

DSCI 3231
Business Statistics I
Fall 2013
Thursday 7:00-9:50 P.M.
UHCL – Bayou Bldg. – ?



Instructor: Ken Black, Ph.D., Ph.D.

Office: Bayou Building 3321-17; 281-283-3239; email: black@uhcl.edu

Office: Tuesday 1:30-3:30 P.M.

Hours: Wednesday 1:00-2:30 P.M. and 4:00-4:30 P.M.

Thursday 1:30-3:30 P.M.

This course has been authorized by UHCL as an Applied Critical Thinking (ACT) Course which means that in addition to learning about the specified course content, students will be engaged with some or all of the Elements of Thought and Universal Intellectual Standards of critical thinking. The objective of an ACT course is to develop the student's ability to become skilled at analysis and evaluation by applying a set of intellectual tools that may be effectively used across all disciplines (as well as to the student's personal life). Based on the Foundation for Critical Thinking (<http://www.criticalthinking.org/>), critical thinking involves thinking for a *purpose*, asking *questions*, using *information*, applying *concepts*, drawing *inferences and conclusions*, identifying *assumptions*, anticipating *implications and consequences*, and recognizing *points of view*. The Universal Intellectual Standards that are applied to these Elements of Thought of critical thinking in order to develop Intellectual Traits include *clarity*, *accuracy*, *precision*, *relevance*, *depth*, *breadth*, *logic*, *significance*, and *fairness*.

Course Description: This course contains an introduction to probability and statistics within the context of business. The central question of the course is "How can we gain information about the characteristics or behavior of a population so as to assist business people in making better decisions in the business environment?" As a part of the learning process, we will study descriptive statistics, sampling, probability laws, probability distributions, confidence intervals and estimation, the process of testing hypotheses, correlation, regression, and forecasting.

Business Statisticians and Critical Thinking: Business statisticians often use critical thinking in their work. Specifically, business statisticians ask: What are the essential issues to research? What are key questions within such issues? How do we measure such questions? What are the appropriate statistical techniques to analyze gathered data? What do the outcomes of such analyses mean to business decision makers?

Much of what is done in the field is inferential – using statistical analysis of sample data to infer information to the population. In this process, business statisticians must think about if they have selected a representative sample, if they have gathered proper levels of data measurement, if they have used appropriate statistical techniques, and if they have reached correct conclusions about the populations. Business statisticians predict, estimate, and forecast by analyzing and assessing information using statistical tools while understanding the assumptions, laws, and limitations of such tools.

Student Learning Outcomes (SLOs). Upon completion of this course, students will be able:

1. To categorize data by level of measurement and understand the relevance of determining the level of measurement of data.
2. To use statistical analysis to describe populations with clarity, breadth and interpretation using information gleaned from a class survey.
3. To accurately apply the empirical rule, understanding its assumptions and limitations.
4. To understand the concept of p -values and logically interpret them to reach statistical conclusions.
5. To determine the predictability of a regression model by interpreting R^2 and other key indicators.
6. To accurately compare and contrast the concepts of Type I and Type II errors.
7. To accurately categorize a written problem by the type of inferential statistical technique appropriate for analysis using logical assumptions.

Fundamental and Powerful Concepts of the Course:

This course contains several concepts that form the foundation for much of what we do in the course. Through these *fundamental and powerful concepts*, you will be able to see connections and themes that run throughout much of the course. Some of these include:

1. Variation
2. Sampling
3. Estimation

Vocabulary of Critical Thinking In this course, we will learn and use the vocabulary of critical thinking. Our critical thinking vocabulary will include an understanding and use of both the elements of thought and the universal intellectual standards.

Elements of Thought* In this course, we will consider and use 8 elements of thought:

1. **Purpose** – goals, objectives
2. **Question at Issue** – problem, issue
3. **Information** – data, facts, reasons, observations, experiences, evidence
4. **Interpretation and Inference** – conclusions, solutions
5. **Concepts** – theories, definitions, laws, principles, models

6. **Assumptions** – presuppositions, axioms, taking for granted
7. **Implications and Consequences**
8. **Point of View** – frames of reference, perspectives, orientations

Universal Intellectual Standards* In this course, we will consider and use 9 universal intellectual standards:

1. **Clarity**
2. **Accuracy**
3. **Precision**
4. **Relevance**
5. **Depth**
6. **Breadth**
7. **Logic**
8. **Significance**
9. **Fairness**

* Source: Richard Paul and Linda Elder, Center for Critical Thinking and Foundation for Critical Thinking.

Critical Thinking Activities

Many of the course activities will include critical thinking vocabulary and approaches. There will be three specific course activities that will be targeted as critical thinking activities. These are:

1. The Student Learning Outcomes addressed by this activity are:
 - To categorize data by level of measurement and understand the relevance of determining the level of measurement of data.
 - To use statistical analysis to describe populations with clarity, breadth and interpretation using information gleaned from a class survey.

A three-page written analysis of the class based on Excel output derived from the class survey as part of Computer Assignment 1. On the first day of class, each student will be asked to complete a survey of mostly demographic and consumer questions. From this, a database will be compiled and sent to students. After using Excel to statistically analyze the data, the student will be required to provide a written analysis of the class using technical writing skills and sharing thoughtful insights about the class and business students in general. This written analysis will be graded using the Elements and Standards of Critical Thinking to include clarity, breadth, and interpretation using information. This three-page analysis will be worth 20 points of the total grade of computer assignment 1 with each of the two elements of information and interpretation worth 10 points each.

2. The Student Learning Outcome addressed by this activity is:
- To accurately categorize a written problem by the type of inferential statistical technique appropriate for analysis using logical assumptions. *Determining the appropriate statistical technique.* After studying estimation and hypothesis testing and learning various statistical techniques, the student will be given a business scenario involving a research question and some data. They will be asked to select the most appropriate statistic technique for analyzing the data given the assumptions and goals of the problem/scenario. Students will be assessed on this activity on the final examination via 5 questions (five scenarios) that will count for 10% of the final examination grade.

4 C's of Critical Thinking:

The UHCL Quality Enhancement Plan (QEP) endorsed by the university accrediting body is a plan to promote applied critical thinking (ACT) for lifelong learning and adaptability. In particular, the key learning outcomes of the UHCL applied critical thinking plan involve 4 C's: Curiosity, Connections, Creativity, and Communication. In this course, we will focus on two of these four C's: Connections and Communication.

Required Materials:

Text Black, Ken *Business Statistics For Contemporary Decision Making*, 7th Edition, Custom UHCL version. Wiley Publishing Company, 2012.

WileyPLUS We will be using WileyPLUS, an online platform contain many course resources along with the location for the course chapter homework quizzes. If you purchase a text that is not shrink-wrapped with WileyPLUS, you will be Required to purchase WileyPLUS separately.

eText WileyPLUS contains an electronic version of the text. You need not necessarily purchase a "hard copy" of the text.

Calculator: You need to have a calculator with capability of performing 2-variable statistical analysis.

Class URL for WileyPLUS:

<http://edugen.wileyplus.com/edugen/class/cls314221/>

Prerequisite: You should have taken both College Algebra and Finite Math before taking this course.

Attendance Policy: Class attendance is considered to be **very important** by the instructor. Excessive absences will result in the lowering of your final grade or in administrative removal from course.

Academic Honesty Policy:

Academic honesty is the cornerstone of the academic integrity of the university. It is the foundation upon which the student builds personal integrity and establishes a standard of personal behavior. Because honesty and integrity are such important factors in the professional community, you should be aware that failure to perform within the bounds of these ethical standards is sufficient grounds to receive a grade of "F" in this course and be recommended for suspension from UHCL. As a member of the UHCL faculty and representing the university in this capacity, I will be honest in all my academic activities and will not tolerate dishonesty.

Course Format:

The course will rely on lecture, presentation, discussion, videos, and other WileyPLUS resources. In most class periods, some time will be dedicated to going over assigned problems. Students will be expected to read and study text materials to expedite the coverage of material. There will be some expectation of computer usage for the class. Students will be required to work additional problems and take additional quizzes on-line through WileyPLUS.

Method of Evaluation:

Your Grade in the Course will be Determined by

Examination I * * * * *	25%
Examination II * * * * *	25%
Final Examination * * * * *	25%
Computer Assignments * * * * *	9%
WileyPLUS Quizzes * * * * *	14%
Attendance * * * * *	2%
Total * * * * *	100%

Students with Disabilities:

If you will require special academic accommodations under the Americans with Disability Act, Section 504, or other state or federal law, please contact the Disability Services Office at (281) 283-2626.

Assessment for Accreditation:

The School of Business may use assessment tools in this course and other courses for curriculum evaluation. Educational Assessment is defined as the systematic collection, interpretation, and use of information about student characteristics, educational environments, learning outcomes and client satisfaction to improve program effectiveness, student performance and professional success. This assessment will be related to the learning objectives for each course and individual student performance will be disaggregated relative to these objectives. This disaggregated analysis will not impact student grades, but will provide faculty with detailed information that will be used to improve courses, curriculum, and students' performance.

6 Drop Rule Limitation - Students who entered college for the first time in Fall 2007 or later should be aware of the course drop limitation imposed by the Texas Legislature. Dropping this or any other course between the first day of class and the census date for the semester/session does not affect your 6 drop rule count. Dropping a course between the census date and the last day to drop a class for the semester/session will count as one of your 6 permitted drops. You should take this into consideration before dropping this or any other course. Visit www.uhcl.edu/records for more information on the 6 drop rule and the census date information for the semester/session.

<u>Date</u>	<u>Day</u>	<u>Topic</u>
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Aug. 27	Tues.	Course Introduction. Develop class database. Chapter 1. Introduction to Statistics. Levels of Data. Read: pp. 2-11
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Aug. 29	Thurs.	Chapter 2. Descriptive Charts & Graphs, Read: pp. 18-39
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