

Business Statistics

Business (BUS) 211

Spring 2025, 3 credits

**Monday, Wednesday, Friday 12:00pm - 12:50pm in Green Hall 107 and 109
(Computer Lab)**

Instructor: Alex Marsella

Office: Green Hall 215

Office Hours: Monday 11-12. Tuesday 10-2. Wednesday 11-12 & 2-5. Friday 11-12

Email: amarsella@berry.edu

Course Description

Analysis of variance, applications of the chi-square statistic, simple linear regression, multiple linear regression, time-series analysis, index numbers, forecasting methods, decision making under uncertainty, nonparametric statistics and other topics of current interest.

PR: MAT 111 (Elementary Stats) and MAT 145 (Applied Calc).

Required Course Textbook

Keller, Gerald. *Statistics for Management and Economics, 12th Edition*. Cengage Learning, 2012. ISBN-13: 978-1305082199

Expected Learning Outcomes & Foundations Assessment

Upon completion of the course, students should demonstrate clear understanding of the relevant material by satisfying the following learning goals/outcomes:

1. Students will be able to explain the sampling distribution of an estimator and the properties of unbiasedness and efficiency.
2. Students will be able to intuitively explain and execute the four parts of a hypothesis test.
3. Students will be able to perform regression analysis. Students will display this proficiency through a group project where they are expected to choose a topic conducive to regression analysis, specify a regression equation, collect data and enter it into Excel, run descriptive statistics and regressions on the data, interpret and evaluate the results, and write a report detailing the regression project and the results.
4. Students will be able to evaluate regression results. Students will be able to determine whether the regression coefficients have the expected sign and magnitude, whether the regression coefficients are statistically significant, whether the equation includes irrelevant variables or omits theoretically relevant variables, and whether the goodness of fit of the equation appears adequate.
5. Students will be able to distinguish between quantitative and qualitative variables and will be able to construct and use dummy variables, both intercept dummies and slope dummies.
6. Students will be able to explain multicollinearity and its effect on regression results. They will be able to choose independent variables that are not redundant and to run (using Excel) the correlation matrix and explain why pair wise correlations do not capture all multicollinearity.
7. Students will understand the fundamentals of statistical inference, recognizing the basic differences between correlation and causation.

Grading

Your grade will be based on the following: 2 exams (two in-class exams, no final), assigned problems, a forecasting assignment, and a project on applied linear regression.

Item	Date	Points
Applications (done in class)	See schedule, due end of class on days noted	20 each x5 (100 Total) (5 since lowest is dropped)
Problems Sets (homework)	See schedule, due 11:59pm	15 each x7 (105 Total)
Quiz 1	Monday Feb 3	65
Quiz 2	Monday Mar 24	65
Quiz 3	Friday Apr 25	65
Final Exam	Monday May 5 2pm	100
Total		500

Grading Scale

Percent	Letter Grade
93-100% (465-500 points)	A
90-92.9% (450-464 points)	A-
87-89.9%(435-449 points)	B+
83-86.9% (415-434 points)	B
80-82.9% (400-414 points)	B-
77-79.9%(385-399 points)	C+
73-76.9% (365-484 points)	C
70-72.9% (350-364 points)	C-
67-69.9%(335-349 points)	D+
60-66.9% (300-334 points)	D
0-59.9% (0-299 points)	F

Note: Based on the grading scale I have chosen there is no rounding up. There may be extra credit opportunities within the class.

Attendance Policy:

Per college policy, class attendance is mandatory. Poor attendance could adversely affect homework and test grades. In particular, absence on **application** days will result in a grade of zero on in-class **applications** assignments. (If you expect to be absent due to a college-sanctioned event, you may turn in an application early.) Should you miss a class, you are responsible for any material covered, supplemental readings distributed, homework assigned, etc. Late arrival for class is not acceptable.

Academic Integrity

All work submitted by students should be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any substantive portion of an assignment for them. This includes artificial intelligence tools like ChatGPT. Any assignment suspected of an academic integrity violation will receive a zero.

I. Detailed Breakdown of Graded Work in this class

A. Applications (x6 - 1 drop = 5)

1. Six at 25 points each, but with one free drop of the lowest.
2. In class, on days where the word **Applications** is used in the schedule, you will work with a partner to do the application. I will give some guidance but the point is that by attending class regularly you develop the skills to do these with minimal help from me.
 - a) These come from the textbook, but I will provide them in class as well.
3. We will use Canvas's built-in "group" option for you to join a group with your partner. Therefore, only one submission per pair is necessary.
4. Due by the end of class on those days.
5. I will drop your lowest one, this is like your "free" absence if you miss one application day. If you don't miss any, you still get the benefit of a free drop.

B. Problem Sets (x7)

1. Seven at 15 points each. Due bi-weekly or weekly, on Fridays.
2. Due 11:59pm on days noted in the schedule. You work on these at home.

C. Quizzes (x3)

1. Three, in-person during class time, on the computer in excel. 65 points each

D. Final Exam

1. 100 points

Make-Up Policy

There will generally not be make-up exams. You have full notice at the beginning of the course of the day the exam is taking place and they occur during scheduled class time. If you are aware of a conflict in your schedule, please bring this to my attention immediately. A week's notice is required. Exceptions can only be made for genuine emergencies. **College-sanctioned events are considered a valid excuse as long as you give me proper notice so I can accommodate you to take the exam early.**

Late Work Policy

Applications can not be accepted late under any circumstances. They are meant to be done with a partner in class. Your lowest application grade will be dropped. With proper notice, a college-sanctioned event is a valid excuse for handing in an application early. Late homework problem sets will be docked at 20% per day late, automatically on Canvas starting at 12:00AM. Exceptions to these policies are only made for medical or family emergencies.

Student Resources

- I am happy to help you during my office hours. Keep in mind that office hours are for you, not me. It's time I've set aside to help you! I would like to reward you for reading the syllabus, so coming to my office and telling me about what you're most interested in learning in this course (during week 1 or 2) will result in 3 extra credit points.
- If you have a disability and/or require an accommodation, please contact The Academic Success Center in Evans Hall, Room 106, as soon as possible so that your accommodations can be made. I can not provide an accommodation without proper documentation from the Academic Success Center.
- If you are struggling with a concept, please come to my office. If your schedule prevents you from coming to in-person office hours on Monday, Wednesday, or Friday, please book a Teams call

with me using this link. [Book a time to meet with me](#) Just make sure you give me a couple days notice.

General Policies and Expectations

- This class is in-person, and per college policy, attendance is **mandatory**.
- As a courtesy to your classmates and to me, please minimize any late arrival or leaving during class.
- Students should make an effort to finish course material in a timely manner. If something comes up last minute (you get called in to work the night homework is due, for example), it is better to have the homework out of the way.
- Please feel free to attend office hours if you have questions regarding material. Office hours are your chance to get questions answered in-depth.
- No laptops are allowed when we are in the regular lecture room.

Accommodation Statement

The Academic Success Center provides accessibility resources, including academic accommodations, to students with diagnosed differences and/or disabilities. If you need accommodations for this or other classes, please visit berry.edu/asc for information and resources. You may also reach out at 706-233-40480. Please note, faculty are not required, as part of any temporary or long-term accommodation, to distribute recordings of class sessions.

Schedule below!

Tentative Schedule

**Introduction and Review of Stats, Fundamental Statistical Concepts,
Analysis of Variance (ANOVA), Linear Regression, Cumulative Review**

Wk	Date	DOW	Due	Readings	Topic	Loc	
1	1/13	M		Ch. 1	Intro, Why Stats Matter	107	
	1/15	W		Ch. 1/2	Stats Refresher	109	
	1/17	F		Ch 2	Excel Basics	109	
2	1/20	M	NO CLASS - MLK JR DAY				
	1/22	W		Ch. 3	Using Excel to Describe Data	109	
	1/24	F	PS1	Ch 4.1-4.2	Descriptive Statistics	109	
3	1/27	M		Ch. 4.3-4.4	Descriptive Statistics	109	
	1/29	W	App	Ch 4.5	Application in Baseball	109	
	1/31	F	App	Ch 4.6	Application in Finance	109	
4	2/3	M	Quiz 1 (Ch 2-4)				109
	2/5	W		Ch 6	Basics of Probability	107	
	2/7	F	NO CLASS				
5	2/10	M		Ch 7.1	Random Variables & Discrete Prob. Distributions	109	
	2/12	W	App	Ch 7.3	Application in Finance	109	
	2/14	F					
6	2/17	M	PS2	Ch 8.2	Normal Distribution	109	
	2/19	W		Ch 8.4	t Distribution	107	
	2/21	F		Ch. 9	Sampling Distributions	109	
7	2/24	M	PS3	Ch. 10 Ch 11	Estimation Intro to Hypothesis Testing	109	
	2/26	W				107	
	2/28	F				109	
8	3/3	M		Ch. 12.1-12.3	Inference about a Population	107	
	3/5	W				109	
	3/7	F	App PS4	Ch 12.4	Application in Marketing	109	
	3/10	M	NO CLASSES - SPRING BREAK				
	3/12	W					
	3/14	F					
9	3/17	M		Ch. 13 Review	Inference comparing Populations Review and Practice of Ch 8 - 13	109	
	3/19	W				109	
	3/21	F	PS5			109	
10	3/24	M	Quiz 2 (Ch 8 -13)				109
	3/26	W		Ch. 14.1	One-way Analysis of Variance	109	
	3/28	F		Ch. 14.2-14.5	Two-Way ANOVA	109	
11	3/31	M					
	4/2	W		Ch 16.1-16..3	Simple Linear Regression & Correlation	109	
	4/4	F	PS6				
12	4/7	M		Ch. 17	Multiple Regression	109	

	4/9	W		Ch. 17	Multiple Regression	109
	4/11	F	PS7	Ch. 18.1,.2,.5	Model Building	109
13	4/14	M	App	Ch. 18.3	Application in Economics	109
	4/16	W	App	Ch 18.3	Application in HR Management	109
	4/18	F	NO CLASS - GOOD FRIDAY			
14	4/21	M		Review	Review and Practice of Ch 16 - 18	109
	4/23	W				
	4/25	F	Quiz 3 (Ch 16 - 18)			
15	4/28	M		Review	Review and Practice for Final	109
	4/30	W				109
	5/5	M	Final Exam 2pm May 5			