Math 445 (845) Introduction to the Theory of Numbers
Section 001

Lecture: MWF 12:30 - 1:20 CBA 31

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WWW pages for this class: http://www.math.unl.edu/∼mbrittenham2/classwk/445f08/

(There you will find copies of nearly every handout from class, lists of homework problems assigned, dates for exams, etc.)

Office Hours: (tentatively) Mo 11:00-12:00, Tu 10:00-11:00, We 3:00 - 4:00, and Th 11:00-12:00, and whenever you can find me in my office and I'm not horrendously busy. You are also quite welcome to make an appointment for any other time; this is easiest to arrange just before or after class, or via email.

Text: *An Introduction to the Theory of Numbers*, by I. Niven, H. Zuckerman, and H. Montgomery (5th edition, John Wiley and Sons).

This course, as its name is meant to imply, is intended to introduce you to the theory of numbers, that is, the theory of the integers and their properties. The topics we will cover will be determined partly by the interests of those attending; likely topics include primality testing, quadratic reciprocity, arithmetic functions, continued fractions and/or Diophantine equations.

Homework will be assigned approximately weekly, and collected one week after it is assigned. It is an essential ingredient to the course - as with almost all of mathematics, we learn best by doing (again and again and ...). Cooperation with other students on these assignments is acceptable, and even encouraged. However, you must write up solutions on your own - after all, you get to bring only one brain to exams (and it can't be someone else's). For the same reason, I also recommend that you try working each problem on your own, first. The homework grades will count 40% toward your final grade. Late homework may be marked as turned in but not graded.

Midterm exams will be given two times during the semester - the specific dates will be announced in class well in advance of each exam. At least one of them will be a take-home exam. Each exam will count 15% toward your grade. You can take a make-up exam only if there are compelling reasons (a doctor SAYS you were sick, jury duty, etc.) for you to miss an exam. Make-up exams tend to be harder than the originals (because make-up exams are harder to write!). A calculator will likely be useless on the kinds of questions we will be exploring.

Finally, there will be a regularly scheduled **final exam** on Tuesday, December 16, from 3:30pm to 5:30pm. It will cover the entire course, with a slight emphasis on material covered after the last midterm exam. It will count the remaining 30% toward your grade.

Your course grade will be calculated numerically using the above scales, and will be converted to a letter grade based partly on the overall average of the class. However, a score of 90% or better will guarantee some kind of **A**, 80% or better at least some sort of **B**, 70% or better at least a flavor of **C**, and 60% or better at least a **D**.

In mathematics, new concepts continually rely upon the mastery of old ones; it is therefore essential that you thoroughly understand each new topic before moving on. Our classes are an important opportunity for you to ask questions; to make sure that you are understanding concepts correctly. Speak up! It's your education at stake. Make every effort to resist the temptation to put off work, and to fall behind. Every topic has to be gotten through, not around. And it's a lot easier to read 50 pages in a week than it is in a day. Try to do some work on your mathematics class(es) every day. You'd be amazed at what the back of your brain can do with a problem, if you give it enough time! Routine **class attendance** is probably your best way to insure that you will keep up with the material, and make sure that you understand all of the concepts.

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Some important academic dates

Aug. 25 First day of classes.
Sept. 1 Labor Day - no classes.
Sept. 5 Last day to withdraw from a course without a **'W'**.
Oct. 17 Last day to change to or from P/NP.
Oct. 20-21 Fall break - no classes.
Nov. 14 Last day to withdraw from a course.
Nov. 26 Student holiday - no classes.
Nov. 27-30 Thanksgiving Vacation - no classes.
Dec. 13 Last day of classes.
Dec. 15-19 Final exam week.
Dec. 16 Math 445 final examination.