

## NEUROMUSCULAR ASPECTS OF EXERCISE

APK 4115      3 CREDITS      SPRING 2022

**INSTRUCTOR:** Professor Evangelos A. Christou

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**Preferred Method of Contact:** UF email

**OFFICE HOURS:** By appointment

**MEETING TIME/LOCATION:** FLG 210, MWF period 1 (7:25 – 8:15 am)

**COURSE DESCRIPTION:** Designed to provide 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 rehabilitation; adaptation of muscle to disuse; and muscle responses to injury.

**PREREQUISITE KNOWLEDGE AND SKILLS:** APK 3110C with grade of C.

**REQUIRED AND RECOMMENDED MATERIALS:**

RM Enoka. Neuromechanics of Human Movement. 5th edition. Human Kinetics. ISBN 978-1-4504-5880-1 (optional – not required). Handouts and review papers will be provided for specific topics (see schedule).

**COURSE FORMAT:** The typical structure of the class is the following: Monday - lecture on the topic of the week; Wednesday – relevant presentation; Friday – Take home quiz. I take absences only during the presentation days.

**COURSE LEARNING OBJECTIVES:** Upon completion of this course, the student 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 AND UNIVERSITY POLICIES:

**ATTENDANCE POLICY:** Make every effort to attend all lectures. Although attendance will not affect your grades directly, it could influence them indirectly. Numerous concepts that will be discussed only during class (and are not in the book) will be part of your weekly quizzes.

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### **PERSONAL CONDUCT POLICY:**

**Technology:** The use of cell phones\* (and the like) is strictly prohibited during lectures and exams. Any cell phone or other electronic device used during an exam will be considered a violation of the student honor code (i.e., cheating) and will result in stiff penalties. Laptop computers are welcome in class as long as you are using it for class-related work. Surfing the web, checking your email, making Facebook posts, or anything of that nature is strictly prohibited. Violation of this policy will result in point deductions at the discretion of the instructor.

**Communication:** You are responsible for checking announcements and course postings on E LEARNING. This is how your course instructor will communicate with you. All course grades will be posted on E LEARNING. Any discrepancies should be pointed out to the instructor on or before the last day of finals week.

**Academic Honesty:** 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."

Any student found violating this honor code will receive a zero for that exam or assignment and may be assigned other educational sanctions at the instructor's discretion.

<https://sccr.dso.ufl.edu/process/student-conduct-code/>

**EXAM MAKE-UP POLICY:** Unexcused absences on quiz/exam days will result in a zero on the quiz/exam. If you are ill or have an emergency that prevents you from taking the quiz at the scheduled time, it is your responsibility to contact the instructor as soon as possible. Documentation of the illness or emergency will be required. It is in the discretion of the instructor to provide a make-up quiz/exam or count the next one twice.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

**PRIVACY:** Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. 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 consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who unmute 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. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

**ACCOMMODATING STUDENTS WITH DISABILITIES:** Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). 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 the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

**COURSE EVALUATIONS:** Students in this class are participating in GatorEvals. This evaluation system is designed to be more informative to instructors so that teaching effectiveness is enhanced and to be more seamlessly linked to UF's CANVAS learning management system. Students can complete their evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Thank you for serving as a partner in this important effort.

## GETTING HELP:

### Health and Wellness

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575
- Counseling and Wellness Center: <https://counseling.ufl.edu/>, 352-392-1575
- Sexual Assault Recovery Services (SARS) - Student Health Care Center, 392-1161
- University Police Department, 392-1111 (or 9-1-1 for emergencies)  
<http://www.police.ufl.edu/>

### Academic Resources

- E-learning technical support, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). <https://lss.at.ufl.edu/help.shtml>
- Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling. <https://career.ufl.edu/>
- Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>
- Student Complaints On-Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/> On-Line Students Complaints: <http://distance.ufl.edu/student-complaint-process/>

## GRADING:

### Course Examinations and Grading

<b>Activity/Assignment</b>	<b>Points</b>
1. Quizzes x 11	22
2. Group Presentation	18
3. Exam 1	25
4. Exam 2	35
<b>TOTAL POINTS</b>	<b>100</b>

#### **Quizzes (22%)**

There will be a total of 11 quizzes and you will not be allowed to drop ANY.

All quizzes will be TAKE HOME. You will receive them the day of the quiz (usually Friday) and they will be due the following class day (typically Monday).

You will need to submit them electronically in Canvas under assignments. Questions will come from material (lectures and presentations) presented to you since the previous quiz and watching relevant TED talks.

#### **Group Presentation (28%)**

This presentation will be based on a research article that I will provide for you. I will randomly assign you into presentation groups and I will post the list of groups on CANVAS. There will be 2-3 people per presentation.

The length of the presentation should be 15 minutes and should be in the format of a powerpoint presentation. The 15 minute limit is strict and you will be cut short if you go over your time. My suggestion, therefore, is to practice the presentation ahead of time. Conciseness, clarity, and information delivery will be part of your grade. There will be a 2 minutes question-answer session after each presentation. This presentation will worth 18% of your course grade.

Each member will grade the other group members for participation in the presentation. The average score from your group mates will be multiplied with my grade. For example, if I gave your group 28% for your presentation and your group mates scored your participation to the presentation at 50%, your individual score will be 14%.

#### **Exams**

There will be two exams for this course. Typically I ask 8-12 questions for each Exam for the whole 50 min period.

**Exam 1 (25%):** This exam will cover the lectures and presentations from January 5<sup>th</sup> to February 7<sup>th</sup>. It will comprise of short answers and/or fill in the blanks questions. This exam will count for 25% of your grade.

**Exam 2 (35%):** This exam will cover the lectures and presentations from February 14<sup>th</sup> to April 11<sup>th</sup>. It will comprise of short answers and/or fill in the blanks questions. This exam will count for 35% of your grade.

**GRADING SCALE:** The total points earned from exams, quizzes, writing assignment, attendance, and presentation will be summed. There is no curve for this course. I reserve the right to round up grades for students who show exceptional participation in class. However, under most circumstances GRADES WILL NOT BE ROUNDED UP!!! If you earn a 79.94%, you will receive a C+, not a B. The following grading scale will be used to assess students in this course. For more detailed information on current UF grading policies, please see the undergraduate catalog web page:

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies>

*Any requests for additional extra credit or special exceptions to these grading policies will be interpreted as an honor code violation (i.e., asking for preferential treatment) and will be handled accordingly.*

Letter Grade	Points Needed to Earn Each Letter Grade	Percent of Total Points Associated with Each Letter Grade	GPA Impact of Each Letter Grade
A	≥ 93	93.00-100.0%	4.0
A-	90-93	90.00-92.99%	3.67
B+	87.00-89.99	87.00-89.99%	3.33
B	80.00-86.99	80.00-86.99%	3.0
C+	77.00-79.99	77.00-79.99%	2.33
C	70.00-76.99	70.00-76.99%	2.0
D+	67.00-69.99	67.00-69.99%	1.33
D	60.00-66.99	60.00-66.99%	1.0
E	0-59.99	0-59.99%	0

## WEEKLY COURSE SCHEDULE:

This approximates what the semester will consist of. This outline is subject to change at any point during the semester.

### First half

Week	Date	Lecture Topic	Assign.
1	W – Jan 5	Syllabus explanation / Organization How to present scientific data in 15 minutes *see pre-recorder lecture on how to present scientific data	
	F – Jan 7	Synaptic transmission/ Muscle Structure	Lecture 1
2	M – Jan 10	Movement mechanics and Contraction Types	Lecture 2
	W – Jan 12	<i>Presentation – Group 1</i>	
	F – Jan 14	<i>Take Home Quiz 1 and 2</i>	<b>QUIZ 1,2</b>
3	M – Jan 17	<b>Martin Luther King Day – NO CLASS</b>	
	W – Jan 19	Motor units I - Structure	Lecture 3
	F – Jan 21	<i>Take Home Quiz 3</i>	<b>QUIZ 3</b>
4	M – Jan 24	Motor units II - Activation	Lecture 4
	W – Jan 26	<i>Presentation – Groups 2, 3</i>	
	F – Jan 28	<i>Take Home Quiz 4</i>	<b>QUIZ 4</b>
5	M – Jan 31	Neural control of force	Lecture 5
	W – Feb 2	<i>Presentation – Groups 4, 5</i>	
	F – Feb 4	<i>Take Home Quiz 5</i>	<b>QUIZ 5</b>
6	M – Feb 7	<i>REVIEW SESSION for EXAM 1</i>	
	W – Feb 9	<b>Exam preparation day</b>	
	F – Feb 11	<b>EXAM 1</b>	<b>EXAM 1</b>

## Second half

Week	Date	Lecture Topic	Assign.
7	M – Feb 14	Motor Output Variability	Lecture 6
	W – Feb 16	<i>Presentation – Groups 6, 7</i>	
	F – Feb 18	<i>Take Home Quiz 6</i>	<b>QUIZ 6</b>
8	M – Feb 21	Voluntary actions	Lecture 7
	W – Feb 23	<i>Presentation – Groups 8, 9</i>	
	F – Feb 25	<i>Take Home Quiz 7</i>	<b>QUIZ 7</b>
9	M – Feb 28	Spinal reflexes and Automatic responses	Lecture 8
	W – Mar 2	<i>Presentation – Groups 10, 11</i>	
	F – Mar 4	<i>Take Home Quiz 8</i>	<b>QUIZ 8</b>
10	M – Mar 7	<b>SPRING BREAK – NO CLASS</b>	
	W – Mar 9	<b>SPRING BREAK – NO CLASS</b>	
	F – Mar 11	<b>SPRING BREAK – NO CLASS</b>	
11	M – Mar 14	Acute Adjustments – <i>Fatigue</i>	Lecture 9
	W – Mar 16	<i>Presentation – Groups 12, 13</i>	
	F – Mar 18	<i>Take Home Quiz 9</i>	<b>QUIZ 9</b>
12	M – Mar 21	Acute Adjustments – <i>Stress</i>	Lecture 10
	W – Mar 23	<i>Presentation – Groups 14, 15</i>	
	F – Mar 25	<i>Take Home Quiz 10</i>	<b>QUIZ 10</b>
13	M – Mar 28	Acute Adjustments – <i>Visual Feedback</i>	Lecture 11
	W – Mar 30	<i>Presentation – Groups 16, 17</i>	
	F – Apr 1	<i>Take Home Quiz 11</i>	<b>QUIZ 11</b>
14	M – Apr 4	<i>Presentation – Groups 18,19</i>	
	W – Apr 6	Chronic Adaptations – Aging	Lecture 12
	F – Apr 8	Chronic Adaptations – Motor Learning	Lecture 13
15	M – Apr 11	<i>REVIEW SESSION for EXAM 2</i>	
	W – Apr 13	<b>EXAM 2</b>	<b>EXAM 2</b>
	Fri Apr 15	<i>Presentation – Groups 20,21</i>	
16	M – Apr 18	<i>Presentation – Groups 22,23</i>	
	W – Apr 20	<b>Makeup presentations</b>	
	<b>W Apr 28</b>	<b>Final Exam Time: 8:00 PM - 10:00 PM – make up time if needed</b>	

### SUCCESS AND STUDY TIPS:

Successful students in my class typically do the following:

1. Do not miss classes throughout the semester. A lot of the quiz and test material are given in class. A significant amount of information is not on the slides or in the book.
2. Take the presentation very seriously and start preparing ahead of time. The group presentation requires anywhere from 10-15 hours of outside class work.
3. Come prepared to the review sessions before the exam. Many concepts are clarified in those sessions.