

QBA 3305: Intro to Business Analytics

Syllabus for Spring 2026

Instructor: Derik Boonstra

Class: Foster 107 (T/R 9:30 - 10:45)

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Office Hours: T/R 11:00 - 12:30; other times by appointment

Prerequisite(s): QBA 2302 - Business Data Analysis I

Description: Designed to aid in understanding what has happened in the past in a firm (descriptive analytics), using past data to predict what is going to happen in the future (predictive analytics), and helping to determine the best course of action to take (prescriptive analytics). Explores how to combine statistical modeling and computer techniques to help make principled decisions in the context of business.

Course Content: This course will cover topics including:

- Introduction to Business Analytics
- Data Mining and Visualization
- Analysis of Variance (ANOVA)
- Linear Regression
- Logistic Regression
- Model Criteria and Resampling Techniques
- Forecasting and Time Series
- Linear Optimization
- Decision Making

Course Materials

- **Textbooks:** I intend to keep the course self-contained so that the content covered in exams and assignments will come only from the provided and covered lecture notes. That is, there is no required textbook. However, the content covered in the course will be inspired by a collection of books, including:
 - Business Analytics by Camm et al. (2021). A great statistics book for real business applications. An excellent resource if you plan to pursue business analytics/data science further after this class.
 - An Introduction to Statistical Learning with Applications in R by James et al. (2021). A more advanced statistics book for an introduction to statistical modeling. The material in this book is covered at a much higher level than the content in our course. However, it provides a good resource for those looking for more in-depth content for future work.
 - R for Data Science by Wickham and Grolemund (2017). A gentle yet thorough introduction to applied data science using the tidyverse framework in R.
 - R Graphics Cookbook 2nd ed by Winston Chang (2025). An entry-level book for creating figures and graphs in R.

Again, these textbooks are not required, and purchasing them is not necessary. However, these books provide good resources and most are free or have .pdf versions available online. I have provided the link for them.

- **Software:** There are many software options available for performing business analytics and statistics. However, these software options generally have other primary purposes and lack the power and flexibility of dedicated analytics tools. For example, Microsoft Excel can perform basic statistics; however, it is primarily a spreadsheet editor. Thus, in this course, we will be using the free programming language R and editor RStudio, which was designed by statisticians specifically for data analysis, statistical computing, and visualization. R and RStudio will be available on campus computers, but can also be installed locally on your personal laptop by following these links:

- R: This will allow you to download the programming language R based on whether you have a Mac, Windows, or Linux operating system.
- R Studio: To facilitate working with R, we will use RStudio, a user-friendly editor that streamlines the process of writing and running R code, managing projects, and generating reports.
- Alternatively, if you want to use R on your personal device but do not want to download or install anything, you can use Rstudio Cloud which is free.

Now, if this is your first time learning a programming language, it may be challenging at first. Additionally, the course is not designed to be a comprehensive class on programming or R. However, I will ensure you have all of the content needed to complete your assignments with the covered materials and will help you every step of the way if any problems occur. Learning a programming language may seem scary, but I promise it is worth it. Learning R equips you with a powerful toolkit for business analytics and introduces you to essential skills in reproducible research, data wrangling, and programming. These are highly valued in today's data-driven business environment and will enhance your résumé. Most graduates with a BBA will list Excel as a skill, but R will make you stand out for high-level positions.

- **Communication:** All course content, including lecture notes and assignments, will be distributed through Canvas. Please make sure to regularly check the course Canvas page and any announcements posted.

Grading Policy: Your grade will be based upon your homework average, two midterms exams, a comprehensive final exam, and a final project. The grading distribution is as follows:

Component	Weight
Highest Exam Score	25%
Second Highest Exam Score	20%
Lowest Exam Score	15%
Homework Average	15%
Final Project	25%

The grading scheme above generates an overall numerical score in the course. At the end of the semester, letter grades are assigned based on those numerical scores as follows:

A	[89.5, 100)	A-	[88.5, 89.5)	B+	[86.5, 88.5)	B	[79.5, 86.5)
B-	[78.5, 79.5)	C+	[76.5, 78.5)	C	[69.5, 76.5)	C-	[68.5, 69.5)
D	[59.5, 68.5)	F	[0, 59.5)				

Notes on Grades: As a rule, I will not calculate grades for students. Additionally, according to the Family Educational Rights and Privacy Act (FERPA), I am only allowed to discuss a student's grade with that student. I cannot inform parents, siblings, roommates, friends, significant others, or anyone else about a student's grade. I also cannot email grades or discuss grades over the phone. Grades can be obtained through canvas or in person. Your grade is based on your work throughout the entire semester. It is your responsibility to work diligently throughout the semester, keeping up with your homework, etc. Everyone's grade will be based on the same scale and I can only give you the grade you earned.

- **Homework:** Homework will tentatively be posted weekly on Canvas and will contain the sections we covered up to that point. Generally, the homework will be due a week from the day the homework assignment was posted at 11:59 pm by uploading a .pdf of your homework to Canvas. For example, I may post the homework on a Wednesday, and the assignment would be due the following Wednesday night at 11:59 pm. The date of the homework will be tentative and based upon the pace of the class. However, all due dates and submission instructions will be explicitly stated in each assignment post on Canvas. Here is some more information on homework assignments:
 - As a business analyst, the primary role is to use data to develop models, generate insights, and support decision-making. Accordingly, homework assignments will primarily consist of applying the methods we learn in class to real datasets. This may require the use of R for data manipulation, visualization, and statistical analysis. Assignments may also include conceptual questions designed to ensure your understanding of the material.
 - I do not accept late work unless we discuss and agree on a plan in sufficient time before the due date. Following the schedule allows me to share feedback with the class so we can further the understanding of the material.
 - Homework will be graded by hand, and partial credit will be given when applicable.
- **Midterm Exams:** There will be two midterm exams during the semester. Both exams will be administered in person during regular class hours. Exam dates will not be set at the beginning of the semester; rather, they will be determined based on the pace of the course. However, each exam will be announced with sufficient advance notice, typically two to three weeks, to ensure that students have adequate time to prepare. You must take the exam when it is scheduled and with the class. If you must miss the exam for an excused absence only, it must be discussed with me several days prior to the exam. A make-up exam will be given on the dead day before the final exam week, unless we can work out an earlier day that works for both your schedule and mine. This can only be done for one exam. Here is some more information on the exams:
 - Exams are intended to gauge students' knowledge of the content covered in the course. This ensures students are actively trying to learn the material and not just showing up to the lecture for credit. However, with an applied course, it is hard to truly gauge one's knowledge. It is especially not feasible to expect one to perform software tasks in a short amount of time. Thus, the exams will primarily consist of conceptual questions in open-ended and multiple-choice formats. This ensures students understand the "big picture" behind the methods we cover, including when and why to use them. Software output may also be given with the expectation that students can analyze it and draw appropriate conclusions.

Note: That is, students will not be expected to perform software tasks on exams. These skills will be assessed in the homework and final project.

 - A review and practice questions will be given in sufficient time before the exam so students know what to expect.
 - The exams are graded for clarity of the presentation and accuracy of the solution. Once a student receives their exam back, they have one week to come to me to report an error in the grading. If one week has passed, the exam grade will not be adjusted.
- **Final Exam:** The final exam is comprehensive and will be in the same format as the midterm exams. The final exam is scheduled for:

Monday, May 11th from 4:30 - 6:30pm.

Note: It is Baylor's policy that the final exam cannot be rescheduled for any reason unless approved by the Dean of Sciences. If you have three final exams scheduled on the same day, then arrangements can be made for one of the exams to be rescheduled. The final exam will be comprehensive and must be taken in person as a class when scheduled. If the University as a whole goes online, due to COVID-19 protocols or some other emergency, then and only then will the final exam be given online. If the final exam is taken online, it will be proctored using Respondus Lockdown.

- **Opting out of Final Exam:** Students may choose to opt out of the Final Exam. In this case, the grade earned on the Final Project (see below for more information) will replace the Final Exam grade. To exercise this option, students must notify me in advance of the scheduled exam date. If a student does not show up for the Final Exam without prior notification, I will interpret this as opting out, and their Final Project grade will automatically replace the Final Exam grade. Students cannot attempt the Final Exam and then decide afterward to substitute the Final Project grade; the choice must be made beforehand and is final.
- **Replacing Midterms with Final Exam:** If a student takes the Final Exam, the Final Exam grade will automatically replace the lowest of the two midterm exam grades, provided the Final Exam grade is higher. Students must complete both midterm exams; a missed midterm cannot be replaced by the Final Exam. Students who opt out of the Final Exam and use the Final Project in its place are not eligible for this replacement policy.
- **Final Project:** The Final Project is an individual assignment designed to assess student learning and provide an opportunity to apply course material and methods to real-world data. Each student must identify and obtain a dataset (business-related datasets are preferred but not required). Students will analyze their dataset using exploratory analysis and appropriate modeling techniques covered in class. There will be checkpoints throughout the semester to monitor progress and understanding of the project. A detailed rubric outlining expectations for each checkpoint and the final submission will be posted on Canvas. The final submission will consist of a presentation showcasing the student's work, including an introduction to the dataset, a summary of the analysis performed, and a conclusion. The final submission date is tentative but will occur during the week prior to the scheduled Final Exam.

Use of Artificial Intelligence: With the rapid advancement of AI, it is unrealistic to assume students will not use such tools. However, AI should serve as a tool to support learning, not as a substitute for genuine understanding. Just as using a calculator is not the same as understanding multiplication, AI-generated content must not replace critical thinking and problem-solving skills. The goal of this course is for students to develop insights and skills applicable to future endeavors. Students are encouraged to engage with AI responsibly, but must not allow it to replace their own work. Any inclusion of AI-generated content, where the core intellectual contribution does not originate from the student, must be properly cited. The academic integrity policy outlined below applies, and students should consult with me if they are uncertain about appropriate AI use.

Disclaimer: This syllabus is a guide to how this class will unfold, but is subject to change at any time. Any changes will be announced in class before they are implemented.

University Resources and Statements

- **Class Attendance:** Regular and punctual class attendance is an important form of student participation, facilitating clear delivery of course material, discussion of key ideas, and development of cooperative relationships between students and faculty that yield immediate academic results and longer-term success in personal and career development. On the other hand, repeated absences may suggest that a student is experiencing academic, personal, or emotional distress. In these cases, early intervention may be needed by the Paul L. Foster Success Center.

At Baylor University, specific class attendance requirements are established within the individual academic units. According to the policy of the Hankamer School of Business, to earn academic credit in a particular course, a student must be officially enrolled in that course by the end of the first full week of the semester and must attend at least 75 percent of all class sessions for that course. Students who do not fulfill these requirements will receive a grade of “F” in the course.

Any University-related activity necessitating an absence from class shall count as an absence when determining whether a student has attended the required number of class sessions. However, if in this event the student seeks to make arrangements prior to the absence to complete scheduled assignments, the faculty member will work with the student to allow for the completion of missed classwork and assignments. Likewise, students are usually allowed to make up class work and/or tests missed due to

serious illness, accident, or death in the family. In these cases, the instructor should be informed in a timely manner.

In order to complete assignments missed due to illness, accident, or death in the family you may be asked for documentation for missing classes. Please ensure you work with your instructor to receive any necessary course content and complete any assignments, quizzes, or exams that you may miss due to confirmed circumstances. If absences due to confirmed reasons exist for an extended period of time and/or too many assignments or tests are missed that make it impossible to successfully complete the course, you must schedule a conference with your instructor to discuss your academic performance in this class.

If you miss an excessive number of classes not related to illness, accident or death in the family, no concessions will be made, and you will receive the grade earned in the course according to guidelines established in the Hankamer School of Business Attendance Policy. Attempts to falsify absences will be treated as an honor code violation. Be sure to pay careful attention to any additional instructions that describe how attendance and class participation will be incorporated into your course.

- **Religious Observances:** We are committed to providing a caring environment in which students from diverse religious backgrounds can succeed. Please review all of the course requirements to identify assignments, exams, or attendance expectations that conflict with religious observance and related cultural practices. I ask that you communicate any conflicts to me within the first week of the semester to allow time for us to discuss the conflict and determine any fair and reasonable adjustments to the schedule and/or assignments. Keep in mind that some changes may simply not be possible for practical reasons of scheduling, but I welcome the opportunity to discuss them with you.
- **Classroom Community:** Everyone deserves to be treated with respect and dignity in this classroom space: students, teaching assistants, instructors, and guests. Baylor's Code of Ethics (BU-PP 024) states, "Members of the Baylor University community are expected to act in a way that builds a distinctive sense of caring, kindness, mutual respect, collegiality, and fairness. The idea that the Baylor community is a family has always been vital in our historical traditions, and we here reaffirm our commitment to that idea. Out of respect for this community, we do not slander or defame." Incivility, unkindness, and aggression have no place in our classroom community.
- **Academic Integrity:** Plagiarism or any form of cheating involves a breach of student-teacher trust. This means that any work submitted under your name is expected to be your own, neither composed by anyone else as a whole or in part, nor handed over to another person for complete or partial revision. Be sure to document all ideas that are not your own. Instances of plagiarism or any other act of academic dishonesty will be reported to the Honor Council and may result in failure of the course. Not understanding plagiarism is not an excuse. As a Baylor student, I expect you to be intimately familiar with the Honor Code at: <http://www.baylor.edu/honorcode/>
- **Academic Success:** I believe every student who has been admitted to Baylor can be successful and I want to partner with you to help you thrive academically. Be sure to take advantage of the many resources available for academic success, including coming to see me during my office hours. Students who regularly utilize the great resources in the Paul L. Foster Success Center (<http://www.baylor.edu/successcenter/>) are among my most successful students. If your academic performance in this class is substandard, I will submit an Academic Progress Report to the Success Center so that the team of coordinated care professionals can ensure that you get the help you need.
- **Academic Accommodations:** Any student who needs academic accommodations related to a documented disability should inform me immediately at the beginning of the semester. You are required to obtain appropriate documentation and information regarding your accommodations from the Office of Access and Learning Accommodation (OALA). Stop by the first floor of Sid Richardson, East Wing in the Paul L. Foster Success Center or call (254) 710-3605 or email OALA@baylor.edu.
- **Writing Center:** I encourage you to visit the University Writing Center (UWC) this semester and get feedback on your writing for this course. Located in Moody Library 2nd floor West, the UWC offers free assistance to you at any stage of the writing process (brainstorming, researching, outlining, drafting,

revising, editing). In their feedback, the consultants focus on higher order concerns, such as content, thesis, evidence, and organization, before grammar or style. The UWC tutors will not proofread, edit, or write your paper for you, but they will equip you with a toolbox of strategies to improve your writing, research, and editing skills. Please take the assignment prompt, your paper/text, and other materials you might need with you to your appointment. Please include my name as the professor, and a report will automatically be sent to me after your session. Go to the website to schedule an appointment, call the UWC at (254) 710-4849, or stop by in person.

- **First Generation College Students:** Baylor University defines a first-generation college student as a student whose parents did not complete a four-year college degree. The First in Line program is a support office for first-generation college students 8 to utilize if they have any questions or concerns. Please check out First in Line, visit us in Sid Richardson, or email firstinline@baylor.edu.
- **Military Student Advisory:** Veterans and active duty military personnel are welcomed and encouraged to communicate, in advance if possible, any special circumstances (e.g., upcoming deployment, drill requirements, disability accommodations). You are also encouraged to visit the VETS Program Office with any questions at (254) 710-7264.
- **Office of Equity and Title IX:** Civil Rights Policy and Sexual and Interpersonal Misconduct Policy: Baylor University does not tolerate unlawful harassment or discrimination on the basis of sex, gender, race, color, disability, national origin, ancestry, age (over 40), citizenship, genetic information or the refusal to submit to a genetic test, past, current, or prospective service in the uniformed services, or any other characteristic protected under applicable federal, Texas, or local law (collectively referred to as Protected Characteristics). If you or someone you know would like help related to an experience involving:
 1. Sexual or gender-based harassment, sexual assault, sexual exploitation, stalking, intimate partner violence, or retaliation for reporting one of these types of prohibited conduct, please visit www.baylor.edu/titleix, or contact us at (254) 710-8454, or TitleIX.Coordinator@baylor.edu.
 2. Harassment (excluding those issues listed in #1) or adverse action based on Protected Characteristics, please visit www.baylor.edu/equity, or contact us at (254) 710-7100 or Equity@baylor.edu.

The Office of Equity and Title IX understands the sensitive nature of these situations and can provide information about available on- and off-campus resources, such as counseling and psychological services, medical treatment, academic support, university housing, advocacy services, and other forms of assistance that may be available. Staff members at the office can also explain your rights and procedural options. You will not be required to share your experience. **If you or someone you know feels unsafe or may be in imminent danger, please call the Baylor Police Department (254-710-2222) or Waco Police Department (9-1-1) immediately.** Except for Confidential Resources, all University Employees are designated Responsible Employees and thereby mandatory reporters of potential sexual and interpersonal misconduct violations. Confidential Resources who do not have to report include those working in the Counseling Center, Health Center and the University Chaplain, Dr. Burt Burleson.

- **Student Wellbeing:** I recognize that students face many struggles during their Baylor career. The Department of CARE Team Services is a group of dedicated and caring case managers who work with students facing mental health issues, financial struggles, and anything else affecting a student's ability to be successful in the classroom. You can find them on the second floor of the Student Life Center, suite 207. Contact Information: (254) 710-2100; CareTeam@baylor.edu.
- **Crisis and Emergency Numbers:** Please make a note of the following numbers for crises or emergencies:
 - Counseling Center Crisis Line: (254) 710-2467 (Business Hours/Non-Business Hours/Weekends)
 - Baylor Police Department: (254) 710-2222
 - MHMR Crisis Center: (254) 867-6550

- MHMR 24-Hour Emergency/Crisis Number: (254) 752-3451

When home during academic breaks, when the counseling center is closed, please call your local resources and/or national hotlines:

- National Hope Network Hotline: 1-800-SUICIDE (1-800-784-2433)
- National Suicide Prevention Lifeline: 1-800-273-TALK (1-800-273-8255)
- **Health Care:** Baylor University is strongly committed to addressing the physical well-being and mental health of students by providing access to on-campus healthcare resources. Baylor Health Services includes Primary Care, Psychiatry, Physical Therapy and Pharmacy and is staffed with fully certified and licensed physicians and nurse practitioners, as well as nurses and administrative staff. Appointments may be made by calling their 9 main number or by logging into the health portal located on their website. Contact Information: (254) 710-1010; Health.Services@baylor.edu.
- **Mental Health:** You also have access to mental health services through the The Counseling Center. Connect with them for an initial appointment, goal-directed individual therapy, group therapy, nutritional counseling, and case management services. You can schedule your 30-minute initial appointment online through the health portal or by calling (254) 710-2467. If you are experiencing suicidal thoughts, call or text #988 anytime day or night for support.
- **TeleHealth:** All Baylor students also have access to medical and counseling services via telehealth in addition to the on-campus services. Medical services include virtual urgent care, psychiatry, and nutrition counseling. Counseling services include 24/7/365 in-the-moment support and ongoing mental health counseling. Access to care is available in the evenings, during weekends, and when the University is closed. All services are free and unlimited to Baylor students. Please visit <https://baylor.academiclivecare.com/> for more information.
- **Addiction:** The Beauchamp Addiction Recovery Center (BARC) supports students in recovery from substance and behavioral addictions through an all-encompassing level of support approach that includes one-on-one mentorship, support groups, and social events open to all Baylor students. Located in the East Village Residential Community (bottom floor of Teal Residential College). Contact Information: (254) 710-7092; BARC@baylor.edu
- **Food Insecurity:** At Baylor, we want all students to have access to food resources that will support their holistic well-being and success. If you or someone you know experiences food insecurity at any time, you can find information on campus and community food resources by visiting The Store. You can also contact Store staff at (254) 710-4931. For additional basic needs assistance, please reach out to CASE or the Care Team.
- **Spirituality:** The Office of Spiritual Life offers programs, persons, and resources to nurture theological depth, spiritual wholeness, and missional living. Located on the corner of 5th and Speight Street in the Bobo Spiritual Life Center. Contact Information: (254) 710-3517; Spiritual_Life@baylor.edu