



# ELEMENTARY APPLIED STATISTICS

G-MA221 A

*McPherson College  
Department of Mathematics*

Spring 2015





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### Course Information

- Department name: Elementary Applied Statistics
- Course ID / Units: G-MA221 A / 4 unit course
- Semester offered: Spring 2015
  
- Location/Time: Melhorn, Rm 112 / MWF 1pm
- Labs: Melhorn, Rm 141 / Thur 1pm
  
- Prerequisites: ID 119 grade C min  
OR min ACT math score of 22

### Instructor Information

- Name: Mark A. Hunter
- Office phone: 620-245-0801  
(Texting OK)
- E-mail address:  
hunterm@mcpherson.edu
- Office location: Melhorn, Rm 123
- Office hours: Mon 2-3pm  
Tues 3-4pm  
Wed, Fri 10-11am

### Course description:

A study of the principles of descriptive statistics, probability, sample & population relationships, estimation, and hypothesis testing. The computer is used as an aid in problem solving.

### General education or prerequisite requirements:

ID119 Intermediate Algebra with a grade of C or better, or 3 years of high school mathematics and an ACT mathematics score of 22, or an appropriate score on the departmental placement test.

### Texts and resources:

OpenIntro Statistics, Second Edition by David M Diez ©2014.

A modified version of this textbook is used for this course under a Creative Commons license. The textbook will be provided to students in class once a receipt from the business office for the \$25 resource fee is turned in.

A PDF version of this textbook will also be provided online.

### Online components of the course:

A major portion of your grade will be from online work. Online access to the OpenIntro learning system will be provided once a receipt from the business office for the \$25 resource fee is turned in.

### Lab components of the course:

There is a required lab scheduled during the Thursday class session.

### Calculator:

You will be allowed to use a calculator on homework, quizzes, & exams. If you are going to purchase a calculator, I suggest you obtain a TI-84 (Plus or regular) or TI-83 (Plus or regular) graphing calculator. You may not use your phone as a calculator during quizzes & exams. I will have a limited number of basic function calculators available during quizzes & exams.

**General Course student learning objectives:**

1. Communicate mathematics intelligently.
2. Interpret graphical and numerical data correctly.
3. Think creatively.
4. Reason logically.

**General Education student learning objectives:**

5. Students will understand and use mathematical properties, processes, and symbols.
6. Students will develop a knowledge of and appreciation for mathematics.
7. Student will understand the philosophy, nature, significance, and use of mathematics from early times to present.

**Student learning objectives:**

- The student will identify the individuals and variables in a set of data.
- The student will classify variables as qualitative or quantitative, and classify quantitative variables as continuous or discrete,
- The student will create an appropriate visual summary for a set of data.
- The student will describe the distribution of a set of data with respect to its shape, center and spread.
- The student will compute and discuss the different measures of center for a set of data.
- The student will compute and discuss the different measures of spread for a set of data.
- The student will provide the five-number summary and draw a box plot for a set of data.
- The student will demonstrate knowledge of the properties of a density curve.
- The student will calculate and discuss the significance of z-scores for individual values in a set of data.
- The student will find proportions corresponding to different intervals in a Normal distribution, using both statistical tables and technology.
- The student will discuss the mathematical properties of a regression line.
- The student will discuss the differences between correlation and causation.
- The student will read and interpret two-way tables.
- The student will calculate conditional distributions given a two-way table.
- The student will discuss the differences and similarities between observational studies and experiments.
- The student will determine the population and sample of a given statistical study.
- The student will demonstrate knowledge of different sampling techniques.
- The student will use a table of random digits to produce a simple random sample.
- The student will determine and discuss the design of a given statistical study.
- The student will demonstrate knowledge of the basic terms of probability.
- The student will calculate simple probabilities.
- The student will determine whether a given probability distribution is continuous or discrete.
- The student will state and apply the law of large numbers.
- The student will describe the sampling distribution of the sample mean for a given sample.
- The student will state and apply the central limit theorem.

**Evaluation:**

Grades will be based upon online homework which allows you to rework the problems as many times as you like until you receive a score that is acceptable to you, online quizzes for each chapter which do not allow rework, lab work and projects using Microsoft Excel, class and lab attendance, three written exams which will have partial credit for corrections available, and a final exam. Details:

***Attendance:*** If you wish to succeed in this class, you need to attend regularly and actively participate in class. If you are sleeping, texting, working on another assignment, etc., during my class, it will inhibit your success, and you will be asked to leave. A positive learning environment, free of distractions is what will be maintained. Students missing more than 15% of scheduled meeting times (6 absences for the MWF portion of the course) will have final grade deduction of the same percentage. If a class is missed, it is the student's responsibility to obtain notes and assignments from other students. Please e-mail the instructor before classes when you are going to be absent. Excused absences are given at my discretion. To petition for an absence to be excused, you must notify me IMMEDIATELY (beforehand, if possible) about the absence and if possible provide documentation (doctor's note, funeral program, tow truck receipt, McPherson sports/activity schedule, etc.) that demonstrates you were unable to attend class.

***Homework:*** There will be homework assigned for each chapter and due on given dates. Late assignments will receive a 10% penalty deduction. Late assignments will only be accepted up to 1 week after the due date. Most homework will be online but there may be a few handwritten homework assignments also. Many chapters will have optional review homework which is not required but will help prepare you for quizzes and exams.

***Quizzes:*** There will be quizzes assigned for each chapter and due on given dates. Late quizzes will receive a 25% penalty deduction. Late quizzes will only be accepted up to 1 week after the due date.

***Project:*** A statistics project will be assigned. The project will involve cooperation within a group, computer usage, preparation of a report, and an oral presentation. All of these requirements involve important job skills that employers consider extremely valuable. Presentations will be done during Lab Sessions throughout the semester

***Labs:*** On Thursdays there will be labs to complete using EXCEL. Usually the class time provided will be sufficient for completing the lab work. You will turn in the lab work before you leave class that day or the following week.

***Exams:*** There will be 3 multiple chapter exams during the semester. Any make-up exams will suffer a 10% penalty if accepted. Tentative dates will be released soon. Final dates will be posted on LMS a minimum of one week before the exam. You will be given the opportunity to correct the exams for partial credit.

***Comprehensive Final Exam:*** The final exam will be comprehensive including materials from chapters which we will cover after test 3. Final is Thursday, May 14, 10:30am-12:30pm. You must notify me prior to Spring Break if this time does not work for you.

**Grading:**

Attendance:	No contribution to grade unless you miss more than 15% of classes or labs.
Homework:	40%
Project/Labs:	20%
Quizzes:	10%
Exams:	21%
Final Exam:	09%

**Expectations for students:**

Students in this course are expected to maintain academic integrity standards described in the McPherson College Academic Catalog. Academic dishonesty includes cheating, fabricating, plagiarizing, dissimulating, abusing resources, forging, sabotaging, and aiding and abetting dishonesty. Any student who engages in these activities or violates the College's integrity standards will be penalized at the instructor's discretion. Each student is responsible for ensuring that no one copies his/her assignments and/or projects.

Students are responsible for completing homework and assignments prior to a scheduled absence and for learning material covered during that absence.

Students are expected to read the assigned material before coming to class. All lectures are prepared and given under the assumption that students have prepared themselves by completing assigned readings.

**Disability statement:**

Students who, because of disability, may require reasonable accommodations to meet course requirements should contact the instructor or access coordinator, Carole Barr (ext. 2506), as soon as possible.

**Academic services:**

As a McPherson student, you may experience difficulty with issues such as studying, personal problems, time management, or choice of major, classes, or employment. The Royer Center for Academic Development is available to help students either directly through academic advising, mentoring, testing and developing learning strategies or by identifying the appropriate College resource. If you feel you need someone with whom to discuss an issue confidentially and free of charge, contact The Royer Center for Academic Development located in the Miller Library, main level.

**Class Guests:**

If you wish to bring a guest to class, you must obtain my permission prior to the class. Guests that cause disruptions will be required to leave.

**DISCLAIMER:**

Changes in the syllabus and/or schedule may be made at any time during the term by announcement in class or on-line. It is the student's responsibility to check on-line regularly for additional course information. The instructor will communicate all substantial modifications to students enrolled in the course, prior to enacting these modifications. The distribution of grades between homework assignments, class participation, mini-projects with presentations, quizzes, and the final exam will not change.

**Course schedule:**

A complete course schedule will be maintained on LMS.

Plan to meet every MTWF except for the following :

January 27	Tuesday	Classes Begin
March 5	Thursday	Down Grades Due
March 6	Friday	Conference – No Class
March 13	Friday	Midterm – Online Exam – No Class
March 14	Saturday	Spring Break Begins – No Class
March 22	Sunday	Spring Break Ends – Class on Monday
April 3	Friday	Easter Break – No Class
May 1	Friday	Awards Convocation (noon – 1pm) We still have class
May 6	Wednesday	Final Day of Class
May 8	Friday	All Schools Day – No Class
May 14	Thursday	Final Exam: 10:30am-12:30pm *

\*NOTE: You must notify me before Spring Break, March 14, if there is any acceptable reason that you need to take the final exam at a different time.

**Phones:**

I understand phones are a large part of your lives these days, but while you are in class, they need to be put away. I do not want to see them laying on desks, so if you have nowhere to store them away during class, please do not bring them to class. In the case of an emergency, please let me know prior to class that you may be excusing yourself to take a call/text. You MAY NOT use your phone as a calculator. If I see a phone on an exam day, you will be given an automatic zero on your exam. Please let me know in advance if you use a phone or pad to assist you in taking class notes.

**Mission of the College:**

McPherson College is a vibrant community of persons from diverse faiths and cultural backgrounds committed to its mission: To develop whole persons through scholarship, participation and service.

**ONE FINAL NOTE:**

Elementary Statistics is not intended to be a difficult course but it does build upon itself. Thus, if you are having trouble understanding the material, it is important to seek help immediately. I recognize that some concepts, methods, and lab work can be challenging. Please feel free to visit me in my office frequently if you require extra help outside of class time. Please contact me if you have questions about the material, course concerns, or upcoming absences. E-mail or text me anytime and try to call during reasonable hours. We can schedule additional office hours and appointment times as needed for your schedule. I will be happy to help you out with this stuff and I can arrange a schedule that meets your needs. If problems arise, please let me know. I would like this to be an enjoyable semester for all of us!

