Math 231 Mathematical Statistics I Fall 2005
Class meetings: M, W, F 11:25 a.m. to 12:30 p.m. in PPHAC 117
Instructor: Kay B. Somers
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Office Hours: Monday, Wednesday, and Friday, 1:30 to 2:30 p.m.; Tuesday 1:00 to 2:00 p.m.
and by appointment.


Course goals: After completing this course, successful students will:

- be able to apply graphical and numerical approaches to summarizing and characterizing a set of measurements;
- learn to make transitions between verbal descriptions, symbolic representations, and numerical values of probability;
- understand a variety of probability distributions and real world situations that give rise to them;
- understand the role of probability in statistical inference;
- understand the basic elements of estimation and statistical inference; and
- be able to explain clearly, both orally and in writing, how the results of their probability and statistical analyses relate to the context from which they were obtained.

Course topics: An understanding of how we collect, present, analyze and interpret data is a critical part of every day life and of many very important professional and personal decisions. The study of probability and statistics addresses situations involving uncertainty, data analysis, inference, and decision making. The course will cover most sections in chapters 1 through 4 and parts of chapters 6 through 10. The topics to be covered include the following: histograms, measures of central tendency and variability, probability and probability distributions, discrete random variables, continuous random variables, the Central Limit Theorem, point estimators, confidence intervals, and an introduction to hypothesis testing.

Homework: Since mathematics can only be learned and understood by doing, readings and homework problems will be assigned during each class and usually will be discussed during the next class. You are expected to come to class prepared to explain problem solutions and ask questions. During many classes there will be short questions at the beginning of class for you to answer, which I will collect and grade. Most will be based on the assigned reading, the previous lecture or on the homework.

The homework will involve a variety of types of activities, including some writing assignments and some longer assignments that could be called projects. Some of these outside–of-class assignments will be collected and graded. In all homework assignments that will be graded, you will be told in advance that the work will be collected. Late homework will be accepted only if you are absent due to illness or emergency. You are encouraged to study and work together on
ungraded assignments; however, all homework that is to be collected and graded is to be done individually unless otherwise noted.

Academic Honesty: For graded homework assignments, you may use your class notes and any books or library sources. However, you may not use the help, orally or in written form, of any individual other than your instructor unless it is specifically a group assignment, and you may not copy someone else’s work or allow someone else to copy your work. If an assignment is completed by a group of two or more people, each person who contributed to the work must put his or her name on the work. The College academic honesty policy appears in your Student Handbook; you are expected to be familiar with it. The Academic Honesty Policy Guidelines specific to mathematics classes are clarified at the end of this syllabus. They apply to work done outside of class as well as to in-class quizzes and tests. Please read them carefully. If you are unsure about the propriety of a particular procedure or approach for completing assigned work in this course, please consult with your instructor before continuing with the assignment.

Grading: In addition to homework and projects, there will be three hour exams, and a mandatory, cumulative final exam. Your course grade will be computed as follows:

- graded homework, daily questions, projects and class participation 30% of your grade
- three hour exams 45% of your grade
- cumulative final exam 25% of your grade

The three hour exams are tentatively scheduled for the following dates:
  - Wednesday, September 28
  - Friday, October 28
  - Friday, December 2

You are responsible for knowing about any changes to the test dates made during class.

Attendance: Students are required to attend all classes. Some of the statistical concepts will be demonstrated through class activities done in small groups during class. In order to participate, you must be in class. Warning: This course will involve an interactive classroom, with significant participation expected on your part.

You are also responsible for obtaining all class handouts and keeping them organized. Students should inform the instructor of any unavoidable absence in advance, if possible. Make-up exams will be given only in the case of a documented illness. You are encouraged to ask questions in class and to see Dr. Somers for extra help outside of class.

Classroom etiquette: You need to come to class prepared. This means that you have carefully read the assigned material, you have worked (seriously) on the assigned problems and you have your notebook, your textbook, and your calculator with you. You are ready to ask and answer questions in class and to work with your classmates on any in-class group activities. This classroom needs to be a place where everyone feels comfortable asking and answering questions; you are expected to treat everyone in class with respect. You need to turn off your cell phone and
any other electronic devices (except calculators, of course) and put them away during class. Finally, you are expected to be on time for class, to stay until class is over and not leave the class unless there is an emergency. (It is very disruptive to everyone, but especially to your instructor, to have people walking in and out of the classroom.)

**Technology:** We will use the computer programs *Maple* and *Excel* to help explore, graph, understand and solve some problems in this class. (These programs are on Moravian’s campus network.) You will also need a graphics calculator for exams and homework assignments.

**Special Accommodations:** Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Learning Services Office as soon as possible to enhance the likelihood that such accommodations are implemented in a timely fashion.

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**ACADEMIC HONESTY POLICY GUIDELINES**

**MATHEMATICS COURSES**

The Department of Mathematics and Computer Science supports and is governed by the *Academic Honesty Policy of Moravian College* as stated in the Moravian College Student Handbook. The following statements will help clarify the policies of members of the Mathematics faculty.

In all homework assignments which are to be graded, you may use your class notes and any books or library sources. When you use the ideas or thoughts of others, however, you must acknowledge the source. For graded homework assignments, you may not use a solution manual or the help, orally or in written form, of an individual other than your instructor. If you receive help from anyone other than your instructor or if you fail to reference your sources you will be violating the *Academic Honesty Policy of Moravian College*. For homework which is not to be graded, if you choose, you may work with your fellow students. You are responsible for understanding and being able to explain the solution of all assigned problems, both graded and ungraded.

All in-class or take-home tests and quizzes are to be completed by you alone without the aid of books, study sheets, or formula sheets unless specifically allowed by your instructor for a particular test.