MATH 561 SYLLABUS
FALL 2018

Time:	Monday and Wednesdat 2:20 p.m. to 3:35 p.m.
Place:	LeConte College 310

Instructor:	George F. McNulty
Office:	LeConte 302
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	781-9509 (Home)
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Office Hours:	1:00 p.m. to 2:15 p.m. Monday, Wednesday, and Friday

Every one of you is welcome to come to my office at anytime. I will generally be in every day from 9 am until 5 pm. While I have other responsibilities, your success is my first priority. Most of the time I will be able to set aside whatever I am doing, so don't hesitate to visit my office.

Text:	A Mathematical Introduction to Logic
Author:	Herbert B. Enderton
Edition:	Second
Publisher:	Harcourt/Academic Press

We will focus on the material in Chapters 2–3, referring to earlier chapters as needed.

Midterm Exams:	Wednesday 19 September 2018
	Wednesday 24 October 2018
	Monday 19 November 2018
Final Exam:	Monday 10 December 2018 at 12:30 p.m.

If you are unable to take an exam at the scheduled time, see me to arrange an alternate time.

What our course is about
From a formal point of view, mathematics can be construed as a collection of theorems, conjectures, proofs, counterexamples, examples, and definitions. Each of these can be seen as a string of symbols. Such strings are as amenable to mathematical investigation as are numbers, vectors, or functions. Roughly speaking this perception is at the heart of mathematical logic. In this setting, the notions of truth and proof can be given unambiguous meanings and their consequences can be developed as a separate branch of mathematics. Our course has the development of a basic but powerful part of this branch of mathematics at its heart. This part is called elementary or first-order logic—it is equipped with means of expression and proof rich enough to comprehend a considerable portion of mathematics.

What you should work to acheive in this course
Understanding the concepts and the proofs of theorems takes precedence in this course over learning how to follow a set of directions to tackle a particular class of problems. Among the results of your efforts in this class should be a deeper understanding of both the power and the limitations of mathematics as well as an increased ability to discover and convey mathematical ideas and proofs.

Weekly Problem Sets
Homework is at the heart of our course. Generally, an assignment will be due weekly, usually at the beginning of every Friday class. Frequently, students will be asked to explain their solutions to the class.

I hope you will find our course enjoyable, informative, and useful.

How Course Grades Will be Determined

The goals of this course can be broken into nine objectives, some of which are essential to the application and further study of mathematics while the remaining objectives touch on more peripheral topics.

The mid-term examinations and the final will provide, amongst them, problems that address each objective. Your grade for the course will be determined by how well you display mastery of these problems. For each sort of problem I identify three levels of performance: master level, journeyman level, and apprentice level. The examinations will all be cumulative. The First Midterm will probably have 3 problems, the Second 6 problems (with 3 being variants of the ones occurring on the First Midterm), the Third Midterm as well as the final will probably have 9 problems. I record how well you do on each problem (an M for master level, a J for journeyman level, an A for apprentice level) on each exam. It is also possible to demonstrate mastery of an objective by presenting certain homework problems to the class. After the Final, I make a record of the highest level of performance you have made on each sort of problem and use this record to determine your course grade. If you have at some point during the semester displayed a mastery of each of the 9 sorts of problems, then your grade will be an A. If you have at some point during the semester displayed a mastery of each of the essential problems, then you will get at least a C. The grade B can be earned by displaying mastery of all the essential problems and mastery of about half of the rest of the problems. The grade D will be assigned to anyone who can master several problems but has not yet displayed a mastery of all the essential problems. In borderline cases, the higher grade will be assigned to those students who turn in their homework regularly.

Students enrolled in this course for graduate credit will be required to complete a term project due at the end of the semester.

This particular way of arriving at the course grade is unusual. It has some advantages. Each of you will get several chances to display mastery of almost all the problems. Once you have displayed mastery of a problem there is no need to do problems like it on later exams. So it can certainly happen that if you do well on the midterms you might only have to do one or two problems on the Final. (It is not unusual that a few students do not even have to take the final.) On the other hand, because earlier weak performances are not averaged in, students who come into the Final on shaky ground can still manage to get a respectable grade for the course.

This method of grading also stresses working out the problems in a completely correct way, since accumulating a lot of journeyman level performances only results in a journeyman level performance. So it pays to do one problem carefully and correctly as opposed to trying get four problems partially correctly. Finally, this method of grading allows you to see easily which parts of the course you are doing well with, and which parts deserve more attention.

The primary disadvantage of this grading scheme is that it is complicated. At any time, if you are uncertain about how you are doing in the class I would be more than glad to clarify the matter.