Syllabus for Math 420

Winter Term 2026 1:50 MWF Mr. Gregg

Course Description and Objectives

Math 420 is a course in applied mathematics. We will be studying the theory and implementation of some of the most important methods used in computational mathematics. Specifically, we will studying topics such as methods for solving algebraic equations and differential equations, polynomical approximations, and implementation of some algorithms in linear algebra.

Part of this course will involve implementing mathematical algorithms in Python. I will be providing a lot of example code in Python. For those of you who have no experience programming in Python I will also provide an introduction to the subset of the Python language that we will be using in this course.

How this Course is Structured

We will meet three times a week for lectures. I will be asssigning homework problems from the text at the conclusion of each chapter. In most cases you will be using the Python code I developed in class to solve the homework problems.

We will have two midterm exams and a final exam.

Grading Policy and Late Policy

Assignments and exams have the following weights:

Problem sets - 50% Midterm exams - 12.5% each Final exam - 25%

Late policy for problem sets is that problem sets may be turned in one class meeting after the initial due date for a 10% penalty. If you turn in a portion of a problem set on time and the remainder late, the 10% penalty will only apply to those problems you submitted late. I will waive the 10% penalty if you have a valid excuse such as illness; however, you must contact me before the initial due date to ask for an extension.

Textbook

Our text is *Numerical Analysis, Tenth Edition* by Burton, Faires and Burton.

Office Hours

My office hours this term are 3:00-4:30 M-F and 2:00-4:00 TTh. You are welcome to stop in at other times as well, but please email first. My office is West Campus 227. My email address is greggj@lawrence.edu.

Course Web Site

The course web site is at http://www.lawrence.edu/fast/greggj/math420.html.

Schedule of Topics and Exams

Week	Topic	Chapter
1	Solving Equations in One Variable	2
2,3,4	Solving Systems of Linear Equations	6,7
5	Polynomial Approximations	3
6	First Midterm Exam	-
6,7	Numerical Integration	4
7, 8	Solving ODEs	5
9	Second Midterm Exam	-
9	Boundary Value Problems	11
10	Solving PDEs	12