ECE 576/676
Computational Methods in Electrical Engineering (4)

Instructor: Professor Lisa M. Zurk, ECE Department, Portland State University, FAB 160-17, 503-725-5423, zurkl@cecs.pdx.edu; Office hours: by appt

Schedule (Fall 2008): TR 1200-1350, OND

Course Description: Students are introduced to advanced mathematical techniques applicable to electrical engineering. Content includes topics such as: optimization techniques, solution of partial differential equations, solution of eigenvalue problems, Fourier methods, vector space operations, and complex variable theory. Additional mathematical topics will be introduced as application examples at the discretion of the instructor. Some homework assignments will include creation of short computational programs in Matlab. Prerequisite: graduate standing.

Grading:
Homeworks: 30%
Mid-term #1: 20%
Mid-term #2: 20%
Final: 30%

Course Text: *Advanced Engineering Mathematics,* by Erwin Kreyszig, 9th edition, Wiley, 2006, ISBN 0-471-48885-2

Supplemental Text: *Advanced Engineering Mathematic,s* by Michael Greenberg, 2nd edition, Prentice Hall, 1998, ISBN 0-13-321431-1

Material Covered (Chapters reference Kreyszig):
- Solutions of ODEs (Chap 2 and Chap 5)
- Power series, Taylor series (Chap 15, 16.1)
- Fourier series (Chap 11)
- Partial differential equations (Chap 12)
- Numeric analysis: PDEs (Chap 19, 21.4-21.7)
- Eigenvalue problems (Chap 7.4-7.5, 8.1-8.2, 20.6-20.8)
- Mathematical statistics (Chap 25)
- Data analysis and probability theory (Chap 24)