MATH-217 Data Exploration and Analysis Fall 2007 Eric Kuennen 3 credits

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Instructor: Dr. Eric Kuennen
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Class Time/Place: **Section 1:** M,W, F: 9:10-10:10 in Swart Hall 3
Section 4: M,W, F: 1:50-2:50 in Swart Hall 2

Office Hours: My official office hours are: M, W, F: 10:20-11:30 and 3:00-4:00
However, when I am not teaching a class, I am usually in my office and available. My class schedule is posted on my door. Feel free to stop by at any time, or make an appointment.

Course Webpage: (D2L) https://uwosh.courses.wisconsin.edu/

Course Description: This course uses activities and experiments to develop ideas about analyzing and reporting data, statistical techniques, probability and simulation. Most activities will involve data gathered from real life situations. This course is designed to provide you with the skills to interpret statistical claims, and provide you with knowledge you will need to teach probability and statistics to elementary school children.

Prerequisites: Mathematics 110 with a grade of C or better.

Textbooks: *Data Exploration and Analysis: Course Materials for Math 217.* Prepared by Dr. Szydlik, Dr. Oktac, and Dr. Collier.

Excursions in Modern Mathematics by Tannenbaum and Arnold, Prentice Hall Publishers. (You want the thin, paperback version edited by Jennifer Szydlik)

Both of these titles are available only from the UWO bookstore.

Calculators: Scientific, statistics, and/or graphing calculators will not be needed in class, and will **not** be allowed on quizzes or exams. You may use a basic five-function calculator for addition, subtraction,multiplication, division and square roots.

Course Objectives: This course is a *mathematics content* course that is designed for elementary teachers. The mathematics content includes material that you may someday teach in your own classes, and also material that will deepen your understanding of the mathematics you may teach. Specifically we will learn about proportions and sampling, surveys and clinical studies, data displays, descriptive statistics, distributions, relationships among data sets, linear regression, counting techniques, permutations and combinations, probability simulations, probability calculations, random variables, the binomial distribution, the normal distribution, the central limit theorem and inference.

This course is designed to give you experience in thinking mathematically. This means that you will solve problems, make conjectures, make arguments, learn to listen and evaluate the claims of others, and communicate your findings and ideas. In this course you will develop written and oral communication skills and explain mathematical ideas using appropriate language, notation, arguments and models.

Our approach will be investigative and center on problem-solving. Another goal of this course is for students to become more confident in tackling difficult problems and in assessing the quality of their mathematical arguments *independently* from the instructor. **The problems you work on in this class will not be just like the examples you've seen, and will not be immediately solvable.** You will need to spend more time that you might expect simply understanding what the problem is asking for! Most problems will require you to collect data from several examples that you choose yourself, or investigate definitions word by word.

Course Format: Class time will be spent in working on interesting problems in small groups and discussing problem solving ideas and solutions as a class. Sometimes you will be asked to write up those ideas and solutions for me outside of class. We will also spend time in class discussing assigned reading and exercises, and short lectures on new topics. Students will be expected to present solutions to problems, make conjectures and arguments, and participate in class discussions. This format will give you the opportunity to practice skills that you will need to be a teacher: listening and making sense of other people's mathematical ideas, explaining your ideas to others, and helping others understand mathematics.

Expectations/attendance: You are expected to attend every class session, complete assigned readings, problems sets, and projects outside of class. Expect to spend **6 to 9 hours** per week outside of class engaged in mathematics. It is very important that you are in class to participate in the problems and contribute to the class discussion. If you must miss a class session, I expect you to notify me in advance. If you are absent from class, you are responsible for the material covered. Arrange to copy another student's notes and be informed of any announcements made during class. Quizzes, graded group work or other in-class assignments may not be made up if you are absent from class.

Homework/Quizzes: Problems for you to practice outside of class will be assigned at each class. Success in the course requires that you do the homework. Actually "doing" mathematics is the only way to understand mathematics. I urge you to work in groups outside of class. If your group is having difficulty with the homework, come to me for help.

In addition, there will be out-of-class assignments and in-class quizzes based on the homework given periodically as announced in class. No late assignments or make-up quizzes will be allowed.

Projects and Writing Assignments: You will be asked to submit a writing assignment on average every two weeks. This may be a report on a problem or problems solved individually or in group work, or a larger group project that involves data collection.

You are encouraged to work together on written assignments. Learn from each other, discuss the problems and concepts, and investigate proposed solutions with your classmates. However, you then must be able to write up the solutions on your own and in your own words. Some writing assignments will be group projects. In this case, the written work must be the collective work of the members of your group. It is your responsibility to ensure that each member of the group understands all of the solutions completely. If a student assigned to your group does not participate in the problem-solving process and the writing of the group project, you should discuss this with me as a group.

Exams: There will be 3 exams given, on **Friday Oct 5**, **Friday Nov 9** , and **Friday Dec 14**. Coverage will be announced in class prior to the exam. Except for illness documented with a written medical report or extreme emergencies with prior or timely notification, there are no provisions for taking exams at any but these regularly scheduled times.

Grading: Your grade in this course will be based on:

homework, problem sets and quizzes	20%
writing assignments (individual and group projects).	20%
3 exams	20% each

To calculate your grade at any point in the term, use the following scale. I reserve the right to lower these percentages, but they will not be raised.

A	90-100	B	80-85	C	70-75	D	60-65
AB	86-89	BC	76-79	CD	66-69	F	0-59

Grades are based on performance, not need. No "extra" credit will be offered.

Incompletes: According to the Student Bulletin, an Incomplete grade can be assigned only when a student is unable to complete the course work because of illness, injury, or other extenuating circumstances beyond the student's control.

Dropping the course: According to the Student Bulletin, the primary responsibility of dropping a class resides with the student. **Sept. 18th** is the last day to drop with a full refund. **October 19th** is the last day to withdraw from the course. A student wanting to drop a course after that deadline may appeal with a REQUEST FOR LATE DROP FORM describing relevant extenuating circumstances beyond the student's control.

Academic Misconduct: Any form of academic misconduct including cheating on a quiz or exam, or in any way seeking to claim credit for the work or efforts of another person will be dealt with in accordance with system policy UWS 14, as referred to in the UW Oshkosh Student Discipline code. (http://www.tts.uwosh.edu/dean/studentdisciplinecode.html) Penalties that may be imposed include a failing grade for the course, disciplinary probation, and expulsion from the university.

Hints:

- Don't misuse the answers in the back of the book. Do not cheat yourself by looking first at the answer to see how to do the problem. This will not help you practice doing problems on your own like you need to do on the exams and in the real world.
- Merely showing up and completing the course is not sufficient to pass my classes; you must demonstrate on your exams that you have gained a basic understanding of the material.
- Don't wait until you have fallen behind to seek help from me. This course will contain new and difficult ideas and it is always worthwhile to discuss homework or issues you have with the course with me. I interpret such consultation as a sign of strength and interest.
- Let me encourage each of you to spend time with me during office hours. Good students take advantage of the opportunity for one-on-one time with their instructors. We can talk about your course concerns, about problem assignments, about quizzes and exams, or explore some aspect of the course that you find exciting or challenging or frustrating! My time is your time during office hours. Each of you is welcome!
- I welcome your feedback on how the course is going for you. In order to encourage your comments, both positive and negative, I have set up a Feedback Forum on Desire2Learn™, where you may share your thoughts with me and with your classmates anonymously at anytime. I will check this forum regularly and respond to your suggestions where possible.