

Belk College of Business Administration, University of North Carolina at Charlotte

INFO 3236-090: BUSINESS ANALYTICS

Spring 2020

Class Website: Canvas will be the website and primary communication channel for all information about this class. Go to <http://canvas.uncc.edu> and login with your NinerNet credentials.

Instructor: Mr. Brad Williams

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Class time: T 5:30-8:15 pm

Classroom: Friday 339

Office hours: Friday's 1pm-2:30pm or by Appointment

Catalog Description

INFO 3236. Business Analytics. (3) Prerequisites: Junior or Senior standing; and MIS, OSCM, Economics, or Marketing major or minor in good standing; or permission of department. This course covers various data mining and business intelligence methods, such as rule-based systems, decision trees, and logistic regression. In addition, this course covers query and reporting, online analytical processing (OLAP) and statistical analysis as well as issues relating to the modeling, storing, securing, and sharing the organizational data resources.

Learning 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 select 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 how to effectively use visual analytics tools to present analytics results to a business audience.
5. To understand the ethical and privacy issues when practicing business analytics.

Course Materials & Software

1. Reading Materials: There is no required textbook for this class. All reading materials will be posted or linked on Canvas class page. These materials include handouts, notes, PowerPoint slides, practice problem sets, and web links to articles for class discussions. You can print the posted material and bring them to class. Please note that I will not provide printed copies of any of the posted materials.

2. Software: This class will use SAS Enterprise Guide, SAS Enterprise Miner Workstation, Tableau Desktop, and R and R-Studio. MS Excel will be used occasionally but it is not the focus of this class. SAS, Tableau, MS Excel, R, and R-Studio are installed in the Friday building student labs. Please check the availability of these software in other student labs on campus if you plan to work outside the Friday building. Instructions to access this software for your personal computer/laptop will be posted on Canvas.

Grading

Component	Weight	Group/Individual
3 Exams @ 24% = 72%	72%	Individual
Exercises 6 @ 3%	18%	Group / individual
Project	10%	Group
Total	100	

The letter grade is assigned based on UNCC's Undergraduate Grading Scheme

A: $\geq 90\%$

B: $\geq 80\%$

C: $\geq 70\%$

D: $\geq 60\%$

F: $< 60\%$

Assignments:

1. Exams

There will be 3 exams. All exams are closed book and closed notes. The exams include multiple-choice questions, essay-type questions and problem-solving with analytics software and will be administered in the computer lab. All exam grades will be posted on Canvas. The instructor will keep all exams after grading. However, exam reviews are available during office hours or by appointment. Students requesting a review of their exams should do so within 3 days of the posting of the exam grades. **No grade reviews or adjustments will be done beyond this 3-day period.**

Makeup exams

If a student anticipates missing an exam, she/he must provide appropriate supporting documents in advance to the instructor to request a make-up exam. The instructor will review all requests and authorize, at the instructor's discretion, eligible students to take makeup exams for missed. A student who misses an exam without prior approval, possibly due to the 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 the makeup exam. It is the student's responsibility to be aware of and follow the make-up exam policies and no special accommodations will be made for any exceptions.

2. Exercises

During the semester, the instructor will give assignments to be completed in and outside of classes. The assignments may cover topics already covered or topics assigned for the day when the assignment is given. Late submission associates with 20% penalty, unless students have valid excuse and documents (such as a doctor's note).

3.Project

The instructor will provide data sets and the students will be working in a team to analyze the data as instructed. More detail will be provided in a separate document. The students will be graded on written submissions and presentation, which will be during the final examination week.

Other Policies:

Syllabus Changes

This syllabus is a guide and every attempt has been made to provide an accurate overview of the course. However, circumstances and events may make it necessary for the instructor to modify the syllabus during the semester and may depend, in part, on the progress, needs, and experiences of the students. Changes to the syllabus will be made with advance notice.

Attendance

Even though attendance is not taken as part of the final grade, regular attendance is necessary for doing well in this course. It has been my observation that students who miss more than 2 or 3 classes are most likely to end up with a failing grade in this class. You are responsible for completing the work from all the class meetings. You are responsible for any material covered, announcements made, assignments distributed, and any other type of work you may miss during any absence from class. The exams may contain material discussed in the class but may not be in the posted PowerPoint slides or handouts.

Class conduct

Disruptive behavior in class distracts from the ability of others to benefit from their in-class experience. Please avoid spending class time working on assignments for other classes, checking e-mail, surfing the Web, or printing out homework. Repeated engagement in such behavior will be reflected in lower grades and in the worst case may lead to removal from the course.

Electronic Devices in Class

Students are permitted to use laptops or tablets during class for note-taking and other class-related work only, but this should be done without distracting other students and without distracting you from the topic of discussion. Cellular phones must be turned silenced during class. No audio or video recording of any class lecture.

Due dates for submitting work

Students are expected to complete the homework and submit by the specified deadline. Late homework submission is allowed for 48 hours beyond the scheduled deadline but will incur a 20% penalty. After that period, your homework will not be accepted, and you will receive a 0 for that assignment. No exceptions will be made. If you know you will miss class, make arrangements to turn in your work ahead of time.

Quality of Work

The expectation is that all your submitted work will be of professional quality both in terms of content and presentation.

- Spelling, grammar, punctuation, clarity of expression, and presentation will count in every piece of work you do for this course. If you have trouble with spelling, grammar or punctuation, have someone proofread your package.
- Your grade will be based on what you say or write and how you present it. It becomes difficult to read for content if the mechanics are sloppy, and a superior job may not be recognized as such if presented in an error-laden package.

- Good ideas sloppily expressed will receive mediocre grades, as will flashy presentations that lack content.
- Students whose native language is not English must meet the same quality of writing and presentations expected of all students.

All work submitted for evaluation (including group and individual work) must be clearly marked with a title and names of students responsible for the work. The question being answered should be spelled out or identified so the instructor knows what is being answered. Work submitted online must have all files named appropriately so that the instructor can easily understand what the file represents. The instructor will not spend time going through all your files in order to find your submitted work. Work that does not have proper identifications as described above will automatically get a deduction of 20% of the assigned grade for that work.

Instructor's help for homework and project

As you practice various sample problems in this class, you will invariably encounter programs that do not work. It is your responsibility to pay attention to discussions in class related to debugging. If you are not able to identify the errors when practicing the sample problems, I will be happy to go through your work with you and help you identify the problems. I can provide any amount of help with examples and practice problems. But, I cannot provide any help with your homework assignments or your project, if you face any problems. Specifically, I cannot take a look at your homework or project before the submission in order to identify/correct bugs/errors or judge how well the work meets the requirements.

Working in Team

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 the instructor's help.

All team members must

- participate in all team activities,
- strive to maintain positive working relationships with their team members,
- assist team members to resolve issues relating to group work,
- 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. The instructor may ask questions about any completed project to any team member and any incomplete or unsatisfactory answers will affect the team grade. The instructor may announce additional measures to obtain feedback on group member contributions and institute appropriate grade penalty for lack of participation.

However, this grade penalty will be limited to the course-work that is group-based.

Grade Appeals

If you believe that the grade you received on an assignment, exam or other graded course component was in error or unfair, you can appeal to the professor in writing **within 3 calendar days** of the receipt of your grade. 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 late in the semester.

Incomplete grade policy

An "incomplete" is not based on a student's failure to complete a given work or as a means of raising his/her grade by doing additional work after the grade report time. An incomplete grade can be given only when a student has a serious medical problem or other extenuating circumstance that legitimately prevents completion of required work by the due date. In any case, the student's work to date, and before the interruption, should be passing, and the student should provide proper written proof (e.g., a doctor's note), to get an 'I' grade.

Exam Ownership

Exams cannot be taken out of the exam room during their administration or during their review at a later class meeting.

Students are encouraged to review their exams during office hours or by appointment for study purposes. However, failure to return an exam after taking or reviewing it or removing an exam from my presence at any time will be considered theft of intellectual property. Such action will result in an exam grade of zero and may warrant further disciplinary action.

Civility

The University strives to create an inclusive academic climate in which the dignity of all individuals is respected and maintained. We celebrate the diversity that is beneficial to both employers and society at large. Students are strongly encouraged to act appropriately when sharing their views in class discussions.

Disability 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.

Academic Integrity/Honesty

All students are required to read and abide by the Code of Student Academic Integrity. Violations of the Code of Student Academic Integrity, including plagiarism, will result in disciplinary action as provided in the Code. Definitions and examples of plagiarism are set forth in the Code. The Code is available from the Dean of Students Office or online at <https://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.

For this class, peer advice and interactions are allowed when discussing non-graded work. Each student, however, must develop her/his own solutions to any graded assignment or lab exercises. Students may not collaborate on graded assignments or lab exercises unless explicitly permitted by the instructor to work in groups. Collaborations were not explicitly permitted by the instructor, constitutes cheating. 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 a graded assignment, contact your instructor, not other classmates.

Diversity

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 the diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

Tentative Schedule

Week	Date	Topics	Exercises Due Thursday by 11:59pm
1	14-Jan	<ul style="list-style-type: none"> Course Overview: Syllabus, Canvas Gradebook, Group Forming Overview of Business Analytics Exploring and Prepping Data 	-
2	21-Jan	<ul style="list-style-type: none"> Exploring and Prepping Data Data Analysis with Excel & Basic SQL 	<ul style="list-style-type: none"> Exercise 1 (Individual) - 3% DUE 1/30
3	28-Jan	<ul style="list-style-type: none"> Fundamental Statistical Concepts Predictive Analytics - Linear and Multiple Regression 	
4	4-Feb	<ul style="list-style-type: none"> Exam 1 	<ul style="list-style-type: none"> Exam 1 - 24%
5	11-Feb	<ul style="list-style-type: none"> Predictive Analytics - Logistic Regression 	<ul style="list-style-type: none"> Exercise 2 (Group) - 3% DUE 2/20 <p><i>Only one person from group needs to submit</i></p>
6	18-Feb	<ul style="list-style-type: none"> Predictive Analytics - Logistic Regression Predictive Analytics - Decision Tree Exam 2 Study Guide 	
7	25-Feb	<ul style="list-style-type: none"> Exam 2 - Logistic Regression & Decision Tree 	<ul style="list-style-type: none"> Exam 2 - 24% Exercise 3 (Individual) - 3% DUE 3/1
8	3-Mar	<ul style="list-style-type: none"> UNCC Student Spring Break - No Class 	
9	10-Mar	<ul style="list-style-type: none"> Predictive Analytics - Cluster Analysis 	<ul style="list-style-type: none"> Exercise 4 (Individual) - 3% DUE 3/26
10	17-Mar	<ul style="list-style-type: none"> Cluster Analysis Getting started on Exercise 5 Data Visualization 	
11	24-Mar	<ul style="list-style-type: none"> Data Visualization with Tableau 	<ul style="list-style-type: none"> Exercise 5 (Individual) - 3% DUE 4/9

Week	Date	Topics	Exercises Due Thursday by 11:59pm
12	31-Mar	<ul style="list-style-type: none"> • Open Lab: <ul style="list-style-type: none"> ○ Study handout 15 Data Visualization ○ Do additional Tableau practice problems ○ Complete exercise 5 ○ Work on exercise 6 ○ Work together on the group project 	
13	7-Apr	<ul style="list-style-type: none"> • R & RStudio 	<ul style="list-style-type: none"> • Exercise 6 (Individual) - 3% DUE 4/23
14	14-Apr	<ul style="list-style-type: none"> • Text Mining • Big Data and Analytics • Ethics & Privacy Issues of Analytics 	-
15	21-Apr	<ul style="list-style-type: none"> • Open Lab for Group Project 	-
16	28-Apr	<ul style="list-style-type: none"> • Group Project Presentations • Review for Exam 3 	<ul style="list-style-type: none"> • Group Project - 10%
17	5-May	Final Exam (or Exam #3): cluster analysis, data visualization, R & R Studio, Text Mining, Big Data Analytics, Ethics and Privacy Issues of Analytics	<ul style="list-style-type: none"> • Exam 3 - 24%