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

MIS 447 Machine Learning							
Course Name	**Course Code**	**Period**	**Hours**	**Application**	**Laboratory**	**Credit**	**ECTS**
Machine Learning	MIS 447	7	4	0	0	4	4

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

Course Objective
In this course, it is aimed to teach the students to learn the learning methods and the relationship of the concept of machine learning with these methods. Students taking this course will be able to analyze complex real-life problems using machine learning methods.

Learning Outcomes
Students who are successful in this course; 1. Will learn the basic concepts of machine learning, 2. Distinguish between machine learning methods, 3. Will be able to choose the right machine learning method, 4. They will be able to code and apply machine learning with any data set.

Course Outline
In this course, after introducing machine learning, learning strategies and supervised and unsupervised learning will be explained. Then, regression, artificial neural networks, clustering algorithms, support vector machines and decision trees and machine learning methods will be taught to the students.

Weekly Topics and Related Preparation Studies		
Weeks	**Topics**	**Preparation Studies**
1	Introduction to machine learning	–Presentations and Lecture Notes
2	Learning strategies	–Presentations and Lecture Notes
3	Multivariate models and regression	–Presentations and Lecture Notes
4	Multivariate models and regression	–Presentations and Lecture Notes
5	Artificial neural networks I	–Presentations and Lecture Notes
6	Artificial neural networks II	–Presentations and Lecture Notes
7	Artificial neural networks III	–Presentations and Lecture Notes
8	**MIDTERM EXAM**	
9	Clustering Algorithms I	–Presentations and Lecture Notes
10	Clustering algorithms II	– Presentations and Lecture Notes
11	Support vector machines I	– Presentations and Lecture Notes
12	Support vector machines II	– Presentations and Lecture Notes
13	Support vector machines III	– Presentations and Lecture Notes
14	Decision trees	– Presentations and Lecture Notes
15	**FINAL EXAM**	

Textbook(s)/References/Materials:
Textbook: Rudolph Russell (2018). Machine Learning: Step-by-Step Guide To Implement Machine Learning Algorithms with Python: Kindle edition.
Supplementary References: Tom M. Mitchell (1997). Machine Learning (McGraw-Hill International Editions Computer Science Series): McGraw-Hill
Other Materials: https://keenethics.com/blog/machine-learning-in-education https://ai.google/education/

Assessment		
Studies	**Number**	**Contribution margin (%)**
Attendance		
Lab		
Class participation and performance		
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical		
Homework		
Presentation		
Projects	1	20
Report		
Seminar		
Midterm Exam/Midterm Jury	**1**	**30**
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	4	64
Laboratory			
Application			
Course-Specific Internship (if any)			
Field Study			
Study Time Out of Class	16	1	16
Presentation / Seminar Preparation			
Projects	5	1	5
Reports			
Homework			
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	15	15
Preparation Period for the Final Exam / General Jury	1	20	20
Total Workload	**(120/30 = 4,00)**		**120**

Course' Contribution Level to Learning Outcomes						
Nu	**Learning Outcomes**	**Contribution Level**				
		1	**2**	**3**	**4**	**5**
LO1	Learn the basic concepts of machine learning.					X
LO2	Distinguish between machine learning methods.					X
LO3	To be able to choose the right machine learning method.					X
LO4	To be able to code and apply machine learning with any data set.					X

	Relationship Between Course Learning Outcomes and Program Competencies (Department of Management Information Systems)					
Nu	**Program Competencies**	**Learning Outcomes**				**Total Effect (1-5)**
		LO1	**LO2**	**LO3**	**LO4**	
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	**5**
2	Develop and manage databases suitable for collecting, storing, and updating data.	x		x		**4**
3	As a result of his/her ability to think algorithmically, and easily find solutions to problems concerning basic business functions.					
4	Learn programming logic, and have information about current programming languages.				x	**2**
5	Be able to use up-to-date programming languages.					
6	Be able to take part in teamwork or lead a team using knowledge of project management processes.				x	**3**
7	Know ethical and legal rules, and use professional field knowledge within the scope of ethical and legal rules.					
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.					
9	Be able to solve the problems encountered in the field of internet programming by designing web applications.					
10	Develop and manage logistics and supply chain management activities					
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	**4**
12	Be able to develop strategies that will provide a competitive advantage with		x		x	**4**

	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.					
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.					
Total Effect						**22**

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.