Course: Artificial Intelligence – 0908531 (3 Credit hours – Core course)
Instructor: Dr. Adham Alsharkawi

Course Website: https://elearning.ju.edu.jo/

Catalog Data: The students will be introduced to the general area of artificial intelligence and how it can be used to solve engineering problems more efficiently than conventional methods. A general review of conventional control will be presented. Then the main areas of expert systems, neural networks, fuzzy logic and genetic algorithms are presented with applications in control.

Prerequisites by Course: Automatic Control – 0908353

Prerequisites By Topic: Basic knowledge of control systems


References:

Schedule & Duration: 16 Weeks, 45 lectures (50 minutes each) plus exams.

Minimum Student Material: Text book, class handouts, and an access to personal computer with MATLAB.

Minimum College Facilities: Classroom with whiteboard and projection display facilities, library, and computational facilities with MATLAB and Simulink.

Course Objectives: The primary objective of this course is to introduce the basic principles, techniques, and applications of Artificial Intelligence. Some reliance will be placed on the use of Matlab and Simulink to reinforce student understanding.

Course Learning Outcomes and Relation to ABET Student Outcomes:
Upon successful completion of this course, a student should:
1. Know how to build an artificial intelligence-based controllers. [c, e]
2. Know the different types of artificial intelligence tools. [a]
3. Improve presentation skills, report writing skills, teamwork skills and problem-solving skills due to the work on the project in this course. [g, d, i]
4. Understand the principle of operation of neural networks, fuzzy logic and genetic algorithms. [a,e]
5. Know how to use Matlab and Simulink in building fuzzy logic and neural network applications. [k]
Mapping to Student Outcomes

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<tr>
<th>ABET SO</th>
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<tr>
<td>Will be measured</td>
<td>Yes</td>
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Course Topics

<table>
<thead>
<tr>
<th>Topic Description</th>
<th>Hrs</th>
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<tr>
<td>1. Introduction to Artificial Intelligence (AI)</td>
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<tr>
<td>2. A brief review of control theory</td>
<td>2</td>
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<td>3. Neural Networks</td>
<td>8</td>
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<td>4. Fuzzy Logic</td>
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<td>5. Genetic Algorithms</td>
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<td>7. Applications in control</td>
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Ground Rules:
- **Attendance:** Students are expected to attend EVERY CLASS SESSION and they are responsible for all material, announcements, schedule changes, etc., discussed in class. The university policy regarding the attendance will be strictly adhered to.
- **Make up Examinations** There will be no make up exams for any exam that will be taken during the course. Exceptions to this rule is restricted only to the following cases: 1. Death of only first order relatives (father, mother, sister, or brother). 2. Hospital entry (in-patient) during the time of the examination. Page 3 of 3 Any other cases will be given the zero mark in the corresponding exam.
- **Special Notes** 1. Seating plan will be as given in the attendance sheet. 2. Students creativity is welcomed and will receive additional marks.

Assessments: Exams, Quizzes, Projects, and Assignments.

Grading Structure:

- Project 15%
- Quizzes 10%
- Midterm Exam 25%
- Final Exam 40%

Total 100%

Last Updated: September, 2017