

CSci 8980

Specifying and Reasoning About Computational Systems

Administrative Issues

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Lectures in Fall 2012

Course Resources

- *Instructor*

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Office Hours: W 10:00 - 11:30

- Course web page

[http://www-users.cselabs.umn.edu/classes/
Fall-2012/csci8980-cl/index.html](http://www-users.cselabs.umn.edu/classes/Fall-2012/csci8980-cl/index.html)

Web page will contain assignments, link to discussion forums, and any information to be communicated between lectures

Course Prerequisites

This course mixes formalized logic, analysis of computational structure and sophisticated forms of reasoning

To be comfortable with such discussions you will need

- mathematical maturity
- (some) familiarity with logic
- facility with languages such as OCaml, Haskell, SML and Prolog
- prior exposure to program analysis through its syntax

Moreover, you should find topics such as symbolic computation, formalized reasoning, etc, interesting

Information Sources

- The “specification” part of the course will be based on the book
Programming with Higher-Order Logic
Dale Miller and Gopalan Nadathur
(Will be useful to own a copy)
- The “reasoning” part of the course will draw on research papers and recent doctoral theses
Papers will be made available as relevant via the resources section of the course web page
- The course will require experimenting with programming systems embodying the logical ideas discussed
Manuals and related materials for these systems are available over the web

Required Work

This is a seminar-style course, with the following kind of work

- Periodic reading assignments
- Occasional written assignments to consolidate class discussions (20%)
- Term paper or project on individually chosen topic related to specification and reasoning (45%)
- Class presentation related to the term paper/project (25%)
- (Enthusiastic) participation in class discussions (10%)

Presence in class is generally expected and not optional

Attendance is *mandatory* for student presentations

Term Paper/Project Details

The term paper/project should contain independent work on a topic related to the course and sufficient for a semester

It should mix some depth in learning with some originality in analysis or implementation

The timetable for the paper/project and its presentation

- Discuss with me a possible topic by September end
- Submit an approximately one page writeup of what you will be doing for the project/paper by Oct 16
 - must have been vetted by me already
 - should contain a concrete plan with references etc to give confidence about what is going to be accomplished
- Be prepared for a presentation based on this work by mid November
- Turn in a writeup (15-20 pages) for grade by the firm deadline of Dec 11