DSBA 6211: Advanced Business Analytics
UNC Charlotte
Fall 2025

Instructor: Dr. Kexin Zhao
Office: 351B Friday
Email: kzhao2@charlotte.edu
Class Hours: Monday 5:30-8:15 pm
Classroom: CCB 501

Office Hours: T 9:30-11:30 AM via Zoom
TA Online Office Hours: T& R 2-3 PM **TA's** Zoom (Ms. Amelia Ho: aho3@charlotte.edu)
Website: Canvas

Course Description

This course is designed to help students apply business analytics techniques to explore and analyze various types of data, enabling them to uncover subtle and non-trivial relationships that are understandable, actionable, and valuable to business decision-makers. Managers across functional areas can leverage the insights derived from data-driven decision-making to gain competitive advantages.

Topics covered include *predictive modeling*, *text mining*, *forecasting*, and *survival analysis*. The course follows a case-based approach, with *Python* as the primary programming language.

Learning Objectives

This course is designed for business managers, information professionals, data analysts, and anyone interested in applying data analytics techniques to uncover non-trivial relationships and summarize data in novel, actionable ways that are understandable and useful to business stakeholders. Students will explore the principles, ideas, and tools that underpin current practices in machine learning and business analytics. Core topics include predictive modeling, text mining, forecasting, and survival analysis. The course emphasizes a practical, non-mathematically intensive approach, enabling students to translate data into insights, support decision-making, and produce reliable forecasts from historical information.

A key focus of the course is the practical applicability of analytics methods across various business scenarios. Students will not only learn about final analytical outcomes but also gain an in-depth understanding of the entire analytics process—from refining business objectives and selecting/preparing data to choosing and evaluating models. They will develop the skills to define analytic tasks aligned with business goals, design successful analytics projects, and assess the utility of current and emerging analytical technologies in real-world contexts.

The course adopts a case-based approach, enriched by lectures, seminar-style discussions, and hands-on lab work. Python will be the primary programming language used for practical experimentation with analytics techniques.

Course Materials

Handouts, power-point slides, assignments, and additional helpful resources will be posted on Canvas.

Software: Python/Google Colaboratory

Recommended references:
- Google Colab Overview: https://colab.google/
- Free Python bootcamp course provided by the School of Data Science:
  https://hia.charlotte.edu/current-students/sds-bootcamp-courses/
- Many online resources, such as:
  - https://www.youtube.com/watch?v=H2EJuAcrZYU
  - https://jakevdp.github.io/PythonDataScienceHandbook/
  - https://www.youtube.com/playlist?list=PLoROMvodv4rMiGQp3WXShtMGgzqpfVfbU
  - https://www.educatum.com/ai-ml-interview-questions-classic

Grading

Component	Percentage
Two exams (2 @ 27.5%)	55%
Group project	25%
Assignments (4 @ 5%)	20%
Total	100%

Final letter grade will be calculated based on the following scale:

A: 90 and above; B: 80-89.9; C: 70-79.9; D: 60-69.9; E: 59.9 and below.

Grades posted on Canvas are for informational purposes only. The official final grade is calculated and maintained in the instructor's grade book.

Exams

Exams will be administered in class. Questions will be based on assigned readings, class lectures, and course assignments.

If a student wishes to dispute the answer to an exam question, they must submit a written appeal to the instructor within seven days of the grade release date, clearly citing the relevant source. The instructor will review the appeal and take it into consideration during the grading process.

Please note that exams are considered the intellectual property of the instructor. Students are **strictly prohibited** from sharing exam content with anyone, whether online or offline, at any time. Sharing or distributing exam material will be treated as theft of intellectual property. Such actions will result in a grade of zero for the exam and may lead to additional disciplinary measures in accordance with university policy. All exams will remain in the instructor's possession or under the instructor's control at all times.

Missed exams

In the rare event that an excuse is approved **prior to the exam date**—and with proper documentation—the student will be allowed to take a make-up exam.

Assignments

Students are required to complete four individual assignments over the course of the semester. All assignments must be submitted on Canvas by 11:59 PM on the designated due date. Late submissions will incur a penalty of **20% of the assignment value per day**, including weekends, beginning immediately after the due date.

Each assignment must be completed independently. **Any form of sharing or collaboration between students will be considered a violation of the Academic Integrity Code**, resulting in a minimum penalty of a zero on the assignment and possible further disciplinary action. Any changes to assignments or the course schedule will be announced and posted on Canvas. It is the student's responsibility to stay informed and up to date with all Canvas announcements and updates.

Group Project

Students will work in teams of 3–5 members to complete a business analytics project. Project details and guidelines will be provided on Canvas. When forming teams, students are encouraged to assemble groups with diverse academic or professional backgrounds, as interdisciplinary collaboration enriches the project experience. The instructor reserves the right to assign or reassign team members as needed. To ensure a variety of analyses, no more than two teams may work on the same dataset. Project topics will be assigned on a **first-come, first-served** basis.

If a team member fails to contribute meaningfully, the rest of the team may, by consensus, request that the individual be removed from the group. In such cases, the team must notify the instructor. Students who are not part of a team will be permitted to complete the project individually, but the maximum grade they can earn will be 80. Peer evaluations may be used to inform individual grades, especially in cases of unequal contribution.

Class Policies

Laptop Requirement

Students are required to have their own personal laptop computer. The policy and the minimum system requirements are found at the link https://datascience.charlotte.edu/current-students/advising/laptop-policy/

Attendance and Participation Policy

Attendance and active participation are required. Tardiness and early departures are disruptive and strongly discouraged. Students are responsible for all material covered, announcements made, assignments distributed, and any other work or activities that occur during their absence. It is the student's responsibility to stay informed and make up any missed content.

Class Behavior Policy

All students are expected to contribute to a classroom environment that is respectful, focused, and conducive to learning. Inappropriate behavior that distracts others—such as arriving late, leaving early, talking during lectures, browsing the internet, or similar disruptions—will not be tolerated. Under no circumstances should students use class time to work on assignments for other courses, check email, surf the web, or print materials. Engaging in these activities will result in grade penalties and may lead to dismissal from the course.

It is my responsibility to maintain a productive learning atmosphere for everyone. Repeated disruptive behavior will result in point deductions from the student's final grade. In severe or persistent cases, the student may be permanently removed from the class.

Electronic Devices in Class

Cell phones must be turned off during class, except in cases of documented medical emergencies. Computing devices such as laptops, tablets, and phones may only be used for activities directly related to the class. Non-class-related use—including internet browsing, gaming, reading the news, texting, chatting, or instant messaging—is strictly prohibited and will be treated as a disruption to the learning environment.

Grade Appeals Policy

If you believe that a grade received on an assignment or exam is incorrect or unfair, you may submit a written appeal to the instructor within **seven calendar days** of the grade being posted. The appeal must clearly explain the reason for your concern, including why you believe the grade is inaccurate or unjust. Appeals submitted after the deadline will not be considered.

Academic Integrity

As a program committed to developing future business and government leaders, the School of Data Science upholds the highest standards of academic integrity. These standards will be strictly enforced in this course.

Students are fully responsible for the content and integrity of the academic work they submit. All submitted work—including exams, reports, projects, and assignments—must be the student's own. University regulations will be applied without exception in cases of academic dishonesty, including cheating, plagiarism, or any related misconduct.

All UNC Charlotte students are expected to be familiar with and adhere to the **UNCC Code of Student Academic Integrity**, available in the university catalog and online at http://integrity.charlotte.edu/. Violations of this code include, but are not limited to:

- Representing the work of others as your own
- Using or obtaining unauthorized assistance on academic work
- Providing unauthorized assistance to others
- Modifying graded work without instructor approval to gain additional credit
- Misrepresenting the content or originality of submitted work
- Engaging in any form of plagiarism, fabrication, or multiple submission of the same work

Students are expected to report any observed academic dishonesty to the instructor. For this course:

- General discussion about homework is allowed and encouraged.
- However, each student must independently develop their own solutions to assignments and lab exercises.
- Collaboration on graded assignments is **not** permitted unless explicitly designated as a group project.
- Copying or using another person's work (in whole or in part) and submitting it as your own is considered cheating.

If you are uncertain whether a specific action constitutes academic dishonesty, consult the instructor **before** proceeding. You are welcome to discuss questions about plagiarism or cheating directly with the instructor for clarification. The instructor may request students to show identification during exams and may also require students to demonstrate that out-of-class assignments are their own work.

Violations of the academic integrity code can result in serious penalties, including receiving zero credit for the assignment, a failing grade in the course, and potential suspension or expulsion from the university. The most common outcome is a failing course grade ("F").

Gen AI Permitted with Attribution

In this course, students are permitted to use generative artificial intelligence (AI) tools like ChatGPT to support their work[1]. To maintain academic integrity, students must disclose any AI-generated material they use and properly attribute it, including in-text citations, quotations, and references (see, for example, https://apastyle.apa.org/blog/how-to-cite-chatgpt). Students are fully responsible for the accuracy and reliability of the content they submit. This includes fact-checking any AI-generated material and ensuring that it is free from errors or misrepresentations (i.e., "hallucinations").

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[1] https://legal.charlotte.edu/faqs/policies-use-generative-artificial-intelligence-ai

Please keep the following in mind:
- Learning is more effective when you write code from scratch before using AI.
- AI should be used as a tool for **assistance and augmentation**, not as a substitute for your own thinking and effort.
- If you use generative AI tools, you **must** include the following statement in your assignment:

  "*The author(s) acknowledges the use of [generative AI tool name] in the preparation or completion of this assignment. The [generative AI tool name] was used in the following way(s): [e.g., brainstorming, grammar correction, citation formatting, drafting specific sections, etc.].*"

Disability Accommodations
UNC Charlotte is committed to providing access to education for all students. If you have a disability and require academic accommodations, please provide an official letter of accommodation from the Office of Disability Services as early in the semester as possible. For more information or assistance, you may contact Disability Services at 704-687-0040 or visit their office in Fretwell 230. Additional details are available at https://ds.charlotte.edu.

Diversity
The School of Data Science is committed to fostering an inclusive academic environment where the dignity of every individual is respected and upheld. We celebrate and value diversity in all its forms, including—but not limited to—ability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socioeconomic background.

Incomplete Grade Policy
A grade of Incomplete ("I") is not granted simply due to a student's failure to complete coursework or as a way to improve a grade by submitting additional work after the semester ends. An "I" may be assigned **only** in cases of serious medical issues or other documented extenuating circumstances that prevent the student from completing required work by the due date. To be eligible for an Incomplete, the student must:
- Be passing the course based on work completed to date,
- Have completed a **substantial portion** of the course requirements, and
- Provide **written documentation** (e.g., a doctor's note) verifying the nature of the extenuating circumstances.

All requests for an Incomplete must be discussed and approved in advance with the instructor.

Course Changes Policy
The instructor reserves the right to make necessary changes to the course content, schedule, and policies. Any changes will be announced in class and posted on Canvas to ensure all students are informed.

Religious Accommodation for Students Policy
The instructor will follow **University Policy 409** on matters of religious accommodation (https://legal.charlotte.edu/policies/up-409). Students seeking accommodations for religious observances must notify the instructor **in advance and no later than the census date of the semester** (typically the tenth day of instruction), as required by the policy.

Credit Hour
In accordance with university policy ([Academic Credit Hour Policy](#)), students should expect to spend a **minimum of two hours on out-of-class work** for every hour of classroom instruction. This includes time spent on readings, assignments, projects, and exam preparation.

Tentative Class Schedule

*** This syllabus may be subject to minor changes during the semester with adequate advance notice to students***

Week	Date	Topics	Due Dates
Week 1	Aug 18	• Couse Introduction • Overview of Business Analytics • Brief Software Recap	
Week 2	Aug 25	• Predictive Modeling	Group formation due
Week 3	Sep 1	Labor Day – No Class ☺	
Week 4	Sep 8	• Predictive Modeling	Project topic due
Week 5	Sep 15	• Predictive Modeling	
Week 6	Sep 22	• Advanced Predictive Modeling	Assignment 1 due
Week 7	Sep 29	• Dimension Reduction	Assignment 2 Due
Week 8	Oct 6	• Midterm	
Week 9	Oct 13	• Text Mining • Guest speaker: *Mr. Keith Williams*, Leading Data Science for StreamElements	
Week 10	Oct 20	• Text Mining • Guest speaker: *Mr. Stephen Casaceli*, Principal at Deloitte	
Week 11	Oct 27	• Text Mining • Forecasting	
Week 12	Nove 3	• Forecasting	Assignment 3 due
Week 13	Nov 10	• Forecasting	
Week 14	Nov 17	• Survival Analysis	Assignment 4 due
Week 15	Nov 24	Group Project Day	
Week 16	Dec 1	• Final Exam	
Week 17	Dec 8	• Group Project Presentation	