LOGOM 3300: Business Statistics

Spring 2017

Without big data analytics, companies are blind and deaf, wandering out onto the Web like deer on a freeway. ~Geoffrey Moore

Instructor

Dr. Andrea Cadenbach, Ph.D.
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Office: 232 Express Scripts Hall
Office Hours: Mondays, 3-4 pm and by appointment

Lecture

Section 001: Mondays and Wednesdays, 9:30 – 10:45 am, room 003 ESH

Supplemental Instruction

Supplemental Instruction (SI) is an academic support program available to students in this course that offers regularly scheduled out-of-class study sessions. At the SI sessions, students will get support to master course content and also to learn general strategies to be successful in the course.

SI instructor: Long Nguyen
The schedule is TBA, and will be posted to MyGateway.

Tutors and Tutoring Hours

Tutors are available and will hold regular office hours as listed below.

Deanna Pan, Room 238 ESH
Mondays, 11:00 – 2:00 PM
Mondays, 5:00 – 7:00 PM
Wednesdays, 11:00 – 2:00 PM

Kevin Wang, Room 240 ESH
Tuesdays, 11:00 – 4:00 PM
Thursdays, 5:30 – 6:30 PM

Prerequisites

MATH 1100 (Calculus), MATH 1105 (Basic Statistics), and INFSYS 1800
With a grade of C- or better in each, and a 2.0 campus GPA

Required Text

Statistics for Business and Economics by Anderson, Sweeney, Williams, Camm & Cochran, 12th edition (South-Western)

The Cengage Online code is NOT required.

Course Web Site

MyGateway will be used to post important announcements, documents, and homework assignments and solutions. Check it regularly.

Withdrawal Policy

- The last day to drop/withdraw without a grade is Feb. 13.
- Students may drop with a grade of EX (excused) until one day after receiving the first graded exam.
- After that time, a grade of EX (excused) or F will be assigned, depending on the student's current score.
- No drops/withdrawals after April 17.
- In addition to notifying the instructor **in writing** of the intention to drop, the student must also officially drop/withdraw from the course.

Course Overview and Objectives

How do companies make sense of data and understand the uncertainties they face on a daily basis? In this course, you will learn statistical methods that are used to analyze data and derive insights that can be leveraged for a competitive edge. Course topics include statistical inference, tests of goodness of fit, linear regression, correlation, multiple linear regression, model building, forecasting, analysis of variance, and design of experiments.

Throughout the semester, students will

- Formulate and analyze problems based on data
- Conduct hypothesis tests and interpret results (tests on mean, proportion, and variance, for one, two, or multiple populations, and tests of independence and goodness of fit)
- Understand the limitations of statistical inference and calculate the probability of both Type I and Type II errors
- Conduct linear regression and interpret the results
- Build statistical models using multiple regression, dummy variables, and the general linear model and evaluate the usefulness of the models
- Make predictions based on time series analysis and standard forecasting techniques
- Explain the fundamental concepts relevant to the analysis of variance (ANOVA) and design of experiments
- Use statistical software such as Excel to conduct data analyses
- Appreciate the significance of probability and statistics in a business context

Class Sessions

Class will consist of lecture, discussions, and small group activities to enhance learning. Students are encouraged to ask questions during class. Questions facilitate discussion on topics and leads to better understanding for the entire class.

Grading and Assignments

Homework, Quizzes, & In-Class Assignments

Homework

Homework problems will be assigned on a regular basis and may require the use of statistical software (Excel). The homework will be graded on the basis of completeness. To receive a full score, sufficient work must be shown to demonstrate an attempt to solve every problem. A hardcopy of completed homework assignments may be turned in during class on the due date, or a scanned PDF may be submitted electronically through MyGateway.

Homework solutions will be posted by 8 pm on the due date. Thus, absolutely no late homework will be accepted for credit.

Quizzes
There will be an in-class quiz during the class period that follows the homework due date. The quiz will cover topics from the preceding homework assignment. Quizzes may be problem-based, conceptual, or both. Students are allowed to bring one page of handwritten notes to this quiz.

Note: Correcting your own homework and analyzing any errors you have made is an excellent way to enhance your learning of the material and prepare for the in-class quiz. If you turn in a hard copy of the assignment, you are encouraged to make a copy of your work in order to compare it to the posted solutions prior to the quiz.

In-Class Assignments
There will be activities and assignments during class sessions that will be turned in and count toward the final grade. There are no make-ups for missed in-class activities.

The three lowest grades in the Homework/Quiz/In-Class Assignments category will be dropped.

Forecasting Project
The forecasting project is an INDIVIDUAL assignment. Students are asked to identify a publicly traded stock, gather historical data on the stock, and make predictions of future values of the stock price. Predictions will be made (1) prior to learning forecasting techniques and (2) after learning forecasting techniques. Students will write a 3-5 page report documenting and evaluating the forecasts made.

Regression Project
The regression project is a GROUP assignment. Students are expected to identify a topic of interest in which a regression analysis can be conducted and in which data is available. Students will then gather data, conduct the regression(s), and write a 4-8 page report detailing the analysis and its findings. The regression project may be completed individually or in groups of up to 4 students.

Attendance
Attendance is required in order to participate in the in-class activities and to take regularly scheduled quizzes. A university excused absence is required to obtain permission from the instructor for a make-up quiz.

Exams
There will be three midterm exams and an optional final exam. Each exam will emphasize the material covered since the previous exam but may include any material covered throughout the semester.

You are permitted to bring one 8.5x11" page of handwritten notes to each exam. The page may have notes written on both sides of it. You may use a calculator for each exam. You must bring your own calculator; none will be available to borrow.

- Midterm Exam 1: Wednesday, Feb. 15 in class
- Midterm Exam 2: Wednesday, March 22 in class
- Midterm Exam 3: Wednesday, May 3 in class

Optional Final Exam
There will be an optional final exam that is cumulative. Students have the option of taking the final exam to replace one of their midterm exam scores. If a student scores lower on the final exam than the student's lowest midterm exam score, the final exam score will not count toward the final grade.

Grading
Your final grade will be calculated as a weighted average according to the following percentages:

- Homework, Quizzes, & In-Class Assignments: 20%
- Forecasting Project: 10%
- Regression Project: 10%
- Midterm Exams: 20% each (3 exams)

Final letter grades will be assigned based on the following scale; however, the instructor reserves the right to modify the scale below based on class performance. Plus/minus grades will be assigned for scores within 2% points of the grade cutoff scores.

90-100%	A
80-89%	B
70-79%	C
60-69%	D
0-59%	F

Course Policies

We will follow all policies in the UMSL *Student Conduct Policy* (http://www.umsl.edu/~studentconduct/Student%20Conduct%20Policy/index.html)

Accommodations
Any student requiring special accommodations for any reason should contact the instructor as soon as possible. Students with disabilities who believe that they may need accommodations in this course are encouraged to contact Disability Access Services in 144 Millennium Student Center at 314-516-6554. Information about your disability is completely confidential.

Academic Integrity
We will follow university regulations for academic integrity: (http://www.umsl.edu/services/academic/policy/academic-dishonesty.html).

These standards will be enforced and infractions of these rules will not be tolerated. Such behavior includes sharing or copying any part of another student's quiz or exam, allowing another student to copy any part of your exam, or using an unauthorized aid on an exam. Infractions of academic integrity will result in a failing grade for the assignment and will be referred to the Vice Chancellor of Academic Affairs for further disciplinary action.

The ONLY materials permitted during the quizzes and exams are 1 sheet of handwritten notes (8.5x11", front and back) and a hand-held calculator.

Absolutely no cell phones or electronic devices other than a hand-held calculator are permitted to be handled during quizzes and exams.

Excused Absences
If you have an excused absence that coincides with an exam or quiz, please notify the instructor as soon as possible, and at a minimum of two weeks before the absence. A make-up will be scheduled.

Early Alert Program
The instructor participates in the UMSL Early Alert Program. Early alerts are electronic notes initiated when the instructor believes a student may be experiencing a barrier to success in the course. When an

alert is raised, the student will receive an email from Student Retention Services in an effort to help the student be successful.

Mandatory Reporting
Under Title IX, all UMSL faculty, staff, and administrators (with limited exception) are obligated to report any incidents of sexual harassment, sexual misconduct, sexual assault, or gender discrimination to the Title IX office and/or other University officials. This ensures that all parties are protected from further abuses and that victim(s) are supported by trained counselors and professionals. Note: There are several offices at UMSL (e.g. Counseling Services, Health Services, Community Psychological Service, Center for Trauma Recovery, and Student Social Services) whose staff are exempt from Title IX mandatory reporting when the information is learned in the course of a confidential communication.

Email Communications
All email from the instructor will be sent to each student's UMSL email address. Check this email address regularly. Treat all email as professional correspondence with an appropriate salutation and closing.

Schedule
The schedule for the course topics is tentative. Revisions may be made as necessary.

Week	Date	Topics		
1	Jan. 18	Chp 6.	The Normal Probability Distribution, Dice Activity, & Applications of Statistics/Forecasting Project	
2	Jan. 23	Chps. 7&8	Sampling Distributions and Interval Estimation	HW1 due
2	Jan. 25	Chp. 9	Hypothesis Testing	Quiz 1
3	Jan. 30	Chp. 9	Hypothesis Testing	HW2 due
3	Feb. 1	Chp. 10	Inference on Two Means/Proportions	Quiz 2
4	Feb. 6	Chp. 10	Inference on Two Means/Proportions	HW 3 due
4	Feb. 8	Chp. 11	Inference on Variance	Quiz 3
5	Feb. 13		**Last day to drop without a grade.**	
5	Feb. 13		Review	HW 4 due
5	Feb. 15		**Exam 1**	NO QUIZ 4
6	Feb. 20	Chp. 17	Technical writing & forecasting for horizontal patterns	
6	Feb. 22	Chp.17	Forecasting: Trend Patterns	
7	Feb. 27	Chp.14	LR: Model, Correlation Coefficient, & Assumptions	HW 5 due
7	Mar. 1	Chp.14	LR: Significance & Predictions	Quiz 5
8	Mar. 6	Chp.15	Multiple Regression	HW 6 due
8	Mar. 8	Chp.15	Multiple Regression	Quiz 6
9	Mar. 13	Chp.17	Forecasting with Seasonality	HW 7 due
9	Mar. 15	Chp.17	Forecasting with Seasonality	Quiz 7 Forecasting project due
10	Mar. 20		Review	HW 8 due

10	Mar. 22		**Exam 2**	NO QUIZ 8
			Spring Break: March 25 – April 2	
11	Apr. 3		Guest speaker	
11	Apr. 5	Chp. 16	Model Building	
12	Apr. 10	Chp. 16	Model Building	HW 9 due
12	Apr. 12	Chp. 19	Quality Control	Quiz 9
13	Apr. 17		**Last day to drop. A grade of EX or F will be assigned.**	
13	Apr. 17	Chp. 12	Tests of Multiple Proportions	HW 10 due
13	Apr. 19	Chp. 12	Tests of Independence and Goodness of Fit	Quiz 10
14	Apr. 24	Chp.12	Continue Chi-Squared Tests	HW 11 due
14	Apr. 26	Chp. 13	ANOVA and Design of Experiments	Quiz 11
15	May 1		Review	HW 12 due
15	May 3		**Exam 3**	NO QUIZ 12 Regression project due
16	May		Optional Final Exam, Wed. May 10, 7:45-9:45 am	