

CAS 734 Winter 2006

# 00 Preliminaries

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# Course Elements

- Instructor: Dr. William M. Farmer
  - ▶ Office: ITB 163
  - ▶ Extension: 27039
  - ▶ E-mail: [wmfarmer@mcmaster.ca](mailto:wmfarmer@mcmaster.ca)
  - ▶ Web: <http://imps.mcmaster.ca/wmfarmer/>
  - ▶ Office hours: M 14:30–15:30, R 13:00–14:00
- Course web site:  
<http://www.cas.mcmaster.ca/~wmfarmer/CAS-734-06/>
- Lecture schedule: TR 14:00–15:30 in ITB 222

# Mission

- Learn what formalized mathematics is and how to use it in the specification and analysis of complex systems.
- Learn how to express mathematical models as axiomatic theories in higher-order logic and set theory.
- Learn how to develop axiomatic theories.
- Learn how to use interactive theorem proving systems.
- Learn what are the major research challenges in formalized mathematics.

# Work Plan

- Lectures in class
- Exercises outside of class
  - ▶ Most will require the use of an interactive theorem proving system
- Student presentations in class
  - ▶ Each should be about 15 minutes long
- Students are required to learn how to use at least two interactive theorem proving systems, one being the IMPS Interactive Mathematics Proof System
- No tests or exams

# Grading

Exercises	75%
Presentations	25%
<b>Total</b>	<b>100%</b>

# Tentative Schedule

- 00 Preliminaries
- 01 What is Formalized Mathematics?
- 02 Review of Mathematical Logic
- 03 Theory Development Techniques
- 04 The IMPS Interactive Mathematical Proof System
- 05 Other Interactive Theorem Proving Systems
- 06 The Little Theories Method
- 07 Symbolic Computation in Formal Proofs
- 08 Practice-Oriented Logics

# Policy Statements

1. Academic dishonesty will not be tolerated!
2. Significant study and reading outside of class is required.
3. Students are expected to regularly attend the lectures and to ask questions.
4. Exercises may not be turned in late, nor may presentations be given late.
5. The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem, that cannot be resolved by discussion among the persons concerned, individuals are reminded that they should contact their Department Chair and the Human Rights and Equity Services (HRES) office as soon as possible.
6. Suggestions on how to improve the course and the instructor's teaching methods are always welcomed.