

Math 351, Elementary Numerical Analysis I, Fall 2011

Class Time: MWF 2-2:50p.m. in 210 Deady Hall
Instructor: Dr. Marcin Bownik
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Office: 323 Fenton
Office Phone: 346-5622
Office Hours: 3-4 Mon. Fri, 12-1 Wed., or by appointment
Textbook: W. Cheney, D. Kincaid, *Numerical Mathematics and Computing*, 6th edition

1. **Background and Goals.** This course introduces students to the subject of numerical analysis. Numerical analysis is the study of methods and algorithms for mathematical computation, with an emphasis on techniques for approximating solutions to numerical problems and managing the error. Topics include: approximations by Taylor series, representation of numbers in different bases, loss of significance, methods for locating roots of equations, polynomial interpolation, and numerical integration. The course, which is the first of two in the sequence, covers most of chapters 1–6 of the textbook.
2. **Mathematica.** For the in-class computer demonstrations we will use Mathematica, a powerful computer program for symbolic and numerical mathematical computations. You may also want to use it for your homework and project. Mathematica is installed in most of the computer labs on campus.
3. **Exams.** There will be an in-class midterm exam on Wed. Nov. 2 and a final exam on Tue. Dec. 6, 3:15-5:15p.m.
4. **Homework.** Homework problems will be assigned every week and be due in class on Wednesday on the material of the previous week. No late homework will be accepted. You may work with your classmates under the following conditions:
 - you must individually write your assignment,
 - you must acknowledge the cooperation by including the name of the person(s).
5. **Project** Part of your grade will be based on a programming or research project due on the last day of class. Possible projects include implementing the algorithms discussed in class in your favorite programming language, or researching a numerical analysis topic. A list of suggested projects will be posted after the midterm.
6. **Grading.** The grading distribution will be as follows:

Homework:	20%
Midterm Exam:	20%
Project:	20%
Final Exam:	40%