OSTIM TECHNICAL UNIVERSITY
FACULTY OF ECONOMICS AND ADMINISTRATIVE SCIENCES
MANAGEMENT INFORMATION SYSTEMS DEPARTMENT
COURSE SYLLABUS FORM

MIS 346 Artificial Intelligence							
Course Name	**Course Code**	**Period**	**Hours**	**Application**	**Laboratory**	**Credit**	**ECTS**
Artificial Intelligence	MIS 346	6	3	0	0	3	3

Language of Instruction	English
Course Status	Compulsory
Course Level	Bachelor
Learning and Teaching Techniques of the Course	Lecture, Question-Answer, Problem Solving, Project

Course Objective

The main purpose of this course is to provide the most fundamental knowledge to the students so that they can understand what the AI is. Due to limited time, we will try to eliminate theoretic proofs and formal notations as far as possible, so that the students can get the full picture of AI easily. Students who become interested in AI may go on to the graduate school for further study.

Learning Outcomes

Students who successfully complete this course;

1. Understand artificial intelligence principles and approaches

2. Understand a basic understanding of the building blocks of AI as presented in terms of intelligent agents

3. Evaluate various search algorithms

4. Understand foundational ideas in the field of natural language processing, computer vision, and robotics

5. Reflect on the philosophical foundations of AI and the future of AI

6. Implement (write computer programs) various AI algorithms

Course Outline
This course introduces the student to artificial intelligence. It begins by introducing concepts such as knowledge, learning, and layers. Topics progress by covering topics such as state space searching, heuristic searching, information representation, analysis, constraint satisfaction problems, meta-logic programming, meta-interpreters, and inductive logic programming. Then, related topics such as Deep learning and reinforcement learning are mentioned. Finally, the applicability of these topics is discussed on sample problems.

Weekly Topics and Related Preparation Studies		
Weeks	Topics	Preparation Studies
1	Introduction (Chapter 1)	– Types of Data – Data Quality Story
2	Intelligent Agents (Chapter 2) Solving Problems by Searching (Chapter 3)	–Introduction (Chapter 1) –Logic and Knowledge Representation
3	Search in Complex Environments (Chapter 4)	– Intelligent Agents (Chapter 2) – Solving Problems by Searching (Chapter 3) –Knowledge base
4	Adversarial Search and Games (Chapter 5)	–Search in Complex Environments (Chapter 4) –Propositional logic and predicate logic –Propositional and predicate logic
5	Constraint Satisfaction Problems (Chapter 6)	–Search in Complex Environments (Chapter 4) –Adversarial Search and Games (Chapter 5)
6	Logical Agents (Chapter 7)	–Constraint Satisfaction Problems (Chapter 6)
7	Quantifying Uncertainty (Chapter 12)	–Logical Agents (Chapter 7)
8	MIDTERM EXAM	
9	Probabilistic Reasoning (Chapter 13)	– Probability and statistics
10	Learning from Examples (Chapter 19) Deep Learning (Chapter 21)	– What is Data Analysis – What is Data Mining
11	Natural Language Processing (Chapter 23) Deep Learning for NLP (Chapter 24)	– Learning from Examples (Chapter 19) –Deep Learning (Chapter 21)
12	Computer Vision (Chapter 25)	– Computer Vision (Chapter 25)
13	Robotics (Chapter 26)	–Logical Agents (Chapter 7)
14	Philosophy, Ethics, and Safety of AI (Chapter 27) The Future of AI (Chapter 28	–Robotics (Chapter 26)

15	Machine learning using Tensorflow – Basics of Python, Numpy, and Keras – Design, train, and evaluate basic feed-forward neural networks Study feature importance and feature reduction	–
16	**FINAL EXAM**	

Textbook(s)/References/Materials:
Textbook: Artificial Intelligence: A Modern Approach (4th Edition) by Pearson. You should have automatic access to the book via Canvas's VS Materials tab.
Supplementary References: N. P. Padhy – Artificial Intelligence and Intelligence Systems, OXFORD publication.
Other Materials: Russell, Norvig, Artifificial Intelligence: A Modern Approach, Third edition, Prentice Hall, 2010

Assessment		
Studies	**Number**	**Contribution margin (%)**
Attendance		
Lab		
Class participation and performance	1	10
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical	5	10
Homework		
Presentation		
Projects	1	10
Report		
Seminar		
Midterm Exam/Midterm Jury	**1**	**20**
General Exam / Final Jury	**1**	**50**
Total		**100**
Success Grade Contribution of Semester Studies		**50**
Success Grade Contribution of End of Term		**50**
Total		**100**

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Course hours (Including the exam week): 16 x total course hours)	16	3	48
Laboratory			
Application			
Course-Specific Internship (if any)			
Field Study			
Study Time Out of Class	8	2	16
Presentation / Seminar Preparation			
Projects			
Reports			
Homework			
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	20	20
Preparation Period for the Final Exam / General Jury	1	20	20
Total Workload		**(104/30 = 3,46)**	**104**

Course' Contribution Level to Learning Outcomes						
Nu	**Learning Outcomes**	**Contribution Level**				
		1	**2**	**3**	**4**	**5**
LO1	Understand artificial intelligence principles and approaches					X
LO2	Understand a basic understanding of the building blocks of AI as presented in terms of intelligent agents					X
LO3	Evaluate various search algorithms					X
LO4	Understand foundational ideas in the field of natural language processing, computer vision, and robotics					X
LO5	Reflect on the philosophical foundations of AI and the future of AI					X
LO6	Implement (write computer programs) various AI algorithms					X

Nu	Program Competencies	Learning Outcomes						Total Effect (1-5)
		LO1	LO2	LO3	LO4	LO5	LO6	

Relationship Between Course Learning Outcomes and Program Competencies (Department of Management Information Systems)

Nu	Program Competencies	LO1	LO2	LO3	LO4	LO5	LO6	Total Effect (1-5)
1	Recognize and distinguish the basic concepts such as data, information, and knowledge in the field of Management Information Systems and know the processes to be followed for data acquisition, storage, updating, and security.		x	x		x	x	4
2	Develop and manage databases suitable for collecting, storing, and updating data.			x	x	x	x	4
3	As a result of his/her ability to think algorithmically, and easily find solutions to problems concerning basic business functions.		x	x		x	x	4
4	Learn programming logic, and have information about current programming languages.		x		x		x	3
5	Be able to use up-to-date programming languages.		x	x				2
6	Be able to take part in teamwork or lead a team using knowledge of project management processes.	x			x		x	3
7	Know ethical and legal rules, and use professional field knowledge within the scope of ethical and legal rules.			x	x	x		3
8	Know the fundamental areas of business administration namely management and organization, production, finance, marketing, numerical methods, accounting, etc., and have the knowledge and skills to work in-depth in at least one of them.	x	x	x				3
9	Be able to solve the problems encountered in the field of internet programming by designing web applications.	x	x	x		x	x	5
10	Develop and manage logistics and supply chain management activities		x	x	x	x	x	5
11	Adapt his/her theoretical knowledge and the experience he/she will gain through practice at the departments of businesses such as information technologies, R&D, and management to real life.		x	x		x		3
12	Be able to develop strategies that will provide a competitive advantage with			x		x		2

	his/her advanced knowledge of management strategies and management functions.							
13	Develop a business idea, commercialize the business idea, and design and manage his/her venture using entrepreneurial knowledge.				x	x		**2**
14	By using English effectively, they can follow, read, write, speak and communicate universal information in the field of management information systems in a foreign language with professional competence.	x	x	x		x	x	**5**
Total Effect								**48**

Policies and Procedures
Web page: https://www.ostimteknik.edu.tr/management-information-systems-english-1241/915
Exams: The exams aim at assessing various dimensions of learning: knowledge of concepts and theories and the ability to apply this knowledge to real-world phenomena, through analyzing the situation, distinguishing problems, and suggesting solutions. The written exams can be of two types, ie. open-ended questions, which can also be in the form of problems or multiple-choice questions.
Assignments: Quizzes and Homework (Assignments) might be applicable. Scientific Research Ethics Rules are very important while preparing assignments. The students should be careful about citing any material used from outside sources and reference them appropriately.
Missed exams: Any student missing an exam needs to bring an official medical report to be able to take a make-up exam.
Projects: A group project with teamwork is welcome.
Attendance: Attendance requirements are announced at the beginning of the term. Students are usually expected to attend at least 70% of the classes during each term.
Objections: If the student observes a material error in his/her grade, he/she has the right to place an objection to the Faculty or the Department. The claim is examined and the student is notified about its outcome.