

MBAD6201-U90/DSBA 6201-U90
Business Intelligence and Analytics
Spring 2023

Instructor:	Prof. Lina Zhou	Email:	lzhou8@uncc.edu
Class Format:	City Center 902	Class Hours:	T 5:30PM – 8:15PM
Teaching Assistant:	Anulitha Marripeddi Vijayalaksmi	Email:	amarripe@uncc.edu
Office Hours:	T 1:30 – 2:30 pm; R 7:00 – 9:00 pm or by appointment (Zoom meetings)		
Content Access:	Canvas (canvas.uncc.edu)		

Course Description

An overview of the business approach to identifying, modeling, retrieving, sharing, and evaluating an enterprise’s data and knowledge assets. Focuses on the understanding of data and knowledge management, data warehousing, data mining (including rule-based systems, decision trees, neural networks, etc.), and other business intelligence concepts. Covers the organizational, technological and management perspectives.

Prerequisites: MBAD 5121 or equivalent

Course Objectives

Business intelligence (BI) is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions. BI applications include the activities of decision support systems, query and reporting, online analytical processing (OLAP), statistical analysis, forecasting, and data mining. The learning objectives of the course are thus:

1. To understand the role of business intelligence and analytics in today’s competitive and turbulent business environment.
2. To be familiar with the terminology of the field, basic principles, and concepts of business intelligence and analytics.
3. To learn how to use and apply key methods for analytics (e.g., regression, decision trees, and clustering).
4. To use a range of tools (e.g., R and SAS Enterprise Guide/Enterprise Miner) appropriate for data analytics problems.

Course Material

- Handouts, slides, assignments, and online resources will be posted on Canvas.
- Bootcamp (available as two separate Canvas courses) on Statistics and R. Students can sign up for and complete the bootcamps at <https://dsba.charlotte.edu/current-students/sds-bootcamp-courses>. See page 3 of this document for detail.

There are **no required textbooks** for the class. The following are **recommended texts**:

- *An Introduction to Statistical Learning: with Applications in R* by James, Witten, Hastie, and Tibshirani, ISBN-13: 978-1461471370

- *Data Science for Business: What you need to know about data mining and data-analytic thinking* by Provost and Fawcett, ISBN-13: 978-1449361327
- *Data mining: concepts and techniques* by Jiawei Han, Micheline Kamber, and Jian Pei. Elsevier, 2011, ISBN-13: 978-0123814791 (E-book is available online)

Course Grading

Each student can earn a maximum of 500 points (100%) by completing the required tasks successfully. A letter grade will be awarded at the end of the semester as your final grade based on your total points.

Item	Points in Final Grade
Exams	300
Assignments	100
Datacamp Courses	20
Class Participation	30
Group Project	50
Total	500

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

- A: 450 and above;
- B: 400 to less than 450;
- C: 350 to less than 400;
- U: less than 350.

The course grades are posted on Canvas for informational purposes only. The official overall grade is computed and kept in the instructor's grade book.

Exams

There will be two exams (300 points), which will be **closed book and notes** when they are administered in class. There will also be an optional comprehensive final exam. Student may take and use it to replace the lowest grade from the two exams. Please be advised that if you do not take the final exam, your final grade will reflect your performance on the first two exams and other course elements. The submission type of both exams is individual. Collaboration between or among students are prohibited and students must follow UNC Charlotte's Code of Student Academic Integrity (<https://legal.uncc.edu/policies/up-407>).

Exams may require LockDown Browser, which will be specified in advance by the instructor. The exams may contain material that is not in the slides or handouts but would be covered in the class. Exam questions will not be accessible after you take the exams. The instructor will keep all exams. However, exam reviews are available during office hours or by appointment for 10 days after exam grades are posted. All exam grades will be posted on Canvas.

Missed exams: In the event that an excused absence with proper supporting documentation is **approved before the exam time**, the student will be given a make-up exam. Missing an exam without prior approval or without providing proper supporting documentation will receive a grade of zero for that exam. It is the student's responsibility to be aware of and follow the attendance and participation policy and no special accommodations will be made for any exceptions. No makeup exam will be given after the last day of class.

Assignments

There will be five individual assignments (110 points) throughout the semester. All assignments are posted on Canvas and should be submitted on Canvas. Unless specified by instructor, assignments emailed to the instructor will not be accepted. Assignments are due at class start time on the due date. In the case of a late submission within 24 hours of the due date/time, the assignment will be graded for a maximum of 80% of the original points for that assignment. Assignments submitted after 24 hours of the due date/time will receive a grade of zero. No exceptions are allowed for this late policy.

All the homework assignments will be individual based unless the assignment clearly specifies otherwise. Each student must develop his or her own solutions to the assigned homework. A student may not share his/her answers with another student or copy (by any means) another's work (or portions of it) and represent it as his/her own. These academic misconduct will result in a grade of zero for the assignment at a minimum with a possibility for further disciplinary action.

Bootcamp Courses

There are two bootcamp courses you need to take for this course.

- Overview of Statistics for Data Science (12 pts)
You can complete each module in the course or pass the comprehensive assessment and get a completion certificate. Only then will you get credit for the above full points in this class. Estimated time required for completion is 10 hours.
- Introduction to R for Data Science (8 pts)
You must complete Modules 1-4 to get credit for the above full points in this class. Estimated time required for completion is 4 hours.

You are required to complete these courses by **January 31**. However, it is recommended to complete these as soon as possible. There is no need to submit your certificates. The information will be obtained directly from the School of Data Science TA.

Class Participation

Class participation consists of class attendance (5 pts), class discussion (5 pts), article presentation (5 pts), and in-class assignments (15 pts). Students are strongly encouraged to engage actively in class discussion, such as asking/answering questions and sharing real-life and work experiences related to the course topics. A student will lose 3 points if he/she never participated in class discussion.

Students are expected to attend every class on time and to stay for the duration of the class. Class attendance will be taken at random in class during the semester. Failure to attend class or arriving late may impact your ability to achieve course objectives. A student's attendance percentage based on this random attendance is factored into the final grade for class attendance. For a class to be considered an excused absence, a printed/electronic note from the related authority is required within one week of the missed class. Tardiness or early departure is strongly discouraged in this class. Students who arrive more than 10 minutes late or leave lecture before it is complete without notifying the instructor prior to the start of class will receive a reduction in their overall class participation grade.

An absence, excused or unexcused, does not relieve a student of any course requirement. Regular class attendance is a student's obligation, as is a responsibility for all the work of class meetings, including tests and written tasks. You are responsible for all lecture material regardless of whether you attend each class. If a student misses a class due to work or other reasons, it is their responsibility to get notes from peers. Instructors do not hold extra repeat class sessions, and office hours are not to be used as a substitute for class attendance.

To expose students to the breadth of business intelligence and analytics and to promote knowledge sharing, students will be organized into two-person groups by the instructor and each group is expected to give a short presentation (~5 minutes) on a case study or a selected article on business analytics published since 2017.

- The presentations will be scheduled throughout the semester by the instructor.
- The presentation will be based on your selected article from an academic or trade journal or a conference that has used business analytics to solve a real-world problem using one or more datasets. The article or case study should contain significant content.
- Your presentation is expected to cover *problem context*, *methods*, and *findings* from the selected article.
- You can search related articles from the UNCC library web portal and/or Google Scholar using keyword search.
- You are encouraged to prepare a presentation file in support of your presentation. The file should be submitted to Canvas by **5:00pm on the scheduled date of your presentation**.

There will be in-class assignments, including unscheduled discussion assignments and short quizzes at various points in the semester on topics covered before. Once an exam/quiz has started and work has been collected, late arrivals cannot make them up. (If one arrives during a quiz, they can immediately start on it, but no time extension will be given). **Make-up quizzes or in-class assignments are not allowed irrespective of whether your absence is excused or un-excused.** One quiz out of all administered quizzes will be dropped for the final grading. Since the class meets on Tuesday evenings, please arrange your work or personal activities around this schedule.

Group Project

Students will form a group of three members to complete a group project. Each group will select a topic on its own that applies business analytical techniques. The group project consists of three deliverables: group formation (5 points), proposal (15 points), and presentation (30 points). All project deliverables are due at the beginning of the class on the scheduled dates and should be submitted to course canvas. Detailed group project and presentation instructions will be provided as a separate document on Canvas. If necessary, peer reviews will be factored into the grade.

Important Information and Class Policies

Laptop and Webcam Requirements

All upper-level (including graduate level) business students are required to have their own personal laptop computer. The policy and the minimum system requirements are found at the link <https://belkcollege.uncc.edu/laptop-policy>. Students in the DSBA program are required to follow the laptop policy [here](#).

Extra Credit Opportunities

Extra-credit opportunities, if any, will be the instructor's decision and such opportunities will be presented to the whole class instead of individual students only. It is strongly encouraged that students do not rely on extra credit to improve their grades later in the semester.

Use of Canvas

Canvas will be the website for course information and primary communication channel for this class. You may access UNCC Canvas from My UNC Charlotte (<https://my.uncc.edu/>) or direct type canvas.uncc.edu. Students are responsible for **all** announcements made in class or announced via

email and on canvas. The instructors may send some information via Canvas announcements. It is the **students'** responsibility to keep up-to-date on the class-related information and to check their @uncc.edu email and Canvas regularly. It's each student's responsibility to report anything that does not match your own record (e.g., missing or wrong grade) within 10 calendar days since the date of information posting.

Team Work

For group activities, each team is responsible for organizing itself, dividing up the work, and deciding how relative contributions should be measured. It is your responsibility to **promptly** inform the instructor of any dysfunctional team dynamics and to solicit his help.

All team members must

- participate in all team activities equally,
- strive to maintain positive working relationships with other team members,
- assist team members to resolve issues relating to group work, and
- freely express their ideas, thoughts, comments, and constructive criticisms to their team members, me, and the class.

It is the responsibility of the team to ensure that all team members understand all concepts related to the completed projects and presentations.

Academic Integrity

University regulations will be strictly enforced in all cases of academic irregularities, cheating or plagiarism or any variations thereof. Students assume full responsibility for the content and integrity of the academic work they submit. The guiding principle of academic integrity shall be that a student's submitted work, examinations, reports, and projects must be his/her own or own group work.

Students have the responsibility to know and observe the requirements of [The UNC Charlotte Code of Student Academic Integrity](http://legal.uncc.edu/policies/up-407) available online at <http://legal.uncc.edu/policies/up-407>. This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism (which includes viewing others work without instructor permission), abuse of academic materials, and complicity in academic dishonesty. **This forbidding includes sharing/copying work between individuals or teams without permission of instructors.** Any special requirements or permission regarding academic integrity in this course will be stated by the instructor, and are binding on the students. Students who violate the code can be expelled from UNC Charlotte. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases the course grade is reduced to failing. Students are expected to report cases of academic dishonesty to the course instructor.

Any further specific requirements or permission regarding academic integrity in this course will be stated by the instructor, and are also binding on the students in this course.

Incomplete Grade Policy

Receiving a grade of incomplete ("I") is not based solely on a student's failure to complete work or as a means of raising his/her grade by doing additional work after the grade report time. As per [university policy](#), incomplete grades will be granted when a student who is otherwise passing has not, due to circumstances beyond his/her control, completed all the work in the course. The missing work must be completed and the final grade reported within one calendar year from the date on which the "I" grade was recorded. The instructor assigning the "I" grade may specify a shorter time than one year for completion of the work and the assignment of a final grade. If the "I" is not removed during the specified time, a grade of "F", "U", or "N", as appropriate is automatically assigned. Time extensions for the completion of an "I" beyond one year cannot be approved except by special request to the

Graduate School under extraordinary circumstances. The grade of “I” cannot be removed by enrolling again in the same course, and students should not re-enroll in a course in which they have been assigned the grade of “I”.

Grade Appeals Policy

If you believe that the grade you received on an assignment or an exam was in error or unfair, you can appeal to the professor **in writing within 10 calendar days of posting the grades**. The appeal should clearly state the reasons why you believe the grade to be unfair or the nature of the error. Overdue appeals will not be considered. The instructors will discuss grades **only** in person (and not via telephone or e-mail).

Student Support

The details of student support resources available are provided at the following links.

Academic support: <https://ninernationcares.uncc.edu/students/academic-support>.

Health support: <https://ninernationcares.uncc.edu/health-support-services>

IT support: <https://help.uncc.edu/>

Disability Accommodations

Students in this course seeking accommodations to disabilities must first consult with the Office of Disability Services and follow the instructions of that office for obtaining accommodations. UNC Charlotte is committed to access to education. If you have a disability and need academic accommodations, please provide a letter of accommodation from Disability Services early in the semester. For more information on accommodations, contact the Office of Disability Services at 704-687-0040 or visit their office in Fretwell 230.

Mental Health Services

It is common for college students to experience challenges that may interfere with academic success such as academic stress, sleep problems, juggling responsibilities, life events, relationship concerns, or feelings of anxiety, hopelessness, or depression. If you or a friend is struggling, we strongly encourage you to seek support. Helpful, effective resources are available on campus at no additional cost.

- Visit the Counseling and Psychological Services website at caps.uncc.edu for information about the broad range of confidential on-campus mental health services, online health assessments, hours, and additional information.
- Call CAPS at (704) 687-0311 if interested in scheduling an appointment with a counselor. After-hours crisis support is also available through this phone number.

Title IX Reporting Expectations

UNC Charlotte is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. UNC Charlotte has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with civil protective orders, and more.

Please be aware that all UNC Charlotte employees, including faculty members, are expected to relay any information or reports of sexual misconduct they receive to the Title IX Coordinator. This means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking, I am expected to report the information to the Title IX Coordinator. Although I am expected to report the situation, you will still have options about how

your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone confidentially, you can contact the following on-campus resources, who are not required to report the incident to the Title IX Coordinator: (1) University Counseling Center (counselingcenter.uncc.edu, 7-0311); or (2) Student Health Center (studenthealth.uncc.edu, 7-7400). Additional information about your options is also available at titleix.uncc.edu under the “Students” tab.

All students are required to abide by the UNC Charlotte Sexual Harassment Policy and the policy on Responsible Use of University Computing and Electronic Communication Resources. Sexual harassment, as defined in the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards.

Religious Accommodation for Students Policy

The instructor will observe University Policy 409 (<https://legal.uncc.edu/policies/up-409>) on matters of religious accommodation. Please note that the procedure prescribed by this policy requires a notice to the instructor prior to the census date of the semester.

Course Changes Disclaimer

The Instructor reserves the right to change the course schedule and syllabus during the course of the semester depending upon the progress of the class. Notice of such changes will be made by announcement in class and on the course canvas. It is students’ responsibility to keep up with any changes in the course schedule, contents, and policies by visiting Canvas regularly.

Class Recordings and Copyright Ownership in Course Materials

To protect the privacy of other students, students are not permitted to make their own recordings of class sessions or to share or distribute University recordings of class sessions. Students with specific electronic recording accommodations authorized by the Office of Disability Services may record classes; however, the instructor must be notified of any such accommodation prior to recording. Any distribution of such recordings is prohibited. See University Policy 402, Student Education Records (FERPA).

The lectures and course materials, including presentations, exams, quizzes, assignments, and similar materials, are protected by copyright. The instructor is the exclusive owner of copyright in those materials created by the instructor. You are encouraged to take notes and make copies of course materials for your own educational use. However, you may not, nor may you knowingly allow others to reproduce or distribute lecture notes and course materials publicly without express written consent of the instructor. Students who publicly distribute or display or help others publicly distribute or display copies or modified copies of an instructor's course materials may be in violation of University Policy 406, the Code of Student Responsibility.

The Belk College of Business strives to create an inclusive academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

Tentative Class Schedule

*** This schedule may be subject to minor changes during the semester ***

Week	Date	Topics	Assignment
Week 1	Jan. 10	<ul style="list-style-type: none"> • Introduction • Business Intelligence and Analytics Overview 	
Week 2	Jan. 17	<ul style="list-style-type: none"> • Data Analytics in Business: Drivers and Challenges <p>Main Article: Big Data in Big Companies</p>	
Week 3	Jan. 24	<ul style="list-style-type: none"> • Analytical Methodology • Linear Regression 	
Week 4	Jan. 31	<ul style="list-style-type: none"> • Linear Regression 	Stats and R Bootcamp
Week 5	Feb. 7	<ul style="list-style-type: none"> • Classification — Logistic Regression 	Linear Regression
Week 6	Feb. 14	<ul style="list-style-type: none"> • Classification — Naïve Bayes 	
Week 7	Feb. 21	<ul style="list-style-type: none"> • Classification — Model Evaluation 	Logistic Regression
Week 8	Feb. 28	Spring Break, no class. ☺	
Week 9	Mar. 7	Exam 1	
Week 10	Mar. 14	<ul style="list-style-type: none"> • ROC • Decision Trees 	
Week 11	Mar. 21	<ul style="list-style-type: none"> • Decision Trees 	ROC
Week 12	Mar. 28	<ul style="list-style-type: none"> • Decision Trees • Data Warehousing 	
Week 13	Apr. 4	<ul style="list-style-type: none"> • Clustering 	Decision Tree
Week 14	Apr. 11	<ul style="list-style-type: none"> • Clustering 	Data Warehousing
Week 15	Apr. 18	<ul style="list-style-type: none"> • Group Project Presentations 	
Week 16	Apr. 25	<ul style="list-style-type: none"> • Group Project Presentations 	
Week 17	May 2	Exam 2	
Week 18	May 9	Comprehensive Final Exam (Optional)	