UNC CHARLOTTE

School of Data Science

DSBA 6156 | Applied Machine Learning | 3 credits

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Office Hours: In-Person at WWH 205C or Online through Zoom Personal Room
o(https://uncc.zoom.us/my/mlee173?pwd=VjdLZy9DWnNSNi9mL0RFVml3MkY5dz09)
            Mondays 10:00 am – 12:00 pm & Wednesdays 11:00 – 12:30 am

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:

Learning from examples or experiences, Machine Learning (ML) has been successfully applied to many different areas such as autonomous control of cars and robots, natural language processing, image recognition, health science, biology, and data mining. ML has reduced the human effort to define and code complex rules. This course teaches the practical side of ML for diverse applications. We introduce basic concepts of ML and methods/tools to learn from data for computational data analysis, including pattern recognition, prediction, and visualization. To encourage hands-on experience, the course is designed with a heavy project focus and practical labs.

Since this course mainly focuses on applying machine learning techniques to various problems, students will learn practical programming for

- reading and storing data in various formats,
- preprocessing or handling data,
- visualization of data to deliver visual insights,
- application of various machine learning techniques,
- analysis of the results of machine learning applications.

Pre or Co-requisite:

In order to understand the material in this course, you should be familiar with the basics of algorithms (as taught in ITCS 3153) and good programming experience (preferably in Python). Consult the instructor to determine if you are sufficiently prepared or have any questions.

There is **Bootcamp** courses that you can utilize to refresh your prerequisite knowledge in https://dsba.uncc.edu/current-students/sds-bootcamp-courses.

Meeting Times:

Wednesdays 12:30 – 3:15 pm @ Friday 381.
(First two weeks of this semester will be delivered online through Zoom. The meeting link is available on Canvas).

Course Objectives:

By the end of the course, students should be able to:

- be familiar with data and visualization tools,
- understand machine learning problems and algorithms to solve diverse real-world application problems, and
- apply machine learning algorithms to solve problems.

Reference Textbooks (Not Required):

- Aurelien Geron. **Hands-On Machine Learning with Scikit-Learn & TensorFlow**. 2nd Ed. O'Reilly, 2019.   GitHub (Link)
- Ethem Alpaydin, Introduction to Machine Learning, 3rd edition, MIT Press, 2014. ebook from Atkins Library
- Ian Goodfellow, Yoshua Bengio, and Aaron Courville, Deep Learning, MIT Press, 2015.

Grading Criteria:

Course Element	Point Value	Percentage
Programming Lab Assignments (ongoing weekly small assignments)	350	30%
Individual Project	400	40%
Quiz	100	10%
Participation	150	15%
Total	1000	100%

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.

Course Policies:

Programming assignments will all be done individually and grades assigned on an individual basis. You may not submit any work done by other people under any circumstances. That you understand this requirement and follow it is essential and indeed the consequences for what is generally called "cheating" can take many forms including being dismissed from the University. Please see Professional Conduct below for more information and links to resources.

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.

Attendance:

For COVID-19 / Pandemic Period

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](Links to an external site.)** 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 (Links to an external site.), indicate so on your Niner Health Check (Links to an external site.) 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 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 (Links to an external site.) 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.

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 (Links to an external site.) 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: I will provide the remote learning resources, recorded lecture videos to watch, followup quizzes for self-reflection, and assignments to practice your learning. The final decision for approval of all absences and missed work is determined by the instructor. ©

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.

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.

Feedback:

Typically, feedback will be returned within one week for small assignments and two weeks for large assignments.

Discussion Board

A class discussion board is being used 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.

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. Students are expected to submit their own work, either as individuals or contributors to a group assignment. Definitions and examples of plagiarism and other violations are set forth in the Code. The Code is available from the Dean of Students Office or online at: http://legal.uncc.edu/policies/up-407 Faculty 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.

Course Credit Workload:

This 3-credit course requires 9 hours of work a week. Class work may include but is not limited to: required readings, library research, written assignments, discussion posts, viewing of course videos, reviewing feedback from the instructor, and completing assessments.

Non-Discrimination:

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.

Title IX:

Title IX 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 legal protective orders, and more. Please be aware that many UNC Charlotte employees, including all faculty members, are considered Responsible Employees who are required 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 must report the information to the Title IX Coordinator. Although I have 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 any of 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); (2) Student Health Center (studenthealth.uncc.edu, 7-7400); or (3) Center for Wellness Promotion (wellness.uncc.edu, 7-7407). Additional information about your options is also available at titleix.uncc.edu under the "Students" tab.

Religious Accommodation:

Students who, acting in accordance with this Policy, miss classes, examinations or other assignments because of a religious practice or belief must be provided with a reasonable alternative opportunity to complete such academic responsibilities. It is the obligation of students to provide faculty with reasonable notice of the dates of religious observances on which they will be absent by submitting a Request for Religious Accommodation Form to their instructor prior to the census date for enrollment for a given semester. The census date for each semester (typically the tenth day of instruction) can be found in UNC Charlotte's academic calendar.

Student Grievances:

Student Grievances Students enrolled in courses at the University of North Carolina at Charlotte who would like to file a complaint regarding their experience may do the following: 1. Refer to the UNC Charlotte Student Grievance Procedure. Students may also contact UNC Charlotte's regional accrediting agency, the Southern Association of Colleges and Schools Commission on Colleges. 2. Students residing outside of North Carolina while attending UNC Charlotte may file a complaint in their state of residence. As required by federal regulations, students are directed to the list of resources here, compiled and updated by the State Higher Education Executive Officers.

Withdrawals:

Students are expected to complete all courses for which they are registered at the close of the add/drop period. If you are concerned about your ability to succeed in this course, it is important to make an appointment to speak with me as soon as possible. The University policy on withdrawal allows students only a limited number of opportunities available to withdraw from courses. It is important for you to understand the financial and academic consequences that may result from course withdrawal.

Incompletes:

The grade of I is assigned at the discretion of the instructor when a student who is otherwise passing has not, due to circumstances beyond his/her control, completed all the work in the course. The missing work must be completed by the deadline specified by the instructor, and no later than 12 months. If the I is not removed during the specified time, a grade of F, U, or N, as appropriate is automatically assigned. The grade of I cannot be removed by enrolling again in the same course, and students should not re-enroll in a course in which they have been assigned the grade of I. University policy addressing Incompletes.

Student Support:

Disability Support Services:

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.
The Office of Disability Services works with current undergraduate and graduate students along with prospective students to ensure equal access to UNC Charlotte's campus and educational programs.

All services are dependent upon verification of eligibility. Once approved for services, students receive accommodations which are based upon the nature of an individual's disability and documented needs. Students are strongly encouraged to register or check-in for their accommodations with a Disability Services counselor as soon as they have registered for classes. Accommodations are not retro-active and will not begin until the student notifies his or her faculty by providing the Letter of Accommodation. Please visit the Office of Disability Services at for additional resources, email questions to disability@uncc.edu, or call 704-687-0040 (tty/v) for more information.

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 | uncc-ucae@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](#)