Syllabus for Math 555, Fall 2020

Instructor information

Instructor Name: Cartwright, Dustin

Office Hours and Location: Tuesday 3–4pm, Friday 1–2pm and by appointment, via Zoom link available on Canvas

Email: cartwright@utk.edu

Course Webpage: Further information, including a version of the syllabus which will be updated with any changes, is on the Canvas webpage for this course.

Course Communications: Most announcements will be made in class. I will use Canvas if I want to reach you between classes or if I want to be sure to reach everyone. For particularly urgent messages, I will use email.

The best way to reach me is by email. I will reply within 24 hours during the work week and usually faster, especially if you email me during working hours.

Student Learning Objectives

You should be able to write proofs with congruences, quadratic reciprocity, and Gauss sums.

Learning Environment

I expect you to attend lecture, pay attention, and participate in discussions. I would like you to leave your video on, so that we feel like a class and I have visual feedback. Please speak up or use the chat if you have questions.

You should treat the other students in the class with respect, both in and out of the classroom.

Text

The course text is *A Classical Introduction to Modern Number Theory* by Kenneth Ireland and Michael Rosen. You may download a free PDF of this textbook from within the UTK network or using the library's proxy.

You may also wish to consult a textbook on general algebra. The most commonly used graduate textbook at UTK is *Abstract Algebra* by David Dummit and Richard Foote.

Course Assessment

Your grade will be based on homework. There will be one homework assignment per chapter, so about 8 assignments over the course of the semester. Homework will be due on Wednesdays at 9am, which will be announced at least a week in advance.

You will upload your assignment in Canvas. You are encouraged to typeset your solutions, but scans are also acceptable. Look on Canvas for some resources on getting started with LaTeX.

Citation policy: You must write your own solutions and acknowledge any sources that helped you with your work.

You are *encouraged* to discuss your homework with other people in class, and and you should give credit to the people who have helped you. You should actually discuss the problems and not just look at someone else's answers. You must write your answers in your own words. You must credit all the people you worked with, either on the problems you worked together or at the top of the homework if you worked on many problems together.

You may use resources such as the Internet or textbooks other than the assigned one. If you do so, you still need to make sure you understand the solution and write it in your own words, using the conventions and notation from the course. Some sources may use different conventions and terminology and so you may find solutions which are correct in their context, but not for this course. Under no circumstances are you allowed to copy an answer from

another source, either verbatim or making small changes in wording. *You must credit Internet and book resources on the specific problem you use them.*

Homework solutions: I will post solutions to each homework assignment by selecting among submitted solutions. If you do *not* want your homework solution or solutions shared with the rest of the class, make a note of that fact. Otherwise, when you submit your homework, you are giving me permission to distribute your answer to the rest of the class. However, please do not distribute these solutions beyond the people in this class.

Make up Policy

Late homework will be accepted with a reasonable excuse, such as medical or family issue. Please let me know as soon as possible if you will need an extension on your homework. For long-term issues, I will waive the homework.

Recordings of class will be posted automatically on Canvas. I will also post the notes of what I write during class.

How to be Successful in this Course

Go over the lecture material after each class, either your own notes, or the textbook. Start the homework early. Work on the problems by yourself before getting help. Ask questions on Piazza. Go to office hours.

Read my comments on your homework and think about how you would fix them. Go to office hours if you have questions. Read the posted solutions to the homework.

Talk to other people in the class about the homework and the material.

If you find yourself falling behind on the material, adjust sooner rather than later. Go back over the notes or the book. Rework problems that you got wrong. Come to office hours if you have questions.

Course Outline and Schedule

I plan to cover most of Chapters 1–8 in the textbook, covering various aspects of congruences and finite fields, as well as Gauss and Jacobi sums. A day-by-day schedule of topics covered will be posted on Canvas.

Campus Syllabus

If the instructor finds it necessary to make informational changes (e.g. office hours, schedule adjustments) due to students' needs or unforeseen circumstances, students will be notified in writing/email of any such changes.