CMSI 698 MULTI-AGENT SYSTEMS AN D DISTRIBUTED ARTIFICIAL INTELLIGENCE
Spring 2010 – 3.0 units
Tuesday 6:30 – 9:30 p.m. – Doolan 222
Dr. Stephanie E. August -- saugust@lmu.edu
Course Description

Objectives
Distributed artificial intelligence combines the areas of artificial intelligence, computer science, sociology, economics, management science, and philosophy. Gerhard Weiss has defined distributed artificial intelligence as "the study, construction, and application of multi-agent systems, that is, systems in which several interacting, intelligent agents pursue some set of goals or perform some set of tasks." The primary objective of this course is to study the development of multi-agent systems for distributed artificial intelligence. The course provides an introduction to intelligent agents and multi-agent systems as well as agent societies. The course also studies problem solving, search, decision-making, and learning algorithms in the distributed Artificial Intelligence domain. The secondary objective of the course is to learn how to research and review advances in the field, and to consider the industrial and practical applications of distributed artificial intelligence techniques to real-world problems such as intelligent traffic control.

Required
Knowledge of a higher level programming language, such as C++, Prolog, or Lisp.

Expected Work
This will be an interactive class, and students are expected to participate in class discussions.

Weekly readings from the text will be assigned. In additional, supplemental readings will be assigned, and written reviews of each of these will be due at the beginning of class on the day they are due. All readings should be completed prior to lecture.

Written and oral homework will be assigned to reinforce lectures and readings. Assignments will include problem sets, programming assignments, and oral reports. Assignments will be collected and graded.

Students will complete a group project during the course of the term, with details to follow. A conference-style presentation on the project will be made to the class at the end of the term.

Students are responsible for all the material in the assigned readings, whether or not it is covered in class, and for all material presented in class, whether or not it is in the assigned readings.

Exams
Two midterms.

Text and Required Materials
Artificial Intelligence: A Modern Approach. Stuart J. Russell and Peter Norvig. 2nd Edition. Prentice-Hall, Englewood Cliffs, NJ, 2003.

Multiagent Systems: A Modern Approach to Distributed Artificial Intelligence. Edited by Gerhard Weiss. MIT Press, 1999.

Additional References
Artificial Intelligence. Elaine Rich and Kevin Knight. 2nd edition. McGraw-Hill, Inc., New York, 1991.

Artificial Intelligence. Patrick Henry Winston. 3rd edition. Addison-Wesley, Reading MA, 1992.

Artificial Intelligence: Structures and Strategies for Complex Problem Solving. George F. Luger. 4th ed. Addison-Wesley, 2002.

Computation and Intelligence: Collected Readings. Edited by George F. Luger. MIT Press, 1995.

Concept Formation: Knowledge and Experience in Unsupervised Learning. Edited by Douglas H. Fisher, Jr., Michael J. Pazzani, and Pat Langley. Morgan Kaufmann Publishers, Inc., San Mateo CA, 1991.

The Elements of Artificial Intelligence. S.L. Tanimoto. Computer Science Press, New York NY, 1987.

Heuristics. Judea Pearl. Addison-Wesley, Reading MA, 1984.

Principles of Artificial Intelligence. Nils Nilsson. Tioga Publishing Co., Palo Alto CA, 1980.

Readings in Artificial Intelligence. Bonnie Webber and Nils Nilsson. Tioga Publishing Co., Palo Alto CA, 1981.

Readings in Knowledge Representation. Brachman, Hector Levesque. Morgan Kaufmann, Los Altos CA, 1985.

Grading

The final grade for undergraduate computer science students will be weighted as follows:

Midterm	30%
Project	50%
Participation and Assignments	20%

The final grade for graduate computer science students will be weighted as follows:

Midterm	25%
Project	40%
Paper/project presentation and paper summaries	25%
Participation and Assignments	15%

The final grade for graduate systems engineering students will be weighted as follows:

Midterm	30%
Case studies presentation and paper summaries	50%
Participation and Assignments	20%

Assignments related to the project and course readings will be graded. As time permits, assignments will be reviewed in class on the due date. *Assignments, projects, and papers are due at the beginning of class. Late work will only be accepted by prior arrangement.*

Refer to the *Teaching Philosophy and Course Policies* handout for additional information.

Office Hours/Contact Points

Office Hours: Tuesday, 5:20-6:20 p.m.
Wednesday, 9:30 a.m. - noon (with some exceptions) plus 1:00-2:45 p.m.
and *by appointment.*

Office: Doolan 108
Phone: (310) 338-5973
Internet: saugust@lmu.edu Put ****** CMSI 698/498 ****** in the subject line!!!