Instructor: Ivan Yotov, Thackeray 405, 624-8338,
yotov@math.pitt.edu, www.math.pitt.edu/~yotov

Office hours: MWF 11:00–12:00 and by appointment.
Class web page: www.math.pitt.edu/~yotov/teaching/20-2/math1080.html
Prerequisites: Linear algebra. Knowledge of differential equations will be useful, but not required.

Content: This course is the second part in the Numerical Analysis sequence, which provides an introduction to modern numerical methods. Topics include solving linear systems and eigenvalue problems, numerical methods for ordinary differential equations, and finite difference methods for partial differential equations. Our goal will be to understand how and when the methods work, using the concepts of stability, convergence, and efficiency of algorithms.

Topics to be covered:

- Chapter 6: Solutions of systems of linear equations
- Chapter 7: Numerical linear algebra: advanced topics
- Chapter 8: Ordinary differential equations
- Chapter 9: Finite difference method for PDEs

Homework: Written homework and several computational projects will be assigned. Homework is due in class on the due date. Late homework will not be accepted.

Computer assignments will use Matlab, software by The MathWorks, available to download through the University software licensing. The Matlab language provides extensive library of mathematical and scientific function calls entirely built-in. A set of Matlab codes implementing the numerical algorithms is provided by the authors of the text and is available on the class web page. The computer assignments will utilize this software.

Exams: Two exams will be given in class during the semester, at approximately five week intervals. A comprehensive final exam will be given during finals week. The final exam will give greater emphasis on material not previously tested by the midterm exams.

Grading Policy: The total of the two midterm exams will count 35%, the homework will count 40% and the final exam will count 25% of the final grade.

Additional References:

- Numerical Mathematics and Computing fifth edition, by W. Cheney and D. Kincaid
- Numerical Mathematics, second edition, by A. Quarteroni, R. Sacco, F. Faleri
- Numerical Linear Algebra, by Lloyd N. Trefethen, David Bau, III
**Academic Integrity.** All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty will be subject to disciplinary action. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity http://www.provost.pitt.edu/info/ai1.html. This may include, but is not limited to the confiscation of the examination of any individual suspected of violating the University Policy.

**Disability Services.** If you have a disability, contact both your instructor and the Office of Disability Resources and Services (DRS), 216 William Pitt Union, 412-648-7890/412-383-7355 (TTY) as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

**Statement of Classroom Recording:** To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording property approved in advance can be used solely for the students own private use.