

## DSBA/MBAD 6201-U91 – Business Intelligence & Analytics

**Fall 2024<sup>1</sup>**

### **Class meetings:**

Tuesdays 5.30pm-8.15pm **in-person** @1105 Dubois Center (11<sup>th</sup> floor)

**Instructor:** Dr. Chandra Subramaniam

**Office:** 266-B, Friday Building, UNC Charlotte Main Campus

**Email:** csubrama@charlotte.edu

**Web:** <https://belkcollege.charlotte.edu/directory/chandrasekar-subramaniam>

**Office hours:** Tuesdays 3.30pm-5.00pm or by appointment (Venue to be decided)

### **Graduate Assistant:**

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### **Important Update for Fall 2024 semester**

Our class will be fully in-person class in Fall 2024. This means that there will be no remote participation option available for students for any reason. All students must follow the updates and instructions about health posted on <https://ninernationcares.charlotte.edu/>.

### **Syllabus and Class Expectations**

#### **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.

#### **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.

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<sup>1</sup> This syllabus may be subject to minor changes during the semester after adequate advance notice to students.

The learning objectives of the course are thus:

- To understand the role of business intelligence and analytics in today's competitive and turbulent business environment.
- To be familiar with the terminology of the field, basic principles, and concepts of business intelligence and analytics.
- To learn how to use and apply key methods for analytics (e.g., regression, decision trees, clustering, and association rule).

### 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, you may find the following texts useful to further your knowledge in analytics and data science:
  - *"An Introduction to Statistical Learning: with Applications in R"* by James, Witten, Hastie, and Tibshirani, ISBN-13: 978-1461471370
  - *"Data Science for Business: What you need to know about data mining and data-analytic thinking"* by Provost and Fawcett, ISBN-13: 978-1449361327
  - *"Data mining: concepts and techniques"* by Jiawei Han, Micheline Kamber, and Jian Pei. Elsevier 2011, ISBN-13:978-0123814791

### Bootcamps

- All students registered for this class should complete two bootcamps – (1) Statistics and (2) R. The statistics bootcamp is available on Canvas and is titled "Training – Statistics for Data Science Overview". You are automatically enrolled in this Canvas course. The R bootcamp is available in DataCamp. You need to follow the steps below to enroll in the R bootcamp in DataCamp:
  - a. Register for DataCamp by filling in the form present on this website: <https://dsba.charlotte.edu/current-students/sds-bootcamp-courses>.
  - b. Login to DataCamp using your university email id (use @charlotte.edu).
  - c. Go to Learn → Tracks → Organization Tracks.
  - d. You will see "SDS R Bootcamp"
- If you complete the Statistics and R bootcamp by Sep 15<sup>th</sup> you will get credit as follows:
  - a. Statistics: 30 points
  - b. R: 30 points

### Laptop Requirement

All students taking classes from the Belk College of Business and/or the School of Data Science are required to have their own laptop computer. If you are using a work laptop, please make sure that your laptop can access the webpages and other materials posted on Canvas and that there are no network access restrictions installed by your workplace. If so, you may find having your personal laptop saves a lot of issues relating to doing work in class.

## Grading<sup>2</sup>:

Component	Points
Exams (2 x 300 points)	600 points (60%)
Assignments (4 out of 5 assignments)	240 points (24%)
Boot camps	60 points (6%)
Class participation & Attendance	100 points (10%)

Final letter grades will be based on the following total points at the end of semester:

900 and above	A (Superior Performance)
800-899.99	B (Good Performance)
700-799.99	C (Marginal Performance)
Below 700	U (Unsatisfactory)

## Credit Hours

This is a 3 credit hour course. Thus, the course has been designed to require on average about 10 hours/week (about 3 hours outside of class for every 1 credit hour) between readings, quizzes, and exercise/project work. Of course, the hours may be more or less than indicated above depending on the assignments, cases, exams or project work due. If a student has limited backgrounds in certain topics, they might need to spend additional time to keep up with other students in the course.

## Attendance

Students are expected to attend all class meetings and to arrive before the class starts. Class topics are integrated, with each week building on prior weeks. Failure to arrive on time or attend class can adversely affect individual performance, ability to contribute to class discussion, in-class assignments, and the earned letter grade. *If a student misses 4 or more classes, they will automatically receive an unsatisfactory U grade in the course regardless of earned points to date on other activities.* If a student misses a class due to work or other reasons, it is their responsibility to get notes from peers; instructors do not hold extra repeat class sessions. Also, **there will be no make-up for in-class assignments given irrespective of whether your absence is excused or un-excused.**

## Class Participation

Class attendance will be taken at random in class during the semester. A student's attendance percentage based on this random attendance is factored into the final grade for class participation. Students are strongly encouraged to have active participation in class discussions. I expect every student to read the textbook and other posted materials prior to each live session.

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<sup>2</sup> Any changes to the grading components or weights will be at the discretion of the instructor and will be communicated to the students well in advance.

## Exams

There will be two exams. Exams are **closed** book and notes when they are administered in class. Exams may require LockDown Browser, which will be specified in advance by the instructor. Exam questions will not be accessible after you take the exams. 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. No exam reviews are allowed after 10 days after the grades are posted.

Missing an exam without prior approval and/or providing supporting documentation within the following timeframe will lead to a grade of zero for that exam. If the excuse is **approved before the exam date** (in 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 12 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 make-up exam policies and no special accommodations will be made for any exceptions. No makeup exam will be given after the last day of class.

## Assignments

All assignments are posted on Canvas and should be submitted on Canvas. Unless specified by instructor, assignments emailed to the instructor will not be accepted. Assignments submitted after the due date/time but within 24 hours of the due date/time will be graded for a maximum of 75% of the original points for that assignment. Assignments submitted after 24 hrs of the due date/time will receive a grade of zero. No exceptions are allowed for this late policy. Also, this late policy applies only to homework assignments and not to in-class assignments, quizzes and exams.

Unless the assignment clearly specifies otherwise, you must complete each assignment on your own. Any sharing of answers between students or submitting someone else's work as your own will be considered a violation of the Academic Integrity Code and will result in, at a minimum, a grade of zero for the assignment with a possibility for further disciplinary action.

## Quizzes & In-class Assignments

There will be short quizzes at various points in the semester on topics covered before. There may also be in-class assignments. Once an exam/quiz has started and work has been collected, late arrivals cannot make them up. (If one arrives during a quiz, they can immediately start on it, but no time extension will be given). **Make-up quizzes or in-class assignments are not allowed irrespective of whether your absence is excused or un-excused.** Instead, one quiz or in-class assignment out of all administered quizzes & in-class assignments will be dropped for the final grading. Since the class meets on Tuesdays evening, please arrange your work or personal activities around this schedule.

### **Extra Credit Opportunities**

Descriptions of extra credit opportunities, if any, will be offered to the entire class and posted on Canvas. However, it is strongly encouraged that students do not rely on extra credit to improve their grades as we may end up with very few or no extra credit opportunities in the semester. No extra credit will be offered to an individual student for the purpose of improving her/his grades. Bottom line: Stay focused throughout the semester and do not miss any assignment or test, so you don't have to rely on extra credit for improving your grades.

### **Class Behavior Policy**

I will conduct this class in an atmosphere of mutual respect. I encourage your active participation in class discussions. Each of us may have strongly differing opinions on the various topics of class discussions. The presentation and discussion of different ideas are encouraged and welcome. The orderly questioning of the ideas of others, including mine, is similarly welcome. However, I will exercise my responsibility to manage the discussions so that ideas and argument can proceed in an orderly fashion. You should expect that if your conduct during class discussions seriously disrupts the atmosphere of mutual respect I expect in this class, you will not be permitted to participate further.

Under no circumstances will students be permitted to spend their class time working on assignments for other classes, checking e-mail, or surfing the Web. Attempts to engage in such behavior will be reflected in lower grades and may lead to removal from the course. All students and the instructor are expected to engage with each other respectfully. Unwelcome conduct directed toward another person based upon that person's actual or perceived race, actual or perceived gender, color, religion, age, national origin, ethnicity, disability, or veteran status, or for any other reason, may constitute a violation of University Policy 406, The Code of Student Responsibility. Any student suspected of engaging in such conduct will be referred to the Office of Student Conduct.

### **Civility**

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

### **Academic Integrity/Honesty**

Students have the responsibility to know and observe the requirements of [The UNC Charlotte Code of Student Academic Integrity](http://legal.uncc.edu/policies/up-407) available online at <http://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.

### **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 case, the student's work to date should be passing up to the time of the extenuating circumstance, 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. 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.

### **Accommodations for Religious Observances**

UNC Charlotte provides reasonable accommodations, including a minimum of two excused absences each academic year, for religious observances required by a student's religious practice or belief. Please refer to <https://legal.uncc.edu/policies/up-409> for details on requesting such accommodations.

### **Other Information**

- χ Students are responsible for **all** announcements made in class or announced via email. The instructors may send some information via Canvas announcements. It is the **students'** responsibility to keep up-to-date on the class-related information and to check their @uncc.edu email regularly.
- χ The instructors will discuss grades **only** in person (and not via telephone or e-mail) and only with the student (not with parents, spouses, etc). The instructors may not answer student e-mails other than related to scheduling appointments. Office hours are posted in the syllabus on page 1.

- χ The instructors may **modify the class schedule and syllabus** during the course of the semester depending upon the progress of the class.

*The University of North Carolina Charlotte and the Belk College of Business strive 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.*

**Topics and Tentative Schedule posted on next page.**

### Topics and Tentative Schedule (as of 8/14/2024)

**Note:** This schedule is subject to change during the semester. Always refer to the latest class schedule and announcements posted on Canvas.

Date	Theme/Topic of Discussion
Aug 20	Class overview, Syllabus, Software Business Intelligence and Analytics Overview
Aug 27	Review of Statistics & R Linear Regression
Sep 3	Linear Regression
Sep 10	Linear Regression Classification – Naïve Bayes
Sep 17	Classification – Naïve Bayes
Sep 24	Classification – Logistic Regression
Oct 1	Confusion Matrix & ROC Curves
<b>Oct 8</b>	<b>Exam 1</b>
<b>Oct 15</b>	<b>Fall Recess – No classes!</b>
Oct 22	Data Warehouse
Oct 29	Decision Trees
Nov 5	Decision Trees
Nov 12	Clustering
Nov 19	Clustering
Nov 26	Catchup & Review, if needed



Date	Theme/Topic of Discussion
Dec 3	Exam 2
Dec 10	Optional Comprehensive Final Exam

*Have a wonderful semester at UNC Charlotte 😊*