



**HASAN KALYONCU UNIVERSITY**  
**Faculty of Engineering**  
**Course Description Form**

<b>COURSE:</b> Artificial Intelligence					
<b>CODE:</b> CENG306		<b>SEMESTER:</b> SPRING			
<b>LANGUAGE:</b> ENGLISH		<b>TYPE:</b> COMPULSORY			
<b>PRE-REQUISITES:</b> - <b>CO-REQUISITES:</b> -		<b>THEORY</b>	<b>PRACTICAL</b>	<b>CREDIT</b>	<b>ECTS</b>
<b>WEEKLY HOURS:</b>		3	0	3	5

**CONTENT OF THE COURSE:** AI is concerned with making computers perform tasks that are currently performed better by humans. The primary aim of this course is to provide some of the theoretical foundations of AI. As a whole it emphasizes both theoretical background and hands-on experience.

**OBJECTIVE OF THE COURSE:** This course aims to introduce the basic concepts of Artificial Intelligence (AI). In addition, current technologies enabling AI is discussed.

<b>WEEKLY SCHEDULE AND PRE-STUDY PAGES</b>	
<b>Week</b>	<b>Topics</b>
1	Introduction, a brief history of AI
2	Contemporary applications, Turing's Test
3	Problem solving and search strategies, uninformed search algorithms
4	Informed search algorithms
5	Game Playing, minimaxing
6	Game Playing, alpha-beta pruning
7	Midterm Exam
8	Inferencing, backward, forward and mixed chaining methods
9	Knowledge representation
10	Uncertainty, probabilities and Bayes' rule
11	Machine Learning, symbolic inductive algorithms
12	Rule associations and decision trees
13	Neural computing, backpropagation algorithm
14	Final Exam

**TEXTBOOK:** S. Russell, and P. Norvig. Artificial Intelligence: A Modern Approach, Second edition. Prentice-Hall, 2004.

**REFERENCE BOOKS:**

- M. Negnevitsky. Artificial Intelligence: A Guide to Intelligent Systems. Addison Wesley. 2001
- G.F. Luger and W.A. Stubblefield. Artificial Intelligence, 4<sup>th</sup> ed. Addison Wesley, 2002.

<b>EVALUATION SYSTEM:</b>		
<b>IN-TERM STUDIES</b>	<b>QUANTITY</b>	<b>PERCENTAGE (%)</b>
Midterm Exam	2	20
Homework	2	10
Laboratory works	0	0
Quiz	1	10
Final Exam	1	60
<b>TOTAL</b>	<b>6</b>	<b>100</b>
CONTRIBUTION OF INTERM STUDIES TO OVERALL GRADE	5	40
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE	1	60
<b>TOTAL</b>	<b>6</b>	<b>100</b>

<b>COURSE CATEGORY:</b>	<b>PERCENTAGE (%)</b>
Mathematics and Basic Sciences	30
Engineering	30
Engineering Design	40
Social Sciences	0

<b>TABLE OF ECTS / WORKLOAD:</b>			
<b>Activities</b>	<b>QUANTITY</b>	<b>Duration (Hour)</b>	<b>Total Workload</b>
Course Duration	13	3	39
Hours for off-the-classroom study (Pre-study, practice)	14	6	84
Laboratory works	0	0	0
Mid-term	2	2	4
Final examination	1	2.5	2.5
Homework	2	8	16
Quiz	1	2	2
<b>Total Work Load</b>			<b>147.5</b>
<b>Total Work Load / 30</b>			<b>4,92</b>
<b>ECTS Credit of the Course</b>			<b>5</b>

	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
<b>LO1</b>	3	3	0	2	2	1	0	0	0	0	0
<b>LO2</b>	3	3	0	2	2	1	0	0	0	0	0
<b>LO3</b>	3	3	0	2	2	1	0	0	0	0	0
	PO: Program Outcomes   LO: Learning Outcomes Values: 0: None   1: Low   2: Medium   3: High										

<b>INSTRUCTOR(S):</b>	Asst. Prof. Dr. Bülent HAZNEDAR
<b>FORM PREPARATION DATE:</b>	13.09.2019

<b>LEARNING OUTCOMES OF THE COURSE:</b>	<b>PROGRAM OUTCOMES:</b>
<p><b>LEARNING OUTCOMES OF THE COURSE:</b></p> <p><b>LO1:</b> The students will understand the basics of Artificial Intelligence as a new paradigm.</p> <p><b>LO2:</b> The students will be able to decide when it is appropriate to use this technology.</p> <p><b>LO3:</b> The students will learn when this technology should be applied to create intelligent applications.</p>	<p><b>PO1:</b> Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.</p> <p><b>PO2:</b> Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.</p> <p><b>PO3:</b> Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.</p> <p><b>PO4:</b> Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice; ability to employ information technologies effectively.</p> <p><b>PO5:</b> Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.</p> <p><b>PO6:</b> Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.</p> <p><b>PO7:</b> Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.</p> <p><b>PO8:</b> Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.</p> <p><b>PO9:</b> Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.</p> <p><b>PO10:</b> Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development.</p> <p><b>PO11:</b> Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.</p>