

BUAN/MIS/OPRE 6356.004: BUSINESS ANALYTICS WITH R (FALL 2025)

Instructor	Professor Heeseung (Andrew) Lee (andrewlee@utdallas.edu) Office Hours: Monday 3:45 pm - 5:00 pm (JSOM 4.427)
TA	Juyeon Park (Juyeon.Park@UTDallas.edu)
Class Hour	Monday 1:00 pm - 3:45 pm (JSOM 1.110) This course will NOT be video recorded. Class attendance is recommended.

Optional Books	1) <i>Data Mining for Business Analytics: Concepts, Techniques, and Applications in R</i> , by Galit Shmueli, Peter Bruce, Inbal Yahav, Nitin Patel, and Kenneth Lichtendahl. Wiley, ISBN-10: 1118879368, ISBN-13: 978-1118879368 2) <i>Business Analytics: Data Analysis & Decision Making (MindTap Course List)</i> , by S. Christian Albright and Wayne L. Winston. Cengage Learning, ISBN-10: 1337406422, ISBN-13: 978-1337406420 3) <i>R for Data Science: Import, Tidy, Transform, Visualize, and Model Data</i> , by Hadley Wickham and Garrett Grolemund. O'Reilly, ISBN-10: 1491910399, ISBN-13: 978-1491910399 (Website: https://r4ds.had.co.nz/introduction.html)
Additional Reading	Lecture notes and learning material will be posted in eLearning.
Required Software	R (https://www.rstudio.com): Download R studio and R, as well as other R packages (specified by the instructor).
Required Device	(Laptop Computer) We will use R, a free programming language, and the RStudio environment for statistical computing and visualization, throughout the course. <u>Prior knowledge of R is a plus but not mandatory.</u> We will start the course with a short tutorial on R. This course is heavily hands-on with many in-class exercises.

Course Description	This course covers the emerging field of business analytics (BA) and enhances students' analytical skills and insights for dealing with massive data sets with R. Through various case studies and lab exercises, students will learn descriptive and predictive analytic methods in real-world problems.
Course Objectives	1. Understand the concept of business analytics 2. Learn and exercise various descriptive and predictive analytic methods 3. Equip the methodological insights to solve a real-world business problem

Assignments	This class involves 4 individual homework assignments.
Exams	The exam format will only be handwriting (e.g., pen) without any electronic device. In the exams, the students should sit on the randomly assigned chair to avoid potential cheating. The scope of each exam will not be duplicated.
Group Project	This class has one group project. Groups should comprise 5-6 students. Once formed, altering the groups will not be possible except in exceptional circumstances. Each team should submit a contribution percentage report to avoid the potential free-rider issue.

Assessment	Individual Homework Assignments	32% (=4*8%)
	Exam 1	28%
	Exam 2	28%
	Group Project Presentation	10%
	Group Project Participation	2%

Final Grade The default schedule for grade assignment is: ($\geq 95\%$) \Rightarrow A, ($\geq 91\%$ & $< 95\%$) \Rightarrow A-, ($\geq 86\%$ & $< 91\%$) \Rightarrow B+, ($\geq 81\%$ & $< 86\%$) \Rightarrow B, ($\geq 76\%$ & $< 81\%$) \Rightarrow B-, ($\geq 70\%$ & $< 76\%$) \Rightarrow C+, ($< 70\%$) \Rightarrow F. **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. Next, the portion of “A-” grade will not exceed 30% of the number of students.

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

The group project participation portion (2%) is affected by your **involvement and contribution to the group project**. In extreme cases, such as when a student contributes significantly less to the group project, a penalty will be imposed, and the student will get 0% in the participation grade.

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) are not acceptable unless prior permission from the 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.

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**.

Make-up exams will not be arranged except for documented medical reasons. The detailed exam format will be announced later on the discussion board of the eLearning system.

Students have **seven calendar days** from posting results to appeal an assignment or exam grade.

Generative AI Use Policy: In line with UT Dallas Policy UTDSP5017:
Exams: Use of Generative AI tools is strictly prohibited. Violations will be treated as academic integrity breaches under university policy.

Tentative Schedule

* Topics and timelines are subject to change at the discretion of the professor

* All assignments are **due by 11:59 pm** central time (CT).

Week	Date	Topic(s)	Assignments
01	08/25	Course Introduction	<i>Install R & R Studio</i>
02	09/01	Labor Day: No Class	
03	09/08	R Review I	
04	09/15	R Review II	<i>Homework 1 Due</i>
05	09/22	R Review III	
06	09/29	Data Exploration & Visualization	
07	10/06	Classification I: Decision Trees	
08	10/13	Classification II: R Practice & Exam 1 Summary	<i>Homework 2 Due</i>
09	10/20	Exam 1	
10	10/27	Other Classifiers	
11	11/03	Clustering: K-Means & Hierarchical Clustering	
12	11/10	Dimension Reduction	<i>Project Proposal Due</i>
13	11/17	Text Mining & Exam 2 Summary	<i>Homework 3 Due</i>
14	11/24	Fall Break: No Class	
15	12/01	Project Presentation & Discussion	<i>Homework 4 Due</i>
16	12/08	Exam 2	

Technical Support

If you experience any problems with your UTD account you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.

Field Trip Policies, Off-campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD printed publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Series 50000, Board of Regents, The University of Texas System*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391) and online at <http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html>

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work. Students are expected to follow the Student Code of Conduct – UTDSP5003. The contents of the Student Code of Conduct can be found at: <http://policy.utdallas.edu/utdsp5003>.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. More examples of scholastic dishonesty are listed at Judicial Affairs webpage at: <http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-Basicexamples.html>

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Students in this course suspected of scholastic dishonesty are subject to disciplinary proceedings, and if found responsible, will be subject to sanctions that include severe reduction in course grades or a final grade of F for the course.

Copyright Notice

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UT Dallas student, you are required to follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see <http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm>

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to

complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22

PO Box 830688

Richardson, Texas 75083-0688

(972) 883-2098 (voice or TTY)

disabilityservice@utdallas.edu

If you anticipate issues related to the format or requirements of this course, please meet with the Coordinator of Disability Services. The Coordinator is available to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Services to notify them of your eligibility for reasonable accommodations. Disability Services can then plan how best to coordinate your accommodations.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

The information contained in the following link constitutes the University's policies and procedures segment of course syllabi: <https://go.utdallas.edu/syllabus-policies>.

Descriptions and timelines in this syllabus are subject to change at the discretion of the professor.