

# Math 4583: Introduction to Mathematical Modeling

MWF 2:30-3:20, MSCS 203

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Course web page: <http://www.math.okstate.edu/~mermin/4583/>

MCM website: <http://www.comap.org/undergraduate/contests/mcm/>

**Office Hours** TBA or by appointment.

**Subject matter** Mathematical modeling is the art of using mathematics to describe and/or prescribe phenomena in the real (or an imaginary) world. (In general, the goal is to be “close enough” rather than completely correct.) We will focus on developing some common tools and strategies through studying and developing a few models of mild complexity.

**Relationship to other courses** A solid understanding of linear algebra and vector calculus is a prerequisite. We will deal with other advanced topics as they arise.

**Textbook** There is no assigned textbook for the course. Since you will be doing a lot of writing, you may wish to invest in a style guide (I like *Elements of Style* by Strunk and White). You will probably find that typesetting mathematics in your word-processor is extremely difficult; I recommend switching to a typesetting program like L<sup>A</sup>T<sub>E</sub>X (see the course webpage for links).

**Grading** Your course grade will be out of 500 points, assigned as follows:

- 50 Highway Slope Design assignment, due Friday, September 17
- 100 Resource Allocation paper, due Wednesday, October 13
- 100 Newspaper paper, due Monday, November 22
- 150 Contest problem, due Wednesday, December 15
- 100 Miscellaneous work and/or Intangibles (e.g., class participation)
- 60 15-minute presentations

**Collaboration** Mathematics is a collaborative venture; you are encouraged to discuss all assignments with friends and/or classmates. You may work in teams of up to three on all assignments except the Newspaper paper, provided that no two students are ever on the same team twice. Remember that you **must acknowledge anyone who helps you**.

**Philosophy** My intent is that this will not be a traditional lecture class; in fact, I am not expert in many of the topics that may arise. Please come prepared for informal discussion, or with quantitative questions that could spark it.

**Illness policy** If you cannot attend a class due to illness or another emergency, no documentation is necessary. If you aren't sure whether or not you're too ill to attend class, please see a doctor. If you need to miss *several* classes, let me know as soon as possible, so that I may plan how to accommodate the situation.

**Academic integrity** In addition to the more obvious forms of cheating, please remember that it's not okay to copy or paraphrase someone else's work without acknowledgement, nor to copy or paraphrase significant amounts of their work *even with* acknowledgement. If you're not sure where you stand, ask me before turning it in.

**Syllabus attachment** Please read the OSU syllabus attachment on the web at

<http://osu.okstate.edu/acadaffr/aa/syllabusattachment-Fall.htm>

This has a lot of important information, including instructions about disability accommodations. Please contact me privately during the first week of the course if you need accommodations as the result of a disability.