

# MATH 110: Topics in Mathematics, Statistics

MWF Noon - 12:50 PM, 359 Swords

## Syllabus – Fall 2008

**Instructor:** Prof. David Damiano, 341 Swords, 793-2476/3374, [ddamiano@holycross.edu](mailto:ddamiano@holycross.edu)

**Office Hours:** Tuesday 1 - 2 PM,  
Wednesday 9 - 10 AM,  
Thursday 11 AM - Noon,  
Friday 9 - 10 AM, 11 AM - Noon,  
and by appointment.

**Course Home Page:** <http://mathcs.holycross.edu/~dbd/math110/math110.html>

**Course Materials:** (available in the College Bookstore): *Statistics, Fourth Edition*, by David Freedman, Robert Pisani, and Roger Purves. (Either new or used will do, just be sure it's the 4th edition.)

**Prerequisites:** The prerequisites for this course are four years of high school mathematics through trigonometry or pre-calculus. Calculus is not a prerequisite for this course.

**Intended Audience:** MATH 110 is designed for non-majors and fulfills the mathematics common area requirement. *NOTE:* This course does NOT fulfill either the statistics requirement in economics or in psychology nor is it the equivalent of the upper level statistics course in mathematics. Students who have taken calculus at Holy Cross or have received advanced placement credit in mathematics do not receive an additional mathematics common area credit by taking this course.

**Topics:** We will follow the text closely and cover material in each of the eight parts of the text: I. Design of Experiments, II. Descriptive Statistics, III. Correlation and Regression, IV. Probability, V. Chance Variability, VI. Sampling, VII. Chance Models, and VIII. Tests of Significance.

**Approach:** The text and the course are designed to introduce you to standard, important topics in statistics with an emphasis on developing a conceptual understanding of the material. The text introduces and expands upon topics by the use of both real world and hypothetical examples. The examples are drawn from a number of different areas in the sciences and social sciences. (It requires no particular background in either area.) As you will find out, the calculations that you will do in this course only involve techniques from Algebra II and pre-Calculus. Relatively few different types of calculations make an appearance in the course. There will, however, be a variety of interpretations of these calculations depending upon the context.

**Class Format:** Classes will consist of a mix of lecture and informal in-class activities. Some time in class will be devoted to answering questions about homework.

**Calculators:** It will be useful to have a graphing calculator for this course both to do rudimentary graphing and to do algebra. Any graphing calculator that you are comfortable with should suffice. If you are purchasing a calculator for this course it does not have to be a high-end calculator. In fact a TI-83 would suffice.

**Grading:** Your total course percentage will be made up from homework, participation, quiz and exam grades as follows:

Homework	10 %
Class Participation	5 %
Quizzes (6)	20 %
Hour Exams (2)	15 % each
Final Exam	35 %
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Total	100 %

You may drop 2 quiz grades for a total of 4 quizzes that count for credit. Each graded assignment, quiz and exam will receive a numerical score which will contribute to the appropriate percentage. At the end of the semester, total course percentages will be used to determine final grades. I do not use an absolute scale to determine letter grades.

**Academic Honesty:** The Department of Mathematics and Computer Science adheres to the College's policy on Academic Honesty, which may be found on page 13 of the 2007-2008 College Catalogue. In addition, the department has formulated the attached statement intended to amplify the policy as to how it might apply in mathematics and computer science.

**Quiz/Test Schedule (9/3/08):**

Any changes to the schedule of assignments, quizzes, or exams will be announced in class. Homework is usually due on Friday, the day of the quiz. Quiz and test questions will be similar to homework questions. There will be an evening review session before each hour exam. The material to be covered on a quiz or hour exam will be announced one week before the quiz or exam.

- Quiz 1: Friday, September 12.
- Quiz 2: Friday, September 26.
- Hour Exam 1: Friday, October 3.
- Quiz 3: Friday, October 17.
- Quiz 4: Friday, October 31.
- Hour Exam 2: Friday, November 7.
- Quiz 5: Friday, November 21.
- Quiz 6: Monday, December 8.
- Final Exam: Tuesday, December 16, 2:30 - 5:30 PM. (Comprehensive exam.)

**Learning Tips.** Here are several suggestions to help you learn statistics.

- In class: Take careful notes. If you don't understand an idea or point being made or calculation, ask about it. We have plenty of time to answer questions but you must ask them. When opportunities arise to talk in groups or present material at the board, take advantage of them. Talking about mathematics is an important way to formulate your understanding of the concepts.
- Out of class: Reread your class notes as soon after class as possible. Summarize your notes for the next class and reread your summaries to prepare for the next class. Read the text before attempting assignments. Mark up the text not just by highlighting but by commenting about concepts and calculations in the margins. Rewrite ideas in your own words and fill in the gaps in the text's calculations. Also, note things that you don't understand so that you can ask about them in class.
- Using the Book: While lengthy, the text takes pains to explain concepts and examples in detail and in language that is easy to understand. However, it is still necessary to pay attention to the details of arguments. The lectures are intended to complement the reading, not replace it, so you should always plan on doing all the assigned reading. You should do the assigned reading in a timely matter, not leaving the reading till the last minute.
- Homework: The goal of assignments is to help you develop your understanding of the material. This is accomplished both by basic calculations which help to become fluent in the symbolic language of statistics, and by more open-ended thought problems which allow you to explore ideas. You should attempt homework problems *after reading the text and your notes*. The least effective way to learn the material is to parrot examples in the text that appear to be close to a particular homework problem. You may also find it helpful to discuss homework problems with other students in the class. It is, however, essential that you write up your own solutions and do not copy those of anyone else.
- Office Hours: If you find that you have additional questions that you would like to ask outside of class, which is quite common in statistics, please see me in office hours. While I'm pleased to speak with students about statistics any time, it's important for your benefit that you seek assistance before assignments are due.
- Quiz and Test Preparation: There will be 6 quizzes during the semester. These will consist of 2 or 3 questions and will cover material introduced since the last quiz or test. These will be given at the beginning of class, so it is important that you have your questions answered prior to that class. There will be 2 in-class hour exams that will cover the material covered since the preceding test. You should begin studying for tests at least one week in advance; you should organize your studying so that you progress through all the material that is covered on the test; you should study from the text, study guide and class notes; and you should make use of office hours. It is important to break up your studying into manageable chunks of time that are spread over each day of the week before the test. The final exam is a three-hour comprehensive exam, so you should allow more time to study for the final than you do for hour exams.