CSCE 475/875 Multiagent Systems
Class Syllabus
Fall 2017

Instructor

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Office Hours:	2:00 – 3:30 PM T 11:00 AM – 12:00 Noon R		
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Graduate Teaching Assistant

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Class Objectives

This class will introduce you to the research topic of multiagent systems (MAS), including what a MAS is, what agents are, and what are the disadvantages and advantages of such a system in different types of applications. We will present some background issues in distributed problem solving (e.g., constraint satisfaction) and planning (e.g., optimization) and build on the non-cooperative game theory. Then, equipped with the background knowledge, we will look into learning in multiagent systems and agent communication. Then we will cover formal agent topics such as social choice, mechanism design, and auctions. Time permitting, we will also look into multiagent negotiations, emergent behaviors (such as ants and swarms), Robocup technologies, and real-time coalition formation.

The course materials in this class are based on the textbook and journal/conference papers.

Required Background

Prerequisites: CSCE 310 (Data Structures & Algorithms required), or instructor permission.

Text Book

Shoham, Y. and K. Leyton-Brown (2011). *Multiagent Systems: Algorithmic, Game-Theoretic, and Logical Foundations*, Cambridge University Press.

Grading

Final grades in this class will be assigned based on the following scale:

A:	94% - 100%	B-:	80% - 82%	D+:	67% - 69%
A-:	90% - 93%	C+:	77% - 79%	D:	63% - 66%
B+:	87% - 89%	C:	73% - 76%	D-:	60% - 62%
B:	83% - 86%	C-:	70% - 72%	F:	below 60%

A+ is awarded to a student whose work and understanding of the class prove to be exceptional.

There will be several game days (group) (30%), two mid-term examinations (20%), one seminar presentation (group) (15%), and one final project (group) (35%).

Seminars

The seminar presentation is for the students to present technical papers (or advanced chapters and sections from the textbook) in the area of MAS, agents, and distributed AI. A list of papers will be provided to the students. Each presentation will involve a Q&A session paneled by the presenters and moderated by the instructor; and all groups are required to participate in Q&A as well. One thing unique about our seminars is that students will be graded for their participation in the Q&A sessions – as panelist on the day of their presentation, and as scholars asking questions on other presentation days. Details of the grading criteria will be provided on the assignment handout later.

Final Project

The final project will be for a multiagent simulation that aims to address an important MAS problem such as how local decisions made by a large group of agents (greater than 500) can lead to meaningful emergent behaviors that satisfy global goals or the ad hoc team playing challenge problem. The simulation software that we will use is Repast. See the Resources page on our course website for the software. This assignment will be graded in 2 parts: programming (50%) and report (50%). Each group member receives the same score for his or her group. Details of the grading criteria will be provided on the assignment handout later. One unique requirement is that the project requires each group to conduct experiments and write a comprehensive discussion of results based on the POJI style. (*Note: This is the term coined by Professor Soh for Presentation, Observation, Justification, and Implication. We will discuss this in class.*) Each group will be required to submit a proposal, a progress report, and a final project report.

Game Days

There will be 3-4 special game days planned for the semester, e.g., Auction Day, Voting Day, Learning Day, and Reputation Day. On each of these days, you will be required to pit what you have learned in the class against your classmates in various contests. You participation on those days will be evaluated. Your written reports for those days will be counted as participation as well. Each game day will be graded in 2 parts: contest (50%) and report (50%). Each group member receives the same score for his or her group. We will also have a Game Days League – the winner of the league will get to sign the "Ball of Fame".

The contest part will be graded in proportion to how your group ranks at the end of the game day. For example, the winning team will be given N points; the second-ranked team will be given N-2 points; the third-ranked team will be given N-4 points; and so on. N will be determined later in the semester depending on the number of groups we have in the class.

The report part will be graded roughly in the following manner:

> 40% Pre-game strategies
> 30% During-game observations and changes in strategies
> 30% Post-game strategies and lessons learned

Disabilities

Students with disabilities are encouraged to contact the instructor Leen-Kiat Soh for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodations to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

Academic Misconduct

All homework assignments, quizzes, exams, etc. must be your own work. No direct collaboration with fellow students, past or current, is allowed unless otherwise stated. The Computer Science & Engineering department has an [Academic Integrity Policy](http://cse.unl.edu/academic-integrity-policy) (http://cse.unl.edu/academic-integrity-policy). All students enrolled in any computer science course are bound by this policy. You are expected to read, understand, and follow this policy. Violations will be dealt with on a case by case basis and may result in a failing assignment or a failing grade for the course itself.

To help avoid these problems, please start assignments early and seek help when you need it.