TISHK INTERNATIONAL UNIVERSITY
FACULTY OF ENGINEERING
Department of COMPUTER ENGINEERING,
2024-2025 Fall
Course Information for CMPE 411 ARTIFICIAL INTELLIGENCE

Course Name:	ARTIFICIAL INTELLIGENCE

Code	Regular Semester	Theoretical	Practical	Credits	ECTS
CMPE 411	7	3	-	3	6

Name of Lecturer(s):	Abubakar Ashir
Teaching Assistant:	NA
Course Language:	-
Course Type:	Area Elective
Office Hours	12-2 PM Sun
Contact Email:	abubakar.ashir@tiu.edu.iq Tel:07511182024
Teacher's academic profile:	1. Doctor of Philosophy (PhD.) in Machine Learning & Patterns Recognition 2018, Şelçuk University, Turkey. 2. Master of Sciences (MSc.) in Image Processing & Embedded Systems 2014, Mevlana University, Turkey. 3. Bachelor of Engineering (B.Eng.) in Electrical & Electronics Engineering 2009, Ahmadu Bello University, Nigeria.
Course Objectives:	1. To have an appreciation for and understanding of both the achievements of AI and the theory underlying those achievements. 2. To have an appreciation for the engineering issues underlying the design of AI systems. 3. To have an understanding of the basic issues of knowledge representation and blind and heuristic search, as well as an understanding of other topics such as minimax, resolution, etc. that play an important role in AI programs. 4. To have a basic understanding on some advanced topics of AI such as learning, natural language processing, agents and robotics, expert systems and planning.
Course Description (Course overview):	Introduction, This is an introductory course converging basic Artificial Intelligence (AI) concepts and its implementation. The course introduces the fundamental concepts of the discipline first then goes into detail with the practical information necessary to implement some algorithms and strategies. There are many existing examples that imply a sort of intelligence like computer games. Robots. Smart. Washing machines. Digital cameras software that suggests music you might like to listen to etc. The course captures the essence of AI and introduces basic ideas regarding knowledge representation and search algorithms.

COURSE CONTENT

Week	Hour	Date	Topic
1	3	29/09-03/10/2024	Introduction to Artificial Intelligent
2	3	06-10/10/2024	Intelligent Agents
3	3	13-17/10/2024	Problem solving I: classical & non-classical search
4	3	20-24/10/2024	Problem solving II: Adversarial Search
5	3	27-31/10/2024	Knowledge Representation & Reasoning I: Knowledge-based Agent & Propositional Logic
6	3	03-07/11/2024	Knowledge Representation & Reasoning II: First-order Logic & Inference
7	3	10-14/11/2024	Midterm Exam
8	3	17-21/11/2024	Knowledge Representation & Reasoning III: Uncertainty Reasoning
9	3	24-28/11/2024	Expert systems and Planning
10	3	01-05/12/2024	Machine Learning I: Learning, Regression & Classification
11	3	08-12/12/2024	Machine Learning II: Learning Decision Trees
12	3	15-19/12/2024	Machine Learning III: Artificial Neural Network

13	3	22-26/12/2024	Review
14	3	05-09/01/2025	Review
15	3	12-16/01/2025	Final Exam

COURSE/STUDENT LEARNING OUTCOMES

1	An ability to Understand the major areas and challenges of AI.
2	An ability to apply basic AI algorithms to solve problems.
3	An ability to Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem.
4	An ability to Formalize a given problem in the language/framework of different AI methods (e.g., as a search problem, logical theory, planning problem, etc).
5	Understand the modelling and implementation of classical machine learning problems such as regressions and classifications

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced)

	Program Learning Outcomes	**Cont.**
1	Exhibit ability to describe and explain fundamental scientific, mathematical, and computing facts, concepts, and theories relevant to computer engineering fields and applications.	P
2	Apply and integrate knowledge, understanding and awareness of other relevant disciplines which are essential in development of computer engineering related applications.	I
3	Ability to identify, formulate and solve pertinent problems through informed selection and application of relevant methods from established analytical, computational, and experimental approaches.	P
4	Ability to analyze complex engineering processes, applications, and systems with comprehensive interpretation of the outcomes of such processes, systems, or applications.	
5	Ability to develop and design complex processes, systems, and applications in computer engineering domain to meet the established technical and non-technical requirements.	
6	Select and apply relevant design methodologies using state-of-the-art techniques and procedures.	
7	Ability to consult literature and critically use scientific databases and other appropriate sources of information to perform simulation and analysis to pursue detailed investigations on research gaps and technical issues.	
8	Ability to design and conduct experimental investigation, interpret data, and draw conclusions.	P
9	Demonstrate knowledge and understanding of engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects in multidisciplinary environments.	
10	Understand and evaluate the sustainability and impact of professional engineering work in the societal and environmental contexts and demonstrate knowledge of and need for sustainable development.	I
11	Functioning effectively as an individual, and as a member or leader in diverse teams and in disciplinary and multidisciplinary activities.	I

Prerequisites (Course Reading List and References):	Mathematics and Programming
Student's obligation (Special Requirements):	Avoid lateness and distraction in the classroom and exhibition of inappropriate behaviour during class hours
Course Book/Textbook:	Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig, (2002), Prentice Hall, Chapter 1-27, page 1-1057
Other Course Materials/References:	1. Artificial intelligence: A guide to intelligent systems. 2nd edition. MICHAEL NEGNEVITSKY 2. Artificial Intelligence: A Modern Approach by Stuart J. Russell and Peter Norvig 3. Machine Learning by Tom M. Mitchell
Teaching Methods (Forms of Teaching):	Lectures, Exercises, Presentation, Project, Assignments, , ,

COURSE EVALUATION CRITERIA

Method	**Quantity**	**Percentage (%)**
Participation	1	5
Quiz	2	5
Project	1	15
Midterm Exam	1	30

Final Exam	1	40
Total		**100**

Examinations: Essay Questions, Fill in the Blanks, Multiple Choices, Short Answers, , ,

Extra Notes:

ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD

Activities	Quantity	Workload Hours for 1 quantity*	Total Workload
Theoretical Hours	15	3	45
Practical Hours	15	0	0
Final Exam	1	30	30
Participation	1	13	13
Quiz	2	3	6
Project	1	40	40
Midterm Exam	1	14	14
Total Workload			**148**
ECTS Credit (Total workload/25)			**6**

Peer review

Signature:	Signature:	Signature:
Name:	Name:	Name:
Lecturer	Head of Department	Dean