

M328K: Introduction to Number Theory
Spring 2010
Unique Number 56880

1 Instructor

Dr. Michael Henry (You may address me as Dr. Henry)
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Office: RLM 11.166
Office Phone: (512) 471-1135
Office Hours: Wed. 3 - 4:30pm, Thurs. 4 - 5:30pm, or by Appointment

2 Teaching Assistant

Cyntreva Paige
Email: cyntreva@hotmail.com
Office: RLM 13.152
Office Hours: TBA

3 Class Time

Lecture: MWF 10:00 - 11:00am in RLM 5.112

4 Required Text and Material Covered

Number Theory Through Inquiry by D. Marshall, E. Odell, and M. Starbird, 1st Edition
We will most likely cover chapters 1 - 5.

5 Course Website

I will use Blackboard extensively. Please make sure you have access to the Blackboard website for this course.

6 Prerequisite

A grade of C or better in M341.

7 Course Description

This is an inquiry style course (also known as “guided discovery”, “modified Moore method” or “inquiry based learning”), which may be very different from any courses you may have

taken in the past. We will follow the text closely. The book consists mostly of statements that we (or rather you) will be proving throughout the semester, then presenting in class. There are very few proofs in the book, and going to sources outside of others in the class, the book, or us is **forbidden**. The point of all of this is that you will be creating the proofs as we go. Mathematics is an intensely creative endeavour, and this course aims to introduce the student to that creative process, and the language and style of precise communication and thinking used in mathematics.

The standing homework assignment is for each student to read ahead and prove the next theorems or settle the next questions in the book. In class I will do very little lecturing. Instead I will ask students to present their proofs to the class. The job of the other students is to make sure they understand the proof presented and ask questions. I may ask other students to rephrase parts of the proof presented, or explain why parts of it are true. If you don't follow an argument, it is your responsibility to ask a question of the student presenting.

In the first month of the semester, each student is **required** to attend one 20 minute session of office hours with either me or Cyntreva.

8 Course Assessment

Homework and Participation	30 %
Exam 1	20 %
Exam 2	20 %
Final Exam	30 %

8.1 Homework

There are theorem statements, questions and exercises in the book, which you are to write proofs of, settle or work out the calculations for. You should type your solutions up neatly ahead of the class in which we will cover that statement, and we will collect them at the start of that class (you can get them back to use when presenting). I will let you know roughly how far ahead we will present in the next class. Of course working further ahead may be wise in order to be able to take advantage of office hours. In addition you should maintain a binder of correct proofs of all of the statements that you can update after we have covered those results in class. This is part of the homework requirement (as well as being very useful for studying for exams). I will ask you to bring your binders to class with you when we have an exam so that I can look over them.

The lowest n homework scores will be dropped, where n will be determined later in the semester. This is to accomodate occasions when for whatever reason you are unable to hand in an assignment. You should still type up proofs from hand-ins you miss, so that you have the proofs of the results. One of the points of doing the homework is that you will be writing your own version of the text book, with the proofs included.

Homework will be assigned each day and collected each Friday and Monday. Some portion of the collected exercises will be graded. Your proofs should be written in **complete sentences**. This helps your organize your thoughts and leads to clearer and more correct proofs. Using technical symbols like \forall , \exists , or \Rightarrow should be avoided.

In this course, you will type up your solutions using the typesetting language \LaTeX . \LaTeX is an absolutely essential tool for writing technical documents, especially in mathematics. This will be an excellent opportunity to get your feet wet with \LaTeX . If you have not seen or even heard of \LaTeX , do not worry. Cyntreva will provide instructions and templates on Blackboard that will help you quickly learn \LaTeX .

8.2 Exams

There will be two in-class midterm exams on **Friday, February 19** and **Friday, April 2**. There will be a cumulative final exam on **Monday, May 17**, 9:00am to 12:00pm. Please mark the dates of these three exams on your calendar now. The exams will be of a more traditional format than class, in that they will cover working out exercises from the material we will cover, as well as proofs, both of results we (you) will prove in class and some closely related results you won't have seen. No books, notes or calculators will be allowed in any of the exams.

If you must miss a midterm exam, please notify me at least a week in advance with a documented excuse. There will be no make-up exams. The lowest (or missed) midterm score will be replaced by that of the final if it improves the total. The final exam can only be rescheduled for very serious reasons. If you have a conflict with the final exam time, please notify me at least two weeks before the final.

9 Academic Integrity

University of Texas Honor Code

The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Each student in this course is expected to abide by the University of Texas Honor Code. You are encouraged to study together and to discuss the homework with other students. However each student must independently type up their homework solutions.

10 Other University Notices and Policies

10.1 Deadlines for dropping the course

February 15 is the last day to drop the course without a possible academic penalty. March 29 is the last day a student may drop the course with the Dean's approval. After March 29, a student may drop the course only in the case of "urgent and substantiated, nonacademic reasons."

10.2 Use of E-mail for Official Correspondence to Students

All students should become familiar with the University's official e-mail student notification policy. It is the student's responsibility to keep the University informed as to changes in his or her e-mail address. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University-related communications, recognizing that certain communications may be time-critical. It is recommended that e-mail be checked daily, but at a minimum, twice per week. The complete text of this policy and instructions for updating your e-mail address are available at <http://www.utexas.edu/its/policies/emailnotify.html>.

In general, I am very good about responding to email in a timely manner. However, I do not generally respond to email between 10:30pm and 9am.

10.3 Religious Holy Days

Religious holy days sometimes conflict with class and examination schedules. If you miss an examination, work assignment, or other project due to the observance of a religious holy day you will be given an opportunity to complete the work missed within a reasonable time after

the absence. It is the policy of The University of Texas at Austin that you must notify each of your instructors at least fourteen days prior to the classes scheduled on dates you will be absent to observe a religious holy day.

10.4 Documented Disability Statement

Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or 1-866-329-3986 (video phone). At the beginning of the semester, students with disabilities who need special accommodations should notify the instructor by presenting a letter prepared by the Service for Students with Disabilities (SSD) Office.

Contact Services for Students with Disabilities at 471-6259 (voice) or 1-866-329-3986 (video phone) or reference SSD's website for more disability-related information:
http://www.utexas.edu/diversity/ddce/ssd/for_cstudents.php

10.5 Behavior Concerns Advice Line (BCAL)

The Behavior Concerns Advice Line is a phone-in service that provides The University of Texas at Austins faculty, students and staff an opportunity to discuss their concerns about another individuals behavior. If you are worried about someone's behavior, you may use the Behavior Concerns Advice Line to discuss by phone your concerns. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit
<http://www.utexas.edu/safety/bcal>.

10.6 Emergency Evacuation Policy

Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation:

- Familiarize yourself with all exit doors of the classroom and the building. Remember that the nearest exit door may not be the one you used when you entered the building.
- If you require assistance to evacuate, inform me in writing during the first week of class.
- In the event of an evacuation, follow my instructions or those of the TA. Do not re-enter a building unless you are given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.