21-600 Mathematical Logic I

	Lecturer	Teaching Assistant
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Lectures are held MWF 11:30 - 12:20 in HH B131. You are expected to attend all lectures. There are no scheduled recitation sessions for this course, but you are welcome to discuss questions with the lecturer or teaching assistant during office hours, or at other times by appointment.

Web site

http://gtps.math.cmu.edu/courses.html

Textbook

Peter B. Andrews, **An Introduction to Mathematical Logic and Type Theory: To Truth Through Proof**, Second Edition, Kluwer Academic Publishers, now published by Springer, 2002.

Please tell me about any misprints you notice.

This semester we will cover most of Chapters 1 and 2, and some of Chapter 3. You are expected to read the material in the book corresponding to the material covered in class. The purpose of the lectures is to help you understand and thoroughly absorb this material, so you are always encouraged to ask questions during lectures.

Goals of the course

This course is intended to extend your understanding of logic on both practical and theoretical levels. It provides knowledge which you will probably find immediately useful, and also provides preparation for other courses you may wish to take in the future.

By the end of the course you should be adept at working systematically to construct correct proofs, and be able to decide with confidence whether an alleged proof is correct, incorrect, or in need of further elaboration. You should have a working knowledge of the conceptual framework of first-order logic, and be able to use the techniques and to state and apply the metatheorems and definitions which are studied in the course.

Computer assignments

An important part of the course is learning to use the computer program ETPS (Educational Theorem Proving System) to do certain homework assignments concerned with constructing formal proofs. If you do not have an Andrew computer account, you should get one promptly. The ETPS Manual can be downloaded from http://gtps.math.cmu.edu/tps-mans.html.

Homework, tests, and grading

Grades are based primarily on homework and tests, though other factors such as class participation may be taken into account. In addition to the final exam, there will be two hour exams, one in early October and one in November. Homework will count for approximately 50% of the course grade, each hour exam 10%, and the final exam 30%.

Homework is regarded as very important, since it is while doing homework that most students really absorb the material. Also, while doing homework students are not under the same time pressures as when they are taking tests, so they can show the quality of work they are truly capable of doing. It is important that the work which is turned in be of high quality in every respect. In addition to communicating the appropriate mathematical ideas as directly and simply as possible, with an appropriate level of detail, it should be neat, legible, clear, grammatically correct, and well organized. All of these factors will be taken into account in grading. In particular, you should expect less than full credit for work which is hard to read or hard to understand even if you "have the right ideas". You should not hesitate to rewrite your initial work if it can be significantly improved. Assignments will vary in difficulty, and it is understood that not every student will be able to do every assigned problem.

All work submitted for grading is to be done independently by each student unless collaboration on a particular assignment is specifically authorized by the instructor. (It will be authorized very rarely, if at all.) You must do the work yourself, and not rely on any other source of information for solutions to assigned exercises. In particular, until the work has been submitted, you must not discuss the substance of the problems with any other student, you must not look at any other student's homework, and you must not permit any other student to look at your homework. Any violations of this rule will be regarded as very serious, and elicit serious penalties.

In general, assignments will initially be made without due dates being specified. It is hoped that most students will hand them in within a few days, before any due dates are specified. Papers are due at the beginning of class on the date they are due. Late papers will be accepted only at the discretion of the instructor. In particular, late papers will not be accepted after the assignments have been discussed in class, and ordinarily no papers will be accepted after the last class of the semester. When late papers are accepted, 10% of the maximum possible score will be deducted for each day the paper is late. Of course, no student will be penalized unfairly when there are genuine mitigating circumstances such as illness.

Assignments consisting of one or more problems due at the same time are generally labelled with a letter. Please put this letter in a square box at the top of your paper, and hand in separate assignments on separate sheets of paper. Please be sure to write your name legibly at the top of your papers.

No books or notes may be used in the exams, which are intended to test what you have absorbed and understood thoroughly enough to remember, explain, and use. Creative problem solving ability will be demonstrated primarily on homework, for which more time is available. When preparing for an exam, you are advised to make a carefully organized written summary of the course, including definitions, theorems, examples, ideas, and techniques. This summary should then be memorized thoroughly so that you can easily reproduce it. Organizing and memorizing such a summary can contribute significantly to the learning process.

If circumstances such as illness prevent you from taking an exam at the scheduled time, please notify the instructor *before* the exam if possible.

Email

It would be wise to include the number of this course in the Subject heading of any email you send to me. Otherwise, your message might get deleted with all the spam email I receive. Email can be very useful, but it can also be a rather inefficient and burdensome mode of interaction. When many people are involved, one can spend all day just dealing with email messages if one does not impose some limits. Please don't try to set up appointments with me by email; it's much more efficient to do this in direct conversation or by telephone. I welcome hearing about your questions, comments, and concerns by any method, including email, but I will generally respond to them in class, not by email. Also, I don't have time to send information by email about grades at the end of the semester; you can get this information through the channels set up by the Registrar.