Math 231   Mathematical Statistics I   Fall 2010

Class Meeting: MWF 11:45-12:55 PPHAC 330

Instructor: Nathan Shank

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Office Location: PPHAC 219

Office Hours: Tuesday: 8:30 - 10:30 and 1:30 - 2:30, Friday: 9:00 - 10:00. Other times by appointment.

Text: *Mathematical Statistics with applications,* Wackerly, Mendenhall III, Scheaffer, 2008, Seventh Edition, Duxbury Thomson Learning.

Course Goals: After completing the 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 value of probability;

- understand a variety of probability distributions and real world situations that give rise to them;

- understand the connection between probability and statistical inference;

- understand the basic elements of estimation and statistical inferences;

- be able to explain clearly, both orally and in writing, how the results of their probability and statistical analysis relate to the context from which they were obtained;

- understand the influence statistics and mathematics has on society.

Course Topics: Throughout the course, the student will learn to collect, analyze, interpret and present numerical and descriptive data. This is something that is vital in preparing student to make sound professional and personal decisions. Data analysis, inferences, and decision making are situations which probability and statics address. The course will cover chapter 1 through 4 and parts of chapters 6 through 10. The topics to be covered include but are not limited to 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.

Assignments/Assessment:

- Homework: As you know math is not a spectator sport. You need to practice what you learn. Homework will be assigned weekly and it will be collected at the beginning of class on Wednesdays. First attempt at homework should be done on your own. If you still need assistance you may ask for a hint from a classmate or work on the problem together. However acquiring an entire solution from a classmate in not acceptable. Homework is to be written up individually. Any collaboration must be properly documented. If two or more homework sets look similar, no points will be awarded for the entire homework set (with no warning). Please see the section on academic honesty policy for more information. You are always welcome to come to office hours to see the instructor. Late homework will not be accepted for a grade. Homework should be neatly written on stapled, lined notebook paper. If you need paper, please see me.

    - Homework should be neat, legible and on clean paper. Please DO NOT include your scratch paper. Your final version of your homework should NOT be your first draft.
    - You should present your homework in the order they are assigned. It should be clear where one problem ends and the next begins.
    - You must show your work. Just supplying an answer will receive no credit. You are grading on your understanding of the tools to SOLVE a problem, not the final answer.
    - Your name and date should be on the top of the first page. If there are multiple pages, they should be stapled.
    - Homework is to be turned in at the beginning of class on the due date. No late homework will be accepted for a grade.

- Quiz: Quizzes may be given at any time. Quizzes can not be made up.

- Presentation: You will be required to construct and present a MAPLE applet to the class. Please see the handout on the *Random Variable Applet* for more details (distributed later).

- Exams: You will have 3 exams and a cumulative final exam. These exams can not be made up except under extreme circumstances with appropriate documentation, for example a doctors note or an accident report. If a student is going to miss an exam for an extenuating circumstance, they must notify the instructor at least one full week before the exam date. If a make up exam is approved, an individual exam will be made, differently from the class exam, and administered on the next available day. The three exams are tentatively scheduled for Friday, October 1, Wednesday October 27, and Monday November 22. The final exam is scheduled for Monday, December 13, 1:30 - 4:30p.m.

Grading: Final determination of your course grade is subject to the discretion of the professor of the course. You are responsible to keep track of your own grade. Grades will be computed as follows:

Homework, Quiz	40%
Tests	30% total
Presentation	10%
Final Exam	20%

Class Structure: Class will consist of lecture, group work, individual work, and problem sessions. Please come to class prepared with you text, notes, and calculator everyday. Please be prepared to participate in class. Class will start promptly at 11:45, and class will not end prior to 12:55. Please turn off your cell phones prior to the start of class.

Attendance: Attendance will be taken everyday. There is a very strong correlation between attendance and grades. In order to understand the material, you need to be present in class. Group work also requires everyone to participate. Any student missing more than three classes will lose two percentage points off their final grade for each additional absence. Remember that no late homework or quizzes are accepted.

Academic Honesty: For graded homework assignments and projects, you may use your class notes and any books or library sources except a solutions manual. Any resources you use must be documented at the top of the homework assignment. As an example if you get help from the Tutor Center for problem 4 only, please write "Help with problem 4 from Tutor Center". No points will be deducted for honestly acknowledging help. However if you do not document any appropriate resource this is considered cheating.

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 reiterated at the end of the 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, please consult with your instructor before continuing with the assignment.

Special Accommodations: Students with disabilities who believe that they may need accommodations in their 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.

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 Students 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 thought 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.