

STAT 109.01

Statistics

Summer 2016 Syllabus

Instructor: Dr. Angela Berardinelli

Office: Old Main Tower 403

Office Phone: 814-824-2421

E-mail: aberardinelli@mercyhurst.edu

Class Times: TuTh 5:30-7:30 PM, Hirt 209

Office Hours: TuTh 3:30-5:00PM, or e-mail to request an appointment

Course Webpage: <http://math.mercyhurst.edu/~aberardine/classes/STAT109/>

This syllabus is a contract. It is meant to tell you what you can expect of me, and what I will expect of you. It is a binding document you should read and understand thoroughly.

1 Course Description

This course is an introduction to the uses of statistics and probability as decision and problem solving tools. Topics included are: measures of central tendency, variability, probability, counting, binomial distribution, normal distribution, confidence intervals, correlation, regression, hypothesis testing, statistical inference, sampling techniques, and experimental design. 3 credits.

Prerequisites: None.

2 Course Learning Goals and Objectives

The following course objectives detail how the specific content of this course will support the Core Learning Outcome of Quantitative and Scientific Reasoning.

- Demonstrate understanding of the following statistical concepts: sampling techniques, experimental design, mean and standard deviation, probability, normal distribution, confidence intervals, and hypothesis testing.
- Study basic statistical analytical methods and employ those methods on quizzes and tests.
- Recognize the use of statistics in real life situations and also its misuse in the news surveys.

3 Required Resources

Textbook: *Elementary Statistics: Picturing the World*, 6th Edition, by Ron Larson and Betsy Farber.

Calculator: You will need a calculator for this course. You may use any statistical, financial, or graphing calculator model you would like. I personally recommend either the TI-30X II or the TI-83 Plus.

Software: We will be using Microsoft Excel 2013 in class. This software is already available on the computers in the lab.

4 Grading

Final Grade Calculation:

| | Percentage of Final Grade |
|------------|------------------------------|
| Quizzes | 25% |
| Exam 1 | 25% |
| Exam 2 | 25% |
| Final Exam | 25% |

Letter Grade Scale:

If you have a weighted

average of at least: 94% 90% 84% 78% 70% 65% 60% 0%

then you will earn a(n): A B+ B C+ C D+ D F

Grade Assignment: Student grades will be determined based solely on the evaluation criteria listed in this section of the syllabus. Grades reflect proficiency in the course content as demonstrated on the graded evaluation criteria. In particular, if you want to earn an A, you need to demonstrate consistent excellence over the course of the entire term; an A on the final is not equivalent to an A in the course.

5 Homework

As you'll notice in the final grade weights given above, homework does not count separately toward your final grade in the course. Practice is an important part of learning and understanding mathematics. As such, a list of homework assignments (practice problems) has been posted to the course webpage. Your work will not be collected. However, working through these problems is the key to your success in this class. It is expected that you will spend approximately 8-12 hours per week studying the material outside of class meetings according to the typical 2-3 hours per in-class-hour rule of thumb.

6 Quizzes

We will have a short quiz during almost every class period. Each quiz will cover the 1-2 most recently completed sections in class. The problems on the quizzes will be based on the assigned homework problems. Your overall quiz grade will be the average of all of your quiz scores after the lowest 4 quizzes have been dropped. Absolutely no extensions or make-ups will be given for

in-class quizzes.

7 Exams

There are two in-class exams scheduled for this semester.

Exam 1: (Chapters 1 and 2; Sections 5.1 and 5.3) Tuesday, June 28th

Exam 2: (Sections 3.1-3.3, 4.1, 5.2, 5.4, 6.1-6.3, and 7.1) Tuesday, July 26th

Final Exam: The final exam is scheduled for Tuesday, August 9th during our normal class period in our normal classroom. It will be comprehensive, covering material from Chapters 1-7 and 9.

In-Class Exams: In-class exams will not be multiple choice and you will be required to show your work to get credit. During class I will clearly indicate what I consider to be a complete solution, and what is “enough work.” My expectations will be clear, and if you need further clarification you can ask questions in class or visit during office hours. You should be sure to emulate the standards modeled in class to receive full credit on in-class exams.

Make-Up Exams: No make-up exams will be given. If you know you are going to miss a scheduled exam for a pre-scheduled event (examples: Mercyhurst-operated sporting event, academic event for another Mercyhurst course, doctor’s appointment, wedding, etc.), you must contact me via e-mail or in office hours at least seven days before the exam is scheduled to take place to arrange to take the exam early. That is, you may arrange to take the exam prior to the scheduled date and time, but you may not make an exam up after it has been administered in class. If you miss an in-class exam, you will receive a zero.

Exam Grading: As shown in Section 4 of the syllabus, each exam counts for 25% of your final grade in the course.

8 Course Policies

Attendance: Students are responsible for all information (notes, announcements, etc.) given in class, regardless of attendance.

E-mail: You can always e-mail me with course-related questions or to request an appointment outside of office hours. However, you should allow up to 2 days for a reply to your e-mail. Also, you should not e-mail me with questions about your grade; to discuss your grade please meet with me in person in my office. E-mail is not a substitute for class attendance. Sometimes, I will need to send out e-mail communications to the class. These communications will be sent to your Mercyhurst account. I will not send to any other e-mail account you may use, so be sure you have access to your Mercyhurst account and check it often enough to receive these important announcements in a timely manner.

Course Content Disclaimer: Statistics is more fun, more interesting, and more useful when working with REAL data. As a result, I will try to apply what we learn to real data in the world whenever possible, including statistics in news and academic articles covering a range

of topics. When we study statistics in articles, it will be from a purely mathematical and/or statistical point of view. Usage of data on a certain issue should never be interpreted as an assertion that a particular political, social, or religious view is “better” than another. Any implied endorsement through our mathematical study of the data will be purely coincidental and completely unintentional. In addition, when we cover probability, we may use casino-style games as examples. I will NOT be endorsing gambling in any form; we will simply be interested in the mathematical properties of the games.

Classroom Etiquette: Please be courteous to the instructor and your fellow students and silence your cell phone before class and do not send or receive calls or text messages during class time. Take off your headphones; do not read the newspaper or other books. Avoid disrupting the instructor and your classmates by arriving to class late or leaving class early unless absolutely necessary.

Course Assistance and Tutoring: If you need assistance, ask for it! I have office hours every week, and the Academic Support Office offers free peer tutoring for this course. Their tutoring center is located in Egan Hall Room 124 and it opens three weeks after classes begin. You may check their page on the portal (my.mercyhurst.edu) for more information.

Regarding Learning Differences: In keeping with college policy, any student with a disability who needs academic accommodations must call Learning Differences Program secretary at 824-3017, to arrange a confidential appointment with the director of the Learning Differences Program during the first week of classes.

Support of the Mercy Mission: This course supports the mission of Mercyhurst University by creating students who are intellectually creative. Students will foster this creativity by: applying critical thinking and qualitative reasoning techniques to new disciplines; developing, analyzing, and synthesizing scientific ideas; and engaging in innovative problem solving strategies.

9 Course Schedule

| Week of | Material to be Covered | Special Events |
|---------|------------------------|---|
| 6/2 | 1.1-1.3 | None |
| 6/7 | 2.1-2.4 | Add/drop deadline Wednesday |
| 6/14 | 2.5 | None |
| 6/21 | 5.1, 5.3 | None |
| 6/28 | 3.1, 3.2 | Exam 1 Tuesday |
| 7/5 | 3.3, 4.1, 5.2 | None |
| 7/12 | 5.4, 6.1-6.3 | None |
| 7/19 | 6.1-6.3, 7.1 | None |
| 7/26 | 7.2-7.4 | Exam 2 Tuesday Last day to withdraw Friday |
| 8/2 | 9.1, 9.2 | None |
| 8/9 | N/A | Final Exam Tuesday |

Final Note: This syllabus is subject to change if deemed necessary. Any syllabus changes or addendum will be communicated in class.

STAT 109 Homework - Summer 2016

| Section | Problems |
|-------------------------------|--|
| 1.1 | 3, 11, 12, 13, 18, 19, 25, 28, 29, 32, 33, 34, 35, 36, 37, 38, 39 |
| 1.2 | 7-14, 16-19, 21-25, 27-32 |
| 1.3 | 1, 2, 11-14, 16, 21, 23-26 |
| 2.1 | 15, 16, 19, 20, 24, 30, 33 |
| 2.2 | 9, 11, 17-19, 24, 25, 29, 30, 34 |
| 2.3 | 9-12, 17, 18, 21, 22, 26, 27, 28, 32, 37-40, 41, 50, 51, 53-56, 65 |
| 2.4 | 9, 10, 13-16, 21, 22, 30, 51 |
| 2.5 | 11-14, 18, 20, 21-24, 28, 41-46, 47 |
| 5.1 | 13-16, 17-36, 38 |
| 5.3 | 2, 4, 6, 9-13, 17-22, 31, 32, 34, |
| END OF EXAM 1 MATERIAL | |
| 3.1 | 2, 15-19, 25-28, 29-34, 35, 36, 47, 48, 52, 54, 56, 63-66, 75 |
| 3.2 | 7, 9-12, 23, 31 |
| 3.3 | 1, 3, 4, 9, 10, 11, 13, 14, 17, 20, 23, 24 |
| 4.1 | 13-16, 20, 22, 24, 31 |
| 5.1 (revisited) | 41-55 (odd) |
| 5.2 | 11, 12, 15, 18 |
| 5.4 | 9, 14, 15, 16, 20, 26, 27, 30, 35, 38 |
| 6.3 | 3, 5, 8, 9, 11, 14, 17, 21, 22 |
| 6.1 | 7, 8, 14, 15, 22-24, 27, 34, 35, 45, 48 |
| 6.2 | 1, 3, 5, 9-12, 17, 19, 27, 28 |
| 7.1 | 5-10, 11-16, 21-30, 37-42 |
| END OF EXAM 2 MATERIAL | |
| 7.4 | 9, 12, 15 |
| 7.2 | 28, 29, 33 |
| 7.3 | 15, 21, 27 |
| 9.1 | 9-14, 19-23 |
| 9.2 | 7-12, 17-19, 27-29 |