

**EASTERN MEDITERRANEAN UNIVERSITY**  
**Department of Computer Engineering**  
**2006-2007 Spring Semester**

<b>Course Code &amp; Name</b>	<b>CMPE 535 Knowledge Engineering</b>										
<b>Instructor</b>	Dr. Mehmet Bodur										
<b>Course Description</b>	An overview of AI, Knowledge-based systems-a survey; Knowledge Engineering concepts; Human Problem Solving; Human Information Processing System; Cognition Models; Knowledge Acquisition; Knowledge Representation; Production Rules; Inference, Forward Chaining, Backward Chaining, Mixed Chaining; Uncertainty, Certainty Factors, Bayesian, Fuzzy set based and Dempster-Shafer methods; Automated Knowledge Acquisition, Machine Learning Approaches in Expert Systems, Rule and Decision-Tree Induction; Connectionist Expert Systems; Expert System Building Tools, Development languages, Shells, Environments; Expert system design using rule-based shells; Expert system development life-cycle; Blackboard architectures; Truth Maintenance Systems.										
<b>Text Books</b>	1- Nikolai K. Kasabov, Foundations of Neural Networks, Fuzzy Systems, and Knowledge Engineering, Oct 1996 ISBN 0-262-11212-4, 550 pp. 282 illus. MIT Press. 2- Larose, Daniel T., Discovering knowledge in data : an introduction to data mining, ISBN 0-471-66657-John Wiley Inc.										
<b>Schedule</b>	Thursday 8:30 @ CMPE128 & Tuesday 14:30 and 15:30 @ CMPE128										
<b>Attendance Policy:</b>	Minimum 70% Attendance is credited by 1 points, 85% and over is credited by 2 points of the participation grade.										
<b>Make-Up Exam Policy:</b>	There is no make-up exam for Quizzes. Students missing the Mid-term or Final exam must submit a legitimate excuse within 3 working days after the exam date in order to qualify for a make-up. Only one makeup exam will be given for one of the missed exams (midterm or final) at the end of the semester that will cover all the topics of the course.										
<b>Grading Policy</b>	Any trial of cheating will cause a discipline reaction and a fail in the course <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">Quizzes (Four)</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Participation</td> <td style="text-align: right;">5%</td> </tr> <tr> <td>Midterm Examination</td> <td style="text-align: right;">25%</td> </tr> <tr> <td>Final</td> <td style="text-align: right;">30%</td> </tr> <tr> <td>Homeworks and Projects</td> <td style="text-align: right;">20%</td> </tr> </table>	Quizzes (Four)	20%	Participation	5%	Midterm Examination	25%	Final	30%	Homeworks and Projects	20%
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**Course Outline**

Week	Subject
1	An overview of AI, Knowledge-based systems - a survey; Knowledge Engineering concepts;
2	Human Problem Solving; Human Information Processing System .
3	Major issues in KE. Typical KE problems and tools .
4	KE and Symbolic Artificial Intelligence, Data, Information, Knowledge. Data Analysis,
5	Data and Knowledge Representation. Methods for Symbolic Manipulation and Inference Forward Chaining, Backward Chaining, Mixed Chaining; Propositional Logic and PROLOG; Production Rules, Expert Systems; Architecture and Design, Knowledge Acquisition
6	Uncertainty, Certainty Factors, Bayesian, Fuzzy set based and Dempster-Shafer methods; Fuzzy Sets and Systems: Extension principle; Fuzzy Proposition and Fuzzy Logic; Fuzzy Rules and Inference; Fuzzy Databases; Clustering-Based Methods for Fuzzy Rule Extraction, Fuzzy Prediction
7	Midterm Exam
8	Neural Networks: Biological and Artificial Neurons; Supervised Learning; Recurrent Networks;
9	Unsupervised Learning; Kohonen Maps; Neural Networks as Associative Memories
10	Automated Knowledge Acquisition, Machine Learning Approaches in Expert Systems, Rule and Decision-Tree Induction;
11	Connectionist Expert Systems;
12	Expert System Building Tools, Development languages, Shells, Environments;
13	Expert system design using rule-based shells;
14	Expert system development life-cycle; Blackboard architectures; Truth Maintenance Systems.