

INSTRUCTOR

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Office Hours:	Face-to-Face Office Hours To be announced Virtual Office Hours: I will hold virtual office hours periodically, as needed. I am happy to schedule meetings with you via Zoom
How to reach me:	<u>Slack will be our primary form of communication in this course.</u> Please reach out to me via Slack first before emailing and/or sending a text message. Slack details are on Canvas. It is my goal to respond to all inquiries within 24 hours. My responses will almost always be much quicker than that, but there may be occasions where responses are delayed.
Technical Support:	For Canvas-related issues or other technical problems, please contact the Technology Assistance Center (TAC) at 910.962.4357 (HELP) or by using the ticketing system available here: http://www.uncw.edu/itsd/index.html .

ABOUT THIS COURSE

Course Description:	This course explores computer-intensive methods for model selection, parameter estimation, and validation for predictive analytics. The course focuses on techniques and algorithms from the statistical and machine learning disciplines and has a strong programming component. Example topics in this course include ordinary least squares regression, logistic regression, multinomial logistic regression, classification and regression trees, neural networks, support vector machines, naïve Bayes, principal components analysis, cluster analysis, and regularization. Each technique is accompanied with a focus on application and problem-solving.
Learning Objectives:	By the end of this course, you should be able to: <ol style="list-style-type: none">1. Recognize fundamental predictive analytics concepts and terminology.2. Access and prepare data for use with predictive analytics techniques.3. Perform feature transformation and selection.4. Select and build appropriate predictive analytics models for quantitative response variables.5. Select and build appropriate predictive analytics models for non-quantitative response variables.6. Distinguish between supervised and unsupervised learning approaches.7. Identify opportunities to apply predictive analytics in a variety of contexts.

These course-wide learning objectives are supported by learning objectives defined for each module of the course. For a listing of the module-specific learning objectives, refer to the Canvas page for this course.

Required Materials: There are five textbooks for this course that you may find to be useful. Fortunately, the books are available freely (and legally) online (see links below).

(1) *An Introduction to Statistical Learning* by James, Witten, Hastie, and Tibshirani 2017 Springer, 7th Edition, ISBN: 9781461471370.

Download free (as PDF) from the authors:

<http://faculty.marshall.usc.edu/gareth-james/ISL/>

Also available for purchase (if desired) from Amazon and the publisher.

(2) *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data* by Wickham and Grolemund 2017 O'Reilly, 1st Edition, ISBN: 9781491910399.

View free online from the authors:

<https://r4ds.had.co.nz/>

Also available for purchase (if desired) from Amazon.

(3) *Hands-On Machine Learning with R*, Boehmke and Greenwell 2019 Taylor & Francis, 1st Edition, ISBN: 9781138495685

View free online from the authors:

<https://bradleyboehmke.github.io/HOML/>

Also available for purchase (if desired) from Amazon.

(4) *Feature Engineering and Selection: A Practical Approach for Predictive Models*, Kuhn and Johnson 2020 Chapman and Hall/CRC, 1st Edition, ISBN: 9781138079229

View free online from the authors:

<http://www.feat.engineering/>

Also available for purchase (if desired) from Amazon.

(5) *Tidy Modeling with R*, Kuhn and Silge 2020 Work-in-progress

View free online from the authors:

<https://www.tmwr.org/>

Additional readings and resources available on Canvas (<https://uncw.instructure.com/>)

Other requirements are listed through Canvas (e.g., minimum technical requirements)

Prerequisites: Completion of MIS 503

Admission to the Masters of Business Analytics (MSBA) program or permission of the program director. Completion of MIS 503

Time Commitment: This is a graduate course on a condensed schedule, so students should expect to devote 15 to 20 hours per week completing the course requirements. Please check your email and the course's Canvas site on a regular basis for updates. Note that some weeks involve more time-consuming concepts and assignments than others.

Format: This course is fully online with all activities and materials contained within the Canvas learning management system (LMS). Additionally, the course is "asynchronous" in that we do not have to be online at the same time each week.

Please note:

1. Lack of access to computer equipment or the Internet will not be accepted as a reason to miss deadlines.
2. All communication must be via Slack (primary), your UNCW email address, or via phone.
All assignments and exams are due by the due date and time (times are given for the Eastern Time Zone). All assignments must be submitted via Canvas.

Grading: We will have multiple assignments, quizzes, and a course project. Each module will feature at least one assignment related to the content covered in the module. Assignments, quizzes, and the project count toward your course grade as follows:

Deliverables (Assignments):	50%
Quizzes:	30%
Course Project:	20%

Final course grades will use the following scale:

93.00% +	A
90.00% to 92.99%	A–
87.00% to 89.99%	B+
83.00% to 86.99%	B
80.00% to 82.99%	B–
77.00% to 79.99%	C+
70.00% to 76.99%	C
under 70%	F

Late Submissions: Missed quizzes will result in a grade of zero, except in cases of emergency. To qualify as an "emergency," the instructor must receive documentation from the proper authority (doctor or Dean of Students) which the instructor must be able to verify prior to administering a make-up exam. Work schedules and vacation do not qualify as emergencies, so please plan your schedules accordingly.

Late deliverables (non-quizzes) can be submitted for a reduced grade. The grade is reduced by 20 percentage points for each day that the assignment is late. For example, if an assignment is due at midnight and would have earned a grade of 90%, and you submit your assignment at 12:30 am, then the grade will be recorded as 70%.

Netiquette: Netiquette is a set of rules for behaving properly online. Much of our communication in this course will take place in the forums and through email. Here are some guidelines for online communication in this course:

- Be sensitive to different cultural and linguistic backgrounds, as well as different political and religious beliefs.
- Use good taste when composing your responses. Swearing and profanity should be avoided. Also consider that slang terms can be misunderstood or misinterpreted.
- Don't use all capital letters when composing your responses. This is considered "shouting" on the Internet and is regarded as impolite or aggressive. It can also be stressful on the eye when trying to read your message.
- Be respectful of others' views and opinions. Avoid "flaming" (publicly attacking or insulting) others.
- Be careful when using acronyms. If you use an acronym it is best to spell out its meaning first, then put the acronym in parentheses afterward, for example: Frequently Asked Questions (FAQs). After that you can use the acronym freely throughout your message.
- Use good grammar and spelling and avoid using text messaging shortcuts. In emails, always identify yourself and what class and section you are in. It is a good practice to put your course and section in the subject line. This helps your instructor identify course related emails.

ADMINISTRATIVE MATTERS

Academic Honesty

Academic dishonesty such as submitting the work of others as your own is strictly prohibited. Depending upon the nature and extent of the violation, consequences may include failing the assignment, failing the course, and/or referral to disciplinary bodies at UNCW.

As a student at UNCW, you are pledged to uphold and support the UNCW Student Academic Honor Code:

"The University of North Carolina Wilmington is a community of high academic standards where academic integrity is valued. UNCW students are committed to honesty and truthfulness in academic inquiry and in the pursuit of knowledge. This commitment begins when new students matriculate at UNCW, continues as they create work of the highest quality while part of the university community, and endures as a core value throughout their lives."

Guidelines in support of the Honor Code, including definitions of cheating and plagiarism, may be found using the following link:

http://www.uncw.edu/policies/documents/03_100FINALHONORCODE_Aug2009.pdf

Student Support Services

The Division of Student Affairs consists of fourteen functional departments, each of which is responsible for providing a variety of student support, service, and educational programs which are accessible to all members of the university community. Student Affairs provides excellent delivery of student services that are responsive to student needs and promote the quality of life and education both inside and outside the classroom. For a complete listing of all student support services, please see <http://www.uncw.edu/safe-relate/campusResources.htm>

Code of Conduct:

This course is subject to the Code of Student Life of the University of North Carolina Wilmington (the Code). The full Code is found here <http://uncw.edu/odos/documents/cosl-current.pdf>

UNCW practices zero tolerance for violence and harassment of any kind. For emergencies, contact UNCW CARE at 910.962.2273 or Campus Police at 910.962.3184. For University or community resources visit <http://www.uncw.edu/safe-relate/campusResources.htm>

The UNCW Statement on Diversity in the University Community

As an institution of higher learning, the University of North Carolina Wilmington represents a rich diversity of human beings among its faculty, staff, and students and is committed to maintaining a campus environment that values that diversity. Accordingly, the university supports policies, curricula, and co-curricular activities that encourage understanding of and appreciation for all members of its community and will not tolerate any harassment or disrespect for persons because of race, gender, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, political affiliation, marital status, or relationship to other university constituents.

Religious Observance Policy

In accordance with NC SL 2010-211, students are entitled to two excused absences for religious observances per academic year. These absences must be requested using the form provided on SeaNet, under "Student Services." This request must be submitted by the student prior to the absence. Once the request is submitted, an email will be sent to all impacted instructors automatically. There is no need to send additional notification to instructors or the Registrar's Office. Any absence for religious purposes will be considered unexcused unless the appropriate form is submitted.

Students with Disabilities

If you are a student with a disability and need accommodations, you must be registered with Disability Services (DePaolo Hall, 910.962.3746). Please provide your Accommodations Letter within the first week of class or as soon as possible. You should then meet with your instructor to make mutually agreed upon arrangements based upon the recommendations in the Accommodations Letter. For additional information, please see <http://uncw.edu/disability/>.

COVID-19 Statement

Following UNCW directives, and out of mutual respect as outlined in the UNCW Seahawk Respect Compact, all faculty, staff, and students will wear face coverings while inside buildings. Students who are unprepared or unwilling to wear protective face coverings will not be permitted to participate in face-to-face sessions and will need to leave the building. Noncompliant students will be referred to the Dean of Students for a Code of Student Conduct violation. Any student who has a medical concern with wearing a face covering should contact the Disability Resource Center at (910) 962-7555.

Student Illness

Students are to do a health check each day before coming to campus. Students who experience COVID-19 symptoms should immediately contact the Abrons Student Health Center at (910) 962-3280. If a student becomes ill, s/he should let the professor know and must not attend the course in-person. If a student is too ill to attend virtually, they will be given the opportunity to complete the material asynchronously.

Seahawk Respect Compact

In the pursuit of excellence, UNC Wilmington actively fosters, encourages, and promotes inclusiveness, mutual respect, acceptance, and open-mindedness among students, faculty, staff and the broader community.

~ We affirm the dignity of all persons.

~ We promote the right of every person to participate in the free exchange of thoughts and opinions within a climate of civility and mutual respect.

~ We strive for openness and mutual understanding to learn from differences in people, ideas and opinions

~ We foster an environment of respect for each individual, even where differences exist, by eliminating prejudice and discrimination through education and interaction with others.

Therefore, we expect members of the campus community to honor these principles as fundamental to our ongoing efforts to increase access to and inclusion in a community that nurtures learning and growth for all.

CLASS SCHEDULE (Subject to Change)

Module	Topic area	Deliverables
1	Introduction to Predictive Analytics	Module 1
2	Linear Models (Part 1)	Module 2
3	Linear Models (Part 2)	Module 3
4	Other Classification Methods	Module 4
5	Advanced Predictive Modeling	Module 5
6	Unsupervised Methods	Modules 6
7	Predictive Analytics Applications	Module 7 & Project