INFO 3237
Business Analytics II
UNC Charlotte

Instructor: Dr. Reza Mousavi
Office: 353C Friday
Phone: 704-687-7621
Email: reza.mousavi@uncc.edu
Classroom: Friday 339

Office Hours: Wednesday 10:30 am-11:30 am and 12:30 pm to 2:30 pm, any other time by appointment
Website: Canvas

Course Description

The ability to understand, analyze and interpret businesses from data has become increasingly more important in any type of business. This class aims to equip you with highly demanded business analytics skills in the current job market. The course will focus on building predictive analytics and understanding and applying a variety of machine learning models including random forest, support vector machine, rule-based classifiers as well as association rule mining and cluster analysis. The class will be hands-on and the emphasis will be placed on the "know-how" aspect - how to apply business analytics to improve business decision making. Prior programming skill is not required. Throughout the semester, a diverse array of business case studies will be discussed to promote the understanding of data mining applications in a variety of business contexts.

The class consists of five parts: Software training, data processing, classification models, text analytics, and cluster analysis.

We will discuss the inner workings of the methods to the level necessary to develop an understanding of when and how to use each technique. Students would also acquire hands-on experience working in teams and using state-of-the-art software to develop data mining solutions to business problems.

Learning Objectives

Upon completion of this course, students should be able to:

- Understand and prepare data to be used in data mining
- Understand the inner workings of classification methods
- Understand the inner workings of text analytics
- Understand the inner workings of cluster analysis
- Build and evaluate predictive analytics
- Become aware of the current trends in the use of data mining in business contexts
- Be skilled in a powerful predictive analytics software

Course Materials

Tan, Steinbach & Kumar, Introduction to Data Mining (Recommended but not Required).

Website: http://www-users.cs.umn.edu/~kumar/dmbook/index.php

Access to a personal computer outside of class time is required.

Grading

Assessment Item	Participation	Weight
Class Participation	Individual	5%
Individual Assignments (5×6%)	Individual	30%
Quizzes	Individual/ Group	5%
Group Project	Group	20%
Mid-term Exam	Individual	20%
Final Exam	Individual	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.

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

Questions on the exams will be taken from the assigned readings of texts, class lectures, and assignments. If the answer to an exam question is disputed, the student should submit a written appeal, citing the source to the instructor. The instructor will take these appeals into account during grading. Exams are a form of intellectual property belonging to those who create them. Consequently, exams must remain in my possession or under my control at all times. This means that exams may not be taken out of the room or copied. Students are encouraged to review their exams during office hours or by appointment. However, failure to return an exam after taking or reviewing it or removing an exam from my presence at any time or copying an exam will be considered theft of intellectual property. Such action will result in an exam grade of zero and may warrant further disciplinary action.

Missed Exams:

In the event that the excuse is **approved before the exam date** (requires documentation), the student will be given a make-up exam.

Assignments

The best way to become familiar with business analytics concepts is by using them. To aid in your learning there will be **individual** assignments in this class. These assignments will be submitted **on Canvas before midnight (Eastern time) on the due date**. Each student is allowed to submit **only one late assignment** throughout the semester. The late assignment should be submitted on or before the day of the final exam. For all of the other late assignments, a penalty of 10% of the assignment value per day (including weekends) is applied.

You must complete each assignment on your own. Any sharing between students will be considered a violation of the Academic Integrity Code and will result in a grade of zero for the assignment with a possibility for further disciplinary action (per instructions provided by the BISOM department, Belk College of Business, or University of North Carolina- Charlotte).

All changes in assignments or schedules will be posted on Canvas. It is your responsibility to keep up with the changes that are posted on Canvas.

Group Project

Students will form groups of 2-3 members to complete a business analytics project. Details will be made available via Canvas. If possible, all teams should be comprised of students from different disciplines/backgrounds, so please keep this in mind this when selecting your team members. I reserve the right to arrange/rearrange team assignments.

The descriptions about project topics will be provided throughout the semester. No more than 2 teams could work on the same topic (unless the teams are competing in an external business analytics/ data science challenge). The topic selection is first come- first served.

The total grade for the group project is 20% of the final grade. The groups are required to prepare 4 outputs: project phase reports 1 and 2, final project report, and final presentation. Each output has 5% of the total 20%.

Class Policies

Attendance and Participation Policy:

Attendance and participation are required and tardiness or early departure is disruptive and is, of course, discouraged. Students will be held responsible for any material covered, announcements made, assignments passed out, and any other type of work that they may miss during any absence from class. Up to 2 missed sessions will be allowed upon instructor's approval in non-emergency cases.

Class Behavior Policy:

Inappropriate behavior distracts from the ability of others to profit from their in-class experience. Such behavior includes arriving late, leaving early, talking, surfing the net, and so on. Rude and inappropriate behavior **will not be tolerated**. Since it is my responsibility to provide an environment that is conducive to learning for everyone in the class, I will deduct points from the grade of any student who chooses to repeatedly distract others. In particularly egregious cases, I will have the student permanently removed from the class. Under no circumstances will students be permitted to spend their lab time working on assignments for other classes, checking e-mail, surfing the Web, or printing out homework. Attempts to engage in such behavior will be reflected in lower grades and may lead to removal from the course.

Electronic Devices in Class:

Use of cellular phones, pagers, music players, radios, and similar devices are prohibited in the classroom and laboratory facilities. Cellular phones MUST BE TURNED OFF DURING CLASS, except in cases of medical emergencies. Pagers must be set to vibrate, rather than beep. Calculators and computers are prohibited during examinations and quizzes, unless specified. Laptop-size computers may be used in lecture for the purpose of taking notes. **Use of instant messaging, email, social media, or other types of communications during class time is prohibited.** Use of computing devices for purposes other than those required for the purposes of the class topic are prohibited. This includes use of laptops, lab computers, phones or other devices for Internet browsing, game playing, reading news, texting, chatting, and other activities not required for the class.

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 after the grades are posted**. 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.

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 work.

All UNCC students have the responsibility to be familiar with and to observe the requirements of The **UNCC Code of Student Academic Integrity** (see the Catalog and also http://integrity.uncc.edu/). This code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism of written materials and software projects, abuse of academic materials (such as library books on reserve), and **complicity in academic dishonesty** (helping others to violate the code). Additional examples of violation of the Code include:

- Representing the work of others as your own.
- Using or obtaining unauthorized assistance in any academic work.
- Giving unauthorized assistance to other students.
- Modifying, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit.
- Misrepresenting the content of submitted work.

Students are expected to report cases of academic dishonesty they become aware of to the course instructor who is responsible for dealing with them. 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. The instructor may ask students to produce identification at examinations and may require students to demonstrate that graded assignments completed outside of class are their own work.

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 at Fretwell 230.

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

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. 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, for a student to receive an 'I' grade, the student's work to date should be passing, he/she must have completed a significant portion of the course, and the student must provide proper written proof (e.g., a doctor's note) of the extenuating circumstances.

Course Changes Policy:

The instructor reserves the right to make any necessary changes to the course content, schedule, and policies. Changes will be announced in class and will also be posted online.

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 (typically the tenth day of instruction).

<h1 style="text-align:center;">Tentative Class Schedule</h1>
<p style="text-align:center;">*** This tentative schedule is subject to change ***</p>

	Topics	Assignments	Due
Week 1	Review the Syllabus, Introduction to Business Analytics	Read Syllabus, Install Software, Work on Tutorial 1	
Week 2	Exploring Data (R recap)	Work on Tutorial 2	Forming Teams Due
Week 3	Classification- Basic Concepts	Read Decision Tree	Assignment 1 Due
Week 4	Classification- Basic Concepts	Read Decision Tree	Select Topic (for Team Project) Due
Week 5	Classification- Model Evaluation	Read Model Evaluation	Assignment 2 Due
Week 6	Classification- Advanced Techniques	Read Random Forest	
Week 7	Classification- Advanced Techniques	**Review Classification**	
Week 8	Project Presentations (Phase 1)		Assignment 3 Due
Week 9	**Mid-term Exam**	**Exam Prep**	
Week 10	Text Analytics- Basic Concepts	Read Text Analytics	
Week 11	Text Analytics- Advanced Techniques	Read Text Analytics	
Week 12	Cluster- Basic Concepts	Read Cluster Analysis	Assignment 4 Due
Week 13	Cluster- Basic Concepts	Read Cluster Analysis	
Week 14	Cluster- Additional Issues	Read Cluster Analysis	Assignment 5 Due
Week 15	**Final Project Presentation**	Review Text Analytics and Cluster Analysis	**Final Project Due**