

# ENGR 6101, 8102, 8103 - Computational Engineering: Fundamentals, Elliptic and Parabolic PDE's Fall 2008 Syllabus

**Instructors:** Dr. Caner Kazanci

**Office:** Dr. Kazanci: 410 Driftmier Engineering Center, (706) 542-0863

**E-mail:** caner@uga.edu

**Course website:** <http://www.engr.uga.edu/~caner/08engr810X/>

**Office Hours:** 10:45am-11:30am Tuesdays and Thursdays, and anytime by appointment.

**Text:** *Numerical Methods for Engineers* by Steven C. Chapra and Raymond P. Canale

**Objective:** Formulation and analysis of numerical methods for algebraic and differential equation solutions.

**Topics:** Here's tentative schedule of topics to be covered:

ENGR 6101 - Topics	Dates
Error propagation, Numerical differentiation, Taylor series	8/19, 8/21
Algebraic equation solutions, Introduction to Matlab	8/26, 8/28
Numerical Integration	9/2, 9/4
Ordinary Differential Equation solutions	9/9, 9/11

Tentative exam date for ENGR 6101: 9/16

ENGR 8102 - Topics	Dates
Introduction to PDE's, transport equation	9/18
Flow equations, discretization types	9/23, 9/25
Gauss-Seidel, irregular boundaries	9/30, 10/2, 10/7
Mixed boundary conditions, sources and sinks	10/21, 10/23, 10/28

ENGR 8103 - Topics	Dates
1d diffusion equation, Discretization types	10/30, 11/04
Von Neumann Analysis, Crank-Nicholson	11/06, 11/11
Diffusion in 2 dimensions	11/18, 11/20
Mixed boundary conditions	12/2, 12/4

Tentative exam date for ENGR 8102 ad ENGR 8103: 12/9

**Grading:** The course grade for each module will be based on three homework assignments (3×20%) and an in-class exam (%40). There will be only one exam for the last two modules. Homeworks will be posted on the course website.

**HW Policy:** You need to show all your work on solutions of HW assignments. You will grade your own HW assignments during the first module. On the due date, right before you hand in your HW assignment, photocopy your entire solution. Hand in the original, but keep the copy. No modifications should be done to the copies. The day after the due date, a detailed solution set will be posted on the course website. You will grade your own HW, and hand in the graded copies. I will re-evaluate your solutions and assign a final grade. Each problem will be graded out of 3 points, according to the following grading criteria:

- 3/3 The solution is totally correct.
- 2/3 The solution is mainly correct, except for a few little mistakes.
- 1/3 The solution is partially correct, but there are serious mistakes.
- 0/3 The solution is totally wrong, or there is no solution.

Grading of the last two modules will probably be done by the instructor. However, depending on its success, grading of the last two modules may be the same as module 1.

**Collaboration:** You are encouraged to work together on homework assignments, but you should write your own solution. In other words, you are not allowed to see the actual paper that somebody else is handing in. This rule applies to computer codes and graphs as well. You may discuss formulas or algorithms with your friends; but you should write your own code. The only code you are allowed to see and modify is the one that is available through the course website. You should not send, receive, start as a template or look at your friend's code. Since your course grade is mostly based on HW grades, any penalty you receive will have a significant impact on your final grade. Therefore I strongly suggest that you pay extra attention to this matter.

**Academic Honesty** All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. The penalties for academic dishonesty are severe and ignorance is not an acceptable defense. All academic work must meet the standards contained in "A Culture of Honesty". Students are responsible for informing themselves about those standards before performing any academic work.

**Attendance:** Attendance is required. If you miss any classes, it is your responsibility to get notes from your classmates and make up for the class you missed.

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.