DSBA 6156: Applied Machine Learning
Fall 2022
Cory Hefner

Contact Information
> **Faculty:** Cory Hefner
> **Email:** chefner5 at uncc dot edu
> **Office:** School of Data Science, Bioinformatics Bldg.
> **Phone:** 704-687-8643
> **Office Hours:** Mondays 3pm-4pm via Zoom
> **Instructional Assistant (IA):** Sai Kumar Kasireddy
> **IA Email:** skasire2 at uncc dot edu
> **IA Office Hours:** Wednesdays 11am-12pm via Zoom

*My preferred method of contact is by email. I will respond to all emailed questions within 24 hours Mon-Fri. I do not respond to emails over the weekend. You can also post your question on online discussion board as we (TAs, I, and classmates) can answer more quickly than solely I. Please title your email starts with **"[DSBA6156]"** to receive the response on time.*

Course Description
Prerequisite: ITCS 6150 or permission of the instructor.
Machine learning methods and techniques including: acquisition of declarative knowledge; organization of knowledge into new, more effective representations; development of new skills through instruction and practice; and discovery of new facts and theories through observation and experimentation.

Meeting Times:
Wednesdays 5:30 – 8:15 pm at Center City 1101

Objectives of the Course
Data, big or small, are being collected at an accelerating pace. This brings many challenges, including data collection, storage, formatting, analysis, visualization, and reporting. This course will cover the aspects of this process that include both data management and analysis. Special attention will be paid to statistical, artificial intelligence, machine learning, and simulation and modeling methods for analysis of data. Students will learn (a) the basic principles, concepts, and methods of analytics in general and machine learning in particular; (b) how to evaluate learning methods; and (c) how to utilize analytics for the benefit of organizations and society.

Instructional Method
Materials presented in this course will be covered through lectures and use cases. Every topic will be covered both in class and through the use case-based hands-on experience. In the end, students will have both the theoretical understanding of machine

learning concepts and concrete experience of putting such concepts and principles into practice.

Textbook
"Machine Learning for Predictive Data Analytics: Algorithms, Worked Examples, and Case Studies," by John D. Kelleher, Brian Mac Namee, Aoife D'Arcy, 2015, Massachusetts Institute of Technology.

Topics
Introduction
Data Preparation and Exploration
Information-based Learning
Similarity-based Learning
Probability-based Learning
Error-based Learning
Evaluation
Case Studies
Predictive Analytics
Advanced Topics

Grading Criteria

Homeworks	20%
Quizzes	15%
Final Exam	25%
Final Project	30%
Participation	10%

Grading Scale
A 100% to 90.0%
B <90.0% to 80.0%
C <80.0% to 70.0%
D <70.0% to 60.0%
F <60.0% to 0.0%
D & F will be 'U' (Unsatisfactory) grade

Semester grades are determined by the weighted sum of points earned in each of the areas summarized in the table above. Total points for each area are normalized so that the best possible score for the semester is 100. Typically, the A to B cutoff falls at 90 points, the B to C cutoff at 80 points, and so on (See the Grading Scale). While this is the typical grading procedure, the instructor reserves the right to make adjustments.

Grade Discussions
The instructor and TA will discuss grades only in person (and not via telephone or e-mail) and only with the student (not with parents, spouses, etc). Office hours are listed in the syllabus.

Attendance
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. Class topics are integrated, with each week building on prior weeks. Failure to attend or to arrive on time can adversely affect both individual performance, ability to contribute to the group project, and the earned letter grade. 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.

Syllabus Revision
The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by Canvas announcement or email notice.

Classroom Conduct:
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 conflict of ideas is 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.

Academic Integrity
All students are expected to adhere to the UNC Charlotte Code of Student Academic Integrity (http://legal.uncc.edu/policies/ps-105.html) as specified in the current Catalog (http://catalog.uncc.edu/). Among other things, this code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty.

Inclement Weather
University Policy Statement #13 states the University is open unless the Chancellor announces that the University is closed. The inclement weather hotline number to call is 704-786-2877. In the event of inclement weather, check your email the morning of class. The instructor will use their best judgment as to whether class should be held understanding that some of you commute from far away and the instructor will notify you by email if class is cancelled.

Late Work and Make-Ups:
NO LATE PERIOD!
Deadlines are deadlines. If you fail to hand in a programming assignment or take a test/exam on time, you get no points for that element.

There is one important class of exceptions to the rule above unforeseeable emergencies. Examples might include severe illness, the death of a family member or

close friend, a house fire, etc. In the case of an unforeseeable emergency, please talk to the instructor.

Discussion Board
Slack is being used as a class discussion board to support this course. In particular, the discussion board is hosted online. All normal expectations regarding professional conduct apply to the discussion board. In addition, here are some explicit guidelines to assist in establishing the tone and expectations regarding the use of online discussion board.

1. No posting of any code for assignments.
2. No inappropriate postings: e.g. profanity, sexism, racism, bullying, inflammatory
remarks, bad taste.
3. No grade inquiries: make those directly to the instructors.
4. All students are expected to follow the discussions.
5. Instructor posts, like in-class announcements, may clarify and even alter assignment specifications.
6. Use the existing topics. Please don't start new threads.
7. Only answer questions by other students when you are confident you are both correct and able to craft a helpful explanation.
8. Questions may of course relate to how best to use tools.
9. Do not expect instant answers. While answers may often come faster, a 24-hour response cycle is reasonable.
10. Posts are anonymous one student to another through the online discussion interface.
11. Posts are archival and individualized for the instructors.

This last item deserves additional comment. Please, keep in mind every word you type may be retained and shared by the instructor with others when the instructor determines there is good reason to do so. This should not concern you. It is the nature of a public discussion board that what you type is archival and public. However, understanding the public and personally identifiable nature of the discussion board should help reinforce the comments above about the importance of Professionalism.

The activities in online discussions will be graded as a part of participation score.

Student Support Services:
Be sure to take advantage of the wealth of resources and support available at UNC Charlotte. Some of the resources available to you include the University Writing Resource Center, University Counseling Center, and the J. Murrey Atkins Library.
• University Center for Academic Excellent (UCAE) | (704) 687 7837 | unccucae@ uncc.edu
• University Writing Resources Center (WRC) | 704-687-1899 | wrchelp@uncc.edu
• Veteran Student Services | 704-687-5488 | veteranservice@uncc.edu
• University Counseling Center | 704-687-0311
• Multicultural Resource Center | 704-687-7121 | mrc@uncc.edu

- List of computer labs on campus
- Atkins Library Laptop Lending program
- Canvas Support