COMP 7/8770: Knowledge Representation and Reasoning – Fall 2005

Lee McCauley

Contact Information:

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Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
	1:00 – 2:30		1:00 – 2:30	
Also by Appointment				

Course Description:

7770-8770.Knowledge Representation and Reasoning. (3). Focuses on long-standing issues of Knowledge Representation, including ontologies; knowledge structures; and representing events, actions, time, space, geometry, and common-sense knowledge. Student will complete a project using a declarative language. PREREQUISITES: COMP 6730 or 6720 or permission of instructor.

Why this course?

This class will focus on the long-standing issues of Knowledge Representation (KR) in an interactive and research oriented manner. The first part of the course will consist of lectures describing the historical background of KR and an overview of key topics in the area. The later part of the course will involve the use of Prolog to construct several small knowledge based systems. Students will also create a medium sized system of their own choosing as a project.

Resources:

Required Text

John F. Sowa. Knowledge Representation: Logical, Philosophical, and Computational Foundations, Brooks Cole Publishing Co., Pacific Grove, CA, 2000.

R. Davis, H. Shrobe, and P. Szolovits. What is a Knowledge Representation? AI Magazine, 14(1):17-33, 1993.

Evaluation:

Grades will be based on class participation (20%), project presentations (20%), project write-up (20%), project code/demo (20%), and homework (20%).

Grading Scale:

A+	97 -100	**B+**	87 - 88	**C+**	77 - 78	**D+**	67 - 68
A	91 - 96	**B**	81 - 86	**C**	71 - 76	**D**	60 - 66
A-	89 - 90	**B-**	79 - 80	**C-**	69 - 70	**F**	59 - 0

Course Policies:

Attendance
Students are expected to attend class regularly. If a student misses class, it is recommended that the student obtain the notes for the missed class meeting from another student. Students are expected to attend all of the scheduled classes.

Late Policy
You are expected to complete work on schedule as deadlines are a part of the real world. Work is not accepted late unless prior arrangements are made with the instructor.

Plagiarism/Cheating Policy:

Plagiarism or cheating behavior in any form is unethical and detrimental to proper education and ***will not be tolerated.*** All work submitted by a student (projects, programming assignments, lab assignments, quizzes, tests, etc.) is expected to be a student's own work. The plagiarism is incurred when any part of anybody else's work is passed as your own (no proper credit is listed to the sources in your own work) so the reader is led to believe it is therefore your own effort. Students are allowed and encouraged to discuss with each other and look up resources in the literature (including the internet) on their assignments, but ***appropriate references must be included for the materials consulted,*** and appropriate citations made when the material is taken verbatim.

If plagiarism or cheating occurs, the student will receive a failing grade on the assignment and (at the instructor's discretion) a failing grade in the course. The course instructor may also decide to forward the incident to the University Judicial Affairs Office for further disciplinary action. For further information on U of M code of student conduct and academic discipline procedures, please refer to:
http://www.people.memphis.edu/~jaffairs/

Course Syllabus

Date	*Topics*
Tuesday August 30	Introduction to the course
Thursday September 1	How logic works
Tuesday September 6	Sets, Bags, Sequences and Functions
Thursday September 8	Introduction to Prolog, Present project ideas

Tuesday September 13	Ontologies and KB structure
Thursday September 15	Prolog facts and rules
Tuesday September 20	Events, actions, and time, Turn in Project Proposals
Thursday September 22	Secrets of Highly Effective Speakers
Tuesday September 27	Time and space
Thursday September 29	Prolog queries and variable binding
Tuesday October 4	Shape and geometry
Thursday October 6	Prolog compound queries and traces
Tuesday October 11	Representing common-sense knowledge
Thursday October 13	Prolog lists
Tuesday October 18	Fall Break – no class
Thursday October 20	Prolog recursion
Tuesday October 25	Reasoning by analogy
Thursday October 27	Prolog double recursion
Tuesday November 1	Conceptual Graphs and Knowledge Interchange Form
Thursday November 3	Discussion of project implementations
Tuesday November 8	Natural language processing
Thursday November 10	Natural language processing in Prolog
Tuesday November 15	Student presented Models with class discussion, Project rough drafts
Thursday November 17	Student presented Models with class discussion
Tuesday November 22	Student presented Models with class discussion
Thursday November 24	Thanksgiving – no class
Tuesday November 29	Student presented Models with class discussion
Thursday December 1	Student presented Models with class discussion
Tuesday December 6	Student presented Models with class discussion
Thursday December 8	Study day – no class
Thursday December 13	Final Exam period (1:00 – 3:00 PM) Projects Presented