

SYLLABUS
Elementary Statistics
Math 7
Fall 2014

Instructor: Ebrahim Ahmadizadeh
Office Location: PPHAC 223
Office Hours: MWF 12:30-1:10 and by appointment
Office Phone: 610 861-5338
E-mail: meenaO1@Moravian.edu
eahmadizadeh@northampton.edu

Textbook: Introduction to Statistics and Data Analysis, 4th Edition, by Peck, Olsen and Devore. Cengage Thomson Brooks/Cole Publishing 2011.

Graphing Calculator and Technology: Graphing calculators and computer software will be used extensively in this course. Purchase of a TI-83 plus or TI-84 plus graphing calculator is highly recommended. The TI-83 plus will be used to demonstrate data analysis and calculations in class. Other calculators with two variable statistical capabilities may be used; some examples and a list of such calculators will be given in class.

Why Study Statistics?

Statistics is the science of gaining information from data. The use of data is increasingly common in many professions, in public policy, and in everyday life. For example:

- On Election Day predictions of election results based on exit polls are made often hours before the polls close.
- A Nielsen television survey uses results from a sample of U.S households to form conclusions about the television viewing habits of all U.S. households.
- Many medical studies report that smoking increases an individual's chance of dying from heart disease or cancer.
- Baseball players are often ranked based on their batting average.

In all cases, once data has been collected it is important that such data is interpreted correctly.

The study of statistics will enable you to think critically about data so that you can analyze data, draw conclusions from that data, and make decisions based on the conclusions you draw. The study of statistics will also inform you of ways in which data can be misleading if used improperly.

Course Outcomes:

In this course you will learn to collect and interpret data, as well as understand and communicate statistical information. For example:

- + When reading newspapers or magazines, listening to the radio, or watching TV, you will be able to analyze articles dealing with statistics and determine their validity.
- + When analyzing statistical data, tables, and graphs you will be able to think critically about the information and analyze its validity, draw conclusions, and make educated decisions about the presented information.
- + You will be able to design your own survey or experiment, collect data, analyze that data, and draw appropriate conclusions about the topic.
- + You will be able to think critically and make decisions based on basic probability theory and probability of events
- + You will be able to use statistics and probability knowledge gained in this course in your profession and real life applications.

Topical Goals:

- + In a statistical study you will be able to determine the population and the sample. You will be able to determine the technique of data collection.
- + You will understand the importance of random sampling and will be able to obtain a random sample from a population.
- + You will be able to collect real data and perform exploratory data analysis such as histograms, stem-and-leaf displays, and box-and-whisker plots with the data. You will learn to do this by hand, using a graphing calculator, or using computer software. You also be able to write a report describing your procedures and the conclusions you have reached.
- + **Given a set of data; you will be able to calculate the measure of central tendency and variation by hand and using a calculator.** In a specified situation you will know which measures are applicable.
- + You will understand regression and correlation. Using a calculator you will be able to find the linear regression equation and correlation coefficient for a data set. In addition you will be aware of the fact that correlation does not always mean causation.
- + You will gain a basic knowledge of probability theory. You will be able to find the probability of an event using basic definitions of probability.
- + You will be familiar with probability distributions in general and the binomial and normal distribution in particular. You will be able to solve problems based on these distributions.
- + You will know the Central Limit Theorem and understand its importance in statistics.
- + You will be able to use sample statistics to estimate population parameters, determine confidence intervals for estimates, and test hypotheses regarding the population parameters.
- + You will be able to read a description of a statistical procedure not discussed in class and apply it to a set of data. For example, having covered in class the hypothesis test for mean, you will be able to read about and apply the hypothesis test for proportion.

To achieve the above course goals and outcomes sections from chapters 1 through 10 of the text will be covered.

Journal Entries:

Students are required to collect at least five articles related to statistics and/or probability from sources such as newspapers, magazines, research journals, the Internet, or other scientific sources and write a journal entry about the article and its conclusion. Students are encouraged to read articles about their own field of study.

Attendance Policy:

Students are expected to attend all class sessions of the course and are responsible for all materials presented in the class. Often group activities and projects will be completed in class. If you are absent, you will not get credit for that group activity or project. There is no make up for missed quizzes. Make up tests will be given only in case of a valid excuse.

Attendance will be recorded by means of an attendance sheet.

All college policies regarding attendance will be followed.

Classroom Department:

Please turn off your cell phones. Each member of class is expected to be on time and act in a manner which respects the rights of all members of the class. Actions which are uncharacteristic of a college classroom will not be tolerated.

Help:

You are encouraged to ask questions in class or make an appointment when necessary. You can also email me with any questions regarding the course. Student tutors may be available. Please check with the Math department regarding availability of such services during the semester.

Academic Honesty:

The academic honesty policies of both the university and the mathematics department will be strictly adhered to.

You are expected and encouraged to work together on group projects during the class. While a group of you working on a project may come up with a solution to a problem, your write up of the solution must be entirely your own and in your own words.

Copying solutions from others or allowing others to copy from you or copying solutions from solutions manual is unacceptable and will not be tolerated.

Learning Disability Statement – Students who wish to request accommodations in this class for a disability should contact Ms. Elaine Mara, Assistant Director of Learning Services for Disability Support, First Floor Monocacy Hall (extension 1510).

Accommodations cannot be provided until authorization is received from the office of Learning Services.

Methods of Evaluation (student assessment)

Students will be evaluated by means of tests, quizzes, classroom participation and activities, computer assignments, homework, group and individual projects, journal entries, and a comprehensive final exam.

Grades will be calculated as follows:

| | |
|-------------------------------|-----|
| Homework | 50% |
| Journal entries | 5% |
| Individual and group projects | 15% |
| Quizzes and 3 tests | 55% |
| Comprehensive Final Exam | 20% |

One point per day will be deducted for late assignments.

If you miss a test you will be permitted to make it up only if you present a valid excuse in the next class period. Only one make up test will be given per student. There will be NO make up quizzes.

All quiz and test dates will be announced in advance in class.

This syllabus is intended as a guide and it may be changed during the semester. I will announce any necessary changes in class.

Pacing schedule
Math 107

| WEEK | CHAPTER | ASSIGNMENTS |
|------------------|--|---|
| Week of Aug25 | Ch 1 The Role of Statistics | homework assignments are !posted on Blackboard jAll projects will be given in class ch1 hw: ch1 concept quiz (will be handed out in class) !Survey Project Estimating the Size activity |
| Sept 1 | Ch 1 quiz Ch 2 The Data analysis process and collecting data sensibly | ch2 hw: ch 2 concept quiz (will be handed out in class) Activity 2.1 Designing a Sampling Plan |
| Sept 8 | Ch2 quiz Ch 3 Graphical Methods for describing data | Activity 2.4 Speed Sorting ch3 hw: page 115 #25, 26, 27, 28, 30 , 31 Chapter 3 graphing calculator hand out |
| Sept 15 | Ch 1,2 &3 Test Ch 4 Numerical Methods for describing data sections 4.1, 4.2 ch4 hw: Page 156 #1, 2,5 page 166 #17, 18,19 Chapter 4 graphing calculator hand out | |

| | |
|---------|--|
| Sept 22 | Ch 4 Numerical Methods for describing data sections 4.3, 4.4 ch4 hw: page 192 Project, Activity 4.2 Boxplot shapes page 174 # 29, 30 . 33 page 193 #55, 57, 58, 62 Project: Chocolate chip cookies |
|---------|--|

| | |
|---------|---|
| Sept 29 | Ch 5 Summarizing Bivariate data sections 5.1, 5.2 page 210 # 12, 13 Project: Sporting goods Sales Chapter 5 graphing calculator hand out Ch4 quiz |
|---------|---|

| | |
|-------|--|
| Oct 6 | Ch 5 Summarizing Bivariate data sections 5.3, 5.4, 5.5 page 218 # 18, 19, 22, 26 Page 253 # 57 U.S Population project |
|-------|--|

| | |
|--------|---|
| Oct 13 | Ch 4 & 5 Test Ch 6 Probability sections 6.1, 6.2, 6.3 HW Page 286 Problems 3, 5, 10 Page 300 problems 13, 17, 21, 26 |
|--------|---|

| | |
|--------|--|
| Oct 20 | Ch 6 Probability sections 6.4, 6.5, 6.6, 6.7 chapter 6 graphing calculator hand out , exam examples and problems in the hand out HW Page 310 # 28, 29 page 320 # 42,49 Page 332 #59 |
|--------|--|

| | |
|--------|---|
| Oct 27 | Ch 6 quiz Ch 7 Random Variable and Probability Distributions sections 1, 2, 3, and 4 |
|--------|---|

| | |
|--------|--|
| Nov 3 | Ch 7 Random Variable and Probability Distributions sections 5, 6, 7, and 8 chapter 7 graphing calculator hand out, examples and problems in the hand out HW Page 407 problems 64, 65, 66, 70, 71, 73, 74, 76 |
| Nov 10 | Ch 6 & 7 Test Ch 8 Sampling Variability and Sampling Distributions sections 1, 2, 3 Ch 8 HW sec 1 problems 1, 2, 3, 6, 8, 9 Activity 8.1 SAT Scores |
| Nov 17 | Ch 8 Ch 8 HW sec 2 problems 10, 11, 13, 16, 19, 22 Ch 8 HW sec 3 problems 23, 24, 25, 28, 31 Activity 8.2 Defective M&Ms |
| Nov 24 | Ch 8 quiz Ch 9 Estimation using a single sample; sections 9.1, 9.2, 9.3 Activity 9.3 Verifying Signatures on a Recall petition |
| Dec 1 | Ch 10 Hypothesis Testing using a single sample; sections 10.1, 10.2 Review for final |
| Dec 8 | Final Exam Exact date will be announced in class and posted on AMOS |

This schedule is intended as a guide and may be changed during the semester.

