

COURSE TITLE	INTRODUCTION TO ARTIFICIAL INTELLIGENCE
COURSE CODE	01AL0102
COURSE CREDITS	3

Objective:

- 1 The objective of this course is to provide students with a comprehensive foundation in the principles, techniques, and applications of artificial intelligence (AI). The course is designed to prepare the students for advanced courses and careers in AI and related fields through a solid foundational understanding of AI principles and practices.

Course Outcomes: After completion of this course, student will be able to:

- 1 Understand the fundamentals of artificial intelligence
- 2 Demonstrate awareness and a fundamental understanding of various applications of AI technique
- 3 Analyze expert system domain of the field of AI
- 4 Analyze various real-world applications of AI in fields of Robotics
- 5 Demonstrate an ability to share in discussions of Natural Language Processing, its current scope and limitations, and societal implications

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	Fundamentals of Artificial Intelligence Introduction -Definition, Future of Artificial Intelligence, Characteristic of Intelligent Agent, Problem Solving Approach to typical AI Problem, Software Agent, Architecture for Intelligent agent, Agents and Environments, The Concept of Rationality, The Nature of Environment	9
2	Applied Artificial Intelligence Applications AI applications , Language Models , Information Retrieval, Information Extraction , Natural Language Processing , Machine Translation, Speech Recognition, Robot, GPT, Hardware , Perception, Perception, planning, Moving	8
3	Expert System and Learning Expert System Representing and using domain knowledge, What is Learning , Rote Learning, Learning by taking Advice, Learning in Problem Solving, example, Winton's Learning Program, Decision Tree	8

Contents : Unit	Topics	Contact Hours
4	Robotics Introduction to robotics, definition and use of robots, robotics applications, Components of robots, Types of robotics, Robot Locomotion, Types of robot sensors, Hardware designing, Future of robotics, Robotics research area	8
5	Natural Language Processing Introduction to Natural Language Processing and its application, components of NLP, Phases of NLP, Application of NLP, Advantages and Disadvantages of NLP, Natural Language Processing VS Computer Language, NLP Libraries, NLP API, Future trend of NLP in AI applications	9
Total Hours		42

Textbook :

- 1 The Ultimate Introduction To NLP, Richard Bandler , Alessio Roberti , Owen Fitzpatrick, Harper Collins , 2013
- 2 Introduction to Robotics, Saeed B. Niku, Willey, 2024
- 3 Artificial Intelligence: Making a System Intelligent, Dr. Nilakshi Jain, Willey, 2019
- 4 Introduction to Robotics, John Craig , Pearson Education, 2022

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
25.00	25.00	15.00	20.00	15.00	0.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brain storming, MOOCs etc.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the class-room.
- 3 Students will use supplementary resources such as online videos, NPTEL videos , e-courses, Virtual Laboratory