CS 773 Winter 2002

00. Preliminaries

Instructor: W. M. Farmer

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Instructor

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Tentative office hours:

MT 14:30–15:20, WR 10:30–11:20

Mission

1. Learn what formalized mathematics is and how to use it in the specification and analysis of complex systems.

2. Learn how to express mathematical models in higher-order logic and set theory.

3. Learn how to use interactive theorem proving systems.

Work Plan

- Lectures in class
- Exercises outside of class
  - Most will require the use of an interactive theorem proving system
- Student presentations in class
  - Should be about 15 minutes long
- No tests or exams

Text and Web Site

- **Required text**: Imre Lakatos, *Proofs and Refutations*, Cambridge University Press, 1976. ISBN 0-521-29038-4.

- **Course Web site**:

  `http://www.cas.mcmaster.ca/~wmfarmer/CS-773-02`

Tentative Schedule

00. Preliminaries

01. What is Formalized Mathematics?

02. What is Mathematics?

03. Review of Logic

04. What is Missing from First-Order Logic?

05. Alternative Logics

06. Mechanized Mathematics Systems

07. Introduction to IMPS

08. The Axiomatic Method

09. Theory Development

10. Conjecture Proving Techniques

Policy Statements

1. Significant study and reading outside of class is required.

2. Regular class attendance is expected.

3. The student is expected to ask questions during class.

4. The student is welcome to discuss exercises with other students, but exercises must be the student's own work.

5. Exercises may not be turned in late without *prior* approval from the instructor.

6. Suggestions on how to improve the course and the instructor's teaching methods are always welcomed.

Grading

Exercise Points	Presentations	Course Grade
170–200	2 or more	A^+
140–169	2 or more	A
120–139	2 or more	A^-
120–200	1	B^+
110–119	1 or more	B^+
100–109	1 or more	B
90–99	1 or more	B^-
90–200	0	C
70–89	0 or more	C
50–69	0 or more	D
0–49	0 or more	F