Syllabus for Math 390: Independent Study in Discrete Mathematics
Fall 2016

Course Information

Instructor: Dr. Lauren Williams
Meeting Time: Approximately 1 hour per week, times to be determined
Suggested Prerequisite: Math 150 Linear Algebra

Course Description

This course is a guided independent study in discrete mathematics, designed for students intending to pursue a career or graduate degree in mathematics, computer science, data science, operations research, and other related fields. Topics will include sets, combinatorics, logic, matrix algebra, relations and functions, recursion, algorithms, and graph theory, all of which will be presented with a focus on applications to programming. Additional topics may be covered based on student interest.

Course Objectives

On successful completion of the course, the student will:

- be familiar with commonly used mathematical notation
- understand the basic principles of set theory, combinatorics, and graph theory, and how these ideas apply to programming
- be able to distinguish between a function and a relation, and identity important properties of each
- be able to apply mathematical concepts and create efficient code to solve a variety of problems they are likely to encounter in computer science or related fields

Required Texts

Applied Discrete Structures by Alan Doerr and Kenneth Levasseur. The authors of this book have published the latest edition as a free pdf, with low cost print versions available as well.

Assignments

As this is an independent study, students will be expected to complete some of the reading on their own, before each meeting. Homework based on textbook problems will be assigned and graded regularly.
In addition to the textbook problems, which will focus on mathematical concepts, programming projects may also be assigned. These assignments will reinforce the application of the mathematics to computer science. These projects will typically be completed in Python/Sage.

Grading

The grade for this course will be based on

- 70%: Average of homework grades
- 20%: Evidence of completing outside readings before meeting times
- 10%: Attendance and participation during meetings

Grading scale:

F	D	D+	C	C+	B	B+	A
0-59	60-64	65-69	70-77	78-83	84-89	90-93	94-100