

Professor: Dr. Chris Black
Office: Snoqualmie Hall #302B
Office Hours: T 10:15 - 11:15, and by arrangement
Office Phone: (425) 640-1574 x3871
Email : blackc@cwu.edu

Required Text: *A Friendly Approach to Number Theory*, Third Edition, Joseph H. Silverman, Pearson/Prentice Hall, 2006

GOALS FOR COURSE:

Upon completion of MATH 430, students will:

- have experienced the benefits of independent mathematical discovery
 - have strengthened their ability to construct valid mathematical proof
 - have strengthened their ability to communicate mathematical ideas orally
 - have an understanding of the fundamental theorems and methodology used in the study of number theory
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COURSE PHILOSOPHY:

Number theory lends itself well to a discovery-style course. Silverman's text was chosen specifically because it enables students to immerse themselves in mathematical discovery, and allows them to uncover the major concepts of number theory. The students will work on the problems as a group and write up solutions individually outside of class. There will be no lecture by the professor, although I am available both inside and outside of class to answer questions.

PROBABLE COURSE TOPICS:

- Fermat's Last Theorem
 - Divisibility and greatest common divisors
 - Congruences & Euler's Formula
 - Prime numbers
 - Successive squaring
 - Diophantine approximation
 - Pell's equation
 - Transcendental numbers
 - Binomial coefficients & Pascal's triangle
 - Fibonacci sequence and recurrence sequences
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GRADING:

Homework:	500 - 540 points, as needed
Participation:	40 points
Attendance/Citizenship:	20 points
Final Exam:	200 points

PARTICIPATION:

As mentioned previously, this course will be student-led. I will act as a moderator while the students work through and present solutions. I will answer questions and steer the discussion, however the momentum for the course will be created by the students themselves. Ordinarily, the work will be presented by volunteers and critiqued constructively by the other students. If you don't volunteer yourself, however, you will be 'volunteered'. Your participation grade will depend on the quality (and quantity) of your work in both volunteering and critiquing.

HOMEWORK:

This course consists entirely of exploring and solving problems posed in the text. NOT ALL PROBLEMS IN THE TEXT HAVE KNOWN SOLUTIONS, AND NOT ALL ARE SOLVABLE. All solutions will be collected, and one or two from each section will be selected to be graded. Each collected proof is worth 10 points.

ATTENDANCE/CITIZENSHIP:

Discussion, interaction, and group problem solving will all be important aspects of this course, which necessitate your attendance. Citizenship addresses your behavior and comportment with class members and the instructor. We each need to be respectful of other students, other cultures, and differing ideas within our learning community. In particular, in a class where you are expected to critique each other, we need to keep our comments constructive.

FINAL EXAM:

The final exam will cover the basic concepts and techniques of number theory. The exam is scheduled for Wednesday 12/9 from 9:00 - 11:00 am.

HONOR AND RESPECT:

Each of us should consider our placement at this institution to be a privilege. We need to have respect for one another, and for ourselves. In light of these facts, cheating in any form will not be tolerated. In particular, it is unacceptable to copy a solution provided by another student. You are encouraged to work together on homework problems, however anything you turn in with your name on it should have been written by you alone. In a course where much of your grade is determined by your proof writing, plagiarism is a concern. The word "plagiarize" is defined by Merriam-Webster as "to steal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source." This is a very serious offense, and will jeopardize your position in the program.

DISABILITY SERVICES:

Students with disabilities may arrange for academic adjustments by providing the instructor with a copy of the "Confirmation of Eligibility for Academic Adjustments" from the Disability Support Services Office as soon as possible. To obtain this form, contact the Disability Support Services Office at the main campus at dssrecept@cwu.edu or (509) 963-2171.