

Math 4400 Section 001: Introduction to Number Theory

Fall 2021 Course Syllabus

Instructor: Josh Pollitz

Class Meetings: MWF 10:45 – 11:35 AM in ST 205

Email: pollitz@math.utah.edu

Office: JWB 130

Office Hours: I will hold *at least* two scheduled office hours per week. These will be set by Wednesday, August 25th, and will be announced in class as well as posted on Canvas; my office hours will be determined by the availability of the students in the course. Please complete the surveys in the “Welcome!” announcement (or page) on Canvas; these will help determine the time of the office hours as well as whether these will be held in person or on Zoom. I am always happy to schedule additional office hours **by appointment**, please don’t hesitate to ask!

Course Texts: There will not be a required course text book. I will instead be compiling material from the following texts (both of which are freely available online):

- (1) *Numbers, Groups and Cryptography* by Gordan Savin;
available at <http://www.math.utah.edu/~savin/book18.pdf>
- (2) *Elementary Number Theory: Primes, Congruences, and Secrets* by William Stein;
available at <https://wstein.org/ent/ent.pdf>

Prerequisites: C or better in MATH 2270 or MATH 2250

Course Description: According to the university course catalog: “*An overview of algebraic number theory, covering factorization and primes, modular arithmetic, quadratic residues, continued fractions, quadratic forms, and diophantine equations.*”

Grade Breakdown:

Exams (2)	30%
Final Exam	25%
Homework	35%
Classwork & Participation	10%

Evaluation: Tentative grade scale:

A	100-93	B+	89-87	C+	79-77	D+	69-67	E	below 60
A-	92-90	B	86-83	C	76-73	D	66-63		
		B-	82-80	C-	72-70	D-	62-60		

Exams: There will be **two** 50-minute, in-class exams that are worth 30% of your final grade and there will be a final exam that is worth 25% of your final grade. All exams will be held in our usual meeting place, ST 205.

Exam 1: Friday, October 8th

Exam 2: Friday, November 19th

Final Exam: Wednesday, December 15th, 10:30–12:30 PM

Graded Homework Assignments: Homework assignments will be due the following days:

Friday, September 3rd Friday, September 17th Friday, October 1st
Friday, October 29th Friday, November 12th Friday, December 3rd

Homework can be turned in individually or in pairs. I would highly recommend that you try submitting assignments in pairs, as writing technical documents with another can be an incredibly valuable learning experience. You can even type your homework up together on Overleaf: <https://www.overleaf.com>. **I expect homework to be very neatly hand-written or typed** (this is a great opportunity to learn/use LaTeX to type up these assignments). Points will be deducted from non-neatly or disorganized hand-written homework. Overall, your homework assignments will make up 35% of your final grade.

Classwork & Participation: There will be one *in-class* assignment each week. These will vary in length, typically one should expect one of these assignments to take 15 minutes. These will be completed in groups of 2-3 and their evaluation is based **mostly** on effort/completion; however, I still want to offer some feedback and evaluation on these items. Because I want people to feel comfortable during these uncertain times, if you decide you would rather

complete the assignment on your own that is acceptable as well. I will drop your **2** lowest class assignments. These assignments make up 15% of your final grade.

Academic Integrity: All University of Utah policies regarding ethics and honorable behavior apply to this course.

Tutoring: The Rushing Math Center offers free drop-in tutoring, a computer lab, and study areas for undergraduates. The Rushing Student Center is adjacent to the LCB and JWB buildings. If you find that you'd prefer more personalized attention than our tutoring center can give, try the ASUU Tutoring Center or pick up a private tutor list from the math department office (233 JWB). For more information look here: <http://learningcenter.utah.edu> and <http://www.math.utah.edu/ugrad/mathcenter.html>, respectively.

COVID-19: University leadership urges all faculty, students, and staff to model the vaccination, testing, and masking behaviors we want to see in our campus community. These include:

- (1) **Vaccination:** Get a COVID-19 vaccination if you have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks. Visit <http://mychart.med.utah.edu/>, <http://alert.utah.edu/covid/vaccine>, or <http://vaccines.gov/> to schedule your vaccination.
- (2) **Masking:** While masks are no longer required outside of Health Sciences facilities, UTA buses and campus shuttles, CDC guidelines now call for everyone to wear face masks indoors.
- (3) **Testing:** If you are not yet vaccinated, get weekly asymptomatic coronavirus tests. This is a helpful way to protect yourself and those around you because asymptomatic individuals can unknowingly spread the coronavirus to others. Saliva based testing is available at alert.utah.edu/covid/testing
- (4) **Self-Reporting:** All of us, including faculty, students, and staff, must self-report if we test positive for COVID-19 via this website: <https://coronavirus.utah.edu/>.

The Americans with Disabilities Act: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020, <https://disability.utah.edu/>. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

Campus Safety: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, office for equal opportunity and affirmative action including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, <https://oeo.utah.edu/contact-us/index.php> or to the Office of the Dean of Students, 270 Union Building, 801-581-7066, <https://deanofstudents.utah.edu/>. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS), <https://police.utah.edu/>.

University Counseling Center: The UCC staff is committed to supporting the mental health needs of our campus community. Their phone number is 801-581-6826. Their hours are Monday-Friday, 8:00am-5:00pm. For after-hours emergencies, contact the 24/7 Crisis Line: 801-587-3000. More information is at <https://counselingcenter.utah.edu/>

Office of the Dean of Students: The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. To contact the Office of the Dean of Students, please email deanofstudents@utah.edu or call 801-581-7066. There is more information at <https://deanofstudents.utah.edu/>