PHL 492/MA 490  Mathematical Logic

Spring, 2004  Dr. Eric Loomis
Office Hours MWF: 11-12:30  Office: HUMB 124
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Webpage: http://www.southalabama.edu/philosophy/loomis/index.htm

COURSE DESCRIPTION: This is a course in mathematical logic that will introduce important aspects of the first-order predicate logic and its extensions. First-order predicate logic is the most powerful system of deductive inference that is provably complete. The extensions of first order logic include axiom systems formulated within it, such as the Peano Axioms for the natural numbers. A number of important facts have been proven about first-order logic and its extensions, and we will examine some of them.

The course does not require knowledge of mathematics beyond basic linear algebra. However, it will assume that you are comfortable with some standard methods of mathematical definition and proof, so previous college-level course work in mathematics or logic is recommended.


Course Goals:
- Familiarity with sentential and first order logic, including elementary metatheory.
- Exposure to and practice with a variety of technical concepts and methods in mathematical logic (recursion, formal definitions, mathematical induction, axiom systems, etc.).
- Familiarity with basic Peano Arithmetic.
- Improved proof-writing skills (both formal and informal).

Course Policies and Procedures:

Attendance: Attendance in lectures is expected. Since testable material is regularly introduced in lectures, it is impossible to miss class frequently and still do well in the course.

Late Papers: Assignments must be submitted at the beginning of the class period on which they are due for full credit. Late papers must be turned-in by the start of the next class meeting; after that they will not be accepted. All accepted late papers are penalized a flat 10%.

Make-up Work: I am willing to re-schedule assignments for individuals who have a legitimate reason for doing so. If you know you are going to miss an exam date, you must notify me at least two class days in advance in order to receive a make-up. Unless you have made a prior arrangement with me, missed exams may be made up only in case of a documented emergency.

Disabilities Policy: Please see me if you have a disability which may affect your performance in the course (this includes learning disabilities such as dyslexia and attention deficit disorder). We will make arrangements to facilitate learning and fair evaluation.

Academic Dishonesty Policy: Academic dishonesty includes cheating on tests and homework as well as plagiarism. If you engage in academic dishonesty, I will notify you that you will receive an ‘F’ in the course. Upon being notified, you have five days to submit a written request to the department chairperson for a hearing on the matter, if you wish to have one. If no hearing request is made, or if the decision from the hearing goes against you, you will receive a course grade of ‘F’. Please see the Student Academic Conduct Policy of the University for details.

Procedures for Assessment of Student Performance: Given that you adhere to the course policies, your grade will be determined on the basis of graded assignments as specified below:
Evaluation.
Best 10 of 12 short graded homework assignments: 3% each
Two mid-semester exams: 20% each
Comprehensive final: 30%

Assignments are regularly posted on my webpage:
http://www.southalabama.edu/philosophy/loomis/index.htm

The homework exercises will be due at the start of the first class day each week (Mondays). They will be given out at the end of the previous week. The assignments will consist of several exercises from the book. Late homework will be accepted but penalized 10%. Any late homework must be submitted by the start of the next lecture period after the initial due date.

The exams will consist of exercises and proofs similar to those done in class. Any material covered up to the exam date may be tested. The exams will be open book. The final will be given on the scheduled final exam date. **Missed exams and homework may be made-up only in cases of a documented emergency or by prior arrangement.**

Email Request: I am willing to entertain questions by email, but please understand that due to our special symbolism it is difficult to give detailed answers via email. So please phrase email questions in a way that allows for a simple answer (ideally, “yes” or “no”).

Email Homework: I am willing to email homework assignments and exam review sheets to you. Review sheets will be in MS Word format. However, please turn in homework assignments on paper and in person.

SYLLABUS:
To maintain flexibility, I have not assigned readings in advance. We will work through the textbook in order, but will probably omit the following sections: 1.7, 2.4, parts of 3.3, and most or all of 3.4.
Below are some important dates. These dates are subject to change. Any changes will be announced in advance in class.

1/12 First class day. Introduction to sentential calculus.

1/19 First homework assignment due at start of class. ***Remember that homework assignments will be due at the start of class each Monday until the end of the semester, except for 1/12, 2/23, 3/15, and 4/12.***

2/20 FIRST EXAM (no homework is due Monday 2/23)

3/15-21 SPRING BREAK

4/9 SECOND EXAM (no homework is due Monday 4/12)

4/30 Last class day.

5/3 Final Exam 10:30-12:30.