

COURSE INFORMATION					
Course Title	Code	Semester	L+P Hour	Credits	ECTS
Advanced Topics in Artificial Intelligence	CSE660	1	3	3	10

Prerequisites

Language of Instruction	English
Course Level	Graduate
Course Type	Elective
Course Coordinator	
Instructors	Assoc.Prof.Dr. Emin Erkan Korkmaz
Assistants	
Goals	<p>The aim of this course is to provide the students knowledge about advanced topics in artificial intelligence and machine learning. The topics covered vary from one offering to the next. However the following subjects are in the focus of the course: Data Mining, Knowledge Discovery, Deep Learning, Neural and Evolutionary Computation, Multi-Agent Systems, Robotics, Natural Language Processing, and Probabilistic Reasoning.</p> <p>Some topics are selected for each in each offering. The student are expected to have a deep understanding of the selected topics by reading and discussing a selection of research papers. The focus of the course is on term Project. The students are expected to select a problem and develop a solution based on the previous research in the literature in their Project work.</p>
Content	Data Mining, Knowledge Discovery, Deep Learning, Neural and Evolutionary Computation, Multi-Agent Systems, Robotics, Natural Language Processing, and Probabilistic Reasoning.

Course Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
1) Gain both a wide and a deep knowledge of the topics taught in the the course.	1	1,2	A,C,D
2) Ability to use knowledge to formulate, and solve practical problems using artificial intelligence techniques.	2	1,2	A,C,D

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study
Assessment Methods:	A: Testing, B: Experiment, C: Homework, D: Project

COURSE CONTENT		
Week	Topics	Study Materials
1	Introductory terms, foundations, history of AI	Textbook
2	Philosophy of AI	Textbook
3	Introductory Material for the Selected Topics	Textbook
4	Literature Survey of Selected Topics	Textbook
5	Literature Survey of Selected Topics	Textbook
6	Readings & Discussions on Research Papers	Textbook
7	Readings & Discussions on Research Papers	Textbook
8	Presentation of Project Proposals	Textbook
9	Analysis and Design Details	Textbook
10	Implementation of the Proposed Method	Textbook
11	Tests and Collection of the Test Results	Textbook
12	Paper write-up	Textbook
13	Project Presentations	Textbook
14	Project Presentations	Textbook

RECOMMENDED SOURCES	
Textbook	Google
Additional Resources	Research papers from the recent top conferences are studied.

MATERIAL SHARING
Documents
Assignments
Exams

ASSESSMENT			
	IN-TERM STUDIES	NUMBER	PERCENTAGE
Assignment		3	30
Project		1	70

Total	100
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE	30
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE	70
Total	100

COURSE CATEGORY	Expertise/Field Courses
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COURSE'S CONTRIBUTION TO PROGRAM						
No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Ability to understand and use basic sciences, mathematics and engineering sciences in a high level.			X		
2	Possession of wide and deep knowledge in the field of Computer Science and Engineering, including the latest developments.					X
3	Ability to reach the new information in the field of Computer Science and Engineering and having high-level competence in necessary methods and skills to make the research by apprehending the new information.					X
4	Ability to bring an innovation that provides different initiatives to the field of Computer Engineering; develop a new approach, method, design, application or apply a present method in a different field.					X
5	Ability to perceive an original research process independently, and design, implement, conclude and lead the process.					X
6	Ability to contribute to the literature by publishing the whole scientific research and development efforts he/she has carried out in the field of expertise.		X			
7	Ability to comprehend scientific, technological, social and cultural developments, and convey them to society with scientific impartiality and ethical responsibility.					X
8	Ability to do critical analysis, synthesis and evaluation of ideas and developments in the field of Computer Engineering.					X
9	Ability to communicate effectively in oral and written ways with the employees in the area of Computer Engineering and wider scientific and social communities, to communicate and discuss in advanced level of written, oral and visual ways by using a foreign language in at least European Language Portfolio C1 General Level.				X	
10	Ability to evaluate scientific, technological, social and cultural developments and to transmit these developments to society with scientific objectivity and a sense of ethic responsibility.		X			

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam week: 13x Total course hours)	13	3	39
Hours for off-the-classroom study (Pre-study, practice)	14	5	70
Homework	3	15	45

Project	1	90	90
Final examination	1	3	3
Total Work Load			247
Total Work Load / 25 (h)			9.88
ECTS Credit of the Course			10