

# Neuromuscular Aspects of Exercise

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**APK 4115 | Class #10363 and #10364 | Section 1G32 and 1G84**  
**| 3 Credits | FA 25**

## Course Info

### INSTRUCTOR

**Diba Mani, Ph.D.**

**Method of Contact: Canvas Messaging for presently enrolled students**

Email: [dmani@ufl.edu](mailto:dmani@ufl.edu) for non-course related communications

Preferred pronouns: she/her

### OFFICE HOURS

Virtual (2 hrs/wk); details posted on Canvas

### MEETING TIME/LOCATION

Access course through Canvas on [UF e-Learning](#) and the Canvas mobile app by Instructure. There are no in-person meetings for this course.

## COURSE DESCRIPTION

Provides an in-depth analysis of muscle structure and function; how muscles produce movement; adaptation of muscle to resistance training, endurance training, and various manipulations used in rehabilitations; adaptation of muscle to disuse; and muscle responses to injury.

## PREREQUISITE KNOWLEDGE AND SKILLS

APK 3110c with a minimum grade of C and/or PET 3351c with a minimum grade of C. Some version of Human Anatomy and Physiology.

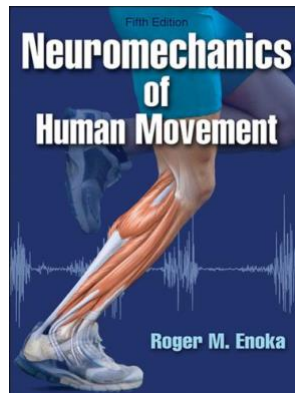
Students enrolling in this course must have at least the following minimum technical skills to succeed:

- General computer literacy is expected in this course. Ensure that your internet browser and extension are up to date before taking any exams.
- Using the learning management system, Canvas
- Using e-mail with attachments
- Microsoft Office: Word, PowerPoint
- Using Zoom video conferencing
- Downloading and installing software such as Google Chrome with extension for Honorlock
- Problem solving any download issues for software used in the course
- Incorporating applications associated with Canvas
- Critical thinking in using web resources

## REQUIRED AND RECOMMENDED MATERIALS

All lecture slides, peer-reviewed research papers, and reading material will be posted on Canvas. You are required to have a functioning personal computing device (e.g., laptop, desktop), webcam, microphone, and speaker (or headphones/earbuds). You will require internet access to view content.

The textbook that our course content is primarily derived is available for short-term use at the UF Libraries: Enoka RM. *Neuromechanics of Human Movement*. 5<sup>th</sup> edition. Champaign, IL: Human Kinetics, 2015. Acquiring this textbook is **not** required but highly suggested, especially for those who will pursue graduate/professional education and careers in topics related to the neuromuscular systems. You will be provided with a list of suggested and required sections to read in this textbook, as related to covered course content (posted on Canvas). Any required reading sections will be provided online at no cost to you.



Additional content will be accessible through online resources, which are provided at no cost to you if you sign in with the UF VPN. Additionally, you will have access (via internet) to John H. McDonald's "Handbook of Biological Statistics" (3rd edition) and several reports on topics such as bioethical issues in biomedical sciences. Access to the internet, a computer with functioning webcam, microphone, and speaker (or headphones/earbuds) are required. Please refer to "UF Computing Requirements" below for additional information on this. All additional material will be provided online through Canvas.

## COURSE FORMAT

This class is 100% online. Pre-recorded lectures and assigned readings are organized within modules. The class is designed to be flexible to your schedule. Assignments are due throughout the semester, with at least one work week to complete each. There are two examinations (one midterm and one final) and one "research project". The research project will focus on a research problem you are interested in. This research project will comprise a research plan you will work to develop throughout the semester. This is a scaffolded assignment, meaning the larger project is broken into smaller assignments that focus on skills or types of knowledge required to successfully complete the larger assignment. It will cumulate in a poster presentation (which includes a recording < 3 minutes in duration). The Canvas course will open at least 24 hours before the start of the semester, and close about one week after the last day of class.

## COURSE LEARNING OBJECTIVES

Upon completion of this course, students will be able to:

1. Knowledge: Discuss, explain, and defend subject matter relevant to neuromuscular physiology.
2. Skills: Discuss, explain, and compare specific skills related to neuromuscular physiology.
3. Professionalism: Present and explain vital, relevant concepts in neuromuscular physiology in a professional manner.

## Course & University Policies

University policies are summarized on the [UF Academic Policies & Resources website](#). This link will direct students to a separate webpage that will provide all required academic policies, such as attendance, grading, personal conduct, DRC and evaluation verbiage, as well as campus academic, health, and wellness resources.

### ATTENDANCE POLICY

As an asynchronous online course, there is no specific attendance policy. However, the final exam must be completed within the designated assessment time (48 hrs) and assignments must be submitted by posted deadlines. Given the format of this course, there are no adjustments possible for late, missing, or incorrect submissions.

### PERSONAL CONDUCT POLICY

Students are expected to exhibit behaviors that reflect highly upon themselves and our University:

- Read and refer to the syllabus.
- Arrive to live sessions (e.g., scheduled office hours), if applicable, on time.
- Follow the guidelines for appropriate behavior in virtual environments (e.g., name visible, non-offensive background (whether virtual or not), appropriate dress during live sessions).
- Submit assignments by the deadlines. If you miss a deadline, please recognize that requesting an exception is unfair to your classmates and instructor.
- Show respect for the course instructor and classmates in engagement.
- Use professional, courteous standards for any web exchanges (e.g., proper greetings and titles in emails).
- Communicate through the preferred means (Canvas), reserving communication through official UFL email addresses for emergencies.
- UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” [The Honor Code](#) specifies several behaviors that are in violation of this code and the possible sanctions.
- You are obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult the instructor in this class.
- The use of software to promote academic integrity through plagiarism detection is advocated for. Although not required, Turnitin is an excellent resource for this and reference/citation assistance.

I reiterate that academic misconduct will *not* be tolerated in this course. This includes, but is not limited to, copy/pasting your own work or that of someone else, not citing a resource correctly, not following instructions on proctored assessments (quizzes and exam), using external tools, such as electronic devices or notes, during closed-book assessments, doing someone else’s work for them, having someone do your work for you, and telling peers what is on assessments before grades are posted. We review all Honorlock recordings, and students who are found to engage in misconduct will be reported to the Student Conduct & Conflict Resolution (SCCR) office.

University of Florida students are bound by the Honor Pledge. On all work submitted for credit by a student, the following pledge is required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Student Honor Code and Conduct Code (Regulation 4.040) specifies a number of behaviors that are in violation of this code, as well as the process for reported allegations and sanctions that may be implemented. All potential violations of the code will be reported to Student Conduct and Conflict

Resolution. If a student is found responsible for an Honor Code violation in this course, the instructor will enter a Grade Adjustment sanction which may be up to or including failure of the course.

### STUDENT COMPUTING POLICY

Since this course is fully online, and per the [UF student computing requirements](#), UF does not recommend students relying on/regularly using tablet devices, mobile phones, or Chromebook devices as their primary computer, as these may not be compatible with specific platforms used in this course or other UF courses. Access to a fast, secure internet network will be necessary for this course. If a student is in an area with limited internet access, UF students can access eduroam for free with their GatorLink log-in credentials. If you have any problems connecting to eduroam, you can contact the UF Computing Help Desk.

There are more than 100 Wi-Fi hotspots in Florida, including several state university campuses and community colleges. You may connect to eduroam in other states as well. You don't have to sit in a car: many locations have open spaces and communal rooms available so you can get online while socially distancing and following CDC guidelines in an air-conditioned space. In Florida, all UF/IFAS Research and Education Centers (REC) are equipped with eduroam, so if you live in a rural area of your county, you can visit an REC to securely watch course videos and take care of your academic needs.

If you have any problems connecting to eduroam you can call (352-392-HELP/4357) or email the UF Computing Help Desk.

### ASSESSMENT PROCTORING POLICY (HONORLOCK SYSTEM REQUIREMENTS)

Exams will be proctored using Honorlock. You will not need to sign-up or schedule a testing time, nor will you need to create an account. To ensure your device is compliant with Honorlock, a series of pre-assessment checks must be performed before gaining access to the exam. Please do so in advance of the exam; we are unable to further accommodate for individual technological issues that may detract from your exam time. Specifications necessary for Honorlock to work are listed below:

- You need to open Canvas on the Google Chrome internet browser and to download the Honorlock Chrome Extension. Other internet browsers will not be compatible with Honorlock. You must use a PC or Mac.
- Make sure you have a stable Internet connection wherever you are taking the exam.
- Students must install the Honorlock Extension within Chrome
- Honorlock will not support Windows 8, Windows 8.1, Mac OSX 10.11 and Mac OSX 10.12. You can find the updated Minimum System Requirements and a system compatibility test on the [Honorlock webpage](#).
- You will need to take the exam on a desktop computer or laptop with a webcam and microphone set up on your chosen device. This will not work on mobile devices or tablets, including iPads and smart phones.
- You need to make sure that the camera is always facing YOU – if the camera does not stay facing you or if you are out of frame, the exam will pause, preventing you from continuing, even midway through.
- A 360-degree scan of your testing room/environment will be required. If you are using a laptop, you will need to pick up your laptop and rotate it for the room scan, including your examination surface (e.g., desk, table), floor space, your lap, etc. The testing environment should be cleared of any clutter, no notes, or textbooks laying out. These could constitute a violation of the Honor Code (e.g., academic dishonesty).
- Cell phones, tablets, smart watches, calculators, earphones, and other external electronic devices must be removed from the vicinity of the testing space (ideally outside the room).
- Make sure the room you are taking the exam in is well-lit and that you are by yourself (private space). Rooms that are not bright enough may get flagged as “blurry” or “unclear”. Avoid posters or photographs on the wall behind you; try to minimize noise, including talking aloud. These will also flag

your exam, which will be reviewed by a member of the instructor team for the course to confirm or refute any academic dishonesty.

- You must have a valid and clear photo identification (ID) card (Gator ID, driver's license, passport) to show at the start of the exam. Make sure the image is clear.
- Only one screen - you cannot have multiple monitors - and one tab, that in which is being used for the exam, in Chrome is allowed. Honorlock has an integrity algorithm that can detect search-engine use, so do not attempt to search for answers, even if it is on a secondary device.
- An Honorlock Practice Quiz will be set up under Quizzes in Canvas. Please go through this practice test well in-advance of taking the exam. This practice quiz allows you to go through all the pre-assessment checks so you will know what to expect when taking the exam itself. Take the practice quiz on the device you intend to take the exam on, in the same environment (building, room, lighting).
- Failure to meet the items above may result in a 0 grade. If you encounter any issues with the testing platform or the exam, you should immediately contact Honorlock for assistance. If this fails, you need to email your course instructor right away with specific details (e.g., screenshots of your chat conversation with Honorlock with time stamps) of what occurred so that they can assist you as quickly as possible.

### MAKE-UP POLICY

Make-up assessments and assignments will be given at the discretion of the instructor. Late submissions are not accepted, although some adjustments have been put in place to accommodate for a single first-time mistake on any one assignment or assessment throughout the entire semester (such as technological issues like missing a deadline or uploading an unreadable or incorrect file): a courtesy adjustment may be made under certain circumstances but with a 50% score deduction, maintaining fairness and consistency with peers – this must be communicated immediately (not the day after the deadline, at the end of the term, etc.). Please review "Grading" below for late submission or missed assessment policies (outside of documented and excusable scenarios).

If any assignment is submitted in an inaccessible format upon grading (e.g., you upload your Research Project presentation by the deadline, but it is not accessible because it requires permissions to view or the recording does not load, you will be deducted 50%). It is strongly recommended that you leave enough time to upload your assignment before the deadline and then double-check your upload has been made successfully.

Unexcused (including "inappropriate excuses") material cannot be made up and will result in a zero on that item. Please do **not** ask for an accommodation for inappropriate excuses, which include:

- Extracurricular activities
- Out of town/vacation
- Sleeping in
- Sports
- Technological issue due to procrastinated assignment upload
- Volunteering
- Work

If you have a serious emergency or life event, please contact the [Dean of Students Office](#) and they will contact your instructor so that you do not have to provide documentation to individual instructors for a make-up. The requirements for make-ups in this course are consistent with university policies that can be found in the [online catalog](#).

### ACCOMMODATING STUDENTS WITH DISABILITIES

Students requesting accommodation for disabilities must first register with the [Dean of Students Office](#). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting

assignments or taking exams. Accommodations are not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations. Students registered with the DRC: It is strongly recommended that you submit your accommodation requests through the DRC in the first week of classes to ensure that they are approved in time. In the case of situations that may impede learning throughout the semester, students may reach out to the Dean of Students Office to provide documentation that will then be directed to the course instructor.

## COURSE EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via [GatorEvals](#). Students will be notified when the evaluation period opens and can complete evaluations through the e-mail they receive from GatorEvals or in their Canvas course menu on the [GatorEvals polling page](#).

## PREFERRED NAME

It is important to the learning environment that you feel welcome and safe in this class, and that you are comfortable participating in class discussions and communicating with me on any issues related to the class. I would like to acknowledge your preferred name, and pronouns that reflect your identity. Please let me know how you would like to be addressed if your name and pronouns are not reflected by your name on the class roster. Please kindly correct me if I forget or make a mistake.

You may also change your "Display Name" in Canvas. Canvas uses the "Display Name" as set in myUFL. The Display Name is what you want people to see in the UF Directory, such as "Ally" instead of "Allison." To update your display name, go to [one.ufl.edu](http://one.ufl.edu), click on the dropdown at the top right, and select "Directory Profile." Click "Edit" on the right of the name panel, uncheck "Use my legal name" under "Display Name," update how you wish your name to be displayed, and click "Submit" at the bottom. This change may take up to 24 hours to appear in Canvas. This does not change your legal name for official UF records. Please keep your preferred name (first and last, if possible) visible when engaging in course activities online (e.g., virtual office hours).

## PRIVACY

Aspects of course content may be audio and visually recorded for students in the class to refer to. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. By enrolling in this course, you will be required to have audio and video enabled for certain activities (e.g., poster presentation). If you do not want your image in any recording pertaining to course content, please let me know within the first couple weeks of class so that we may seek an accommodation. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

## Grading

The following table outlines the point-accruing components of the course.

Evaluation Component	Allocation to Final Grade
Syllabus Quiz	0%
Engagement	10%
Supplemental Learning Experiences	30%



Scaffolded Presentation	30%
Final Exam	30%

**Syllabus Quiz** – The syllabus quiz is based on content found in this syllabus. Students will be given an unlimited number of attempts on the quiz. It is recommended that students complete the quiz as soon as possible to unlock the course material – a score of 100% must be earned to do so. Students will receive a zero for the syllabus quiz if it is not completed by the deadline. You will need to complete the syllabus quiz before gaining access to other course material.

**Engagement** – The first of the three activities making up points in this category is a short video post to introduce yourself to the class. The activity will require the use of audio and visual recording tools. To earn full credit for this assignment, you must comment on at least one classmate’s post. This is due near the beginning of the semester.

The second component for engagement credit is a “creativity” project, which may be submitted in the form of anything from writing a poem to recording a short video (creativity and uniqueness is highly encouraged!). The submission may be uploaded any time during the semester, up to the deadline; earlier submissions are welcome, especially when it comes to sharing with classmates and maintaining a level of creativity and uniqueness. The submission must be an original piece of work on a topic relevant to the course, which includes lecture content, reading material, and internationalization. Peers will designate selections they like, so posting sooner in the term may prove an advantage for “up-votes”.

The third aspect in this grading category is internationalization. Students will evaluate the global level at which course topics are targeted and make a submission connecting the subject matter to the international scientific community. This third aspect may include a pre- and post-internationalization survey. The goal of this “internationalization” opportunity is to understand the diverse background of scientific data and research scientists; the intent is that this will expand our cultural, worldly knowledge and experience. Our section of APK 4115 fulfills one of the curriculum requirements of the International Scholars Program (ISP), which provides an opportunity for recognition at graduation (info available during the term).

**Supplemental Learning Experiences (SLE)** – These SLEs are designed to expand and elaborate on topics discussed in lectures. Most of the SLEs are in the form of open-book assignments. Sharing content or copy/pasting peer results will result in an academic misconduct violation and a possible “0” grade, at the very least.

A third of the SLEs are closed-book quizzes that will typically comprise 5-10 questions (multiple choice, short answer, matching) pertaining to all lecture, textbook, and additional material covered since the previous closed-book “SLE: Quiz”. Answers to the closed-book SLEs will not be released. However, we may discuss commonly missed questions during virtual office hours or through Canvas Announcements and the Discussion Board. Please plan to attend the following week’s office hours to review specifics. You may review a closed-book SLE from the time grades for that SLE are released until the next closed-book SLE or the end of classes.

Given the extended access time for assignment submissions, late submissions will **not** be accepted. Please plan accordingly for uploads to **avoid technological issues and time zone discrepancies** (e.g., gradebook closing out at 11:59 PM ET means you should probably not wait until 11:55 PM ET to upload your assignment). Please make sure that the correct assignment is uploaded in a readable file format (i.e., .doc, .pdf); failure to do so may result in a “zero” grade. In the case that you do upload an incorrect file or file type, you may reupload. The single last submission before the assignment deadline will be the one and only file graded. To repeat, it is your responsibility to make sure the file uploaded for grading is the correct file and that it is in a readable file format (i.e., not in .pages).

**Scaffolded Presentation** – The presentation will be based on an original peer-reviewed research article on a relevant course topic. You will be selecting a paper on a research topic related to the course, completing a series of activities related to the paper throughout the term such as creating an outline and connecting to class topics, and then presenting in through audio and visual recording to the class. The presentations will be asynchronous, meaning recorded and uploaded... *not* live. Self- and peer-evaluations are a component of this grade category.

Instructions on presentation expectations (e.g., PowerPoint formatting, uploading to Canvas, and duration) will be given at the start of the semester. Presentation evaluation forms (rubrics) are posted in Canvas.

**Final Exam** – The final exam is cumulative. A review document with exam content is posted on Canvas. The structure of the final exam will be like that of the SLEs that are closed-book quizzes, taken a few times throughout the term, but longer in duration and more comprehensive. The exam will be virtually proctored via Honorlock through Canvas.

## GRADING SCALE

Any discrepancies with points displayed in the gradebook must be brought to the attention of the instructor as soon as possible, or before the last day of class. There are no re-grades or re-submissions in this course. If there is something that you believe is incorrect, a re-evaluation of the score may be made. Please recognize that doing so will result in a stricter evaluation of your submission, which may result in additional deductions.

There is **no** curve for this course and final grades will **not** be rounded up. Any requests for additional extra credit or special exceptions to these grading policies will be respectfully ignored. More detailed information regarding current UF grading policies can be found on the [UF Catalogs page](#).

Letter Grade	Percent of Total Points Associated with Each Letter Grade	GPA Impact of Each Letter Grade
A	93.00-96.99%	4.0
A-	90.00-92.99%	3.7
B+	87.00-89.99%	3.3
B	83.00-86.99%	3.0
B-	80.00-82.99%	2.7
C+	77.00-79.99%	2.3
C	73.00-76.99%	2.0
C-	70.00-72.99%	1.7
D+	67.00-69.99%	1.3
D	60.00-66.99%	1.0
E (F)	0-59.99%	0

## Weekly Schedule

Specifics, such as content covered within each module and deadlines, are available on Canvas. All assignments and assessments are due at 11:59 PM ET on Friday, on the date marked, below and/or in Canvas, unless otherwise noted or mentioned (to reiterate, not all assignments are included in this summarized table). Please review all announcements for updates – you are required to receive Canvas announcements and to respond to Canvas messages promptly. Please reach out in advance for accommodations, including special observances, such as holidays – I am happy to assist however I can.



Week	Dates	Canvas Module	Content
1	August 21-22, 2025	Orientation	<a href="#">First Day of Class is Thursday, August 21</a> <b>Syllabus Quiz &amp; Introductory Posts due Friday, August 29 at 11:59 PM ET</b> Introduction to the Motor System
2	August 25-29	Module 1	Presenting Scientific Data SLE 1: Resources for Presentations due Friday, August 29 at 11:59 PM ET
3	September 1-5	Module 2	<a href="#">Monday, September 1 is Labor Day*</a> Activation Signals SLE 2: Membrane Potentials due Friday, September 5 at 11:59 PM ET
4	September 8-12	Module 3 Module 4	Synaptic Transmission Muscle Architecture & Mechanics
5	September 15-19	Module 5	SLE 3: Quiz due Friday, September 19 at 11:59 PM ET Neuroplasticity
6	September 22-26	Module 6	SLE 4: Plasticity due Friday, September 26 at 11:59 PM ET Motor Units
7*	September 29-October 3	Module 6	SLE 5: Contraction Speed due Friday, October 3 at 11:59 PM ET [More] Motor Units
8	October 6-10	Module 7	SLE 6: Quiz due Friday, October 10 at 11:59 PM ET Fatigue <b>Internationalization due Friday, October 10 at 11:59 PM ET</b>
9	October 13-17	Module 8	SLE 7: Fatigue due Friday, October 17 at 11:59 PM ET Task Control of Force <a href="#">Friday, October 17 is Homecoming*</a> <b>Presentation Slide Drafts due Friday, October 17 at 11:59 PM ET</b>
10	October 20-24	Module 9	Reflexes SLE 8: Reflexes due Friday, October 24 at 11:59 PM ET
11	October 27-31	Module 9	Reflexes SLE 9: Quiz due Friday, October 31 at 11:59 PM ET
12	November 3-7	Module 10	Aging SLE 10: Exercise is Medicine due Friday, November 7 at 11:59 PM ET
13	November 10-14	-	<a href="#">Tuesday, November 11 is Veteran's Day*</a> <b>Presentation Final Slides &amp; Recording due Friday, November 7 at 11:59 PM ET</b>
14	November 17-21	-	<b>Creativity Projects due Friday, August 21 at 11:59 PM ET</b>

15	November 24-28	-	Monday, November 24 to Friday, November 28 is Fall/Thanksgiving Break*
16	December 1-5	-	Wednesday, December 3 is the Last Day of Class Thursday, December 4 and Friday, December 5 are Reading Days
17	December 8-12	-	Final Exam Week* Final Exam accessible via Honorlock Sunday, December 7 at 11:59 PM ET – Tuesday, December 9 at 11:59 PM ET
*Official FA 25 weekday holiday			

### SUCCESS AND STUDY TIPS

Recognizing that people learn in different ways and with no judgement on how you study (e.g., highlighting the textbook, using YouTube, drawing figures), here are some tips for success and studying in this course that have been proven useful for many:

- The suggested textbook is quite concisely written but should be read carefully and provides detail to material described during lecture. Although the material presented in lecture does not encompass everything described in the reading segments, the textbook explains topics discussed in class in a different way. Any content that is required reading and fair game on assessments will be posted to Canvas.
- Look up material that inspires you. If we're learning about muscle contractions and you really become curious about diseases pertaining to the cross-bridge cycle – take a moment to look it up and read about it or watch a video clip! Share as a Discussion on Canvas.
- Do prepare and practice for your presentation well in advance. We do presentations for a variety of reasons – take the opportunity to present to the class seriously; it'll likely come in handy when you're doing a med school interview or job talk in the future. Webinar presentation formats and online interviews are here to stay... get used to them if you're not already!
- Check Canvas for announcements! Adjustments to the schedule and edits/clarifications to topics discussed in class will be posted here.
- Please do not take an unfair advantage of the accommodating nature I try to maintain in my classroom; an accommodating but *equitable* space is important (e.g., if others are not using notes during an exam, you shouldn't be, either).
- Things happen. That's life. If there are some majorly overwhelming things happening during your semester, send me an email, come by office hours. We'll work together to figure out what steps you should take in hopes of wrapping up the course well. Swing by virtual office hours and chat academia (grad school, anyone?), sports, and aspirations to travel the world some time.