

PSTL 1006

Mathematical Modeling and Prediction

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Office Hours:
Monday, Wednesday,
Friday 1:30-2:15

Classroom:
Monday, Wednesday
and Friday,
Appleby Hall 303
2:30-3:20

Description

PSTL 1006 introduces students to the art of mathematical prediction through algebraic modeling and elementary probability theory. The class covers techniques of representing the behavior of real-world data with algebraic equations, including linear, polynomial, exponential and logarithmic functions. Students will learn to develop equations that accurately represent the behavior of real-world data. Problems are drawn from various disciplines of interest to CEHD majors. While students practice traditional algebraic methods, they will also use the spreadsheet program Excel extensively to investigate the behavior of data sets. The class will also strengthen students' ability to communicate and evaluate mathematical reasoning. This course satisfies the University Mathematical Thinking requirement.

Required Materials

- **College Algebra in Context**, third edition. Harshbarger and Yocco.
- **Scientific calculator** (your choice, anything with buttons that say log, ln, 10^x)
- **Excel spreadsheet program**. This is loaded on most computers along with other MicroSoft applications like Word. If you do not have a personal computer, please schedule time each week in one of the University computer labs so that you can complete your homework.

Classroom Etiquette

- No laptops may be used during class without the instructor's permission.
- Do not use classroom computers for activities unrelated to class. Checking email or web surfing in class may result in a 5 point reduction of your homework grade for each case.
- Electronic devices such as cell phones and music players must be turned off during class.
- Listen to your classmates carefully and give them useful but supportive feedback on their mathematical ideas.

Learning Goals

- Fit an appropriate equation to data using algebraic techniques and using Excel.
- Evaluate how well the equation fits the data.
- Give mathematical evidence for your ideas.
- Represent real-world situations with equations that you can solve.
- Learn basic probability theory including counting methods and conditional probability.

Pace of Class

The class moves quickly. You should get most of your homework questions answered outside of class. We will have time to discuss only a few homework questions in class each day. Please find study partners and use the MCAE tutoring center that is described below to help you complete homework problems outside of class.

Grading

Course grades are based on 1000 total points. The points are distributed across assignments as follows:

Homeworks and in-class assignments	140 points
27 homeworks, 4 points each	
30 turned in, but 3 are dropped	
Three quizzes on probability and counting	
10 points each	
In-class assignments	
2-5 points each, can be used as extra credit	
towards the 140 point maximum of this category	
Models	210 points
(7 models, 30 points each)	
Tests	450 points
(3 tests, 150 points each)	
Final Exam	200 points
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Total	1000 points

Final Grades are assigned according to University grading policy:

<u>Grade</u>	<u>Points</u>	<u>Minimum percent needed</u>	<u>Grade point equivalent</u>
A	950	95	4.00
A –	900	90	3.67
B +	870	87	3.33
B	830	83	3.00
B –	800	80	2.67
C +	770	77	2.33
C	730	73	2.00
C –	700	70	1.67
D +	670	67	1.33
D	650	65	1.00
S	700	70	None
F	<650	< 65	0.00
N	<730	< 73	0.00

Late Assignments

There are no make-ups on tests except in cases of religious holidays, military service or University-sponsored events. If you must miss a test for one of these three reasons, please make arrangements at the beginning of the semester or as soon as you know about the absence. If you miss a test for a different reason, you cannot make-up the test. Your final exam score will be substituted for the missing grade.

Homeworks, models and quizzes can be made-up in cases of serious problems with permission of the instructor. However, these assignments can be no more than 1 week late. If the assignment is submitted more than a week late, it will receive no more than half credit.

Math Tutoring

You can get help on your assignments during the instructor's office hours. Also, you can get tutoring in math and many other subjects at the Multicultural Center for Academic Excellence (MCAE). MCAE is housed in a the building called Klaeber Court in Dinkytown, at 320 16th Avenue SE, Minneapolis, MN 55455, 612-624-6386. See information on their tutoring schedule at:

<http://www.mcae.umn.edu/acadsupport/index.html>

UNIVERSITY POLICIES

Student Conduct

The University of Minnesota Student Conduct Code governs all activities in the University, including this course. Students who engage in behavior that disrupts the learning environment for others may be subject to disciplinary action under the Code. This includes any behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities. The Student Conduct Code is available at http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html

Disability Accommodations

Reasonable accommodations will be provided for students with disabilities on an individualized and flexible basis. Disability Services determine appropriate accommodations through consultation with the student. See the instructor for information about contacting Disability Services or call DS Student Services at 626-1333.

Harassment

The University of Minnesota is committed to providing a safe climate for all students, faculty, and staff. All persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. Reports of harassment are taken seriously, and there are individuals and offices available for help. Contact the Department Chair, 206 Burton Hall, 626-8705, or the Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 624-9547.

Complaints Regarding Teaching/Grading

Students with complaints about teaching or grading should first try to resolve the problem with the instructor involved. If no satisfactory resolution can be reached, students may then discuss the matter with the Department Chair, 206 Burton Hall, 626-8705, who will attempt to mediate. Failing an informal resolution, the staff in the PSTL departmental office will facilitate the filing of a formal complaint.

Complaints Regarding Advising

Complaints Regarding Advising: Students with complaints about advising should first try to resolve the problem with the advisor involved. If no satisfactory resolution can be reached, students take the matter to CEHD Student Professional Services, 110 Wulling Hall, 625-6501.

University Grading Standards

A - achievement that is outstanding relative to the level necessary to meet course requirements.

B - achievement that is significantly above the level necessary to meet course requirements.

C - achievement that meets the course requirements in every respect.

D - achievement that is worthy of credit even though it fails to meet fully the course requirements.

S - achievement that is satisfactory, which is equivalent to a C- or better.

F (or N) - Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I (see below).

I - (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., hospitalization) a student is prevented from completing the work of the course on time. Requires a written agreement between instructor and student.

Scholastic Dishonesty

Scholastic dishonesty is defined by the Office for Student Conduct and Academic Integrity as "submission of false records of academic achievement; cheating on assignments or examinations; plagiarizing; altering, forging, or misusing a University academic record; taking, acquiring, or using test materials without faculty permission; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement". Scholastic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.

Plagiarism

Plagiarism occurs when students turn in work that is not their own. According to the Office of Student Conduct and Academic Integrity, when you "present the ideas, words, and work of someone else as your own, you have plagiarized. Any information, data, or expressions coming from someone else or another source must be properly cited by you. If there is any doubt in your mind regarding what needs to be cited, it is your responsibility to seek clarification from the instructor." More information on plagiarism is available at <http://www1.umn.edu/oscai/integrity/student/index.html>.

Credits and Workload Expectations

For undergraduate courses, one credit is defined as equivalent to an average of three hours of learning effort per week necessary for an average student to achieve an average

grade in the course. For example, a student taking 15 credits should require approximately 45 hours of work each week.

Absence for Religious Observance

The University of Minnesota permits absences from class for participation in religious observances. Students who plan to miss class must:

1. Inform instructors of anticipated absences at the beginning of the semester;
2. Meet with instructors to reschedule any missed labs or examinations; and
3. Obtain class notes from other students.

Instructors are required to assist students in obtaining course materials and assignments distributed during class sessions and to make arrangements for taking missed examinations.