# Math 4040 -- Coordinating Seminar -- Spring 2008

## Teacher

**mike daven**  
(email = daven[at]msmc.edu, phone = 845-569-3265, snowline = 845-569-3500)

## Text

There is no required textbook, but the following books are listed as optional:

- *Mathematics: A Very Short Introduction*  

- *Mathematics through the Ages: A Gentle History for Teachers and Others*  
  -- the expanded second edition, not the first edition!

- *Extending the Frontiers of Mathematics: Inquiries into Proof and Argumentation*  
  by Edward Burger (Key College Publishing, 2007; ISBN = 1597570427)

These books each contain a sampling of topics and ideas that you will be using during the seminar for individual and group projects. I recommend that you buy *at least one* of these books, if not two or all three.

## Class Times

TH 12:45-2:10pm, Aquinas 307

## Office Hours

- Aquinas 50-H (MST extension)  
  W @ 10:00am-11:00am  
  H @ 11:30am-12:30pm  
  and by appointment

In this seminar, we will look at topics that appear in one or more of the following areas of mathematics: Discrete Math, Calculus, Probability, Statistics, Linear Algebra, Numerical Analysis, Number Theory, Geometry, History of Math, and Abstract Algebra. We will look for the connections between these fields.

**Objectives:** At the end of the course, students will have learned about...

... design theory.  
... discrete systems.  
... game theory.  
... inverses.  
... linear programming.  
... optimization.  
... recursive functions.  
... the theory of experiments.

**Check the schedule** for a detailed list of the topics we will cover.

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Your grade in this class will be determined by several homework assignments, a writing project, and a group project. *There will be no quizzes, tests, or final.*
There will be five graded **HOMEWORK SETS**, each worth 50 points, the lowest of which will be dropped. Each assignment will be announced at least one week before the due date. The length and difficulty of these assignments may vary. A completed homework assignment will consist of 1-2 problems per single-sided page, neatly typed, stapled, hole-punched, free of ragged edges, with the standard cover sheet. For these assignments, you are encouraged to work with other members of the class but the work you turn in must be your own. **Late or hastily-prepared homework assignments will not be accepted.**

Each student will write a **BIOGRAPHICAL SKETCH** consisting of a brief historical account of a specific mathematician and a problem they worked on. This component of your grade, totalling 100 points, will consist of: an initial proposal, progress reports, and a written paper. The entire writing project should be approximately 5 pages in length -- about 1-2 pages on the "history" and 3-4 pages on the "problem". Your mathematician and topic must be approved in advance. Before you begin writing, make sure that you understand the scope of your topic and that you will have suitable supporting material for the project. As a starting point, you should browse one or several of the optional textbooks.

For their **GROUP PROJECT**, each team will develop and present material on some topic in mathematics. This component of your grade, totalling 200 points, will consist of: an initial proposal, resource list, outline, written summary, and in-class presentation. As a starting point, you should browse one or several of the optional textbooks. More details will be announced in class.

**GRADING (500 points total):**

- **homework sets:** 200  (drop one)
- **biographical sketch:** 100
- **group project:** 200

*For each unexcused absence, your point total will be reduced by 3 points, even if no assignment is due.*

The grading scale will be as follows:

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I am working on the possibility of posting grades online using WebCT (Moodle?).

**HONESTY:** Giving or receiving aid in whatever form will result in action by the appropriate academic committee. Refer to the Student Handbook for further details.

**ALWAYS SHOW ALL WORK.** We are interested in more than just "the right answer"; we also want to emphasize the right *methods*. Your calculator is only a utility, and wherever possible, you will be expected to justify your answers. Partial credit will be given accordingly.

**ABSENCES:** Attendance will be kept. *For each unexcused absence, your point total will be reduced by 3 points, even if no assignment is due.* If I am contacted with an acceptable excuse before the date of any quiz or other assignment, a make-up can be arranged. Abuse of this policy makes life difficult for everyone involved.

A few things to note:

- **YOU ARE EXPECTED AND ENCOURAGED TO ASK QUESTIONS!**
- Mike's office is in Aquinas Hall, room 50-H (MST extension).
Feel free to come to office hours. If those above do not suffice, I will gladly arrange other times.

Please make me aware of any problems you are having or anticipate.

You can get a message to me at 569-3265, or by e-mail at daven[at]msmc.edu, with the following proviso: do not send email with unexpected attachments. If you do so, your message will be deleted unread.

Useful information will be posted from time to time at http://faculty.msmc.edu/daven/seminar/ -- check back frequently. Also check the resources on the links page, and possibly WebCT (Moodle?)

When you turn in an assignment on loose-leaf paper, staple as necessary, and remove any "ragged edges". In most cases, work that is assigned in advance must be typed.

Your notes and other papers should be organized in a 3-ring binder.

An important theme in my teaching philosophy, and I would hope in your learning philosophy as well, is the following:

It is not the responsibility of college students to know the right answers, but the right questions.

DISCLAIMER! Why do we study mathematics?!:

A small part of our purpose in this class will be to learn some basic mathematics. But if we are thoughtful about our present studies, we note that what we will be trying to learn goes much, much further. Specifically, we will be learning to think our way through difficult (and often tedious) problems. Though it is conceivable that you might never use the mathematics encountered here, if you successfully complete the class, I believe you’ll have proven to yourself that you are capable of enduring and overcoming an intellectual challenge.

For more on my "teaching philosophy", click here.

last updated Wednesday, January 23, 2008