Artificial Intelligence

Semester I	Subject Code: MSE11905	

Learning Outcomes:

Learner would be able to

- learn various types of algorithms useful in Artificial Intelligence (AI).
- convey the ideas in AI research and programming language related to emerging technology.
- understand the numerous applications and huge possibilities in the field of AI that goes beyond the normal human imagination.

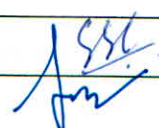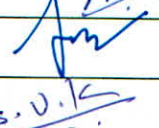# M.Sc. Computer Science First Year 2019-24

Artificial Intelligence

Semester I	Subject Code: MSE11905	Lectures: 60

Objectives:

The syllabus aims in equipping students with,
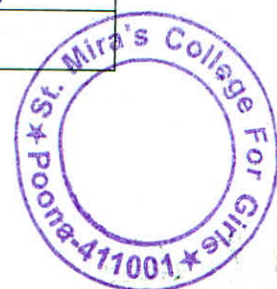- To learn various types of algorithms useful in Artificial Intelligence (AI).
- To convey the ideas in AI research and programming language related to emerging technology.
- To understand the numerous applications and huge possibilities in the field of AI that goes beyond the normal human imagination.
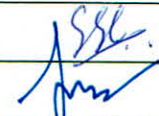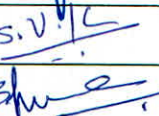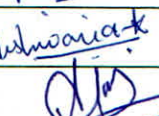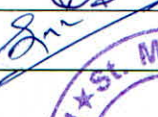
Unit 1: Introduction to Artificial Intelligence and searching algorithm	12
Chapter 1 : Introduction to Artificial Intelligence • Introduction and Intelligent systems, What Is AI? • The Foundations of Artificial Intelligence • The History of Artificial Intelligence • Applications of AI, Early work in AI and related fields • AI problems and Techniques.	2

Chapter 2 : Searching
• Defining AI problems as a State Space Search: example
  ➢ Search and Control Strategies
  ➢ Problem Characteristics
  ➢ Issues in Design of Search Programs
  ➢ Production System.
	10

Sr. No.	BOS member		Sign
1	Prof. Seema Chowhan	Subject Expert	
2	Prof. M.B. Lonare	Subject Expert	
3	Prof. Shilpa Khadilkar	Subject Expert	
4	Ms Anuradha Bhamre	Industry Expert	
5	Ms Aishwarya Kaliyiluvila	Alumni	
6	Prof. Ashwini Kulkarni	Chairman and Internal Faculty	
7	Prof. Swati Pulate	Internal Faculty	

- Blind Search Techniques
  - ➤ BFS, DFS, DLS
  - ➤ Iterative Deepening, Search,
  - ➤ Bidirectional Search, Uniform cost Search.
- Heuristic search techniques:
  - ➤ Generate and test, Hill Climbing
  - ➤ Best First search
  - ➤ Constraint Satisfaction, Mean-End Analysis
  - ➤ A*,AO*

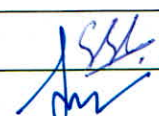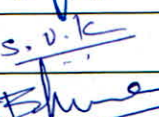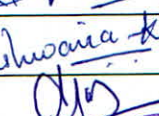|	
Unit 2: Knowledge Representation	**16**
Chapter 3 : Knowledge Representation • Representations and Mappings • Approaches to Knowledge Representation • Knowledge representation method • Propositional Logic • Predicate logic • Representing Simple facts in Logic, Resolution • Forward and backward chaining	8
Chapter 4: Knowledge Representation Structure • Weak Structures, Strong Structures. • Semantic Networks • Frames • Conceptual Dependencies • Scripts.	5
Chapter 5: Game Playing • Minimax Search Procedures • Adding alpha-beta cutoffs	3

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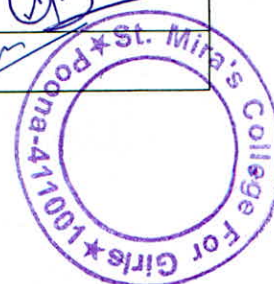| Unit 3: AI with Python	12
Chapter 6 : • Introduction to Python ,Why python with AI • Features of Python • Basics of Python, • Python statements • Methods & Functions using python	7
Chapter 7 : Basic and advanced modules &Packages • Basic and advanced modules &Packages • Python Decorators and generators • Advanced Objects & Data structures.	5

Unit 4: Machine Learning	8

Chapter 8 : Machine Learning
• Why Machine learning
• Types of Machine Learning:
  ➢ Supervised learning- Classification & Regression.
    • Decision tree
    • Random Forest
    • KNN, Logistic algorithms.
  ➢ Unsupervised learning-Clustering & Association.
    • K-means for clustering
    • Apriori algorithm
    • Support Vector Machine (SVM)
    • Reinforcement learning.
	8

*Contact hours – 12 hours

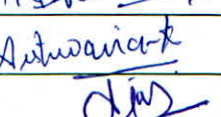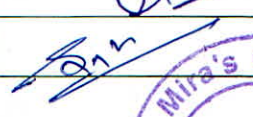| Sr. No.	BOS member		Sign
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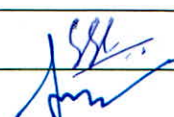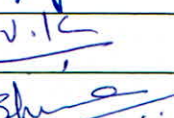
Reference Books:

1.Elsevier Publication ,*Artificial Intelligence: A New Synthesis* , Nilsson
2.Elsevier Publication ,*Computational Intelligence*, Eberhart
3.Packt Publishing Ltd ,*Artificial Intelligence with Python*, PrateekJoshi
4.PHI 2nd Edition, *Introduction to Machine Learning* ,EthemAlpaydin

Artificial Intelligence Practical

Sr. No.	Assignment
1	Basic programs using python using python environment, a) Program to print multiplication table for given no. b) Program to check whether the given no is prime or not. c) Program to find factorial of the given no d) Program for sum of digit
2	Assignment
3	Assignment
4	Assignment
5	Assignment
6	Assignment
7	Assignment
8	Assignment

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