MATH 5620/6865 NUMERICAL ANALYSIS II
SPRING 2012 SYLLABUS

Instructor: Fernando Guevara Vasquez.

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Office hours: MTW 2-3pm or by appointment.

Textbook: This class is mostly based on the book "Numerical Analysis" by Burden and Faires (9th edition, Thomson Brooks/Cole, ISBN: 978-0538733519).

Prerequisites: Math 5610 or instructor's permission. Basic Matlab programming.

Hours: MTWF 10:45am – 11:35am

Classroom: MWF: LCB 323. T: JWB 308.

Course website:

`http://www.math.utah.edu/~fguevara/math5620_s12`

Description: This is the continuation of Math 5610. Topics include.

- Solving systems of linear equations (Chap 6–7)
- Approximating Eigenvalues (Chap 9)
- Boundary value problems for ordinary differential equations (Chap 11)
- Numerical solution to partial differential equations (Chap 12)

Grading:

- Homeworks (40%): There will be between 6 and 8 homeworks.
- Project (15%): To be announced in class.
- Midterm (15%): Tentatively Fri Feb 24, in class. Exact date will be announced at least one week before.
- Final (30%) Friday May 3 2012, 10:30am-12:30pm (per university's final exam schedule)

Class format: One day of class (Tuesday) will be mostly used as a question/answer/review session or computer lab.

About programming: Programming is an important part of the homework for this class. You are *required* to use Matlab or the open source (free) alternative Octave. Please see the course website for: (a) how to get Matlab or Octave and (b) guidelines on how to present your numerical experiments and supporting code.

For graduate students: You can take this class as a graduate level class (Math 6865). The lectures are the same for everyone but there may be extra problems for PhD students.

Other reference textbooks You are not required to buy these, but I will reference them throughout the class.

- Kincaid and Cheney, *Numerical Analysis: Mathematics of Scientific Computing* (3rd edition, Brooks/Cole), 2001.
- Stoer and Burlisch, *Introduction to Numerical Analysis*, Springer 1992.
- Trefethen and Bau, *Numerical Linear Algebra*, SIAM 1997.
- Golub and Van Loan, *Matrix Computations*, John Hopkins 1996.
- Brenner and Scott, *The Mathematical Theory of Finite Elements*, Springer 2002
- Ciarlet, *Finite Element Methods for Elliptic Problems*, SIAM 2002
- LeVeque, *Finite Difference Methods for Ordinary and Partial Differential Equations*, SIAM 2007

Students with Disabilities: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.