Business Intelligence and Analytics
Fall 2021

INSTRUCTOR: Dr. Sungjune Park
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OFFICE HOURS: Tue, Thu 12:00 pm – 1:00 pm (Main Campus or via Zoom),
               Tue 4:30 pm – 5:30 pm (Center City), and
               by appointment via Zoom

CLASS HOURS: Tue 5:30 pm - 8:15 pm, Center City Building 801

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.

LEARNING 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, clustering, and association rule).
4. To use a range of tools (e.g., R, SAS Enterprise Guide/Enterprise Miner, IBM
   SPSS Modeler) appropriate for data analytics problems.

COURSE MATERIALS

- Handouts, slides, assignments, and online resources will be posted on Canvas.
• **Textbook:** There are no required textbooks as students will be provided with enough materials for each topic on Canvas. But, recommended texts are as follows:
  - *Data mining: concepts and techniques* by Jiawei Han, Micheline Kamber, and Jian Pei. Elsevier, 2011, ISBN-13: 978-0123814791, E-book can be checked out from the Atkins library at [https://uncc.primo.exlibrisgroup.com/permalink/01UNCC_INST/5neftp/almal991010705997604091](https://uncc.primo.exlibrisgroup.com/permalink/01UNCC_INST/5neftp/almal991010705997604091)

  - A scientific calculator that can do exponential and log calculations.

**GRADING**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Exams (2)</td>
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<tr>
<td>Assignments (5)</td>
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<tr>
<td>Stats Bootcamp</td>
<td>5</td>
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<tr>
<td>R Bootcamp</td>
<td>2</td>
</tr>
<tr>
<td>Class Participation</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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Final grades will be based on the following scale.
**A: 90 and above, B: 80-89.9, C: 70-79.9, U: 69.9 and below.**

**EXAMS**

An opportunity to take an early or make-up exam is given to a student only if he/she provides legitimate and documented reasons. Permission must be obtained from the professor before the scheduled exam time. The format of make-up exams may differ from the format of the regularly scheduled exam.

Exams are **closed** book and notes when they are administered in class. 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.
ASSIGNMENTS

Assignments will be posted at the end of the class at least a week before they are due. Solutions must be provided via Canvas only. Detailed information on assignments’ tasks and expected work will be given with each assignment. Assignments are due on the given day with the start of class (5:30 pm) unless stated otherwise. In the case of a late submission on the same day, 20% of the points earned from the submission will be deducted. After the due date, the late homework may be accepted, but with a 50% penalty. Once the grade is posted or a week has passed after due date, whichever comes first, you will receive a 0 for the late assignment.

Each student must develop his or her own solutions to the assigned homework. Students may not "work together" on homework 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.

Bootcamp courses

There are two bootcamp courses you need to take for this course. These courses will have to be completed by **September 12**.

1. *Statistics for Data Science Overview* (5pts)
   You will get a full credit if you get a certificate of completion. Otherwise, partial credit may be awarded depending on the progress/performance in the course. Estimated time required for completion is 10 hours.

2. *Introduction to R for Data Science* (2pts)
   You can get a full credit if you successfully complete the first four modules (up to Module 4: Data Import) Estimated time required for completion is 4 hours.

There is no need to submit your certificates or show your progress to receive the credits. Your progress/completion report will be obtained directly from the School of Data Science TA.

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

- **Complete your** Niner Health Check **each morning.**
- **Do not come to class if you are sick.** Please protect your health and the health of others by staying home. Contact your healthcare provider if you believe you are ill.
- **If you are sick:** If you test positive or are evaluated by a healthcare provider for symptoms of COVID-19, indicate so on your Niner Health Check to alert the University. Submit a copy of your Niner Health Check notification email to your instructors. Upon learning that you have tested positive or have been diagnosed for symptoms of COVID-19, either from your reporting or from Student health Center testing or diagnosis, representatives from Emergency Management and/or the Student Health Center will follow up with you, and your instructors will be notified of the need for accommodations, as necessary.
- **If you have been exposed** to COVID-19 positive individuals and/or have been notified to self-quarantine due to exposure, indicate so on your Niner Health Check to alert the University. Representatives from Emergency Management and/or the Student Health Center will follow up with you as necessary. Submit a copy of your Niner Health Check notification email to your instructors. If you need any additional support verifying your absence after you have communicated with your professors, contact Student Assistance and Support Services.

To return to class after being absent due to a period of **self-quarantine**, students should submit a copy of their Niner Health Check clearance email to their instructor(s). To return to class after being absent due to a COVID-19 **diagnosis**, 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, as instructor I will do the following to help you continue to make progress in the course:

- Extend the deadline of assignment and provide make-up exam on a case-by-case basis.
- Give a high priority when schedule meetings during office hours.

The final decision for approval of all absences and missed work is determined by the instructor.

**CLASS DELIVERY METHOD**

Students who enroll in face-to-face classes are expected to participate in person — just as they were before the pandemic. Students who believe they need disability accommodations in their face-to-face classes should contact the Office of Disability Services at 704-687-0040 or disability@uncc.edu.
Only in extremely rare situations may a faculty member alter course delivery and only after they have provided appropriate justification that has been reviewed and approved by the dean. Faculty do not have the authority to make course format changes informally without consultation with their dean.

There will be no live streaming or recordings of classes unless the delivery format completely switches to online delivery mode.

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).

CLASS CONDUCT

Disruptive behavior in class distracts from the ability of others to profit from their in-class experience. Such disruptive behavior includes arriving late, leaving early, cell-phone interruptions, checking e-mail, surfing the net during the class, spending class time working on assignments for other classes, side conversations between two or more students during lecture, unnecessary comments that add no value to class, and any activities that negatively impact the ability of other students to learn and/or listen in class. Such behavior will be considered rude and inappropriate and will not be tolerated.

Students are permitted to use computers 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. Those using computers during class for work not related to that class must leave the classroom for the remainder of the class period.

COVID-19 PROTECTION

It is the current policy of UNC Charlotte that as a condition of on-campus enrollment, all students are required to engage in safe behaviors to avoid the spread of COVID-19 in the 49er community. Such behaviors specifically include the requirement that all students properly wear CDC-compliant face coverings in all indoor spaces on campus, including classrooms and labs, regardless of vaccination status. Failure to comply with this policy in the classroom or lab may result in dismissal from the current class session. If the student refuses to leave the classroom or lab after being dismissed, the student may be referred to the Office of Student Conduct and Academic Integrity for charges under the Code of Student Responsibility.

ACADEMIC INTEGRITY
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](https://legal.uncc.edu/policies/up-407).

**Ownership of Course Materials**

The lectures and course materials provided by the instructor including presentations, tests, quizzes, exams, videos, outlines, and similar materials are protected by copyright. The instructor is the exclusive owner of copyright in those materials instructor creates. You are encouraged to take notes and make copies of course materials for your own educational use. However, you may not, nor you may knowingly allow others to reproduce or distribute course materials publicly without instructor’s express written consent. This includes providing materials to commercial course material suppliers such as CourseHero, Chegg, etc. and other similar services. Students who publicly distribute or display or help others publicly distribute or display copies or modified copies of the instructor’s materials may be in violation of [University Policy - 406, the Code of Student Responsibility](https://legal.uncc.edu/policies/up-407).

**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 10 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.

**INCOMPLETE GRADE POLICY**

The incomplete 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 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 cases, the student's work to date should be passing, and the student should provide proper written proof (e.g., a doctor's note), in order to get an 'I' grade.

**DISABILITY ACCOMMODATIONS**

UNC Charlotte is committed to access to education. 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. Contact the Office of Disability Services at 704-687-0040 or visit their office in Fretwell 230.

**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.

**COURSE SCHEDULE**

The Instructor reserves the right to change the course contents and schedule. The up-to-date course schedule is available on Canvas. Important announcements, specific policies regarding exams, etc. are also available on Canvas. It is the student's responsibility to be aware of any changes in the course schedule, course contents, and course policies by visiting Canvas regularly.

*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.*
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Due Dates</th>
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</table>
| Aug 24 | Introduction  
Business Intelligence and Analytics Overview  
Analytics tools (R and SAS) |                      |
| 31     | Statistics Review / Regression                             |                      |
| Sep 7  | Regression                                                | Stats and R Bootcamp |
| 14     | Regression/ Data Warehousing                               |                      |
| 21     | Classification – Logistic Regression                       | Regression Assignment|
| 28     | Classification - Naive Bayes, kNN, LDA, ...                | Data Warehouse Assignment|
| Oct 5  | Classification - Model Evaluation                         |                      |
| 12     | Fall Recess – No class                                    |                      |
| 19     | **Exam 1**                                                |                      |
| 26     | ROC / Decision Trees                                      |                      |
| Nov 2  | Decision Trees                                            | ROC Assignment       |
| 9      | Clustering                                                | Decision Tree Assignment|
| 16     | Clustering / Association Rule Mining                       | Clustering Assignment|
| 23     | Association Rule Mining                                    |                      |
| 30     | Neural Networks / Text Mining                              | Association Rule Assignment|
| Dec 7  | **Exam 2**                                                |                      |
| Dec 14 | **Comprehensive Final Exam (optional)**                    |                      |