Cincinnati Christian University
Math 240 Statistics
Fall 2018 | 3 semester credit hours | MW 1:30 p.m. – 2:45 p.m.
Location: CR Room G2

Instructor: Dr. Julie Bedi	Office Location: PH 267
Email: julie.bedi@ccuniversity.edu	Office Hours: MWF 9:00 – 11:00 TR 11:00 – 12:00

Foster School of Biblical Studies, Arts & Sciences

The mission of Cincinnati Christian University is to teach men and women to live by biblical principles and to equip and empower them with character, skills, insight, and vision to lead the church and to impact society for Christ.

Course Description

A study in the application of statistical analysis, hypothesis testing, and regression analysis in psychological research and business decision-making. Topics include descriptive statistics, probability, probability distributions, sampling, and interval estimation. Common statistical software will be used to analyze and interpret data.

Prerequisite: Satisfactory performance on a placement examination or successful completion of MATH 010.

Course Rationale

Since some understanding of mathematics will enhance the study of every discipline, as well as develop skill in mathematical reasoning and competence in real world situations, this class will be particularly relevant to an informed and aware Christian citizenry.

Learning Objectives (connected to Arts & Sciences Outcome #4 below):

At the end of this course, the student will be able to:

1. Describe, explore, and compare datasets using descriptive statistics as well as frequency distributions, histograms, scatterplots, and boxplots
2. Recognize or recommend a valid sampling method
3. Compute uncertainty through probability formulas and distributions
4. Interpret and use the results of hypothesis tests about proportions, means, and standard deviations/variance to make informed decisions
5. Understand the relationship between two variables using correlation and regression
6. Comprehend research studies and other literature employing statistical concepts
7. Make connections among ideas in mathematics and connect mathematics to other disciplines and real world situations

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Arts & Sciences Departmental Outcomes

CCU's Arts & Sciences program is designed to prepare students to

1. communicate effectively in both oral and written forms in a variety of rhetorical contexts, including Standard English,
2. adeptly utilize modern research and writing tools,
3. identify decisive events and ideas in the human experience and assess their influences on modern culture and thought,
4. employ critical and creative thinking and mathematic and scientific principles for problem solving, literary and socio-cultural analysis, intercultural understanding, and research in the sciences and humanities,
5. demonstrate the integration of academic insights and experiences by constructing and employing a personal framework in which ethical decisions can be made in light of societal values and a Christian worldview.

Required Text

Elementary Statistics Using Excel, 6th Edition. Mario F. Triola. Pearson, 2017. ISBN-10: 0134506626

Grading Policy

Letter grades will be assigned based on the published grade point system in the CCU Academic Catalog. Grades will be comprised of the following:

Tests	(5 Tests - 10% each)	50%
Final Exam		10%
Quizzes/Projects/Article & Writing Assignments		25%
Homework/Class Labs and Activities		15%

Quizzes/Tests/Exam

Quizzes, tests, and exams assess whether the objectives are being met. If a student misses a scheduled quiz or test without making prior arrangements with the instructor, it cannot be made up unless the instructor makes an exception. Even then, a penalty may be given. It is the responsibility of the student to take the quiz/test early or schedule a makeup quiz/test date with academic support.

Homework

Assignments will be given throughout the course to help students understand and apply the concepts learned in class. Homework, projects, and other assignments will be announced in class at least one week prior to the due date.

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Late Assignments

An assignment will be considered late if it is not submitted by the beginning of the class session on which it is due. 20% will be deducted from the score per day for late assignments. Assignments that are late due to severe illness or an emergency situation *may* be accepted depending on the circumstances. If you find yourself in a situation that prohibits you from turning in your assignment on time, it is in your best interest to address that issue with your instructor **prior** to the due date. Students who are absent because of CCU extracurricular activities should turn in the assignment early when possible or the first day back to class.

Academic Integrity

This class will follow CCU's regulations pertaining to academic integrity. A copy may be found in CCU's Student Handbook.

Disability Services: Students who require academic accommodations due to any documented physical, psychological, or learning disability should request assistance from the Student Services Department within the first two weeks of class. The Student Services Department is located on the upper level of the Presidents Hall. You may also contact the office by phone (513.244.8150).

Attendance

You are expected to attend all class sessions and actively participate in class activities. This will be an activity and application-driven course, so class attendance is crucial to achieve maximum benefit. If you exceed the absentee policy set forth by CCU, it will result in a grade of FA (failure due to absences). If a student is present for less than half of a class period, it is considered an absence.

If you *must* be absent for a CCU extracurricular activity, you will be responsible for e-mailing the professor, in advance, stating why you will be absent, turning in any assignments **prior** to the class, and obtaining any notes or assignment details you missed from Canvas, the professor, and/or other students.

Course Outline

Details regarding assignments and due dates will be announced during class time once week in advance of the due date as well as posted on Canvas. The *Elementary Statistics Using Excel (6th Edition)* textbook will be used as the base outline for the course topics. The course will be very hands-on with many labs and activities that give students the opportunity to practice collecting and/or analyzing data using the methods learned in class. Students will use Microsoft Excel to aid in their analyses.

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Fall 2018 Course Outline*
Unit 1: Describing, Exploring, and Comparing Data **(Chapters 1-3)** • Statistical and Critical Thinking • Types of Data; Collecting Sample Data • Introduction to Excel • Frequency Distributions & Histograms • Graphs – Enlightening vs. Deceptive • Scatterplots, Correlation, & Regression • Measures of Center, Variation, & Relative Standing; Boxplots **TEST #1**
Unit 2: Probability **(Chapters 4)** • Basic Probability Concepts • Addition and Multiplication Rule • Complements, Conditional Probability, & Bayes' Theorem • Counting • Simulations **TEST #2**
Unit 3: Probability & Probability Distributions **(Chapters 5 - 6)** • Binomial & Poisson Probability Distributions • Standard Normal Distribution with Applications • Sampling Distributions & Estimators • Central Limit Theorem • Assessing Normality; Normal as Approximation to Binomial **TEST #3**
Unit 4: Statistical Inference **(Chapters 7 - 9)** • Estimating Population Proportion, Population Mean, Population Standard Deviation, or Variance • Bootstrapping • Basics of Hypothesis Testing • Testing a Claim about a Proportion, Mean, Standard Deviation, or Variance (one and two-samples) **TEST #4**
Unit 5: Correlation and Regression **(Chapter 10)** • Correlation • Regression • Prediction Intervals & Variation • Multiple & Nonlinear Regression **TEST #5**

**The instructor reserves the right to change or amend any part of this course plan as deemed necessary.*