Math 311w Section 002, Autumn 2014
Concepts of Discrete Mathematics

Where and When: Osmond 116, MWF, 15:35 - 16:25 (with exceptions)
Teacher: Timothy Reluga
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Office hours: Friday 2 - 3 pm, walk-ins, and by appointment
Course Web page: http://www.math.psu.edu/treluga/311w

Course Description

This course introduces students to the use of mathematics as language. Using a theorem-proof framework much like that used in Euclid’s geometry textbook 2,400 years ago, we will study elementary number theory, modular arithmetic, set theory, formal logic, groups, and other discrete-math topics. The course will include several writing assignments to help students develop their own communications skills.

Prerequisites: students must be comfortable with rational number algebra, including solving linear equations.

Textbook

Numbers, Groups, and Codes, second edition, by J. F. Humphreys and M. Y. Prest. The course will cover chapters 1 through 5, plus some lecture material not in the textbook.

Grading

Grades will be awarded based on two term exams (100 points each), a final exam (140 points), several writing assignments including laboratory assignments and a short term paper (50 points total), and course participation (10 points). The final grade will be calculated out of 400 points. The first exam will be September 29th, the second will be November 3rd.
Learning objectives

- Learn the math covered in our textbook.
- Read and write proofs of theorems.
- Code numerical algorithms in python.
- Translate reality into the language of mathematics.

Rough Course Outline

Before Exam 1 Logic, sets, relations, functions
Before Exam 2 Number theory, modular arithmetic, RSA Encryption
Before Final Introductory group theory

Homework

Homework assignments will be posted weekly on our class web page. For each section of the book we study, there will be an online reading quiz in Angel that you must answer before the first class on that section. Homework problems will be written or online for practice, but will generally not be graded.

Writting

There will be several graded writting assignments. Writting assignments must be turned in through Angel. Details will be given for each as the course progresses.

Planned Laboratory Topics

We will have several laboratories during the class. Some of which will be meeting in a campus computer lab and make use of the python programming language to learn to these computations. Classes meeting in computer labs will be announced in class and on the web.

Academic integrity

All Penn State Policies regarding ethics and honorable behavior apply to this course. I embrace puritanical righteousness.

Disability accomodations

Reasonable accomodations will be made for students with disabilities through ODS.