Math 44-23 TT Intro to Contemporary Mathematics, Fall 2008

Instructor: Dr. Karl Schaffer
Class meeting days: Tue/Thu
Class time 1:30-3:40 PM
Classroom: S-49
email: schafferkarl@fhda.edu

Office phone: 408-864-8214
Office**:** E-23A (see map on other sheet)
Office Hrs: : **Mon/Wed/ 5:00-5:50 PM, Tue/Thu 12:30-1:20 PM**
or by appointment
class web address: **http://nebula2.deanza.edu/~karl/**
(password to be given in class)

Course content: A survey of selected topics from contemporary mathematics, including problem solving techniques and finding patterns, introduction to combinatorics and the theory of networks ("graphs"), symmetry and tessellations, scaling and fractals, topology, voting methods, and number theory. Additional topics are to be selected by the instructor. The course will give students practice in all forms of mathematical communication, with reading assignments, writing assignments, and oral presentations.

Text: The Heart of Mathematics, 2nd Edition, by Burger and Starbird, Key College Press, required. We will study chapters 1,2, and 4-6, with additional handouts from the instructor.

See the HW listed at the class web site for each class.
Read section 8.4, we will go over it during the second class period.
Read and work all the problems at the end of chapter 1, #1-15, pg 28-32, by the end of the 2nd week.

REQUIREMENT: Students must have a scientific or graphing calculator, which they may use on all exams. All exams will be open book, open notes.

Grades: 90-100 A, 80-89 B, 70-79 C, 60-69 D, less than 60 F, based on:

20% Two exams (10% each), NO MAKE-UPS! Dates of exams:

> **Thu., Oct. 16,** Exam 1, on Ch. 1, Ch. 2, Ch. 8/voting, and other material covered so far.

> Exam 2 will be given out on **Th. Oct. 23** (Take-home) and will be due after 2 weeks on **Th. Nov. 6**.

> Lowest score on these two exams will automatically be replaced with final exam score, only if final is higher. (If not, no replacement will be made.) All exams are open-book, open-notes.

20% Short quizzes or other class assignments. These will usually be group assignments. You may drop your lowest score.

20% Homework assignments. Homework is assigned in each class, may be collected at beginning of week or your homework binder may be checked periodically (not all homework will be collected). Homework is graded for completion, not correctness. NO LATE HOMEWORK ACCEPTED. EVER! For full credit, you need only complete 80% of the collected assignments; keep assignments in a loose-leaf binder.

20% Written/Oral reports - 5% each.
> **First** is a writing assignment due third class session, **Tue., Sep. 30** - see page 2 of this sheet for description.
> **Biography** of a contemporary mathematician, written and oral report, due **Tue., Oct. 28**
> **Report** on an area of mathematics related to the course that sparks your interest, due **Th., Nov. 13.**
> **Final project**, subject to be decided by students, due **Tue., Dec. 2.**

20% Final Exam: mandatory, comprehensive, scheduled for: **Fri., Dec. 12, 1:45-3:45 PM**. No make-ups or early exams. All exams are open-book, open-notes.

Attendance. Due to the importance of class work and participation, you may miss 3 class sessions during the quarter; each class missed beyond three will result in your grade being lowered one letter. If you are late by more than 20 minutes or leave early by more than 20 minutes you will be marked absent for 1/2 class. You must participate fully in discussions and class activities to get full participation credit.

Some background on the instructor: Ph.D. and MA in Mathematics from UC Santa Cruz, undergraduate work at University of Chicago and University of Alabama. Grew up in New England and Alabama. Do research in the mathematics of "networks," and am very active in math education for K-12. I am interested in and will use collaborative learning and interdisciplinary learning techniques in the class. I am also a modern dance performer and choreographer, and company I co-direct does shows about math and dance, among other things. For more background on this see www.mathdance.org and/or www.schafferstern.org. For a recent online video story, see www.aip.org/dbis/, click on "MathDance."

Mathematical "autobiography." Due Third class date.
(Those of you who have taken a class from me before may turn in a previous autobiography with a page attached about your recent experiences. Please use a word processor.)

Write a "mathhematical autobiography." Think about experiences you have had doing mathematics, both in and out of school. Include at least one successful and one not-so-successful episode. You might write about teachers, particular math problems, courses, or real-life applications of mathematics that have affected you and of which you have strong recollections. Include the good, the bad, and the ugly, and be as entertaining as you like. This will give me an opportunity to get to know you a little better; it should also give you an opportunity to reflect on your own experiences with mathematics.

Please also include a statement as to when you took math most recently, which class it was, where you took the class, and how well you did.

You must write at least 600 words (about one page SINGLE-SPACED typewritten or two pages longhand. Do not use wide margins or point size larger than 12 point. (You should check the number of words using the "word count" command in most word processors – for example, in Microsoft Word, that command is found in the "Tools" menu.) For full credit write a little TOO much! (These will *not* be read to the class! Write about anything you feel comfortable about having the teacher read.)

Many, if not all of us have had particularly negative experiences with mathematics and especially mathematics teaching. Perhaps you can remember a specific incident which seems to have impacted your learning and study of mathematics since that time. Or your experiences might have been primarily positive and supportive: success in a difficult class, a teacher who acknowledged your skills at mathematics, an enjoyment in doing mathematics. Write about those experiences that have been most important to you in the greatest detail. Be specific and describe the circumstances and the people involved. Think about the later impact of your experiences - how do they still affect you today?

You might also want to think about how you actually use mathematical thinking in everyday life - diverse mathematical skills are used in building or designing or in doing craft work, estimating money or amounts, planning complex activities, collecting and organizing data. These activities might not necessitate the use of the quadratic formula, but they probably require good intuitions and understandings about geometric and quantitative knowledge. Write about activities you do which require this kind of mathematical insight.

I would particularly like to read about any cultural influences on your mathematical background. Have you learned ways of doing mathematics that you can identify as being from a culture other than the dominant one in this country? Did you begin learning mathematics in another country, and if so, what changes did you find when you moved here? Can you identify specific cultural influences on how you see your own mathematical knowledge and on your motivation to study mathematics?

Please do not simply list the classes you have taken and the grades received. I am much more interested in whether you we affected by the class, the teacher, and the experience, and in what ways. Describe in detail!

DIRECTIONS TO OFFICE