SE 2F03 Fall 2005

00 Preliminaries

Instructor: W. M. Farmer

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Instructor

Dr. William M. Farmer

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Teaching Assistants

1. Vera Pantelic

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Mission

Logic is the study of the principles underlying sound reasoning. It is the foundation for scientific inquiry and communication. Logic is particularly important to Software Engineering; it is the intellectual technology that Software Engineers use to create, analyze, and interconnect precise specifications and descriptions of software systems. It has often been said that logic is to Software Engineering what calculus is to other areas of Engineering. The mission of this course is to introduce Software Engineering students to the basic concepts of logic—e.g., theories, models, logical consequence, and proof—by examining a variety of logical systems that are employed by Software Engineers and Computer Scientists. Applications of logic in software development will be highlighted.

Work Plan

- Lectures by instructor

- Tutorials by teaching assistants

- Assignments outside of class

- Two midterm tests during class time on October 11 and November 15

- Final exam on the date scheduled by the University

Mechanics

- Course web site:

  `http://www.cas.mcmaster.ca/~wmfarmer/SE-2F03-05/`

- Required text:

  M. Huth and M. Ryan, *Logic in Computer Science: Modelling and Reasoning about Systems*, Cambridge University Press, 2004. ISBN: 0-521-54310-X.

- Teaching assistants will:

  - Conduct tutorials
  - Provide assistance with assignments
  - Mark assignments

- Each student is required to keep a log book

Academic Dishonesty

- Academic dishonesty consists of misrepresentation by deception or by other fraudulent means

- Includes:
  - Plagiarism
  - Copying
  - Improper collaboration

- Academic dishonesty can result in serious consequences

- Your work must be your own. Plagiarism and copying will not be tolerated!

- Students may be asked to defend their written work orally

Other Policy Statements

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

2. Regular class attendance is required. Attendance will be taken, and absences will be excused only in highly exceptional cases.

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

4. You may want to discuss the assignments with your fellow students. **If you do that, you must record a summary of your discussions in your log book including a list of all those with whom you had discussions and a description of what information you received.** It is part of your professional responsibility to give credit to all who have contributed to your work.

5. A student may use his or her texts and notes during the midterm test and final exam.

6. Assignments may not be submitted late and the midterm tests may not be taken later without **prior** approval from the instructor.

7. Calculators are **not** permitted during the midterm tests and final exam.

8. The instructor reserves the right to require a deferred final exam to be oral.

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

Grading

Assignments	20%
Midterm tests (2)	40%
Final exam	40%
Total	**100%**

1. **A student who fails the final exam automatically fails the course.**

2. A student's final score will be reduced by one half point for each missed class (there is no penalty for the first **four** missed classes).

3. The instructor reserves the right to adjust the marks for an assignment, midterm test, or final exam by increasing or decreasing every score by a fixed number of points.

Syllabus

01 Introduction

02 Propositional Logic

03 First-Order Logic

04 Temporal Logic and Model Checking

05 Higher-Order Logic

06 Hoare Logic and Program Verification

07 Other Logics