



GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Integrated MSc, 7th Semester

Branch: Information Technology

Subject Name: Introduction to Artificial Intelligence and Data Science

Subject Code: 1370501

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 of AI: The AI Problems, The Underlying Assumption, What is an AI techniques, The Level Of The Model, Criteria For Success, Some General References, One Final Word.	5	10
2.	Problems, State Space Search & Heuristic Search Techniques: Defining The Problems As A State Space Search, Production Systems, Production Characteristics, Production System Characteristics and Issues in the Design of Search Programs, Generate-And-Test, Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction, Means-Ends Analysis.	11	25
3.	Knowledge Representation: Representations And Mappings, Approaches To Knowledge Representation, Representation Simple Facts In Logic, Representing Instance And Isa Relationships, Computable Functions and Predicates, Resolution, Procedural versus Declarative Knowledge, Logic Programming, Forward versus Backward Reasoning.	9	20
4.	Introduction Data Science: Considering the emergence of data science, Outlining the core competencies of a data scientist, Linking data science, big data, and AI , Understanding the role of programming, Creating the Data Science Pipeline, Preparing the data, Performing exploratory data analysis, Learning from data, Visualizing, Obtaining insights and data products, Understanding Python's Role in Data Science, Considering the shifting profile of data scientists, Working with a multipurpose, simple, and efficient language, Learning to Use Python Fast ,Loading data, Training a model, Viewing a result.	11	25
5.	Introduction to Business Analytics: Why Analytics Business Analytics: The Science of Data-Driven Decision Making Descriptive Analytics Predictive Analytics Prescriptive Analytics Descriptive, Predictive and Prescriptive Analytics Techniques Big Data Analytics Web and Social Media	9	20



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	Analytics Machine Learning Algorithms Framework for Data-Driven Decision Making Analytics Capability Building Roadmap for Analytics Capability Building Challenges in Data-Driven Decision Making and Future		
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Reference Books:

1. “Artificial Intelligence” -By Elaine Rich And Kevin Knight (2nd Edition) Tata Mcgraw-Hill
2. “Artificial Intelligence: A Modern Approach” -By Stuart Russel, Peter Norvig, PHI
3. “Introduction to Prolog Programming” -By Carl Townsend
4. Dinesh Kumar, Business Analytics, Wiley India Businenalytics: The Science
5. V.K. Jain, Data Science & Analytics, Khanna Book Publishing, New Delhi t
6. Data Science For Dummies by Lillian Pierson , Jake Porwa

Course Outcome:

After learning the course, the students should be able to:

No.	CO statement
CO-1	Ability to understand problem solving methods and their applications.
CO-2	Understand the search technique procedures applied to real world problems.
CO-3	Understand and use various types of logic and knowledge representation schemes.
CO-4	Explore various steps of data science pipeline.
CO-5	Describe the various areas where data science is applied.