

**INFO 3237**  
**Business Analytics II**  
**UNC Charlotte**  
**Spring 2021**

**Instructor:** Dr. Xue Guo

**Office:** 353C Friday

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**Email:** [xue.guo@uncc.edu](mailto:xue.guo@uncc.edu)

**Class Hours:** Tuesday/Thursday 2:30 – 3:45 pm

**Classroom:** [Zoom](#)

**Office Hours:** Thursday 9:30 am – 11:30 am or any other time by appointment (all office hours are conducted online, as explained later in the syllabus)

**Website:** Canvas will be the website for course information (<http://canvas.uncc.edu>).

### **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, 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 (5x7%)	Individual	35%
Group Project	Group	20%
Mid-term Exam	Individual	20%
Final Exam	Individual	20%
<b>Total</b>		<b>100%</b>

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.

### **Laptop requirement:**

All upper-level business students, which includes all students in this class, 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>. In particular, since some of the sessions of the class will be held online, webcam and microphone are required.

### **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.

**Office hours**

In the Spring 2021 semester, office hours and one-on-one meetings will be held online via zoom. During the scheduled open office hours, appropriate zoom link will be posted on Canvas. Click the link to enter the virtual office, and your instructor will allow you in in the order of the students who have entered. If you like to set up an appointment outside of the scheduled office hours, email your instructor giving your availability and the instructor will setup a zoom link for you to join at the agreed meeting time.

**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 50% of the total 20%.

If a group member does not contribute, the rest of the members may, after a consensus agreement, ask him/her to leave the group and notify the instructor. The maximum project grade for students not belonging to a group will be 80. If necessary, peer reviews will be factored into the grade.

### **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).

**Important Information & Policies for the Spring 2021 semester****Niner Nation Cares**

All students must follow the updates and instructions related to Spring 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.

**Absenteeism during Covid-19**

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.

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.

If you are absent from class as a result of a COVID-19 diagnosis or quarantine, please notify your instructor immediately and seek instructions to help you continue to make progress in the course. The specific instructions for this situation will be provided on a case-by-case basis. The final decision for approval of all absences and missed work is determined by the instructor.

### **Belk College statement on diversity**

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### **University's statement on 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.

**Tentative Class Schedule**

\*\*\* This tentative schedule is subject to change\*\*\*

Session	Date	Topics	Assignments	Due
Week 1	Jan 21	<ul style="list-style-type: none"> <li>Review the Syllabus,</li> <li>Introduction to Business Analytics</li> </ul>	Read Syllabus, Install Software	
Week 2	Jan 26, Jan 28	<ul style="list-style-type: none"> <li>Introduction to Business Analytics</li> <li>Exploring Data (R recap)</li> </ul>	In-Class Activity (R statistics)	Forming Teams Due
Week 3	Feb 2, Feb 4	<ul style="list-style-type: none"> <li>Data mining overview</li> <li>Classification- Basic Concepts</li> </ul>	Read Decision Tree	Assignment 1 Due
Week 4	Feb 9, Feb 11	<b>Spring break No class</b>		
Week 5	Feb 16, Feb 18	<ul style="list-style-type: none"> <li>Classification- Model Evaluation</li> </ul>	Read Model Evaluation	Select Topic (for Team Project) Due
Week 6	Feb 23, Feb 25	<ul style="list-style-type: none"> <li>Classification- Advanced Techniques</li> </ul>	Read Random Forest	
Week 7	Mar 2, Mar 4	<ul style="list-style-type: none"> <li>Classification- Advanced Techniques</li> </ul>	Review Classification	Assignment 2 Due
Week 8	Mar 9, Mar 11	<ul style="list-style-type: none"> <li>Project Presentations (Phase 1)</li> </ul>		Project Phase 1
Week 9	Mar 16, Mar 18	<b>Mid-term Exam</b>	<b>Exam Prep</b>	Assignment 3 Due
Week 10	Mar 23, Mar 25	<ul style="list-style-type: none"> <li>Text Analytics- Basic Concepts</li> </ul>	Read Text Analytics	
Week 11	Mar 30, Apr 1	<ul style="list-style-type: none"> <li>Text Analytics- Advanced Techniques</li> </ul>	Read Text Analytics	
Week 12	Apr 6, Apr 8	<ul style="list-style-type: none"> <li>Cluster- Basic Concepts</li> </ul>	Read Cluster Analysis	Assignment 4 Due
Week 13	Apr 13, Apr 15	<ul style="list-style-type: none"> <li>Cluster- Additional Issues</li> </ul>	Read Cluster Analysis	
Week 14	Apr 20, Apr 22	<ul style="list-style-type: none"> <li>Cluster- Additional Issues</li> </ul>	Read Cluster Analysis	Assignment 5 Due
Week 15	Apr 27, Apr 29	<b>Final Project Presentation</b>	Presentation and Report	<b>Final Project Due</b>
Week 16	<b>TBD</b>	<b>Final Exam</b>		