STA 2216 – Statistical Methods

BA in Business Administration
BA in Economics
Spring 2020

Professor:	Charles McFerren, MBA
Office hours:	By appointment
Availability:	Email address: cmcferren@mcdaniel.edu
Prerequisites:	STA 2215 or MAT 3324
Credits:	4 hours
Number of hours per semester	14 weeks (weekly lecture and seminar) plus Exam Week, i.e., • 2 90-minute seminars per week • 1 Final Exam
Class Timings:	• Monday, 16:00 to 17:30 • Wednesday, 16:00 to 17:30
Venue:	See "MyMcDaniel" and Blackboard

Course Description:

The objective of this course is to provide students with the statistical concepts and tools required to conduct and critically evaluate univariate and/or multivariate statistical studies based on both large and small data sets. With a focus on applications in business and economics, the course develops the analytical tools that can be used for problem solving and decision making in a probabilistic environment. Topics covered include confidence interval estimation, hypothesis testing, simple linear regression, multiple regression and time series-analysis analysis. An important objective of the course is to use Excel to solve business problems.

Learning outcomes:

After completion of this course, students will be able to:
- Use Excel to demonstrate the integral role of software in applying statistics to analyze data to solve business problems.
- Calculate probabilities related to the sample mean and proportion.
- Construct and interpret confidence interval estimates for the mean and proportion.
- Apply basic principles of hypothesis testing to test a mean or a proportion.
- Compare the means and variances of two independent populations.
- Use regression analysis and time-series analysis to predict the value of a dependent variable.

Prerequisites:
STA 2215 or MAT 3324

Methodology to be used:
The course is interactive and involves the presentation and discussion of concepts, tools, techniques and algorithms commonly used to solve practical business problems. A strong focus is on solving problems using relevant software (primarily Excel). Continual student involvement is supported with the extensive use of the Blackboard technology and students are required to carry out both individual and group activities.

Class attendance:
- There exists a strong positive correlation between class attendance and success on the homework assignments and exams.
- Following the third unexcused absence, however, the class participation grade will be reduced by 1 point for each absence.
- A tardy arrival will be counted as half an absence.

Decorum and Internet Addiction Disorder (IAD)

The lectures provide a great opportunity to both unplug from technology and substantially cut back on screen time (minimum one and a half hours guaranteed per class). Therefore, with the exception of the Excel application used in class, the use of electronic equipment (i.e., for fidgeting, texting, browsing social network platforms, streaming videos on mobile phones, laptops, tablets, phablets, etc.) is not permitted. Each violation will count as an unexcused absence and result in the reduction of the class participation grade by 1 point.

Honor code
The course participants are expected without question to adhere completely to the McDaniel College academic honor code. Any violation will result in a zero for the given assignment and other possible sanctions.

Recommended readings:
Statistics for Managers Using Microsoft Excel, 8th Edition (Global Edition)
by Levine, Stephan and Szabat
Pearson Publishing
ISBN 978-1-292-156347

Grading:

The final grade will be composed of the following components:
- 10% class attendance and decorum
- 40% group assignments
- 20% mid-term exam
- 30% comprehensive final exam

Detailed class schedule, 1ˢᵗ – 14ᵗʰ week:

Date of class	Topics, readings required for the class
Week 1 Feb. 3, 5	• Syllabus and Course Requirements • Sampling Distributions • Read Chapter 7
Week 2 Feb. 10, 12	• Sampling Distributions • Read Chapter 7
Week 3 Feb. 17, 19	• Confidence Interval Estimation • Read Chapter 8 • **Assignment #1 Due** Friday, 21.2.20
Week 4 Feb. 24, 26	• Confidence Interval Estimation • Read Chapter 8
Week 5 Mar. 2, 4	• Hypothesis Testing: One-Sample Tests • Read Chapter 9
Week 6 Mar. 9, 11	• Hypothesis Testing: One-Sample Tests • **Assignment #2 Due** Friday, 13.3.20
Week 7 Mar. 16, 18	• **REVIEW** Monday, Mar. 16 • **MIDTERM** Wednesday, Mar. 18
Week 8 Mar. 23, 25	• Hypothesis Testing: Two-Sample Tests • Read Chapter 10
Week 9 Mar. 30/ Apr. 1	• Simple Linear Regression • Read Chapter 13
Week 10 Apr. 13, 15	• **Spring Break Apr. 6-10** • Simple Linear Regression • Read Chapter 13
Week 11 Apr. 20, 22	• Multiple Regression • Read Chapter 15 • **Assignment #3 Due** Friday, 24.4.20
Week 12 Apr. 27, 29	• Multiple Regression • Read Chapter 15
Week 13 May 4, 6	• Time-Series Forecasting • Read Chapter 16
Week 14 May 11,13	• Time-Series Forecasting • Read Chapter 16 • **Assignment #4 Due** Friday, 15.5.20
Finals Week May 18	• **COMPREHENSIVE FINAL EXAM,** Monday, May 18 • Graded Exams and Course grades distributed, Wednesday, May 20

Assignments:
- Assignment #1, Due Friday, 21.2.20
- Assignment #2, Due Friday, 13.3.20
- Assignment #3, Due Friday, 24.4.20
- Assignment #4, Due Friday, 15.5.20