198:323 Numerical Analysis and Computing, Fall 2019

Sections: 1   M, W 6:40-8, ENG-B120; Th5:15-6:10, LSH-B267
                2   M, W 6:40-8, ENG-B120; Th6:55-7:50,   SEC-202

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- **Office Hours:** Th 2:00-3:00PM or by arrangement

- **Course Homepage:** http://www.cs.rutgers.edu/∼steiger/CS323-F19.html

- **Objectives:** Introduction to general issues arising in numerical computing (accuracy, convergence, stability, efficiency) and to specific algorithms for some important computational tasks.

- **Expected Work:** several (3,4,5) written homeworks and possibly some small programming tasks, ($\leq 1/3$); midterm, and a final ($\geq 2/3$). (* Any high level language known to the TA is OK and facility with **MATLAB** would be useful.)

- **Topics:**

  1. k-digit normalized floating point numbers
  2. Solution of Nonlinear Equations
  3. Linear Systems
  4. Polynomial Approximation and Interpolation
  5. Numerical Differentiation and Integration
  6. (?) Differential Equations
  7. (?) Monte Carlo

- **References:** (on reserve at SERC reference desk)

  1. "Elementary Numerical Analysis", Kendall Atkinson, John Wiley, 1993.
  2. "Elementary Numerical Analysis: An Algorithmic Approach", third edition,S. Conte and C. de Boor, Mc Graw-Hill, 1980 (a paperback version was recently released).
  3. "Numerical Methods Using MATLAB", J. Matthews and K. Fink, Prentice Hall, 1999
  4. "Introduction to Applied Numerical Analysis", R. Hamming, McGraw-Hill, 1971 (in paperback 2012).
  5. "Scientific Computing, An Introductory Survey", 2nd edition, M. T. Heath, McGraw-Hill, 2002
  6. "Numerical Analysis", G. Dahlquist, A. Bjorck, N. Anderson, Prentice-Hall, 1974.

[NO RECITATION FIRST WEEK]