

Math 333 – Number Theory – Fall 2026

Instructor

Joshua Ruiter

Email: jruiter@batten.edu

Office: Eggleston 110

Office hours: by appointment

Meetings

Tuesday, Thursday

10:30-11:45am

Blocker 18

Textbook

A Friendly Introduction to Number Theory

4th Edition

by Joseph Silverman

What is number theory? Number theory is the study of patterns formed by counting numbers $1, 2, 3, \dots$. We'll study patterns involving equations (like the Pythagorean theorem equation $a^2 + b^2 = c^2$), divisions and remainder, and prime numbers. Course topics include: Pythagorean triples, divisibility, greatest common divisors, factorization of integers, modular congruence, Fermat's Little Theorem, Euler's Formula, Euler phi function, Chinese remainder theorem, primes, quadratic reciprocity. The plan is to start with chapter 1 of the textbook and see how far we get.

Grades: Final grades are calculated by weighted average:

Homework	25%
Daily examples	25%
Quizzes	25%
Final exam	25%

0	60	63	67	70	73	77	80	83	87	90	93
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

Homework: Assignments due Tuesdays. Each assignment, you can submit corrections to one problem from the previous assignment (for full credit). If you are submitting corrections, attach the prior version of your answer for that problem. Problems posted on Blackboard.

Assignments can be submitted as handwritten or printed L^AT_EX. Submissions in L^AT_EX will receive a 5% extra credit bump on that assignment. I will provide a L^AT_EX template, and I am happy to help with questions related to L^AT_EX in office hours or via email.

Daily examples: This includes daily participation and a notebook submitted at the end of the semester. Before class, you'll write an example in your notebook. At the start of class, I'll call on a randomly selected person to present their example in 1-3 minutes. I will ensure that each person is called on an equal number of times. Grades depend both on giving an example when called on, and submitting a complete notebook at the end of the semester.

Quizzes: Every other Thursday, for a total of 6 quizzes. We'll set aside some time for review before each quiz. You can bring a 3x5 notecard with notes.

Final exam: Covering material from the entire semester. You can bring two 3x5 notecards with notes.

Disability accommodations: Talk to me if you have an accommodations letter so that we can discuss your specific needs. If you do not have a letter, contact disabilityservices@batten.edu.

Attendance: Attendance is not directly part of the grade calculation, but missing class will mean not getting credit for some daily examples.

Office hours: By appointment through a link on Blackboard. If you no-show or cancel an office hour within 12 hours, I will not accept appointments from you for 30 days.

Technology: As a blanket course policy, put away all technology before class. This includes laptops, phones, smart watches, etc. If you have it out, I'll ask you to put it away.

Key dates

Date	Homework	Date	Quiz
Tue, Sep 1	HW 1	Thu, Sep 3	Quiz 1
Tue, Sep 8	HW 2	Thu, Sep 17	Quiz 2
Tue, Sep 15	HW 3	Thu, Oct 1	Quiz 3
Tue, Sep 22	HW 4	Thu, Oct 15	Quiz 4
Tue, Sep 29	HW 5	Thu, Oct 29	Quiz 5
Tue, Oct 6	HW 6	Thu, Nov 12	Quiz 6
Tue, Oct 13	HW 7		
Tue, Oct 20	HW 8	Date	Event
Tue, Oct 27	HW 9	Tue, Aug 25	First day of class
Tue, Nov 3	HW 10	Thu, Nov 26	No class, Thanksgiving
Tue, Nov 10	HW 11	Thu, Dec 3	Last day of class
Tue, Nov 17	HW 12	Mon, Dec 7	Final Exam (8:00–10:30 AM)
Tue, Nov 24	HW 13		
Tue, Dec 1	HW 14		

More info on daily examples

Before each class, you should complete one page in your example notebook. The list of questions for each day will be detailed in a separate document, updated throughout the semester.

A completed page in the example notebook must include:

- The date
- A copy of the question/description of what example was asked for
- A description of your example and brief explanation of why it is a valid example

For instance, if I said, ‘Give an example of a Pythagorean triple,’ your entry might look like:

Monday, January 26. A Pythagorean triple: (3, 4, 5) is a Pythagorean triple because $3^2 + 4^2 = 9 + 16 = 25 = 5^2$.

At the start of each class, I will call on one randomly selected people to present their examples in 2-3 minutes. When called on, it is not necessary that your example is perfect, but you do need to be ready present it so that we can all learn together. I will ensure that everyone is called on roughly the same number of times. If you are absent when called on, you will not receive credit (unless you have notified me in advance that you are sick, at a sporting event, etc.).

Half of this grade category is successfully presenting examples when called on, and half the grade is submitting a complete notebook at the end of the semester.

$$\text{daily examples grade} = \frac{1}{2} \left(\frac{\text{times successfully presented}}{\text{times called on to present}} \right) + \frac{1}{2} \left(\frac{\text{completed notebook pages}}{\text{assigned notebook pages}} \right)$$