Elementary Statistics MATH 107 Spring 2006

Class Meetings: MWF 12:50 – 2:00 pm.
Instructor: Nathan Shank
E-mail: menbs01@moravian.edu

Required Text: Peck, Olsen and Devore, *Introduction to Statistics and Data Analysis,* 2nd edition, Duxbery, Pacific Grove, CA 2001.

Course Goals: After completing this course, successful students will:
- have an understanding of how data is collected and gain experience collecting their own data sets
- be able to effectively summarize data using graphical displays, and interpret data and draw conclusions based on graphical displays of data
- understand that the purpose of collecting and analyzing data is to answer questions and make informed decisions
- understand the role of probability and uncertainty in data analysis
- be able to explain clearly, both orally and in writing, how the results of statistical analyses relate to the context from which they were obtained
- learn to think critically about data and the results of data analyses that occur in their everyday lives
- be able to use technology appropriately as a tool for quantitative analysis

Course Topics: Throughout the course, the student will learn to collect, analyze, interpret and present numerical and descriptive data. The topic covered include collecting data sets, graphically methods for describing data, numerical measures for data, normal distributions, regression and correlation, sampling and design of experiments, basic probability theory, parameter estimation, confidence intervals and inference and tests of hypothesis. These topics are chapters 1 through 10 of the text.

Class Structure: Class will start promptly at 12:50. Class will consist of mostly lecture with occasional seat or board work. Please turn off your cell phones prior to the start of class.

Class Participation and Attendance:
Class participation is very much encouraged and appreciated. Attendance will be taken at each class. I understand that there are circumstances that you must miss class, however it is your responsibility to find out what you missed and get any assignments from classmates. Missing 3 classes in a semester is not acceptable.

Assignments/Assessment:
1) **Reading:** During each class, I will assign material to read for the following class. Please read the assigned sections so that you may follow the material.
2) **Homework:** Homework problems are assigned each class. They are listed on the syllabus schedule. These problems must be done on your own. Homework problems will be collected and count as part of your grade. Doing homework problems will prepare you for the tests.

3) **Quizzes:** There will unannounced quizzes during the semester. These can be given any time during class. Quizzes can not be made up. The quizzes will be timed and are due at the end of the timed period regardless of when you arrived to class.
4) **In Class Test:** There will be 2 in class test given on Friday, February 17, and Wednesday, March 29. Test problems will be similar to homework and class problems.
5) **Written Project:** There will be 1 written project. More details will be given at a later date. See the sheet on the Bivariate project.
6) **Cumulative Final Exam:** There will be a cumulative final exam given on the date set by the registrar. Details will follow.

Grading: You should keep track of your grades on the last page of you notebook. The grades will be computed as follows:

Homework	20%
Quizzes	10%
Test 1	15%
Test 2	15%
Written Project	15%
Final Exam	25%

Calculators and Technology: You will need to have a calculator to use for this class. Please bring it and your book to each class. You may use it on all tests, quizzes and homework problems. Excel or other statistics packages may also be used on homework and the written project. I will provide instruction for the TI-83 during class. If you need instruction for a different calculator, it must be done outside of class time.

Academic Honesty: For graded homework assignments and projects, you may use your class notes and any books or library sources except a solutions manual. You may not use other students in the class as a resource for homework or the projects. 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.

<div align="center">

Academic Honesty Policy Guidelines
Mathematics Courses

</div>

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 gr4aded 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.

Section	Title	Homework Problems Due
Chapter 1	The Role of Statistics	
1.1	Three Reasons to Study Statistics	
1.2	The Nature and Role of Variability	
1.3	Statistics and Data Analysis	3, 4
1.4	Types of Data and Some Simple	
	Graphical Displays	8, 9, 10, 11, 16, 19
Chapter 2	The Data Analysis Process and	
	Collecting Data Sensibly	
2.1	The Data Analysis Process	
2.2	Sampling	3, 6
2.3	Statistical Studies: Observation and	
	Experimentation	
2.4	Simple Comparative Experiments	46, 48
2.5	More on Experimental Design	50, 52, 53
Chapter 3	Graphical Methods for Describing Data	
3.1	Displaying Categorical Data:	
	Comparative Bar Charts and Pie Charts	3, 4, 12, 14
3.2	Displaying Numerical Data:	
	Stem-and-Leaf Displays	17, 18
3.3	Displaying Numerical Data:	
	Frequency Distributions and Histograms	27, 40
3.4	Displaying Bivariate Numerical Data	45, 49
Chapter 4	Numerical Methods for Describing Data	
4.1	Describing the Center of a Data Set	1, 2, 7
4.2	Describing Variability in a Data Set	16, 17, 19, 24
4.3	Summarizing a Data Set: Boxplots	30, 32, 33
4.4	Interpreting Center and Variability: Chebyshev's	
	Rule, the Empirical Rule, and z-scores	38, 41, 45