



Course Syllabus: Special Topic in Artificial Intelligence - CS 290E

Division	Computer, Electrical and Mathematical Sciences & Engineering
Course Number	CS 290E
Course Title	Special Topic in Artificial Intelligence
Academic Semester	Spring
Academic Year	2018/2019
Semester Start Date	01/27/2019
Semester End Date	05/23/2019
Class Schedule (Days & Time)	01:00 PM - 02:30 PM Sun Wed

Instructor(s)

Name	Email	Phone	Office Location	Office Hours
Robert Hoehndorf	robert.hoehndorf@kaust.edu.sa	+966128081643	4222, 3, Ibn Sina (bldg. 3)	On request.

Teaching Assistant(s)

Name	Email
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Course Information

Comprehensive Course Description	Artificial Intelligence as a field aims to create systems that resemble or reproduce intelligent behavior using machines. This course will provide a broad overview over the research area of Artificial Intelligence and introduce basic methods focusing on problem solving, decision making, reasoning, representing knowledge, communicating, perceiving, and acting. We will use game playing as a model for intelligent behavior throughout the course.
Course Description from Program Guide	
Goals and Objectives	The aim of the course is to introduce basic concepts in Artificial Intelligence research and complement related courses (such as Data Analytics and Machine Learning). At the completion of this course, students will be able to design intelligent agents and intelligent systems that can make decisions based on complete or incomplete information, use different methods to explore a search space, and communicate the decisions.
Required Knowledge	Programming; basic algorithms and data structures; complexity of algorithms; discrete mathematics; basic probability theory
Reference Texts	Norvig and Russel, Artificial Intelligence: A Modern Approach, Third Edition.
Method of evaluation	50.00% - Final exam 50.00% - Homework /Assignments
Nature of the assignments	There will be five homework assignments (10% each) that involve solving problems related to the course progress and small programming tasks. The final exam will test understanding of the concepts introduced in the course.
Course Policies	Late submission of assignments without valid reason will result in 50% reduction of points for the assignments.
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Sun 01/27/2019 Wed 01/30/2019	Introduction: Foundations and Approaches to Artificial Intelligence; Intelligent Agents; Rationality
2	Sun 02/03/2019 Wed 02/06/2019	Introduction to two-person zero-sum games.
3	Sun 02/10/2019 Wed 02/13/2019	Decision making in games; adversarial search; dealing with uncertainty and incomplete information.
4	Sun 02/17/2019 Wed 02/20/2019	World states, beliefs, desires, and intentions: knowledge representation and reasoning
5	Sun 02/24/2019 Wed 02/27/2019	Propositional logic and first order logic; reasoning in first order logic.
6	Sun 03/03/2019 Wed 03/06/2019	Representing and achieving goals: classical planning
7	Sun 03/10/2019 Wed 03/13/2019	Planning and action: hierarchical planning, scheduling
8	Sun 03/17/2019 Wed 03/20/2019	Formalizing "common sense": non-monotonic reasoning
9	Sun 03/24/2019 Wed 03/27/2019	Spring Break
10	Sun 03/31/2019 Wed 04/03/2019	Uncertainty: Quantifying uncertainty, probabilistic reasoning, Bayesian Networks
11	Sun 04/07/2019 Wed 04/10/2019	Decision making: believes, desires, intentions, utility theory
12	Sun 04/14/2019 Wed 04/17/2019	Decision making: multiple agents, sequential decision problems, game theory
13	Sun 04/21/2019 Wed 04/24/2019	Natural Language Processing: Language models, information retrieval and extraction
14	Sun 04/28/2019 Wed 05/01/2019	Natural Language Processing: named entity recognition, relation extraction
15	Sun 05/05/2019 Wed 05/08/2019	Natural Language Processing
16	Sun 05/12/2019 Wed 05/15/2019	Revision
17	Sun 05/19/2019 Wed 05/22/2019	Final Exam Week

Note

The instructor reserves the right to make changes to this syllabus as necessary.