Computer Science and Engineering CSE 4633
Artificial Intelligence

CREDIT/CONTACT HOURS: Credit Hours: 3, Contact Hours: 45

COORDINATOR:
Dr. Changhe Yuan

   a. Supplemental Material: No required material

SPECIFIC COURSE INFORMATION:
Catalog Description: Three hours lecture. Study of the computer in context with human thought processes. Heuristic programming; search programming; search strategies; constraint satisfaction problem, knowledge representation; uncertainty reasoning; decision making under uncertainty; machine learning.
   a. Prerequisites: Grade of C or better in CSE 2383 and CSE 2813
   b. Required/Elective:
      Computer Science –Selected Elective
      Software Engineering –Elective
      Computer Engineering - Elective

SPECIFIC GOALS OF THE COURSE:
   a. Specific Outcomes of Instruction:
      1. To acquaint students with the major areas of the field of artificial intelligence.
      2. To give students dept of exposure to a few areas within artificial intelligence in order for them to gain an appreciation of the techniques that are available and the problems that are yet to be solved
   b. Criterion 3 Outcomes:
      Note: Parenthesized list indicates the ABET EAC and CAC outcomes addressed by each performance criteria.
      1. Students will be able to read and understand technical articles describing work in the field of artificial intelligence. (EAC: g; CAC: f)
      2. Students will be able to evaluate the applicability of different search procedures to an AI problem and determine which is most likely to be most applicable and effective. (EAC: b; CAC: k)
      3. Students will be able to implement a machine learning technique such as back propagation neural network and conduct experiments to assess its performance. (EAC: c,k; CAC: c,i)
      4. Students will be able to apply knowledge of probability theory to understand the principles behind Bayesian networks and uncertainty reasoning. (EAC: a; CAC: a,j)
      5. Students will be able to implement an expectation maximization algorithm for learning parameters for a Bayesian network and conduct experiments to assess its performance. (EAC: c,k; CAC: c,i)
6. Students will be able to identify, formulate, and solve a real-world problem using artificial intelligence techniques by collaborating in an interdisciplinary team. (EAC: b,c,d,e,f,g,j,k; CAC:b,c,d,e,f,i,j)

<table>
<thead>
<tr>
<th>TOPICS COVERED</th>
<th>(Number of class hrs)</th>
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<tbody>
<tr>
<td>1. Definition of artificial intelligence</td>
<td>1</td>
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<tr>
<td>2. Intelligent agents</td>
<td>2</td>
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<td>3. Systematic and local search techniques</td>
<td>9</td>
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<td>4. Constraint satisfaction problem</td>
<td>2</td>
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<td>5. Game search</td>
<td>3</td>
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<tr>
<td>6. Representing and reasoning about uncertainty</td>
<td>12</td>
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<td>7. Decision making under uncertainty</td>
<td>3</td>
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<td>8. Machine learning</td>
<td>12</td>
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