

**Programme Educational Objectives, Programme Outcomes,
Programme Specific Outcomes
and
Learning Outcomes
of
Artificial Intelligence & Machine Learning
Offered by
Centre for Artificial Intelligence**



**Centre for Artificial Intelligence
Madhav Institute of Technology & Science
Gwalior, Madhya Pradesh-474005**

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1. Programme Educational Objectives

Artificial Intelligence & Machine Learning

PEO 1: Develop software solutions demonstrating intelligent behaviour, handling uncertainty, constantly learning, and effectively using domain knowledge

PEO 2: Promote research in intelligent technology and concepts.

PEO 3: Participate in life-long learning for effective professional growth and demonstrate leadership qualities to co-ordinate cooperative team in contributing for the betterment of the society.

2. Program Outcomes (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2; Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis, and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and Leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

3. Program Specific Outcomes

At the end of the program, the student should be able to:

PSO1: Design, analyze, and implement the solutions of the complex problems using AI & ML techniques such as pattern recognition, clustering and classification.

PSO2: Apply advanced machine learning principles to address practical real-world problems, specializing in natural language processing, computer vision, reinforcement learning, IoT, cloud computing.

4. Learning Outcomes of all courses/subjects

First Year:

Subject Code	Title of Subject	Semester	Subject Category
100015	Energy Environment, Ecology & Society	I	HSMC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Describe various energy resources, their conversion to electrical power and role in technological & economic development.
2. Update with national/international power status and renewable power development targets & missions
3. Recognize the impact of pollution on the ecosystem and control policies adopted at national/international levels.
4. Illustrate the concepts of ecosystems and their conservation
5. Solve practical problems of society in a sustainable and ethical manner
6. Fulfil professional duties keeping in mind the environmental safety, health, and welfare of public

First Year:

Subject Code	Title of Subject	Semester	Subject Category
280101	Introduction to Artificial Intelligence & Machine Learning	I	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. define basic concepts of Artificial Intelligence
2. relate various computer components used in Artificial Intelligence
3. familiarize and learn about the latest trends and research in the field

4. understand the real-world problems and applications of AI and ML for solving the problems
5. build AI enabled intelligent procedures for solving real world problems
6. to build AI enabled intelligent procedures for solving real world problems

First Year:

Subject Code	Title of Subject	Semester	Subject Category
100022	Basic Electrical & Electronics Engineering	I	ESC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Solve DC & AC circuits by applying fundamental laws & theorems
2. Analyze the response of linear electrical and magnetic circuits for given input
3. Explain working principle, construction, applications of single phase transformer & rotating electrical machines
4. Determine the performance parameters such as efficiency, voltage regulation by using equivalent circuit of single-phase transformer
5. Select the logic gates for various applications in digital electronic circuits
6. Analyze characteristics of Diode and Transistor

First Year:

Subject Code	Title of Subject	Semester	Subject Category
100022	Basic Electrical & Electronics Engineering LAB	I	ESC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Verify circuit theorems
2. Perform tests on transformer for determination of losses, efficiency & polarity.

3. Verify the truth table of logic gate
4. Interpret V-I characteristics of diode & transistor
5. Acquire teamwork skills for working effectively in groups

First Year:

Subject Code	Title of Subject	Semester	Subject Category
250100	Linear Algebra	I	ESC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Determine the solution of Matrix.
2. Find the analytical solution of algebraic structures.
3. Express the vector space.
4. Acquire the knowledge of Linear transformation.
5. Illustrate the concept of Inner product spaces.

First Year:

Subject Code	Title of Subject	Semester	Subject Category
280102	Introduction to Computer Programming	I	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. identify situations where computational methods and computers would be useful.
2. describe the basic principles of imperative and structural programming.
3. develop a pseudo-code and flowchart for a given problem.
4. analyse the problems and choose suitable programming techniques to develop solutions.
5. design, implement, debug and test programs.
6. design computer programs to solve real world problems.

First Year:

Subject Code	Title of Subject	Semester	Subject Category
280201	Digital Logic Design	II	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. explain the computer architecture for defining basic component and functional unit.
2. recall different number system and solve the basic arithmetic operations.
3. develop the understanding of combinational circuits.
4. analyse the basic concepts of sequential circuits.
5. compare various memories.
6. solve the Boolean functions using logic gates.

First Year:

Subject Code	Title of Subject	Semester	Subject Category
250106	Probability & Random Process	II	BSC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Interpreting the theory of Probability and its distributions
2. Evaluating the Skewness, Kurtosis, curve fitting, correlation, and regression.
3. Applying the various test to validate the hypothesis
4. Explaining the knowledge of random variables.
5. Judging the various random process

First Year:

Subject Code	Title of Subject	Semester	Subject Category
280202	Data Structures	II	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. outline the basics of algorithms and their performance criteria's.
2. explain the working of Linear/nonlinear data structures.
3. identify the appropriate data structure to solve specific problems.
4. analyse the performance of various data structures and their applications.
5. evaluate the time/space complexities of various data structures and their applications.
6. design the optimal algorithmic solutions for various problems.

First Year:

Subject Code	Title of Subject	Semester	Subject Category
280203	Object Oriented Programming & Methodology	II	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Relate the concepts and significance of OOPs in real world.
2. Demonstrate adeptness of object-oriented programming to solve problems using Object oriented concepts
3. Apply object-oriented programming to develop solutions of problems using standard language constructs.
4. Analyze data flow diagrams and flow charts for small/ moderate problems
5. Determine how to simulate the problem in field of Operating system, Computer networks and real-world problems.
6. Develop software using concepts of objects, associations, and integrity constraint.

First Year:

Subject Code	Title of Subject	Semester	Subject Category
100016	Technical Language	II	HSMC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Speak clearly effectively and appropriately in a public forum to a variety of audiences and purposes.
2. Prepare oral presentations and arguments within the Engineering Profession effectively.
3. Demonstrate knowledge and comprehension of major text and traditions in language as well as its social, cultural, and historical context.
4. Read a variety of Text analytically so as to demonstrate in writing and/or speech the interpretation of texts.
5. Interpret text written in English assessing the results in written and oral arguments using appropriate material for support.

First Year:

Subject Code	Title of Subject	Semester	Subject Category
100017	Language Lab	II	HSMC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Speak clearly effectively and appropriately in a public forum to a variety of audiences and purposes.
2. Deliver effectively oral presentations.
3. Grasp knowledge and comprehensive skills to speak on a given topic on spot.
4. Interpret English spoken by others and respond to situation.
5. Analyse English Language as spoken by others in day-to-day life.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
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280301	Discrete Structures	III	BSC
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Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Define the basic concepts of set theory, propositional logic, graph theory, discrete numeric function and algebraic structure.
2. Illustrate the knowledge of course content and distinguish between them in terms of their applications.
3. Implement the course content to solve the problems.
4. Apply the concept of studied topics with suitable technique faced in engineering problems.
5. Analyze the basic concepts of set theory, propositional logic, graph theory, discrete numeric function and algebraic structure to examine the real world problems
6. Design the analytical skill and interpret applications of engineering beneficial in real time troubleshooting.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280302	Design & Analysis of Algorithms	III	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. demonstrate a familiarity with major algorithms and data structures.
2. apply important algorithmic design paradigms and methods of analysis.
3. analyze the asymptotic performance of algorithms.
4. compare different design techniques to develop algorithms for computational problems.

5. design algorithms using greedy strategy, divide and conquer approach, dynamic programming, backtracking and branch n bound approach.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280303	Operating System	III	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Define the basic concept of operating systems.
2. Explain the working procedure of the operating system.
3. Analyze the various operating system problems and issues.
4. Develop the solutions for various operating system problems and issues.
5. measure the performance of various scheduling and allocation techniques.
6. test the working of various scheduling and allocation techniques.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280304	Computer Network & Protocols	III	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. explain the fundamental concepts of computer network.
2. illustrate the basic taxonomy & terminologies of computer network protocols
3. develop a concept for understanding advance computer network.
4. build the skill of IP addressing and routing mechanism.
5. predict the performance of computer network in congestion and internet.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280305	Database Management System	III	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. demonstrate the concepts of different type of database system
2. apply relational algebra concepts to design database system
3. make use of queries to design and access database system.
4. analyze the evaluation of transaction processing and concurrency control
5. determine the optimize database for real world applications.
6. ddesign a database system for a real-world application.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280306	Python Programming Lab	III	DLC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Define the various computational problems using python language.
2. Explain the basic syntax and features of python.
3. Apply appropriate online tools like Colab for effective real-time problem solving.
4. Evaluate the problems based on distinguished datasets.
5. Design programs utilizing features of Object-Oriented Programming in Python.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280307	Self-Study Seminar	III	DLC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Refer various technical recourses available from multiple field
2. Improve his/her performance in self-learning domain.
3. Acquire additional knowledge of multi-disciplinary domains
4. Prepare oral demonstrations.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280308	Summer Internship Project II	III	DLC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Identify job skills, knowledge, and attitude requisite to constitute a professional identity.
2. Express the technical ideas, strategies & methodologies
3. Demonstrate profession ethics and awareness about general workplace behaviour
4. Adhere to deadlines and commitment to complete the assignment.
5. Write professional work reports and presentations.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280401	Computer Architecture & Microprocessor	IV	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Demonstrate the computer Architecture and microprocessor for defining basic component and functional unit.
2. Develop the fundamental concept to understand the working of computer architecture and microprocessor.
3. Explain the basic concept of input and output and memory organization
4. Develop the skill of writing assembly language programming
5. Built the system using peripheral devices and controllers for 8086 microprocessors.
6. Apply the concept of computer architecture and microprocessor in solving real world problems.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280402	Cloud Computing	IV	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. define various basic concepts related to cloud computing.
2. identify the architecture, infrastructure, and delivery models of cloud computing.
3. apply suitable virtualization concepts.
4. choose the appropriate programming models and public cloud platforms.
5. analyze various security issues in cloud computing.

6. compose virtualization, security and programming modules in cloud computing solutions

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280403	Software Engineering	IV	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. explain the various fundamental concepts of software engineering.
2. develop the concepts related to software design & analysis.
3. compare the techniques for software project management & estimation.
4. choose the appropriate model for real life software project.
5. design the software using modern tools and technologies.
6. test the software through different approaches.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280404	Machine Learning & Optimization	IV	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Define a familiarity with major optimization algorithms.
2. Apply important optimization algorithmic and analyze the results
3. Choose the local and global optimum
4. Test for the design problems to be solved as mathematical programming problems.

5. Design supervised and unsupervised learning approaches for real-life problems.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280405	Network & Web Security	IV	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Explain cryptographic algorithms, hash algorithms and authentication mechanisms.
2. Illustrate fundamentals of number theory, attacks, and security principles.
3. Apply number theory and various algorithms to achieve principles of security.
4. Analyze the cause for various existing network attacks and describe the working of available security controls
5. Examine the vulnerabilities in IT infrastructure.
6. Predict the attacks and controls associated with IP, transport-level, web and e-mail security.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
280406	Design & Thinking Lab	IV	DLC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Define the basic concept of embedded system.
2. Describe the basic principles of Arduino Programming and IDE.
3. Familiarize with different type of sensors and related systems.
4. Design, implement, test and debug systems/programs.

5. Design and develop smart systems applications.
6. Interface different sensors to embedded boards like Arduino.

Second Year:

Subject Code	Title of Subject	Semester	Subject Category
1000001	Indian Constitution & Traditional Knowledge	IV	MAC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Know the rich Indian traditions and the Indian constitution.
2. Appraise the utility and significance of tradition and its applicability in present times.
3. Employ the knowledge of the constitutional norms as laid in the constitution and abide by the practices stated therein.
4. Create a better society and living standards for themselves as well as for others.
5. Recognize the basic concepts of ethics and morality pertaining to Indian culture and tradition.
6. Connect traditional Indian philosophy with their everyday conduct and practices.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280501	Information Retrieval	V	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. gain the basic concepts and techniques in Information retrieval
2. explain the issue in representation and graphical documents

3. comprehend types of text analysis, IR system architecture, query processing models and probabilistic models
4. process the text data for text classification
5. apply the different evaluation strategies to the retrieved results for computing the efficiency and accuracy
6. perform indexing, compression, information categorization and sentiments analysis.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280502	Data Science using Python	V	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. define the fundamental of data science and its importance
2. contrast the basic of python and libraries related to data science
3. classify different types of data analytics
4. organized the data collected from different sources
5. analyze the pre-processing and data reduction techniques
6. create the graphical representation of data through visualization tools on various applications.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280503	Theory of Computation	V	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Explain the basic concepts of switching and finite automata theory and languages.
2. Relate practical problems to languages, automata, computability, and complexity.
3. Construct abstract models of computing and analyse their power to recognize the languages.
4. Construct and analyze the grammar.
5. Apply mathematical models and descriptors in various computing theories
6. Solve problems in computer science using mathematical and formal techniques.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280504	Computer Graphics & Multimedia	V	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. explore various display devices and application of computer graphics
2. illustrate various scan conversion techniques
3. apply 2D and 3D transformation and projection techniques
4. classify the methods of image clipping and various algorithms for line and polygon clipping
5. apply appropriate filling algorithm, hidden surface algorithm on images.
6. summarize various color models, shading methods and color algorithms.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280505	Soft Computing	V	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. explore various display devices and application of computer graphics
2. illustrate various scan conversion techniques
3. apply 2D and 3D transformation and projection techniques
4. classify the methods of image clipping and various algorithms for line and polygon clipping
5. apply appropriate filling algorithm, hidden surface algorithm on images
6. summarize various color models, shading methods and color algorithms.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
100006	Disaster Management	V	MAC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Define the characteristics of various types of disasters.
2. Classify the types of disasters.
3. Choose the appropriate suggestive measures as per the nature and type of disaster.
4. Analyse the possible causes and consequences of an earlier or ongoing disaster.
5. Evaluate the performance of existing countermeasures used for disaster management.
6. Design realistic solution-based strategies for dealing with natural disasters.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280506	Minor Project I	V	DLC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Formulate the real-world problems.
2. Demonstrate critical thinking skills by evaluating different approaches, methodologies, or solutions
3. Utilize the new tools, algorithms, techniques to obtain solution of the project.
4. Write technical report

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280507	Self-Study Seminar	V	DLC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Refer various technical recourses available from multiple field
2. Improve his/her performance in self-learning domain.
3. Acquire additional knowledge of multi-disciplinary domains
4. Prepare oral demonstrations.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280508	SIP-II	V	DLC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Identify job skills, knowledge, and attitude requisite to constitute a professional identity.
2. Express the technical ideas, strategies & methodologies
3. Demonstrate profession ethics and awareness about general workplace behaviour
4. Adhere to deadlines and commitment to complete the assignment.

5. Write professional work reports and presentations.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280601	Data Mining & Warehousing	VI	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. explain basics of data mining and data warehousing.
2. classify database systems and data models / schemas of data warehouses.
3. compare methods for storing & retrieving data from different data sources/repositories.
4. apply data mining techniques for knowledge extraction from large amount of data.
5. predict trends to make informed decisions.
6. develop real world applications using data mining techniques.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280602	Image Processing	VI	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. describe the fundamentals of image processing.
2. classify image enhancement techniques in both spatial and frequency domains for noise removal and better appearance.
3. apply image segmentation for object and boundary detection.
4. analyse the causes for image degradation and image restoration.
5. evaluate image compression techniques.
6. implement novel image filtering techniques.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
280603	Deep Learning	VI	DC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. recall the concepts of neural networks, activation functions and optimization algorithms.
2. explain the principles of backpropagation and gradient descent.
3. select an appropriate deep learning model for problem solving.
4. evaluate the performance of deep learning models.
5. compare the applicability of deep learning architectures across the problem domain.
6. develop novel deep learning architectures for specific applications.

Third Year:

Subject Code	Title of Subject	Semester	Subject Category
1000007	Intellectual Property Rights (IPR)	VI	MAC

Learning outcomes:

After completion of this program, the postgraduates will be able to:

1. Imbibe the knowledge of Intellectual Property and its protection through various laws
2. apply the knowledge of IPR for professional development
3. develop a platform for protection and compliance of Intellectual Property Rights & knowledge

4. create awareness amidst academia and industry of IPR and Copyright compliance
5. deliver the purpose and function of IPR and patenting.

5. Scheme of Examination

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute & NAAC Accredited Institute Affiliated to RGPV, Bhopal, MP)
Department of Information Technology
Scheme of Evaluation
B. Tech. I Semester (B. Tech in Artificial Intelligence and Machine Learning)
(for batches admitted in academic session 2021-22 onwards)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Teaching (Offline/Online)	Mode of Exam.	
				Theory Slot		Practical Slot		End Sem. Exam	Lab Work & Sessional		Skill Based Mini Project	L	T				P
				End Term Evaluation	Continuous Evaluation	Continuous Evaluation	End Sem. Exam										
1.	280101	DC	Introduction to Artificial Intelligence & Machine Learning	50	10	20	20	-	-	-	100	4	-	-	4	Blended (3/1)	MCQ
2.	280102	DC	Introduction to Computer Programming	50	10	20	20	60	20	20	200	2	1	2	4	Blended (2-1)	AO
3.	100022	FSC	Basic Electrical & Electronics Engineering	50	10	20	20	60	20	20	200	2	1	2	4	Blended (2-1)	MCQ
4.	250100	BSC	Linear Algebra	50	10	20	20	-	-	-	100	3	1	-	4	Offline	PP
5.	100018	HSMC	Energy Environment, Ecology & Society	50	10	20	20	-	-	-	100	3	-	-	3	Online	MCQ
Total				250	50	100	100	120	40	40	700	14	3	4	19		

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.

¹Proficiency in course/subject – includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in that particular course/subject

MCQ: Multiple Choice Question AO: Assignment + Oral OB: Open Book PP: Pen Paper SO: Submission + Oral

Mode of Teaching					Mode of Examination					Total Credits
Theory				Lab	Theory			Lab	Total Credits	
Offline	Online	Blended	Blended	Offline	PP	A+O	MCQ	Lab		Credits %
04	03	07	03	02	04	03	10	02	19	
21.05%	15.79%	32.34%	15.79%	10.53%	21.05%	15.79%	52.63%	10.53%	Credits %	

MEAN (ACADEMICS)
M.I.T.S
GWALIOR

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute & NAAC Accredited Institute Affiliated to RGPV, Bhopal, MP)

Department of Information Technology

Scheme of Evaluation

B. Tech. II Semester (Artificial Intelligence and Machine Learning)

(for batches admitted in academic session 2021-22 onwards)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Teaching (Offline/Online)	Mode of Exam.	
				Theory Slot		Practical Slot		End Sem. Exam	Lab Work & Sessional		Skill Based Mini Project	L	T				P
				End Term Evaluation	Continuous Evaluation	Continuous Evaluation	End Sem. Exam										
1.	280201	DC	Digital Logic Design	50	10	20	20	-	-	-	100	2	1	-	3	Blended (2/1)	PP
2.	250106	BSC	Probability and Random Process	50	10	20	20	-	-	-	100	3	1	-	4	Offline	PP
3.	280202	DC	Data Structures	50	10	20	20	60	20	20	200	3	-	2	4	Blended (2/1)	PP
4.	280203	DC	Object Oriented Programming and Methodology	50	10	20	20	60	20	20	200	3	-	2	4	Blended (2/1)	AO
5.	100016	HSMC	Technical Language	50	10	20	20	-	-	-	100	3	-	-	3	Blended (2/1)	PP
6.	100017	HSMC	Language Lab	-	-	-	-	60	20	20	100	-	-	2	1	Offline	SO
Total				250	50	100	100	180	60	60	800	14	02	06	19		

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.

¹Proficiency in course/subject – includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in that particular course/subject

MCQ: Multiple Choice Question AO: Assignment + Oral OB: Open Book PP: Pen Paper SO: Submission + Oral

Mode of Teaching					Mode of Examination					Total Credits
Theory				Lab	Theory			Lab	Total Credits	
Offline	Online	Blended	Blended	Offline	PP	A+O	MCQ	Lab		Credits %
04	-	08	04	03	13	03	-	03	19	
21.05%	-	42.11%	21.05%	15.79%	68.42%	15.79%	-	15.79%	Credits %	

MEAN (ACADEMICS)
M.I.T.S
GWALIOR

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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Department of Information Technology

Scheme of Evaluation

B. Tech. III Semester (Artificial Intelligence (AI) and Machine Learning)

(for batch admitted in academic session 2021-22)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted							Total Marks	Contact Hours per week			Total Credits	Mode of Teaching (Offline/ Online)	Mode of Exam.	
				Theory Slot				Practical Slot				L	T	P				
				End Term Evaluation		Continuous Evaluation		End Sem. Exam.	Continuous Evaluation									
				End Sem. Exam.	Proficiency in subject /course	Mid Sem. Exam.	Quiz/ Assignment		Lab Work & Sessional	Skill Based Mini Project								
1.	280301	BSC	Discrete Structure	50	10	20	20	-	-	-	100	2	1	-	3	Offline	PP	
2.	280302	DC	Design & Analysis of Algorithms	50	10	20	20	60	20	20	200	2	1	2	4	Blended (2/1)	PP	
3.	280303	DC	Operating System	50	10	20	20	-	-	-	100	2	1	-	3	Blended (2/1)	PP	
4.	280304	DC	Computer Networks and Protocols	50	10	20	20	-	-	-	160	2	1	-	3	Blended (2/1)	PP	
5.	280305	DC	Database Management System	50	10	20	20	60	20	20	200	2	1	2	4	Blended (2/1)	PP	
6.	280306	DLC	Python Programming Lab	-	-	-	-	60	20	20	100	-	1	2	2	Offline	SO	
7.	280307	DLC	Self-learning/Presentation (SWAYAM/NPTEL/MOOC)	-	-	-	-	-	40	-	40	-	-	2	1	Online and Mentoring	SO	
8.	200XXX	CLC	Novel Engaging Course (Informal Learning)	-	-	-	-	50	-	-	50	-	-	2	1	Interactive	SO	
9.	280308	DLC	Summer Internship Project-I (Institute Level) (Evaluation)	-	-	-	-	60	-	-	60	-	-	4	2	Offline	SO	
Total				250	50	100	100	290	100	60	950	10	6	14	23	-	-	
10.	1000005	MAC	Project Management & Financing	50	10	20	20	-	-	-	100	2	-	-	-	GRADE	Online	MCQ

³ proficiency in course/subject includes the weightage towards ability/skill/competence/knowledge level/ expertise attained etc. in that particular course/subject.

MCQ: Multiple Choice Question AO: Assignment + Oral PP: Pen Paper SO: Submission + Oral

Mode of Teaching						Mode of Examination						Total Credits
Theory			Lab	NEC		Theory			Lab	SIP/ SLP/ NEC		
Offline	Online	Blended	Offline	Interactive	PP	A+O	MCQ	SO	SO	SO		
04	-	05	04	06	01	15	-	-	07	01	23	
17.39%	-	34.78%	17.39%	26.09%	04.35%	65.22%	-	-	30.43%	4.35%	Credits %	

MLO
5/7/22
DEAN (ACADEMICS)
M.I.T.S
GWALIOR

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute & NAAC Accredited Institute Affiliated to RGPV, Bhopal, MP)

Department of Information Technology

Scheme of Evaluation

B. Tech. IV Semester (Artificial Intelligence (AI) and Machine Learning)

(for batch admitted in academic session 2021-22)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted							Total Marks	Contact Hours per week			Total Credits	Mode of Teaching	Mode of Exam.	
				Theory Slot				Practical Slot				L	T	P				
				End Term Evaluation		Continuous Evaluation		End Sem. Exam.	Continuous Evaluation									
				End Sem. Exam.	Proficiency in subject /course	Mid Sem. Exam.	Quiz/ Assignment		Lab Work & Sessional	Skill Based Mini Project								
1.	280401	DC	Computer Architecture and Microprocessor	50	10	20	20	60	20	20	200	2	1	2	4	Blended	PP	
2.	280402	DC	Cloud Computing	50	10	20	20	-	-	-	100	3	-	-	3	Blended	PP	
3.	280403	DC	Software Engineering	50	10	20	20	60	20	20	200	3	-	2	4	Blended	MCQ	
4.	280404	DC	Machine Learning and Optimization	50	10	20	20	60	20	20	200	3	-	2	4	Blended	PP	
5.	280405	DC	Network & Web Security	50	10	20	20	-	-	-	100	3	-	-	3	Blended	PP	
6.	280406	DLC	Design and Thinking Lab	-	-	-	-	60	20	20	100	-	-	2	1	Offline	SO	
7.	200XXX	CLC	Novel Engaging Course (Informal Learning)	-	-	-	-	50	-	-	50	-	-	2	1	Interactive	SO	
Total				250	50	100	100	290	80	80	950	14	01	10	20	-	-	
8.	1000001	MAC	Indian Constitution and Traditional Knowledge	50	10	20	20	-	-	-	100	2	-	-	-	GRADE	Online	MCQ

Summer Internship Project-II (Soft skills Based) for two weeks duration: Evaluation in V Semester

³ proficiency in course/subject includes the weightage towards ability/skill/competence/knowledge level/ expertise attained etc. in that particular course/subject.

MCQ: Multiple Choice Question AO: Assignment + Oral PP: Pen Paper SO: Submission + Oral

Mode of Teaching						Mode of Examination						Total Credits
Theory			Lab	NEC		Theory			Lab	NEC		
Offline	Online	Blended	Offline	Interactive	PP	A+O	MCQ	SO	SO	SO		
-	-	15	04	01	12	-	-	03	04	01	20	
-	-	75%	20%	5%	60%	-	-	15%	20%	5%	Credits %	

MLO
05-05-2023
DEAN (ACADEMICS)
M.I.T.S
GWALIOR

Handwritten signatures and notes at the bottom of the page, including names like 'Bulbul', 'Aditya', and 'Saurabh'.

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute & NAAC Accredited Institute Affiliated to RGPV, Bhopal, MP)

Department of Information Technology

Scheme of Evaluation

B. Tech. V Semester (Artificial Intelligence (AI) and Machine Learning)

(for batch admitted in academic session 2021-22)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Teaching	Mode of Exam.	
				Theory Slot			Practical Slot				L	T	P				
				End Term Evaluation		Continuous Evaluation		End Sem. Exam.	Continuous Evaluation								
				End Sem. Exam.	Proficiency in subject /course	Mid Sem. Exam.	Quiz/ Assignment		Lab work & Sessional								Skill Based Mini Project
1.	280501	DC	Information Retrieval	50	10	20	20	-	-	-	100	2	1	-	3	Blended	PP
2.	280502	DC	Data Science using Python	50	10	20	20	60	20	20	200	3	-	2	4	Blended	MCQ
3.	280503	DC	Theory of Computation	50	10	20	20	60	20	20	200	2	1	2	4	Blended	PP
4.	280504	DC	Computer Graphics & Multimedia	50	10	20	20	60	20	20	200	2	1	2	4	Blended	PP
5.	280505	DC	Soft Computing Techniques	50	10	20	20	-	-	-	100	3	-	-	3	Blended	PP
6.	280506	DLC	Minor Project-I **	-	-	-	-	60	40	-	100	-	-	4	2	Offline	SO
7.	280507	Seminar/ Self-Study	Self-learning/Presentation (SWAYAM/NPTEL/ MOOC)#	-	-	-	-	-	40	-	40	-	-	2	1	Online and Mentoring	SO
8.	200XXX	CLC	Novel Engaging Course (Informal Learning)	-	-	-	-	50	-	-	50	-	-	2	1	Interactive	SO
9.	280508	DLC	Summer Internship Project-II (Evaluation)	-	-	-	-	60	-	-	60	-	-	4	2	Offline	SO
Total				250	50	100	100	350	140	60	1050	12	03	18	24	-	-
10.	1000006	MAC	Disaster Management	50	10	20	20	-	-	-	100	2	-	-	GRADE	Online	MCQ

Additional Course for Honours or minor Specialization Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization

⁵ proficiency in course/subject includes the weightage towards ability/skill/competence/knowledge level/ expertise attained etc. in that particular course/subject.

MCQ: Multiple Choice Question AO: Assignment + Oral PP: Pen Paper SO: Submission + Oral

** The minor project-I may be evaluated by an internal committee for awarding sessional marks.

* Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance, assignments and presentation

Mode of Teaching					Mode of Examination					Total Credits
Theory		Lab	NEC		Theory		Lab	NEC		
Offline	Online	Blended	Offline	Interactive	PP	AO	MCQ	SO	SO	
-	-	15	08	01	12	-	03	08	01	24
-	-	62.50%	33.33%	4.17%	50.00%	-	12.50%	33.33%	4.17%	Credits %

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Madhav Institute of Technology & Science Gwalior (M.P.)

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

NAAC Accredited with A++ Grade

Centre for Artificial Intelligence

Scheme of Evaluation

B. Tech. VI Semester (Artificial Intelligence (AI) and Machine Learning)

(for batch admitted in academic session 2021 – 22)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Teaching	Mode of Exam.			
				Theory Slot			Practical Slot				MOOCs		L				T	P	
				End Term Evaluation		Continuous Evaluation		End Sem. Exam.	Continuous Evaluation		Assignment	Exam							
				End Sem. Exam.	Proficiency in subject /course	Mid Sem. Exam.	Quiz/ Assignment		Lab work & Sessional										Skill Based Mini Project
1.	280601	DC	Data Mining & Warehousing	50	10	20	20	60	20	20	-	-	100	2	1	2	4	Blended	PP
2.	280602	DC	Image Processing	50	10	20	20	60	20	20	-	-	200	3	-	2	4	Blended	PP
3.	280603	DC	Deep Learning	50	10	20	20	60	20	20	-	-	200	3	-	2	4	Blended	PP
4.	DE	DE	Departmental Elective* (DE-1)	-	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ
5.	OC	OC	Open Category (OC-1)	50	10	20	20	-	-	-	-	-	100	3	-	-	3	Blended	PP
6.	280604	DLC	Minor Project-II**	-	-	-	-	60	40	-	-	-	100	-	-	4	2	Offline	SO
7.	200XXX	CLC	Novel Engaging Course (Informal Learning)	-	-	-	-	50	-	-	-	-	50	-	-	2	1	Interactive	SO
Total				200	40	80	80	290	100	60	25	75	950	14	1	12	21	-	-
8.	1000007	MAC	Intellectual Property Rights (IPR)	50	10	20	20	-	-	-	-	-	100	2	-	-	GRADE	Online	MCQ

Additional Course for Honours or minor Specialization Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization

⁵ Proficiency in course/subject – includes the weightage towards ability/ skill/ competence /knowledge level/ expertise attained etc. in that particular course/subject

MCQ: Multiple Choice Question AO: Assignment + Oral PP: Pen Paper SO: Submission + Oral

Mode of Teaching					Mode of Examination					Total Credits
Theory		Lab	NEC		Theory		Lab	NEC		
Offline	Online	Blended	Offline	Interactive	PP	AO	MCQ	SO	SO	
-	3	12	5	1	12	-	3	5	1	21
-	14.29	57.14	23.81	4.76	57.14	-	14.29	23.81	4.76	Credits %