SYLLABUS FOR MATH 2106-D

Georgia Tech, Fall 2017

Course Title Foundations of Mathematical Proof

Course Description and Objectives

The course is an introduction to proofs and abstract mathematical thinking. In particular, the goal of this class is to prepare students to take upper level classes such as abstract algebra and analysis. In particular, we will study sets, logic, proof techniques, relations and functions, and introductions to proofs in algebra and analysis. For about half of the course, we will follow the corresponding sections in Hammack (see the list of course textbooks below), while we will use Judson for the intro to proofs in algebra and Ross for the proofs in analysis. For a tentative guide to what we will cover, see the "rough plan" on the course website, which will be updated as the semester goes on.

Lectures Tuesdays and Thursdays from 9:30 AM to 10:45 AM in Skiles 371.

Instructor Larry Rolen

Office Skiles 137

Email larry.rolen@math.gatech.edu

Textbooks We will use the "Book of Proof" by Richard Hammack for about half of the course. This is freely available online at `http://www.people.vcu.edu/~rhammack/BookOfProof/`, and as described there a print copy of the book is available from Amazon for $15.65.

Later on, we will also use "Abstract Algebra, Theory and Applications," by Thomas Judson, which is also freely available and can be found at `http://abstract.pugetsound.edu/download.html`.

In the last part of the course, we will use "Elementary Analysis: The Theory of Calculus" by Kenneth Ross, which is available through Springer Link to GT students.

Prerequisites MATH 1502 or MATH 1512 or MATH 1504 or MATH 1555 or ((MATH 1552 or MATH 15X2 or MATH 1X52) and (MATH 1553 or MATH 1554 or MATH 1564 or MATH 1522 or MATH 1X53)), or permission of instructor. Essentially, the expectation is that students will have completed the calculus sequence and taken linear algebra.

Course Website `http://people.math.gatech.edu/~lrolen3/FoundationProofs.html`

Class Discussion This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the grader, and myself.

Rather than emailing questions to the grader and I, I encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email team@piazza.com.

Find our class page at: `https://piazza.com/gatech/fall2017/math2106f/home`

Office hours times Wednesdays from 1-3 PM, from Thursdays 2-3 PM (or by appointment)

Office hours location: Clough 248

Additional Georgia Tech Resources In addition to discussing questions with me or your fellow classmates in office hours, Piazza, or email, Georgia Tech also offers free academic support to all undergraduate students. In particular, the OMED and 1-1 Tutoring programs are available to all undergraduate students. Please come see me or send me a message if you are interested in using one of these programs and have questions.

Homework Homework will be due at the **beginning** of class each Thursday. Homework will be posted on the course website. Writing up your solutions in LaTeX is highly encouraged. In fact, **10% extra credit will be given for typing up the homework solutions in LaTex.** Late homework is not accepted. However, if there is a documented excuse or illness, etc., an adjustment, such as a dropped score, may be made. A random selection of problems on each assignment will be graded.

Exams There will be two midterms. **Tentatively,** these will take place on **September 21 and October 31** in class. Any changes to these dates will be made with sufficient advanced notice. There will also be a **final exam**, which will take place on **December 14** from **8:00 AM - 10:50 AM** in Skiles 371 (the usual classroom). Do not plan to leave campus for break before this time. If three final examinations are scheduled in one day, the examination for the middle period will be rescheduled to the conflict period or to another period mutually agreed on by the Instructor and the student.

Make-up exams In the event of an absence due to an institute-sponsored event, such as an intercollegiate sports competition, please notify me at least two weeks in advance to arrange an early test or other alternative. If you miss an exam due to family or medical emergency, please bring me a note from the Office of the Dean of Students.

Grading The weighting of the grade will be determined as follows: 20% homework, 30% final exam, 25% Midterm 1, 25% Midterm 2. The final grade cutoffs will not be determined until the end of the semester and they will be based on the overall score distribution, as well as historical grade distributions for the course. Cutoffs will not be set higher than the standard ones (90% for an A, 80% for a B, 70% for C, and 60% for D), but they may be lowered depending on the difficulty of the assignments and exams.

Classroom Decorum Please arrive to class on time every day to avoid disturbing the learning environment. If you are late, please enter quietly and quickly. The use of electronic devices, other than for note-taking, is not allowed.

Academic dishonesty While discussing lectures, the textbook, and homework problems

with your classmates is encouraged, rote copying of solutions is not permitted, and will further hurt you in your preperation for the exams. Cheating on the exams in any form will also not be tolerated. The Georgia Institute of Technology honor code is available at `https://policylibrary.gatech.edu/student-affairs/academic-honor-code`.

Accommodations for Students with Disabilities If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or `http://disabilityservices.gatech.edu/`, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Final note If you have any questions or concerns about anything in the class, please do not hesitate to come and talk to me at anytime. Feedback from students is very valuable and I am open to adjusting the course based on such feedback. If you are having troubles with anything in the class, please remember that I am here to help and to make sure that you have the tools you need to be successful and get the most out of the course.