Math 320 – Computer Methods in the Mathematical Sciences I. Fall 2016.

Instructor: Zvi Rosen.
Office: DRLB 3N8D.
Website: Canvas.
Class Location: DRLB 3C2
Class Times: MWF 11am-12pm
Office Hours: Wednesday 12pm-1pm or by appointment, DRLB 3N8D

Prerequisites. MATH 240. If you have not taken MATH 240, but you would like to take the course, please speak to the instructor. Programming experience may be useful, but is not necessary to take the course.

Attendance. Attendance is highly recommended but not mandatory. If you anticipate missing multiple days of class, please let the instructor know in advance.

Grading. 40 % – Homework
30 % – Quizzes
30 % – Final Project
If you would like to submit an assignment for regrading, you must do so within a week of getting the grade.

Homework. Homework will be assigned on a near-weekly basis. Teamwork is encouraged, as long as you specify your colleagues in your writeup. Each team member should write up and submit their work separately. The lowest homework grade will be dropped. Homework will be collected at the end of class on the day it is due.

Quizzes. Quizzes will be administered most weeks on Friday. They will cover the recent material studied in class. Each quiz will last about 20 minutes, and the lowest two quiz grades will be dropped.

Course Text. The course textbook is *Applied Numerical Methods with MATLAB for Engineers and Scientists, Third Edition* by Steven C. Chapra. Some homework assignments will include problems from the textbook, so please get a copy!

Final Project. The final project will entail a written proposal, a full-length written report, and a 20 minute presentation at the end of the semester. The projects will be carried out in pairs or individually. More details will come in a separate handout.

Course Objectives. We will begin the semester by becoming familiar with MATLAB. Then we will delve into the following topics:

(1) Roots and optimization.
(2) Linear algebra.
(3) Regression and fit.
(4) Interpolation.
(5) Differentiation and integration.
(6) Differential equations.

In each topic, we will discuss the theory underlying computational methods, and then implement these techniques in MATLAB. Our focus will be on proving convergence and error bounds for our techniques.

Student Disabilities Services. University of Pennsylvania, provides reasonable accommodations to students with disabilities who have self-identified and been approved by the office of Student Disabilities Services (SDS). Please make an appointment to meet with me as soon as possible in order to discuss your accommodations and your needs.
If you have not yet contacted SDS, and would like to request accommodations or have questions, you can make an appointment by calling SDS 215.573.9235. The office is located in the Weingarten Learning Resources Center at Stouffer Commons 3702 Spruce Street, Suite 300. All services are confidential.

Academic Integrity. You can consult the University's Code of Academic Integrity here: http://provost.upenn.edu/policies/pennbook/2013/02/13/code-of-academic-integrity. These standards will be upheld in this class. If you use fragments of code from someone else, please specify this in your comments. If you work with your classmates, please make a note of it. Any cases of academic dishonesty may be referred to the Office of Student Conduct.