
GMU Department of Mathematical Sciences
Math 413: Modern Applied Mathematics I
Fall 2010
Syllabus

Instructor:

Prof. Maria Emelianenko

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Office: Room 226A, Science and Tech I

Office Hours: TR 4-5pm and by appt

Time and Room:

MWF 10:30-11:20pm Enterprise Hall, Room 277

Course materials, assignments and announcements will be available at the course website:

<http://math.gmu.edu/~memelian/teaching/Fall10/math413>

Prerequisite: Grade of C or better in MATH 203 and 214 or 216.

Textbook: Mark H. Holmes "Introduction to the Foundations of Applied Mathematics", Springer

Course Description:

Synthesis of pure mathematics and computational mathematics. Emphasizes interplay between discrete and continuous mathematics. Mathematical structure revealed from equilibrium models in discrete and continuous systems.

We will learn how to formulate, analyze and solve real problems arising in the fields on science and engineering. Both analytical and computational assignments will be given and students will be expected to make 10-minute in-class presentations after completing each of the core assignments. In-class demonstrations and examples will employ MATLAB tools and the use of MATLAB will be expected when doing computational assignments.

MATLAB is a computing environment with programming capability, good graphics, and powerful library functions. It is available on campus on the Mason cluster and several Unix computer labs. Alternatively, a PC version can be purchased at the bookstore at a reasonable price. MATLAB tutorials are available at our class home page if you are new to MATLAB. Alternatively, the manual which comes with the PC version is very complete.

Grading policy:

Your grade in this course will depend on your performance on graded projects and one take-home final exam. Tentative weight of assessment components:

- Projects and graded assignments: 30%
- Midterm exam: 25%
- Final exam: 30%
- Participation: 15%

Weekly practice problems will be given that will not count towards the final grade, unless specifically noted. I strongly encourage all participants to do these exercises in order to gain the necessary grasp of the material and perform well on exams and graded assignments. I will discuss solutions in class.

All GMU academic integrity policies <http://www.gmu.edu/catalog/apolicies> apply to this course. Feel free to ask me for help if you have any questions.