Instructor: D.W. Schwendeman (schwed@rpi.edu, 276-2647)

Inst. Office Hours: Wednesdays 1:30–3:00pm, Fridays 9:30–11:00am, or by appointment.

Teaching Assistant: Nour Al Hassanieh (alhasn@rpi.edu, Amos Eaton 424)

TA. Office Hours: TBA

Course website: Linked from my homepage: http://www.rpi.edu/~schwed


Outline:

- Part 1: Ordinary Differential Equations (ODEs)
  1. Introduction (Chapters 1 and 2). Classification of ODEs, initial-value problems vs. boundary-value problems, well-posed problems and problem stability.
  3. Boundary-value problems (Chapter 4). Shooting and finite difference methods; linear and nonlinear problems; higher-order methods.

- Part 2: Partial Differential Equations (PDEs)
  1. Introduction (Chapter 5). Classification of PDEs, canonical forms and well-posed problems, basics of finite difference methods, Fourier stability analysis.
  3. Hyperbolic Equations (Chapter 8). Finite difference methods for the wave equation and first-order equations, CFL stability conditions, behavior near discontinuities.

Grading Policy:

- Course grades will be based on exams (two in-class exams and a final exam) and regularly assigned homework (pencil & paper problems and computing problems).
- The weights for these items are 70% for exams and 30% for homework.