BUSA 537: Business Data Science

COURSE SYLLABUS: SPRING 2026

Instructor: Dr. Zaki Malik
Email Address: zaki.malik@etamu.edu

Please use emails to ask me questions, and use BUSA-537 in the subject line of the email. This is the fastest way to reach me.

Office Hours: Thursday 8.30AM – 12.30PM and 2PM – 3.30PM in Dallas (or online; Zoom Link posted in D2L)

COURSE INFORMATION

Course Modality
- This is an Online Asynchronous Class, i.e. there are no live lectures. Lecture Recordings for each week will be available through D2L.

Textbook
> R for Everyone: Advanced Analytics and Graphics
> > by Jared P. Lander
> **ISBN**: 978-0-321-88803-7

Software Required
- For the class exercises and assignments, you need the R software. If you don't have the software, please refer to page 1 to 33 of the textbook to download and install the software on your computer. The R software is a cross-platform system. Thus, it can be installed on Windows PC, Apple Mac desktop and laptop, and the Linux system.
- You cannot install the R software on any smart phone, iPad, or tablet PC.
- It is a graduate-level class. Students are expected and responsible to make sure the software is installed and working in the <u>first week</u> of the semester!

Optional Texts and/or Materials
- R is implementation-oriented. Meaning, the more you write R code, the better you get at it. Students are encouraged to consult other online sources for learning and practicing R.

COURSE DESCRIPTION

This course is designed to introduce the following advanced business analytics knowledge to students:

1. **Business analytics by using advanced statistics models**
2. **Statistics model implementation in the R software**

This course teaches graduate students the process of implementing advanced statistics models such as linear models and text mining in the R software. Fundamental statistics knowledge is required before taking this class.

Student Learning Outcomes

1. Students should be able to use the statistical models introduced in this class to resolve analytical questions assigned during this semester.
2. Students should be familiar to the R software interface and the data modeling processes in the software.
3. Students should be able to interpret the implications of data analysis results to business operations.

GRADING

Assignments (A Maximum of 30 Points)
Three assignments will be given during the semester. You can get a maximum of 15 points for each assignment. Assignments are very important to your final grade! Please be sure to complete and submit every assignment by the deadline.
- Assignment 1 (please visit D2L for schedule)
- Assignment 2 (Please visit D2L for schedule)

Exams (A Maximum of 70 Points)
Three exams will be given during the semester. Each exam will be open for one week in the online learning system. You can choose any time during the one-week period to take the online exam. Once you start the exam, you have three hours to complete the exam. You can't pause or retake the exam once it is started. The exam dates are:
- Exam 1 (10 points) (Please visit D2L for schedule)
- Exam 2 (30 points) (Please visit D2L for schedule)

Exam 3 (30 points) (Please visit D2L for schedule)

Final Grade
At the end of this semester, if your total is between 90 and 100, you will get an A; if it's between 80 and 89, you will get a B, and so on. **Please note that the actual points will be used to calculate your final grade.** No curving will be used in this class.

Points	Grade
90-100	A
80-89	B
70-79	C
60-69	D
below 60	F

TECHNOLOGY REQUIREMENTS

You will need to install R and a suitable editor (like R Studio).

COMMUNICATION AND SUPPORT

- If you ask me questions by emails, I will reply within 48 hours. However, I usually answer them much faster.
- **If you have questions about software operations, please make sure to include the screenshots of the issues in the emails.**
- All assignment due dates, deadlines, and exam time are central time in the United States.

COURSE AND UNIVERSITY POLICIES

Students with Disabilities
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:
Office of Student Disability Resources and Services
Gee Library- Room 132

Student Conduct
All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Code of Student Conduct from Student Guide Handbook).*

Campus Concealed Carry
Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to ((http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/ 34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf) and/or consult your event organizer). Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

AI use policy [May 2023]
Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course. Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors 'guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty
13.99.99.R0.10 Graduate Student Academic Dishonesty

TENTATIVE COURSE OUTLINE

.

Weeks	Topics/ Chapters in Textbook
1	Class introduction & Chapter 1-3: Introduction to R and R studios
2	Chapter 4: Basics of R/ Chapter 5: Advanced Data Structures
3	Chapter 6: Reading data into R/ Chapter 7: Statistical Graphics
4	Chapter 7: Data visualizations advanced topics (ggplot)/ Assignment 1
5	Chapter 8: Writing R functions/ Chapter 9: Control (switch) statements
6	Chapter 11: Group Manipulation/ Chapter 12: Data reshaping/ Exam 1
7	Spring Break
8	Chapter 14: Probability distributions
9	Chapter 15: Basic Statistics/ ANOVA tests / Assignment 2
10	Chapter 16: Linear regression/ Project
11	Chapter 17: Regression model diagnostics / Exam 2
12	Chapter 18: Logistic regression
13	Chapter 20: Decision Tree analysis / Receiver Operating Characteristic (ROC) curve/ Assignment 3
14	Cross validation
15	Chapter 20: Time Series Analysis / Exam 3