Math 180 : Applied Analysis (Fall 2001)
http://www.math.hmc.edu/~hosoi/math180.html

Lecturer: Professor Peko Hosoi
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Lecture: TTh 8:10-9:25
Beckman B134

Office Hours: TBA

Grader: Tim Prescott

Text: Elementary Applied Partial Differential Equations
Richard Haberman, Prentice Hall, Third Edition

Grading: 25% homework; three exams, 25% each. The first two exams will
be given in class on October 9 and November 15. The final exam will be
scheduled during finals week.

Homework: You are encouraged to collaborate on your homework solu-
tions. If you work in groups, each person must write up solutions in his/her
own words. No late homework will be accepted. Your lowest homework
score will be dropped at the end of the semester.
**Week 1:** *Heat Equation.*
Derivation of the heat equation. Boundary conditions. Classification of PDEs.

**Week 2:** *Separation of Variables.*

**Week 3:** *Laplace’s Equation.*
Examples.

**Week 4:** *Fourier Series.*
Sine and cosine series. Odd and even parts.

**Week 5:** *More Fourier Series.*
Convergence Theorem. Gibb’s phenomena.

**Week 6:** Exam 1

**Week 7:** *Wave Equation.*
Vibrating strings and membranes.

**Week 8:** Fall Break.

**Week 9:** *Sturm-Liouville Eigenvalue Problems.*

**Week 10:** *More Sturm-Liouville Eigenvalue Problems.*

**Week 11:** Exam 2.

**Week 12:** Thanksgiving.

**Week 13:** *2D and 3D Problems.*

**Week 14:** *Infinite Domain Problems.*
Fourier Transforms. The heat kernel.

**Week 15:** *Review*

Final Exam