BUAN 6356: Business Analytics With R

Class Information

Term	Fall 24: [19 Aug – 6 Dec]
Course Number	BUAN 6356.001
Class Meetings	Fridays; 1.00 PM – 3.45 PM
Classroom	JSOM 1.107

Instructor Information

Instructor	Magesh Tarala
Phone	214-394-0321
Email	magesh.tarala@utdallas.edu
Office Hours	Thursday 3.00 PM to 4.00 PM (online). Appointments encouraged.
TA Information	Prajwal Prahllad Rao Kulkarni prajwalprahlladrao.kulkarni@utdallas.edu Thursdays from 12:00 PM to 1:00 PM every week via Microsoft Teams

Course Information

Course Description	This course delves into the principles and practical applications of business analytics, emphasizing the extraction of valuable insights from company data. It explores a wide range of applications, such as customer segmentation, customer relationship management (CRM), personalization, online recommendation systems, and product assortment optimization. The primary focus is on equipping students with the essential skills to effectively apply business analytics in making informed business decisions. Additionally, students will gain valuable hands-on experience using R, an open-source tool widely used in the field.
Course Objectives / Learning Outcomes	1. Acquire foundational knowledge of business intelligence and data mining, exploring various real-world use cases to understand its practical applications. 2. Foster practical understanding in data preparation, exploration, and visual analytics methods, enabling effective data analysis and interpretation for informed decision-making. 3. Gain hands-on experience in predictive modeling, classification, clustering, and association rules, empowering you to solve complex business challenges using data-driven insights.

Course Material

Books and Materials	**Recommended**: *Data Mining for Business Analytics: Concepts, Techniques, and Applications in R*, by Galit Shmueli, Peter Bruce, Inbal Yahav, Nitin Patel, and Kenneth Lichtendahl. Wiley, ISBN-10: 1118879368, ISBN-13: 978-1118879368 **Reference**: R for Data Science by Grolemund and Wickham, http://r4ds.had.co.nz/index.html **Software**: R and RStudio https://posit.co/download/rstudio-desktop/
Laptop Computer	This course offers a practical learning approach with numerous in-class examples and exercises. Students are expected to install R and RStudio on their laptops and bring them to each class session.

Assessment

Training in R (DataCamp)	5%
Homework Assignments (4), 7.5% each	20%
Exam 1	25%
Exam 2	25%
Group Project	25%

Homework Assignments

This class involves 4 individual homework assignments.

Exams

I may require use of Lockdown browser / HONORLOCK. I will provide more information before the Exam.

Group Project

Groups should comprise 4 students and should be formed ASAP. Once formed, altering the groups will not be possible except in very special circumstances.

Final Grade

Letter Grade	Final Point Total
A	>= 93.00 – 100
A-	>= 90.00 – 92
B+	>= 88.00 – 89
B	>= 83.00 – 87
B-	>= 80.00 – 82
C+	>= 78.00 – 79
C	>= 73.00 – 77
F	0 – 72

The final cut-offs could be adjusted at the end of the semester based on the following rules: The portion of "A" grade will not exceed 30% of the number of students. The portion of "A-" grade will not exceed 30% of the number of students.

Additional Information

You are responsible for any announcements made in class or through eLearning, including changes to the schedule. You are also responsible for material distributed in class or through eLearning (please check eLearning regularly)

All assignments and project reports must be submitted through eLearning. Alternative submission methods (e.g., by paper, by e-mail, or on disk/USB drive) is not acceptable unless prior permission of instructor is obtained. Submissions after the deadline will not be accepted, and accordingly a grade of zero will be automatically applied for a missing submission after the deadline

All exams require *individual-effort*. Unless under extreme circumstances, make-up exams will *not* be arranged. A make-up exam will include significant discussion, essay, and short answer questions

- Exams will be proctored using a remote proctoring service called Honorlock.
- A laptop or desktop with webcam/microphone will be required to take the exams
- You will need a current UTD student ID to take the exams

Copying another student's work (computer files) or having another person do your work is scholastic dishonesty (see below) and will be dealt with according to the university code on academic integrity.

University Policies and Procedures

For information regarding general University policies and procedures, please go to http://go.utdallas.edu/syllabus-policies. These policies include the following:

- Technical Support
- Field Trip Policies, Off-Campus Instruction and Course Activities
- Student Conduct and Discipline
- Academic Integrity
- Copyright Notice
- Email Use
- Withdrawal from Class
- Student Grievance Procedures
- Incomplete Grade Policy
- Disability Services
- **Descriptions and timelines in this syllabus are subject to change at the discretion of the instructor.**

Schedule

Course Weekly Schedule, Assignments, and Due Dates: *This is a **tentative** class schedule. Instructor reserves the right to make changes to the content and schedule. Changes, if any, will be announced in the class as well as posted on eLearning portal. It is the student's responsibility to keep track of them.*

Week (Date)	Topics	Book Chapter	Assignments	Due Date
1 (8/23)	Introductions, Roadmap, Group Formation, Tool Installation, Introduction to Business Analytics	Chapter 1	Intro to R (2.5%) (DataCamp)	9/6
2 (8/30)	Data Mining Process and Overview of R	Chapter 2	Intermediate R (2.5%) (DataCamp)	9/6
3 (9/6)	Data Exploration and Visualization	Chapter 3.1 – 3.4	Assignment 1: Data Exploration and Visualization (5%)	9/20
4 (9/13)	Evaluating Performance Measures Quiz 1	Chapter 5		
5 (9/20)	Multiple Linear Regression	Chapter 6	Assignment 2: Models using MLR and LR methods (5%)	10/4
6 (9/27)	Logistic Regression	Chapter 10		
7 (10/4)	Review and about Exam 1 Potential Guest Lecture		Project Proposal Due	
8 (10/11)	Exam 1			
9 (10/18)	Classification and Regression Tree	Chapter 9	Assignment 3: Models using CART and NNW Methods (5%)	11/1
10 (10/25)	Neural Networks and Applications	Chapter 11		
11 (11/1)	Clustering Analysis	Chapter 15	Assignment 4: Clustering and Association Rules (5%)	11/15
12 (11/8)	Association Rules Quiz 2	Chapter 14.1		
13 (11/15)	Practical Considerations in Business Analytics			
14 (11/22)	Group Project Presentations			
15 (11/29)	Fall Break: No Class			
16 (12/6)	Exam 2			