Math 410.1 **Spring 2009**

Professor: Dr. Martin Montgomery
Office: Stewart 332
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Email: mmontgomery "at" piedmont "dot" edu **(This is the best way to contact me!)**
Course Web Page: http://cyrus.piedmont.edu/users/mmontgomery/
Textbook: *Mathematical Modeling* by J. Berry and K. Houston
Time: Tuesday, Thursday 2-3:15.
Office Hours: MWF 11-12. Lots of time available by appointment (see schedule online)

Course Description: This course will explore the ideas and develop the techniques of applying mathematics to real world situations.

Grading:

Your grade in this course will be based on your performance on homework, two exams during the 16 week term, and a final project.

Assignments

Homework will be collected about once every two weeks (see attached schedule) at the beginning of class. Most assignments (unless otherwise indicated) will require the use of a computer; either to type up your solution for submission or in order to perform calculations. More details will be provided with each assignment.

Exams

There will be two in-class exams during the 16 week term. The exams will be composed of both a hand-written portion as well as a computer portion. Exam dates are provided on the course schedule (see last page). More information regarding the exams will be provided as we get closer to those exam dates.

Final Project

During our scheduled final exam time, you will present a summary of a final project. This will be based upon several weeks worth of work that you have done with a specific problem. More information will be given out with the assigned final project.

Attendance

Piedmont College is instituting (or rather, enforcing) a new attendance policy. Here it is:

Attendance, timeliness, and participation are required and part of your grade. More than the allotted number of absences for any reason will result in failure of the course. The maximum allotted number of absences is as follows:
Day classes meeting two times a week for entire semester: **4 absences**
Courses operating under a different format to be determined by the professor of the course. **All absences for participation in recognized school events (e.g., athletics, drama, field trips) will count against the announced absence policy**. *A request for consideration of an exception to this policy must be submitted in writing to the appropriate Dean.*

Letter Grades

The course is graded using the standard breakdown for letter grades, i.e. 90-100 for a letter grade of A, 80-89 for a grade of B, 70-79 for a grade of C, 60-69 for a grade of D, and F for 59 and below. Note that routine mastery of the material generally earns a letter grade of B or C. Earning a grade of A requires synthesis and creativity.

Homework	25%
Exam 1	25%
Exam 2	25%
Final Project	25%

Some Legal Disclaimer Stuff

Prerequisite: Calculus III (Math 213) or some similar course.

Course Objectives: By the end of the course, students should understand fundamental principles of:

- The different requirements, objectives, and analysis of various mathematical models
- Utilizing *Excel* in the formulation and solution of mathematical models.

Academic Integrity: The college imposes strict penalties for academic dishonesty, which is defined as follows

- **Cheating:** Intentionally using or attempting to use unauthorized materials, information or study aids in any academic exercise.
- **Fabrication** Intentional and unauthorized invention or falsification of any information or citation in an academic exercise.
- **Facilitating Academic Dishonesty:** Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.
- **Plagarism:** Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercies

Details and administrative procedures may be found in the Piedmont College Student.

Withdrawal: See student catalog or other supplementary material for policy and dates associated to withdrawals.

Students with Disabilities: Piedmont College makes every effort to provide reasonable and appropriate accommodations to students with disabilities. Accommodations must be coordinated through the Office of Counseling and Career Services by contacting the director at 1-800-277-7020 ext. 1259 or by email - kcutrell@piedmont.edu. Students are responsible for providing accurate and current documentation of their disability and for making a written request to the Director of Counseling and Career Services before receiving accommodations. Students with special needs (disabilities, problems, or any other factors that may affect their performance or that require special instructional strategies) should also make these needs known to the professor/instructor during the first class session.

Math 410 Lecture Schedule

Week	Tuesday	Thursday
0 Jan. 5–Jan. 9	No Class	Syllabus
1 Jan. 12–Jan. 16	Intro. to Modeling	Sensitivity Analysis
2 Jan. 19–Jan. 23	Population Models: Exponential Growth	Computer Solutions to Population Problems
3 Jan. 26–Jan. 30	Population Models: Logistic Models	More Computer Solutions Logistic Growth **Homework 1 Due**
4 Feb. 2–Feb. 6	Dynamic Systems	Computer Solutions to Dynamic Models
5 Feb. 9–Feb. 13	Population Dynamics	Computer Solutions to Population Dynamics **Homework 2 Due**
6 Feb. 16–Feb. 20	Iterated Functions	Computer Solutions to Iterated Functions
7 Feb. 23–Feb. 27	More Iterated Functions	Review for Exam 1 **Homework 3 Due**
8 Mar. 2–Mar. 6	Intro. to Modeling in Physics	**Exam 1**
9 Mar. 9– Mar. 13	**Spring Break**	**Spring Break**
10 Mar. 16–Mar. 20	Simple Projectile Motion	Computer Solutions to Motion
11 Mar. 23–Mar. 27	Planetary Orbits	The Moon's Orbit **Homework 4 Due**
12 Mar. 30–Apr. 3	Combinatorics and Probability	Geometric Distribution
13 Apr. 6–Apr. 10	Simulation	More Simulation **Homework 5 Due**
14 Apr. 13–Apr. 17	Optimization	More Optimization
15 Apr. 20–Apr. 24	Still More Optimization	Review for Exam 2 **Homework 6 Due**
16 Apr. 27–May 1	Final Project Discussion	**Exam 2**
17 May 4–May 6	**Final Project** May 5, 3–5 P.M.	