



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Integrated MSc, 7th Semester
Branch: Computer Science
Subject Name: Introduction to Artificial Intelligence and Data Science
Subject Code: 1370304

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE(E)	PA (M)	PA (I)	ESE (V)		
3	0	2	4	70	30	20	30	150

Content:

Sr. No.	Content	Teaching Hours	Module Weightage
1.	Introduction to AI: Introduction of Artificial Intelligence, Historical backdrop, AI Problems, AI technique, production systems, problem characteristics, production systems characteristics.	5	12%
2.	Problem Solving: Problem Solving by Searching, State-space Search techniques: Breadth first search, depth first search and Iterative deepening DFS. Heuristic search Techniques: Hill Climbing, Best-first search, Problem reduction, Constraint satisfaction.	8	19%
3.	Finding Optimal Paths: Brute Force, Branch & bound, Algorithm A*, Admissibility of A*, Iterative Deepening A*, Recursive best first search	8	19%
4.	Introduction to Data Science, Different Sectors using Data science, Introduction to analytics process, Types of Analytical Techniques	5	12%
5.	Data Analytics Process, Knowledge Check, Exploratory Data Analysis (EDA), EDA- Quantitative technique, EDA- Graphical Technique, Data Analytics Conclusion and Predictions.	9	21%
6.	Feature Generation and Feature Selection (Extracting Meaning from Data), Data Visualization- Basic principles, ideas and tools for data visualization	7	17%

Reference Books:

1. Artificial Intelligence: Elaine Rich, Kevin Knight, Mc-GrawHill
2. A First course in Artificial Intelligence by Deepak Khemani , Mc-GrawHill
3. Business Analytics: The Science of Data - Driven Decision Making, U Dinesh Kumar, John Wiley & Sons.
4. Introducing Data Science: Big Data, Machine Learning, and More, Using Python Tools, Davy Cielen, John Wiley & Sons.



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Course Outcome:

CO-1	Understand the basics of Artificial Intelligence
CO-2	Apply algorithms for finding optimal solutions.
CO-3	To explain how data is collected, managed and stored for data science.
CO-4	To understand the key concepts in data science, including their real-world applications and the toolkit used by data scientists.