Numerical Analysis II  
Math 516, Spring 2015  

Instructor: Professor Lars Ruthotto

Times.  
TueTh 10:00 AM – 11:15 AM, Math & Science Center, Room W302

First day of classes: January 13, 2015  
Last day of classes: April 23, 2015  
Recess: March 9-13 (Spring break)

Office hours.  
TueWedTh 11:30 am – 12:30 pm by appointment (l ruthotto@emory.edu)

Prerequisites.  
Math 515 – I will not review this material. You are expected to know it.

Topics.  
Finding roots: Given some function f, find x such that f(x) = 0.  
Optimization: For example, given an objective function f, solve min_x f(x)  
Interpolation, splines best approximation, integration  
Numerical integration and quadratures  
Ordinary differential equations (ODEs)

Textbook.  
No specific book is required for this course. Two excellent books you can use as references are:  
A First Course in Numerical Methods, U. Asher and C. Greif, SIAM 2011  
Scientific Computing with Case Studies, D.P. O’Leary, SIAM, 2009

Grades.  
There will be several homework assignments / projects and a final project.  
The final grade will be determined as:  
50% homework, 25% midterm exam, 25% final exam

Final Exam.  
The Final Exam is cumulative and is still to be scheduled.
**Homework.**

Homework will be a combination of computing and analysis. Computing will be done using Julia or Matlab.

Solutions, results, and analysis should be submitted as a single, readable document. This document can either be sent to me electronically (as a pdf file), or you can give me a printed copy. All codes used to generate results for the assignments have to be submitted electronically as a single .zip, .tar, or .tgz archive.

**Class Attendance.**

Attendance is not required, but strongly encouraged.

If you miss a class, then you should get a copy of the notes from one of your classmates. If you come to class, please do not disturb your fellow students and avoid using phones, computers, or leaving in the middle of a lecture.

**Students with Disabilities.**

If you have a disability and would like to request classroom accommodations, please see me after class or during office hours to discuss arrangements.

**Honor Code.**

All students must adhere to the provisions of the Honor Code. For more information, see: [http://college.emory.edu/home/academic/policy/honor_code.html](http://college.emory.edu/home/academic/policy/honor_code.html)