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INFO 3236-091
Business Analytics
Spring 2021

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Instructor:	Prof. Lina Zhou	Email:	lzhou8@uncc.edu
Class Format:	Online (Zoom meetings)	Class Hours:	M 5:30PM – 8:15PM
Office Hours:	M 11:30 am – 12:30 pm; T 3:30 – 5:30 pm or by appointment (Zoom meetings)		
Content Access:	Canvas (canvas.uncc.edu)		

Course Description

This course covers various data mining and business intelligence methods, such as rule-based systems, decision trees, and logistic regression. In addition, this course also covers online analytical processing (OLAP) and statistical analysis as well as issues relating to modeling, storing, securing, and sharing the organizational data resources.

Course Objectives

 "Business analytics" refers to the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions (Davenport and Harris, 2007, Competing on Analytics: The New Science of Winning). This class will provide the conceptual foundations of business analytics and an overview of several analytics techniques and software tools.

The specific learning objectives are as follows:
1. To develop an understanding of business intelligence, analytics and decision support.
2. To understand the principles of data management for analytics.
3. To understand different data mining and analytics tools and techniques (e.g., decision trees, logistic regression, cluster analysis, etc.) for solving business problems.
4. To understand when and how to apply the learned analytics techniques to real-world business problems.
5. To understand the ethical and privacy issues when practicing business analytics.

Prerequisites:

Junior or senior standing; and MIS, OSCM, Economics, or Marketing major or minor in good standing; or permission of department.

Course Material and Software

There is **no required textbook** for the class.

Slides, assignments, readings, problems, and links to articles for class discussions will be posted on Canvas.

This class will use **SAS Enterprise Guide** and **SAS Enterprise Miner Workstation**. MS Excel will be used occasionally but it is not the focus of this class. You can download the software to your personal

computer from software.uncc.edu. They are also installed in the labs 280 and 339 in Friday building. Alternatively, you can use UNCC Apporto to get access to the software.

Course Grading

Each student can earn a maximum of 400 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	240
Assignments and Quizzes	100
Class Participation	15
Group Project	45
Total	400

Final letter grade will be calculated based on the following scale:
   A: 360 and above;
   B: 320 to less than 360;
   C: 280 to less than 320;
   D: 240 to less than 280;
   F: below 240
   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: the mid-term exam and the final exam. The submission type for both exams is individual. The exams may include multiple-choice questions, short-answer, essay-type questions, and problem solving with analytics software. The exams may contain material that is not in the slides or handouts but was covered in the class. The entire or part of the exams will be closed book and notes. Any changes to the exam settings will be informed by the instructor in class and/or through announcements. The submission type of both exams is individual. Collaboration between or among students are prohibited and students must follow UNCC's Code of Student Academic Integrity (https://legal.uncc.edu/policies/up-407).

The exams will be timed and require the LockDown Browser and Respondus Monitor. It is the student's responsibility to take the practice quiz (as many times as needed) to get familiar with how the exam system works and what is the correct posture for use during the exam to avoid system warning or false alerts. Exam questions will not be accessible after you take the exams.

Missed exams: Missing an exam without prior approval and/or providing supporting documentation within the following timeframe will receive a grade of zero for that exam. In the event that the excuse is **approved before the exam date** (a rare case and requires supporting documentation), the student will be given a make-up exam. A student who misses an exam without prior approval, possibly due to unexpected situation on the exam day, should contact the instructor within 6 hours of the exam start date/time and provide appropriate supporting documentation to be eligible for a makeup 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.

Exams take a lot of time and effort to prepare and, as a form of intellectual property, belong to those who create them (i.e., professors). Consequently, students are not allowed to copy or record any exam questions. **Any violation of these requirements** will be considered theft of intellectual property and will result in an exam grade of zero automatically and warrant further disciplinary actions.

Assignments

There will be 5 homework assignments (90 points in total) throughout the semester. All except the first one are individual submissions. The first assignment is about students' self-introduction and project team formation. All of the remaining four assignments will be data management and analytics assignments using SAS. The detailed instructions and datasets will be posted in Canvas.
You need to submit your answers through course canvas. The tentative due dates of all assignments are provided in the table on the last page of this syllabus. Assignments are due at 5:30pm EST on the due date. No late submissions of assignments will be accepted. In other words, you will receive a zero for the late assignment.

For individual based assignment. Each student must develop his or her own solutions to the assigned homework. Students may not "work together" on solutions to homework assignments. A student may not use 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.

Quizzes

There will be two individual online quizzes (10 points in total), aiming to reinforce students' learning and identify problems with concept understanding. The question types may include true/false, multiple-choice, fill in the blank, and short-answer questions. The quizzes will be closed book and notes and timed, and require the LockDown Browser and Respondus Monitor. In general, there will be NO MAKE UP quizzes unless a student has requested in advance with legitimate reasons and relevant support documents.

Group Project

Students are required to complete a course group project (45 points) by using the learned data analytics techniques and SAS Enterprise Guide/Miner to analyze a dataset. The instructor will provide data sets and the students will be working in team to analyze the data as instructed. The students will be graded on written submissions and presentation. More detail will be provided in a separate document. All project deliverables are due at 5:30pm on the scheduled dates and should be submitted to course canvas.

Students should create 2-**member** project teams on their own. Any deviation from the group size will require the instructor's permission. Once a group is formed, each group member is expected to contribute to the course group actively and equally. If necessary, peer evaluations will be factored into the grade.

Class Participation

Students are expected to attend every class and remain in class for the entire duration of the session. Class attendance will be taken at random in class throughout the semester. A student's attendance grade is the percentage of attendance multiplies 10. Failure to attend class or arriving late may impact your ability to achieve course objectives. **Tardiness or early departure is strongly discouraged in this**

class. Recurrence of such behavior will be noted and may lead to deduction of points in class participation grade. Class and strongly encouraged to actively engage in class discussion, such as asking/answering questions and sharing real-life experiences related to the course material. A student will lose 2 points in class participation if he/she has never participated in class discussion during the entire semester.

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. Please note that office hours are not to be used as a substitute for class attendance. Failure to attend class will affect the class participation portion of your grade.

To get exposed to the breadth of business analytics and to promote knowledge sharing, each student will give a short presentation (5 points) on a selected article or case study on business analytics published since 2015 (~5 minutes).

- The presentations will be scheduled throughout the semester by the instructor.
- The presentation will be based on your selected article from an academic journal, trade magazine, conference proceeding, whitepaper, and/or company websites that have applied 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 expected to prepare a presentation file in support of your presentation. The presentation file should be submitted to Canvas by **5:30pm on the scheduled date of your presentation**.

Important Information and Class Policies

Niner Nation Cares

All students must follow the updates and instructions related to Fall semester reopening posted on http://ninernationcares.uncc.edu and https://ninernationcares.uncc.edu/students. For your own health and safety and that of your friends and families, make sure to adhere to the health and safety guidelines posted on the above links. Please do not treat these guidelines lightly.

Attendance and Participation Policy

Students are expected to attend every class and remain in class for the duration of the session when it is safe to do so in accordance with university guidance regarding COVID-19. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course 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. Any unexcused absence or excessive tardiness may result in a loss of participation points. Please note that office hours are not to be used as a substitute for class attendance.

Students are encouraged to work directly with the instructor regarding their absence(s). For absences related to COVID-19, please adhere to the following:

- **If you are sick**: If you test positive or are evaluated by a healthcare provider for symptoms of COVID-19, complete this form to alert the University. Representatives from Emergency Management and/or the Student Health Center will follow up with you as necessary, and your instructors will be notified.
- **If you have been exposed** to COVID-19 positive individuals and/or have been notified to self-quarantine due to exposure, complete this form to alert the University. Representatives from Emergency Management and/or the Student Health Center will follow up with you as necessary, and your instructors will be notified.

To return to class after being absent due to a COVID-19 diagnosis or due to a period of self-quarantine, students should submit an online request form to Student Assistance and Support Services (SASS). Supporting documentation can be attached directly to the request form and should be from a student's health care provider or the Student Health Center, clearly indicating the dates of absences and the date the student is able to return to class. Instructors will be notified of such absences.

Should a student need assistance from the SASS office in verifying an emergency situation, they can submit an online request form and attach supporting documentation. Please note that students are not required to go through the SASS office at any time regarding absence verification, and the SASS office does not have the authority to excuse absences, allow for make-up work, or provide other academic accommodations. The final decision for approval of all absences and missed work is determined by the instructor.

In cases of absence due to pregnancy or parenting (pregnancy, childbirth, false pregnancy, termination of pregnancy, or recovery from any of these conditions), students should contact the Title IX Office to obtain absence verification by completing the form at http://bit.ly/332eaGd.

The United States Department of Education requires UNC Charlotte's Office of Financial Aid to determine if a student who receives financial aid and fails to earn a passing grade in a course has actually attended and/or completed the course. Because I do not take regular attendance for this course, the date I will report as your last date of attendance will be the latest of the following:

- The date you last participated in an online discussion or activity;
- The date you last submitted an assignment/project/exam/quiz; or
- The date you last initiated contact with me to ask a question about the course or course content.

If you earn an F or U grade, your last date of attendance will be reported to the U.S. Department of Education. *This may require you to pay back any financial aid funds received for this course.* (For additional information, see Last Date of Attendance FAQs on Registrar's website.)

Withdrawals
Students are expected to complete all courses for which they are registered at the close of the add/drop period. If you are concerned about your ability to succeed in this course, it is important to make an appointment to speak with me as soon as possible. The University policy on withdrawal allows students only a limited number of opportunities available to withdraw from courses. It is important for you to understand the financial and academic consequences that may result from course withdrawal.

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.

Webcam is required for using Lockdown Browser with Respondus Monitor. Please note that students have to install only the Lockdown Browser, and that too only through Canvas. **There are no additional installations or license requirements for Respondus Monitor**.

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/

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. It's each student's responsibility to check Canvas regularly and report anything that does not match your own record (e.g., missing or wrong grade) within SEVEN calendar days since the date the information was posted.

Office hours

Office hours will be held online via zoom. The information about office hours zoom link can be found on Canvas. After you enter the virtual office, your instructor will allow you in in the order of the students who have entered.

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.

Extra Credits

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. Please do not depend on any extra credit opportunities to improve your grade later in the semester.

Student Recording

Electronic video, image capture, and/or audio recording is not permitted during class, whether conducted in person or online, unless the student obtains permission from the instructor. If permission is granted, any distribution of the recording is prohibited. Students with specific electronic recording accommodations authorized by the Office of Disability Services do not require instructor permission; however, the instructor must be notified of any such accommodation prior to recording. Any distribution of such recordings is

prohibited.

Academic Integrity

As a program that helps to create business and government leaders, the College of Business has an obligation to ensure academic integrity is of the highest standards. Standards of academic integrity will be enforced in this course.

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 available at http://legal.uncc.edu/policies/up-407. Specifically, refer to https://legal.uncc.edu/policies/up-407#c6 for Prohibited Academic Conduct. This code forbids cheating, fabrication or falsification of information, misuse of academic materials, multiple submission, plagiarism, unauthorized collaboration, and research misconduct. Students are expected to report cases of academic dishonesty they become aware of to the course instructor who is responsible for dealing with them. Additional resources for navigating Academic Integrity cases are available at https://scai.uncc.edu/academic-integrity.

For this course, it is permissible to assist classmates in general discussions about the homework. General advice and interaction are encouraged. Each person, however, must develop his or her own solutions to the assigned homework and laboratory exercises. Students may not "work together" on graded assignments. Such collaboration constitutes cheating, unless it is a group assignment. A student may not use or copy (by any means) another's work (or portions of it) and represent it as his/her own. If you need help on an assignment, contact your instructor or the TA, not other classmates.

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.

Students who violate the code can be punished to the extent of being permanently expelled from UNCC and having this fact recorded on their official transcripts. The normal penalty 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 "F."

If you are unclear about whether a particular situation may constitute an honor code violation, you should meet me to discuss the situation. Feel free to discuss the definition of cheating and/or plagiarism with me if you are unclear on these terms or have questions about the acceptability of a particular type of action.

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 7 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.

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".

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.

Diversity and Inclusion

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.

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 <u>Sexual Harassment Policy</u> and the policy on <u>Responsible Use of University Computing and Electronic Communication Resources</u>. 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 standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by announcement in class and will also be posted on the course canvas. It is students' responsibility to keep up with the changes that are posted on Canvas and/or announced in class.

Copyright Ownership in Course Materials
The lectures and course materials, including presentations, tests, exams, outlines, 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. This includes providing materials to commercial course material suppliers such as CourseHero and other similar services. 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. Similarly, you own copyright in your original papers and exam essays. If the instructor is interested in posting your answers or papers on the course web site, the instructor will obtain your written permission.

Tentative Class Schedule
*** This tentative schedule is subject to change ***

Week	Date	Topics	Due Dates
Week 1	Jan. 25	• Introduction • Business Analytics Overview	
Week 2	Feb. 1	• Analytics methodology • Fundamental Statistical Concepts	
Week 3	Feb. 8	**Spring Recess**	
Week 4	Feb. 15	• Fundamental statistical concepts • Data Management with SAS Enterprise Guide	**Assignment 1**
Week 5	Feb. 22	• Decision trees	**Assignment 2**
Week 6	Mar. 1	• Decision Trees with SAS Enterprise Miner	**Quiz 1**
Week 7	Mar. 8	• Logistic regression	**Assignment 3**
Week 8	Mar. 15	• Logistic regression with SAS Enterprise Miner	
Week 9	Mar. 22	**Exam 1**	
Week 10	Mar. 29	• Cluster Analysis	**Assignment 4**
Week 11	Apr. 5	• Cluster Analysis with SAS Enterprise Miner	
Week 12	Apr. 12	• Data Warehousing • Association Analysis	**Assignment 5**
Week 13	Apr. 19	• Neutral Networks	**Quiz 2**
Week 14	Apr. 26	• Recommender System	
Week 15	May 3	**Group Project Presentations**	
Week 16	May 10	**Exam 2**	