	3.0	0.00	Attained	Discuss more practical examples in class room session and real world problems will dicuss.
		CO6	utilize some of the libraries available for solving problems.	3.0	3.0	3.00	3.0	0.00	Attained	More complex real world programming problem will include in
	3160123: Digital Logic Design	CO1	explain the basic components and functional units of define computer architecture.	3.0	3.0	3.00	2.5	-0.50	Attained	Additional topic specific tests should be conducted
		CO2	explain different number systems and basic operations employed at machine level.	3.0	3.0	3.00	2.5	-0.50	Attained	More HOT questions should be added
		CO3	develop the understanding of combinational circuits.	2.9	3.0	3.00	2.5	-0.50	Attained	Level of target should be improved.
		CO4	analyze the basic concept of sequential circuits.	3.0	3.0	3.0	2.5	-0.50	Attained	Discuss extra Tutorial- sheet
		CO5	compare and differentiate various memories used in computers.	2.5	3.0	2.60	2.5	0.10	Attained	Students are motivated to develop mini-projects focusing on real
		CO6	reduce the boolean functions to mitigate hardware complexity issues.	3.0	3.0	3.00	2.5	-0.50	Attained	Students are encouraged to observe, to gain insight into possible
	3160124: Discrete Structure	CO1	explain the basic concept of set theory, prepositional logic, graph theory, discrete numeric function and algebraic structure.	3.0	3.0	3.00	2.5	-0.50	Attained	More problem solving question related to set theory and function will be included in class room discussion.
		CO2	illustrate the knowledge of course content and distinguish between them in terms	3.0	3.0	3.00	2.5	-0.50	Attained	Complex problem activities will include for better understanding
		CO3	identify the concepts of graph and tree for solving problems in the computer	2.0	3.0	2.20	2.5	0.30	Not Attained	Beyond the syllabus, some practical problem will provide to
		CO4	apply the concepts of studied topics with suitable technique faced in engineering	2.2	3.0	2.40	2.5	0.10	Not Attained	Dicuss more reccurence relation solutions to student for
		CO5	analyze the set theory, prepositional logic, graph theory, discrete numeric function	2.5	3.0	2.60	2.5	-0.90	Attained	Discuss more practical examples in class room session and
		CO6	build analytical skill and interpret applications of engineering beneficial in real	3.0	3.0	3.00	2.5	-0.50	Attained	More complex real world problem will include in examination

SEMESTER III	2160322: Design & Analaysis of Algorithims (Theory)	CO1	demonstrate a familiarity with major algorithms and data structures	3.0	3	3.00	2.5	-0.50	Attained	More problem solving question related to class and objects will
		CO2	idenify important algorithmic design paradigms and methods of analysis	3.0	3.0	3.00	2.5	-0.50	Attained	Complex programming activities will include for better
		CO3	analyze the performance of algorithms.	3.0	3	3.00	2.5	-0.50	Attained	Beyond the syllabus, some practical problem will provide to
		CO4	compare various algorithm design techniques	3.0	3	3.00	2.5	-0.50	Attained	Dicuss more programming solutions to student for improving
		CO5	select the design technique to solve any real world problem	3.0	3	3.0	2.5	-0.50	Attained	Discuss more practical examples in class room session and real
		CO6	design efficient algorithm using various design techniques	3.0	3.0	3.00	2.5	-0.50	Attained	More complex real world programming problem will include in
	2160322: Design & Analaysis of Algorithims (Lab)	CO1	demonstrate a familiarity with major algorithms and data structures	2.8	3.0	2.80	2.5	-0.20	Attained	More problem solving question related to class and objects will
		CO2	idenify important algorithmic design paradigms and methods of analysis	2.5	3.0	2.60	2.0	-0.60	Attained	Complex programming activities will include for better
		CO3	analyze the performance of algorithms.	3.0	2.8	3.00	2.5	-0.50	Attained	Beyond the syllabus, some practical problem will provide to
		CO4	compare various algorithm design techniques	3.0	2.9	3.00	2.5	-0.50	Attained	Dicuss more programming solutions to student for improving
		CO5	select the design technique to solve any real world problem	3.0	2.8	3.00	2.5	-0.50	Attained	Discuss more practical examples in class room session and real
		CO6	design efficient algorithm using various design techniques	3.0	3.0	3.00	2.5	-0.50	Attained	More complex real world programming problem will include in
	2160323: Computer Graphics & Multimedia (Theory)	CO1	define the basic concepts of computer graphics.	2.4	3.0	2.50	2.00	-0.50	Attained	Target achieved
		CO2	demonstrate scan conversion problems using programming language.	3.0	3.0	3.00	2.00	-1.00	Attained	Target achieved
		CO3	implement the concepts of geometric transformation of 2D and 3D objects.	2.7	3.0	2.80	2.00	-0.80	Attained	Target achieved
		CO4	apply clipping and filling techniques for modifying an object.	2.6	3.0	2.60	2.00	-0.60	Attained	Target achieved
		CO5	design the application using modelling and rendering.	2.1	3.0	2.30	2.00	-0.30	Attained	Target achieved
		CO6	demonstrate the concept of viewing of 2D objects.	1.7	3.0	1.90	2.00	0.10	Not Attained	more efferts are required
	2160323: Computer Graphics & Multimedia (Lab)	CO1	define the basic concepts of computer graphics.	3.0	3.0	3.00	2.00	-1.00	Attained	Target achieved
		CO2	scan conversion problems using programming language.	3.0	3.0	3.00	2.00	-1.00	Attained	Target achieved
		CO3	implement the concepts of geometric transformation of 2D and 3D objects.	3.0	3.0	3.00	2.00	-1.00	Attained	Target achieved
		CO4	progam for clipping and filling techniques for modifying an object.	3.0	3.0	3.00	2.00	-1.00	Attained	Target achieved
		CO5	practical implementation of modelling and rendering.	3.0	3.0	3.00	2.00	-1.00	Attained	Target achieved
		CO6	apply viewing of 2D objects.	3.0	3.0	3.00	2.00	-1.00	Attained	more efferts are required
	2160324: Operating System	CO1	tell the baisc concept of operating system.	3.00	3.00	3.00	2.50	-0.50	Attained	Additional topic specific tests should be conducted
		CO2	explain the working procedure of the operating system.	3.00	3.00	3.00	2.50	-0.50	Attained	More HOT questions should be added
		CO3	analyze the various operating system problems and issues.	3.00	3.00	3.00	2.50	-0.50	Attained	Level of target should be improved.
		CO4	develop the solutions for various operating system problems and issues.	2.60	3.00	2.60	2.50	-0.90	Attained	Discuss extra Tutorial- sheet
		CO5	measure the performance of various scheduling and allocation techniques.	3.00	3.00	3.00	2.50	-0.50	Attained	Students are motivated to develop mini-projects focusing on real world problems.
		CO6	test the working of various scheduling and allocation testing	3.00	3.00	3.00	2.50	-0.50	Attained	Students are encouraged to observe, to gain insight into possible
	160511: Discrete Structure	CO1	explain the basic concept of set theory, prepositional logic, graph theory, discrete numeric function and algebraic structure.	3.0	3.0	3.0	2.5	-0.50	Attained	More problem solving question related to set theory and function will be included in class room discussion.
		CO2	illustrate the knowledge of course content and distinguish between them in terms of their applications.	3.0	3.0	3.0	2.5	-0.50	Attained	Complex problem activities will include for better understanding the concepts of Prepositional logic.
		CO3	identify the concepts of graph and tree for solving problems in the computer science.	2.0	3.0	2.2	2.5	0.30	Not Attained	Beyond the syllabus, some practical problem will provide to
		CO4	apply the concepts of studied topics with suitable technique faced in engineering	2.2	3.0	2.4	2.5	0.10	Not Attained	Dicuss more reccurence relation solutions to student for
		CO5	analyze the set theory, prepositional logic, graph theory, discrete numeric function and algebraic structure to examine the real world problem.	2.5	3.0	2.6	2.5	-0.10	Attained	Discuss more practical examples in class room session and discrete numeric function and algebraic structure problems will
		CO6	build analytical skill and interpret applications of engineering beneficial in real time troubleshooting.	3.0	3.0	3.0	2.5	-0.50	Attained	More complex real world problem will include in examination paper. Also research oriented problem will discuss with fast leaners.
	160512: Data Science using python (Theory)	CO1	define the fundamentals of data science and its importance.	3.0	3.0	3.0	2.5	-0.50	Attained	Higher order thinking question related to data science and research oriented issues will be included in class room teaching.
		CO2	contrast the basics of python and libraries related to data science	3.0	3.0	3.0	2.5	-0.50	Attained	More complex assignments, small projects and tutorials of data
		CO3	classify different types of data analytics	3.0	3.0	3.0	2.5	-0.50	Attained	Beyond the syllabus, some practical problem of pre-processing
		CO4	organize the data collected from various sources	3.0	3.0	3.0	2.5	-0.50	Attained	More complex examples of data visualization should be

SEMESTER V	(Theory)	CO5	analyze pre-processing and data reduction strategies.	3.0	3.0	3.0	2.5	-0.50	Attained	Discuss more practical examples in class room session and
		CO6	create the graphical representation of the data through visualization tool on various	3.0	3.0	3.0	2.5	-0.50	Attained	Real world problem will discuss to student and ask them to
	160512: Data Science using python (Lab)	CO1	define the fundamentals of data science and its importance.	3.0	3.00	3.0	3.0	0.00	Attained	Higher order thinking question related to data science and research oriented issues will be included in class room teaching.
		CO2	contrast the basics of python and libraries related to data science	3.0	3.00	3.0	3.0	0.00	Attained	More complex assignments, small projects and tutorials of data
		CO3	classify different types of data analytics	3.0	3.00	3.0	3.0	0.00	Attained	Beyond the syllabus, some practical problem of pre-processing
		CO4	organize the data collected from various sources	3.0	3.00	3.0	3.0	0.00	Attained	More complex examples of data visualization should be
		CO5	analyze pre-processing and data reduction strategies.	3.0	3.00	3.0	3.0	0.00	Attained	Discuss more practical examples in class room session and
		CO6	create the graphical representation of the data through visualization tool on various	3.0	3.00	3.0	3.0	0.00	Attained	Real world problem will discuss to student and ask them to
	160513: Theory of Computation (Theory)	CO1	explain the basic concepts of swithing and finite automata theory & languages..	3.0	3.00	3.00	3.00	0	Attained	Higher order thinking question related to data science and
		CO2	relate practical problems to languages, automata, computability and complexity.	3.0	3.00	3.00	3.00	0	Attained	More complex assignments, small projects and tutorials of data
		CO3	construct abstract models of computing and check their power to recognize the	3.0	3.00	3.00	3.00	0	Attained	Beyond the syllabus, some practical problem of pre-processing
		CO4	analyze the grammar, its types, simplification and normal form.	3.0	3.00	3.00	3.00	0	Attained	More complex examples of data visualization should be
		CO5	interpret rigorously formal mathematical methods to prove properties of languages	3.0	3.00	3.00	3.00	0	Attained	Discuss more practical examples in class room session and
		CO6	develop an overview of how automata theory, languages and computation are applicable in engineering application.	3.0	3.00	3.00	3.00	0	Attained	Real world problem will discuss to student and ask them to apply concept of data science in different engineering
	160513: Theory of Computation (Lab)	CO1	explain the basic concepts of swithing and finite automata theory & languages..	3.0	3.00	3.00	3.00	0	Attained	Higher order thinking question related to data science and research oriented issues will be included in class room teaching.
		CO2	relate practical problems to languages, automata, computability and complexity.	3.0	3.00	3.00	3.00	0	Attained	More complex assignments, small projects and tutorials of data
		CO3	construct abstract models of computing and check their power to recognize the	3.0	3.00	3.00	3.00	0	Attained	Beyond the syllabus, some practical problem of pre-processing
		CO4	analyze the grammar, its types, simplification and normal form.	3.0	3.00	3.00	3.00	0	Attained	More complex examples of data visualization should be discussedin class room session, this will help to student to analyze different dataset problems.
		CO5	interpret rigorously formal mathematical methods to prove properties of languages grammars and automata	3.0	3.00	3.00	3.00	0	Attained	Discuss more practical examples in class room session and numerical problems will dicuss. Also research oriented issues will discuss with fast leaners.
		CO6	develop an overview of how automata theory, languages and computation are applicable in engineering application.	3.0	3.00	3.00	3.00	0	Attained	Real world problem will discuss to student and ask them to apply concept of data science in different engineering applications.
	160514: Microprocessor and Interfacing (Theory)	CO1	compare the architecture and feature of different 16-bit microprocessor interfacing	3.0	3.0	3.0	2.5	-0.50	Attained	Level of target should be improved.
		CO2	develop programming skills in assembly language of 8086 microprocessor and 8051 microcontroller.	3.0	3.0	3.0	2.5	-0.50	Attained	More practical approach and problems would be introduced with students.
		CO3	demonstrate the concept of interfacing with peripheral devices.	2.0	3.0	2.2	2.0	-0.20	Attained	More projects on software development would be included.
		CO4	make use of different interrupts and addressing modes.	2.6	3.0	2.7	2.5	-0.20	Attained	Real life Projects can be assigned to improve the software development.
		CO5	design an interfacing for I/O devices.	1.7	3.0	1.9	2.0	0.10	Not Attained	Level of target should be improved.
		CO6	build a system based on 8086 microprocessor and 8051 microcontroller.	1.1	3.0	1.5	2.0	0.50	Not Attained	Additional guest lectures and workshops are conducted to educate students on modern IT tools.
	160514: Microproce	CO1	differentiate the various types of instructions and addressing modes	3.0	3.0	3.0	3.0	0.00	Attained	Lower oreder thinking to higher order thinking problems
		CO2	identify the Hex code/Machine code of instructions in assembly language	3.0	3.0	3.0	3.0	0.00	Attained	More complex assignments to be given to students for better
		CO3	perform interfacing of various periperal devices and memory with microprocessor	3.0	3.0	3.0	3.0	0.00	Attained	More and more interfacing problems to performed in lab

	ssor and Interfacing (Lab)	**CO4**	demonstrate the arithmetic & Logical operation using instruction set of 8086/8051 microprocessor	**3.0**	**3.0**	**3.0**	3.0	0.00	Attained	More complex examples should be discussed in class room session, this will help to student to analyze different arithmetic and Logic problems.
		CO5	use of 8086/8051 for interfacing with I/O devices	**3.0**	**3.0**	**3.0**	3.0	0.00	Attained	Discuss more practical examples in class room session.
		CO6	build the assembly language programs in 8086/8051 to solve real world problems	**3.0**	**3.0**	**3.0**	3.0	0.00	Attained	Real world problem will discuss to student and ask them to
	160515: Soft Computing Techniques	**CO1**	define basic concepts of neural network and fuzzy systems.	**3.0**	**3.0**	**3.0**	2.5	-0.50	Attained	Lower oreder thinking to higher order thinking problems
		CO2	compare solutions by applying various soft computing approaches on a given problem.	**3.0**	**2.8**	**3.0**	2.5	-0.50	Attained	More complex assignments to be given to students for better understanding.
		CO3	develop and train different supervised and unsupervised learning	**3.0**	**2.8**	**3.0**	2.5	-0.50	Attained	More and more interfacing problems to performed in lab
		CO4	classify various nature inspired algorithms according to their application aspect.	**3.0**	**2.9**	**3.0**	2.5	-0.50	Attained	More complex examples should be discussed in class room session, this will help to student to analyze different arithmetic and Logic problems.
		CO5	compare the efficiency of various hybrid systems	**3.0**	**2.8**	**3.0**	2.5	-0.50	Attained	Discuss more practical examples in class room session.
		CO6	design a soft computing model for solving real world problems	**3.0**	**2.9**	**3.0**	2.5	-0.50	Attained	Real world problem will discuss to student and ask them to apply concept in different applications.
SEMESTER VII	**160732: Pattern Recognition**	**CO1**	explain the basic principle of image processing	**3.0**	**3**	**3.0**	2.5	-0.50	Attained	More problem practical based question will be included in class
		CO2	apply the advance pattern recognition algorithms on images	**3.0**	**3**	**3.0**	2.5	-0.50	Attained	Real world problem activities will include for better
		CO3	analyse the potentia; pf basic image processing	**2.0**	**3**	**2.2**	2.5	0.30	Not	Beyond the syllabus, some practical problem will provide to
		CO4	compare different pattern recognition algorithms on different domain	**2.2**	**3.0**	**2.4**	2.5	0.10	Not Attained	Dicuss more reccurence concpts of pattern to student for
		CO5	develop the ral world application of pattern recognition	**2.5**	**3**	**2.6**	2.5	-0.10	Attained	Discuss more practical examples in class room session and
		CO6	design basic programming structure for image processing using python	**3.0**	**3**	**3.0**	2.5	-0.50	Attained	More complex real world problem will include in examination