

James Madison University, Department of Mathematics and Statistics
Math 448 – Numerical Analysis, Spring 2013

TuTh 2:00-3:15, Miller G030

Instructor: Dr. Stephen Lucas.

To contact me: In Person: Roop 112, Office Hours: Monday 9:05-9:55, Tuesday 12:30-1:45, Wednesday 11:15-12:05, Thursday 9:30-10:45 or by appointment. Phone: 568-5104, Email: lucassk@jmu.edu

Textbook: Richard L. Burden & J. Douglas Faires, Numerical Analysis, 9th edition, 2001 Thomson Brooks/Cole.

Computing: We will be using Matlab as a programming environment, which can be purchased at the bookstore, or online (student edition) at http://www.mathworks.com/academia/student_version/. Matlab is also available in Burruss 30 & 130, Roop 103, and Miller G080. A flash drive for storing your files is highly recommended. There are a large number of Matlab resources on the web, including the online textbook by Matlab's author, at http://www.mathworks.com/moler/index_ncm.html

Overview: Study and analysis of algorithms used to solve nonlinear equations and systems of linear and nonlinear equations. Iterative methods for matrices and Newton-type methods. Interpolation and approximation of functions. Numerical differential and integral calculus. Programming using a high-level language and/or software packages. Prerequisite: MATH 237, MATH 238 and MATH 248. While material from Math 248 is not technically part of the course, I anticipate spending some time reviewing that material, particularly programming in Matlab.

Attendance: While I will not be formally taking attendance, it is one of the most important aspects of any mathematics course. In fact, there is a strong correlation between attendance and success. I will **not** accept any late work (i.e. exam, programming assignments, homeworks, etc.) without an exceptionally good excuse. If you miss an exam without first being excused, you will not be allowed to make it up. While my sympathy is directly proportional to your response speed, I do not guarantee sympathy. You or a family member should contact me as soon as possible if you have an extended illness or other extenuating circumstance.

Course grading: Homework (weekly): 40%, Programming Assignments: 25%, Midterm Exam: 15%, Final: 20%.

- Your weighted average (as a percentage) determines your grade for the course on a scale that will be roughly A=85-100, B=65-84, C=50-64, D=40-49.
- Homework will be assigned weekly, will be due the following week, and will often be collected electronically. All homework files are to be submitted via Blackboard by 11:59pm of the due date.
- There will be programming assignments on each topic that are larger scale than the weekly homework. These will be quite challenging and will take **most** students a large block of time to complete properly. It is important to start as soon as possible, and only spend the few days before the due date writing up. Specific instructions will be on the assignments.
- The midterm exam will cover material from the proceeding sections; the final exam will be cumulative. Due to the combination of theory and implementation, I anticipate that exams will be take-home.

Getting Help: While working in groups is encouraged (one of the best ways of learning something is explaining it to someone else), I encourage you to ask a lot of questions, in lectures, by email or by phone. Office hours are an under-utilized resource that is there for you.

Disability and Special Circumstances: I strongly encourage students who require special arrangements to contact me during the first week of class. Students with disabilities need to register with the Office of Disability Services (ODS). Any discussion of special circumstances will remain confidential except for any necessary communication with ODS in case of a disability.

Academic Integrity: Academic integrity is extremely important. Therefore, we will strictly abide by the honor code found at <http://www.jmu.edu/honor/printcode.html>. Any breach of the honor code results in failure in this course. I encourage working in groups but not copying in groups. Functionally or logically identical programs are considered violations of the honor code to be prosecuted rigorously. If you have any questions about what does or does not fit under the umbrella of academic integrity, please contact me.