

Iowa Lakes Community College

STATISTICS—BUSINESS STATISTICS

Tuesday & Thursday evenings – Summer, 2011

Course & Section Numbers

- Courses MAT-157 & BUS-211 (These are two numbers for essentially the same course.)
- Sections 201 (Emmetsburg), 202 (Estherville), 203 (Algona), 204 (Spirit Lake), and 205 (Spencer)

Schedule

- Tuesday & Thursday nights, 5:45pm ; May 24 – July 28, 2011
- The course will be taught over the interactive television system at Iowa Lakes Community College.
- At various times throughout the summer, the class will originate from all the different ILCC centers. However, the primary origination center will be Emmetsburg.

Description

- **CATALOG DESCRIPTION:** The use of statistics by the methods of descriptive and inferential statistics. Both single and bivariate data are analyzed. Elementary probability and normal probability distributions are studied along with hypothesis testing, linear correlation regression analysis and analysis of variance.
- **GENERAL DESCRIPTION:** In this course you will first learn about descriptive statistics in one and two variables. You will then use the basic concepts of probability to understand inferential statistics. In particular you will learn how to use statistics to estimate information about a population and how to perform significance tests using both traditional and non-parametric statistics.

Credit

- 4 semester hours

Prerequisites

- There are no formal prerequisites for this class. However, a basic knowledge of algebra will be extremely useful.
- All students also need to achieve appropriate scores on one of ILCC's mathematics placement tests.

Transferability

- This is a basic introductory statistics course. Equivalent courses are offered at almost every college, and it should transfer freely.
- Many majors have a statistics requirement, and this course should meet that requirement for most majors.
- Some math and science majors may require a more formal proof-based course. If you need to transfer this course and have any questions, contact the college you plan to attend.

Instructor

- David Michael Burrow
- E-Mail: davidmburrow@yahoo.com (preferred method of contact)
- Alternate E-Mail: burrowd@garrigan.pvt.k12.ia.us
- Home Phone/Fax: 515/295-5285
- Text/Cell/Voice Mail: 515/341-3763 (Calling by voice on the cell phone is generally **NOT** a good way to contact Mr. Burrow; texting is better.)
- Course Website: <http://www.davidmburrow.com/statistics.html> (will contain printable copies of notes and hand-outs – NOTE: This is **NOT** an E-Companion page.)

Book

- Brase, Charles Henry, and Corinne Pellillo Brase. *Understandable Statistics: Concepts and Methods*. 10th Edition. Boston: Brooks/Cole Cengage Learning, 2012.
- This was a **NEW EDITION** in Spring, 2011. There are significant changes from the 9th edition.

- The textbook that the fulltime ILCC faculty have selected is available from the ILCC bookstore, and it should also be available from on-line retailers such as [Amazon.com](https://www.amazon.com) or [bn.com](https://www.bn.com).
- The book will be used for reference in class, and problems will be assigned from it. If money is a concern, students are encouraged to share textbooks.

Calculator

- You should have a graphing calculator designed for statistics for this class.
- The best calculators for this class are TI-83, TI-83+, TI-84, or TI-84+ graphing calculators, which are available for \$75 - \$125 in area stores such as K-Mart, Target, Wal-Mart, Alco, Pamida, Staples, and OfficeMax, as well as from the ILCC bookstore. The TI-83 is used in illustrations in the book, and it will be the main calculator used for explanations in class. Many of the problems we will be doing are much easier to do on the TI-83 than on any other calculator. From the point of view of this class there is no difference between a TI-83 or TI-83+ calculator. The TI-84 and TI-84+ are essentially identical, but contain one additional feature (the X^2 -GOF Test) that could be useful in this course. The standard TI-83 is the cheapest, while the TI-84+ is the most expensive of these calculators.
- The Casio CFX-9850 has virtually the same functions as the TI-83 and will cost less (\$50 - \$75). However, you may not find it as user-friendly as the TI-83, and notes in the class will not be geared to it.
- Other Texas Instruments graphing calculators, such as the TI-81, TI-82, TI-85, or TI-86 are **not** recommended. They do not have the statistical features that will make your problems much easier to do.
- Graphing calculators made by other companies (H-P, Sharp, etc.) may work. This is not guaranteed, however, and instructions in the class will be geared to the Texas Instruments machines.
- A downloadable virtual TI-83 graphing calculator is available on the class website.

Other Supplies

- You will need to take organized notes almost every week, and you will want writing materials to do this.
- A small supply of graph paper may be useful for some problems, but is not required.
- In addition, you will need to complete an individual or small group project. This may require some additional supplies, depending on what you choose.

Overall Goals

- Understand the uses of formal statistics, and apply statistical methods to solve real-world problems.
- Describe and apply sampling procedures.
- Calculate and interpret descriptive statistics such as measures of central tendency, dispersion, and position.
- Understand the basic theory of probability, and how probability is applied to statistical problems.
- Use sample statistics to estimate population parameters.
- Understand the concept of statistical significance, and apply statistical tests to check for significance.
- Describe and interpret correlations and linear regressions.
- Calculate and apply non-parametric statistics.
- Understand how statistics can be misused and misinterpreted.

Assignments

- You will be given suggested assignments most days in class. While these will not be turned in for a grade, it is suggested that you do the problems.
- At the very least, you should look through them and make sure you know how to do each type of problem. We will go through many of the assigned problems in class.

Tests

- You will be given four tests over the course of the semester.
- We will review in class before each test.
- By the nature of the course, each test will to some extent be cumulative, reviewing what came before. However there will be nothing officially cumulative in the final.
- Tests will be graded on a straight points basis, with all tests (including the final) worth approximately the same number of points.

Project

- All students will complete an individual or small-group project, where you will apply statistics to a real-world situation.
- You will complete an initial prospectus for the project, a mid-term progress report, a written summary, and a final presentation to the class.
- You will receive a letter grade on the project, which will be worth approximately the same as one test.

Attendance

- It is assumed that you will be at each class session, and you will find it much easier to do well if you attend regularly. There are 14 class sessions. Attendance *will* count for 10% of your overall grade. You may miss 2 sessions and still get an "A" on the attendance portion of your grade. For each session you miss, your attendance grade will go down one letter (so if you miss more than 5, you will get an "F" for attendance). There are no exceptions to the attendance grade policy.
- **Tests are intended to be taken when scheduled.** If you are not able to take the test when scheduled, you must make arrangements with the instructor BEFORE the scheduled time of the test. If you do not make arrangements beforehand, the test may not be made up.

Grades

- The standard ILCC grading scale applies:
 - A = 90%+
 - B = 80%+
 - C = 70%+
 - D = 60%+
 - F = 59%-
- Pluses and minuses are not recorded on ILCC grades. There is generally no "extra credit" in this class.

Weather Cancellation

- In case of severe weather, the college will announce any cancellations on area radio stations. Listen to the 5:00 news for any announcements.
- Weather cancellations are also posted on the website <http://www.iowalakes.edu>. Evening class cancellations are generally announced by 3pm.

Tentative Schedule

Test dates will be as indicated; some topics may change if classes are missed due to weather or other reasons.

Tuesday, May 24 (Chapter 1)

- Class Description
- Explanation of Projects
- Introduction to Statistics
- Basic Terms

Thursday, May 26

- ***** NO CLASS *****
- **The instructor will be at the National Academic Championships with the Garrigan quiz bowl team.**
- **Work on the assignment given May 24 and your project prospectus.**

Tuesday, May 31

- ***** NO CLASS *****
- **The instructor will be at the National Academic Championships with the Garrigan quiz bowl team.**
- **Work on the assignment given May 24 and your project prospectus.**

Thursday, June 2 (Chapter 1 & 2)

******* PROJECT PROSPECTUS DUE *******

- Types of Samples
- Experimental Design
- Organizing Data

Tuesday, June 7 (Chapters 3)

- Measures of Central Tendency
- Measures of Dispersion
- Measures of Position

Thursday, June 9 (Chapter 3)

- REVIEW FOR TEST #1
- Basic Probability

Tuesday, June 14

***** TEST ONE *****

Thursday, June 16 (Chapters 4 – 6)

- Binomial Events & Their Probabilities
- Normal Distributions & Their Applications

Tuesday, June 21 (Chapter 7)

- Estimation

Thursday, June 23 (Chapter 8)

- REVIEW FOR TEST #2
- The Hypothesis Testing Method

Tuesday, June 28

***** TEST TWO *****

Thursday, June 30

- Z-Tests & t-Tests

Tuesday, July 5 (Chapter 9)

***** PROJECT PROGRESS REPORTS DUE *****

- Correlation & Regression

Thursday, July 7 (Chapters 9 – 10)

- More on Correlation & Regression
- REVIEW FOR TEST #3

Tuesday, July 12

***** TEST THREE *****

Thursday, July 14 (Chapter 10)

- Chi-Square Tests
- Statistical Process Control

Tuesday, July 19 (Chapter 11)

- Non-Parametric Statistics

Thursday, July 21

***** PROJECT PRESENTATIONS *****

- What Else Is There?
- Which Test Should I Use?

Tuesday, July 26

***** PROJECT PRESENTATIONS *****

- Statistical Deception—Ethical Considerations in Statistics
- REVIEW FOR TEST #4

Thursday, July 28

***** PROJECT PRESENTATIONS *****

***** TEST FOUR *****

STUDENT ACADEMIC HONESTY POLICY

Iowa Lakes Community College believes that personal integrity and academic honesty are fundamental to scholarship. Iowa Lakes strives to create an environment where the dignity of each person is recognized and an atmosphere of mutual trust exists between instructors and students. The faculty have confidence in the integrity of the students and encourage students to exercise good judgment in fulfilling this responsibility.

Actions contrary to academic integrity will not be tolerated. Activities that have the effect or intention of interfering with learning or fair evaluation of a student's work or performance are considered a breach of academic integrity. Examples of such unacceptable activities include, but are not limited to:

- **Cheating** (intentionally using or attempting to use unauthorized material, assistance or study aids in my academic work). For example, using a cheat sheet for a test, looking at another student's paper during an exam, stealing or buying all or parts of an exam or paper, altering and resubmitting work for a better grade without prior approval to do so, etc.
- **Plagiarism** (representing another's ideas, words, expressions or data in writing or presentation without giving proper credit, failing to cite a reference or failing to use proper documentation, using works of another gained over the Internet and submitted as one's own work).
- **Falsification and/or misrepresentation of data** (submitting contrived or made-up information in any academic exercise). For example, making up data, citing non-existent sources, etc.
- **Facilitating Academic Dishonesty** (knowingly helping or attempting to help another violate any provision of the academic honesty policy). For example, working together on a take-home exam or other assignment when the option has not been made available, giving a paper/assignment to another student for his/her use, etc.
- **Multiple Submissions** (submitting, without prior approval from the instructor involved, any work submitted to fulfill academic requirements in another class). For example, submitting the same paper for two different classes, etc.
- **Unfair Advantage** (trying to gain unauthorized advantage over fellow students). For example, gaining or facilitating unauthorized access to exam materials (past or present); interfering with another student's efforts in an academic exercise; lying about the need for an extension on a paper or assignment; destroying, hiding, removing or keeping library materials, etc.

Disciplinary Action

Any violation of this policy will be treated as a serious matter. The instructor has primary responsibility over classroom behavior and maintaining academic integrity. Depending on the nature and severity of the offense, Iowa Lakes Community College reserves the right to exercise disciplinary action as outlined in the Disciplinary Action Section of the Student Handbook.

Americans with Disabilities Act – Policy of Nondiscrimination

It is Iowa Lakes Community College policy to not discriminate against qualified individuals with disabilities and to provide reasonable accommodation(s), as required by law, to otherwise qualified applicants for admission or to students with disabilities in all education programs, activities, services and practices, including application procedures, admissions, course selection, the awarding of degrees, discipline and dismissal. Educational opportunities will not be denied to an otherwise qualified application or student because of the need to make reasonable accommodation(s) or modification(s) for the physical and mental impairment(s) of any such individual.

Iowa Lakes Community College students needing reasonable accommodation(s) and/or modification(s) should contact Linda Helmers by phone at (712) 852-5216 or (712) 362-8364 or via email at lhelmers@iowlakes.edu. To assure that accommodation(s) and/or modification(s) will be ready when classes start, students must make the request as soon as possible, before a semester begins.

It is the policy of Iowa Lakes Community College not to discriminate on the basis of sex, race, national origin, creed, age, marital status or disability in its education programs, activities, or employment policies, as required by Titles VI and VII of the 1964 Civil Rights Act, Title IX of the 1972 Educational Amendments, Section 504 of the Federal Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act (ADA) of 1990.

Inquiries regarding compliance with Title IX, Title VI, Title VII, or Section 504 may be directed to Kathy Muller, Human Resources, Iowa Lakes Community College, 19 S. Seventh Street, Estherville, IA 51334, telephone (712)362-0433; to the Director of the Iowa Civil Rights Commission, Des Moines; or to the Director of the Region VII Office of Civil Rights, Department of Education, Kansas City, Missouri.