UF Department of Applied Physiology and Kinesiology
College of Health and Human Performance
UNIVERSITY of FLORIDA

Movement Neuroscience

APK4144 | Class # 18186 | 3 Credits | Fall 2025

Connect with HHP

@UFHHP
@ufhhp
@UF_HHP
APK LinkedIn

Course Info

INSTRUCTOR

Julia Choi, PhD
Office: FLG 134
Office Phone: (352) 294-1720
Email: juliachoi@ufl.edu
Preferred Method of Contact: Email or Canvas

OFFICE HOURS

2 hours/week (schedule is posted in CANVAS)

MEETING TIME/LOCATION

FLG 0285, T | period 5-6 (11:45 AM-1:40 PM)
FLG 0285, R | periods 6 (12:50 PM-1:40 PM)

COURSE DESCRIPTION

Covers both anatomical and physiological aspects of movement-related components of the nervous system from a functional perspective. Topics include: neuronal signaling; synaptic transmission, somatosensation; proprioception; nociception; vision and eye movements; vestibular; audition; lower vs. upper motor neurons; cortical, basal ganglia and cerebellar regulation of movement; and cognition.

PREREQUISITE KNOWLEDGE AND SKILLS

APK 2100C and APK 2105C (with minimum grades of C) and (sophomore standing or higher) and Applied Physiology and Kinesiology major.

REQUIRED AND RECOMMENDED MATERIALS

The following textbook is required:

Neuroscience
Seventh Edition
Edited by George J. Augustine, Jennifer M. Groh, Scott A. Huettel, Anthony-Samuel LaMantia, Leonard E. White, and Emeritus Purves
Publication Date - 01 March 2023
ISBN: 9780197616246

Instructional materials for this course consist of only those materials specifically reviewed, selected, and assigned by the instructor(s). The instructor(s) is only responsible for these instructional materials.

COURSE FORMAT

The course meets twice weekly, with Thursday lectures followed by Tuesday discussions. Weekly take-home quizzes are submitted via CANVAS. Impromptu pop quizzes will be given during class without prior notice. Three non-cumulative exams will be given during the semester.

COURSE LEARNING OBJECTIVES:

The course provides an in-depth overview and treatment of the sensory and motor systems of the nervous system responsible for regulating movement. By the end of this course, students should be able to:

- Describe electric signaling of nerve cells and synaptic transmission as they pertain to movement.
- Elaborate how sensory systems including somatosensory (proprioception, touch, pain), visual, auditory, and vestibular systems, relate to movement.
- Discuss each sensory system's peripheral anatomy and physiology, as well as central brain physiology for processing each type of sensory signal.
- Define the function of lower motor neurons, upper motor neurons, cortical physiology of movements, basal ganglia physiology, cerebellar physiology, posture, and eye movements.
- Explain mechanisms of higher-level cognitive function, speech and language motor control, as they relate to movement.

Students should also be able to integrate across all the above topics to demonstrate a holistic understanding of how the central nervous system controls movement.

Course & University Policies

This course follows all university-wide academic policies and student support guidelines. For the most current information on academic integrity, accommodations, health and wellness services, and other campus resources, please visit: https://go.ufl.edu/syllabuspolicies

ATTENDANCE

Attendance is not required but is strongly encouraged. Please make every effort to attend all class meetings. Students will receive points for participation in Discussion sessions (see Rubic below). Students who receive a zero in discussion for unexcused absence will not be able to earn full credit for discussion. Missing a class may also result in missing pop quizzes. There will be no make-up pop quizzes. Students who need to miss a class should communicate and discuss with the instructor in advance.

PERSONAL CONDUCT & ACADEMIC INTEGRITY

Students are expected to arrive on time and enter quietly if late. Please show respect toward instructors and classmates. Inappropriate behaviors include chronic tardiness, talking during lectures, texting or using phones in class, and making disruptive remarks. The UF Honor Code strictly prohibits cheating. If a student is found responsible for an Honor Code violation in this course, the instructor will enter a Grade Adjustment which may be up to or including failure of the course.

EXAM MAKE-UP POLICY

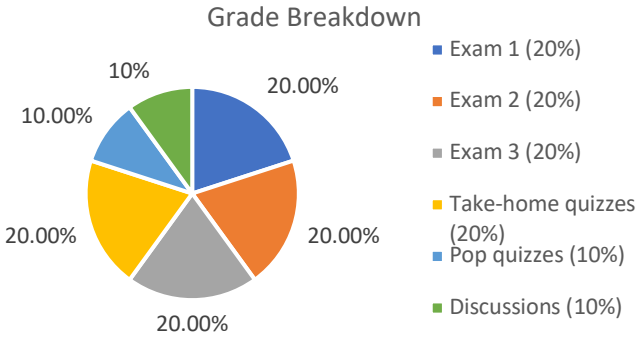
If you have an illness, family emergency or death, please contact the Dean of Students Office and follow the DSO Care Team procedures for documentation and submission of a request for make-up assignment (https://care.dso.ufl.edu/instructor-notifications/). Make-up exams are offered at the discretion of the instructor given that there is a medical, family, or other emergency that deems the need for a make-up. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies.

APK ADMINISTRATORS

For suggestions or concerns related to APK courses or programming, please reach out to any of the following:

- Dr. David Vaillancourt (he/him), APK Department Chair, vcourt@ufl.edu
- Dr. Demetra Christou (she/her), APK Department Vice Chair, ddchristou@hhp.ufl.edu
- Dr. Steve Coombes (he/him), APK Graduate Coordinator, scoombes@ufl.edu
- Dr. Anna Gardner (she/her), APK Undergraduate Coordinator, akgardner@ufl.edu

Grading



Discussions – Most modules will include a discussion session, where students work in small peer groups. Students may use course materials and their own notes. Checking the web is prohibited. Regular contributions to weekly discussions are highly encouraged. A student who is absent will receive a zero unless the absence is justified according to UF policies. Rubric for assignment of discussion points are as follows:

Satisfactory	3 pts	- Defines, describes, and illustrates concepts - Explains, assesses, and criticizes ideas - Demonstrates preparation and reading of assignments
Basic	2 pts	- Defines and describes some concepts - Partially explains but cannot assess and criticize ideas - Evidence of incomplete reading of assignment and preparation
Bare minimum	1 pts	- Defines and describes some concepts - Unable to explain, assess or criticize ideas - Clearly unprepared and lacking evidence of reading assignments
Absent	0 pts	- Refuses to engage in discussion - Checking the web - Not present or no submission of answers to discussion

***Take-home quizzes** –Take-home quizzes will be administered weekly using Canvas. Students must complete these quizzes individually. Take-home quizzes will cover materials from lectures, discissions, and assigned readings. Questions must be answered in order and cannot be changed once submitted.

***Pop quizzes** – There will be 3-4 pop quizzes covering recent course materials. Quizzes will be given without prior notice during class. Students must be present to receive a score; missed quizzes will result in a zero. No class materials, notes, or other sources are allowed. There are no make-up pop quizzes. However, the lowest pop quiz score will be DROPPED.

Exams – There will be three non-cumulative exams, each worth 20%. Each exam will consist of 40 questions, plus bonus question(s). Exams are closed book. Students will take exams in the regular classroom and will have 60 minutes to complete each exam.

*Quizzes and Exams will be closed-book and consist of the following types of questions:

- True/False
- Multiple choice: choose ONE answer that is BEST.
- Multiple answers: select ALL correct answers to get full points. Partial points will be given based on % items correct.
- Short answer (fill in the blanks, single sentence, or short paragraph)

GRADING SCALE

There is no curve for this course. Final grades will not be rounded. More detailed information regarding current UF grading policies can be found here: 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 respectfully ignored.

Letter Grade	Percent Associated with Each Letter Grade	GPA Impact of Each Letter Grade
A	93-100%	4.0
A-	90.00-92.99%	3.67
B+	87.00-89.99%	3.33
B	83.00-86.99%	3.00
B-	80.00-82.99%	2.67
C+	77.00-79.99%	2.33
C	73.00-76.99%	2.00
C-	70.00-72.99%	1.67
D+	67.00-69.99%	1.33
D	63.00-66.99%	1.00
D-	60.00-62.99%	0.67
E	0-59.99%	0

Weekly Course Schedule

WEEKLY SCHEDULE

Tentative dates and course plan are below. Any changes to this schedule will be posted in CANVAS as an announcement.

Date	Class Activity	Assessments Due
August 21	Course Introduction	
August 26	Lecture 1 (Module 1)	
August 28	Lecture 2 (Module 2)	**Quiz 1**
September 2	Discussion (Module 2)	
September 4	Lecture 3 (Module 3)	**Quiz 2**

September 9	Discussion (Module 3)	
September 11	Lecture 4 (Module 4)	**Quiz 3**
September 16	Discussion (Module 4)	
September 18	Exam 1 review	**Quiz 4**
September 23	**Exam 1 (Modules 1-4)**	**Exam 1 (Modules 1-4)**
September 25	Lecture 5 (Module 5)	
September 30	Lecture 6 Part 1 (Module 6)	
October 2	Lecture 6 Part 2 (Module 6)	**Quiz 5**
October 7	Discussion (Module 6)	
October 9	Lecture (Modules 7)	**Quiz 6**
October 14	Discussion (Module 7)	
October 16	Lecture (Modules 8)	**Quiz 7**
October 21	Discussion (Module 8)	
October 23	Review Exam 2	**Quiz 8**
October 28	**Exam 2 (Modules 5-7)**	**Exam 2 (Modules 5-8)**
October 30	Lecture 9 (Module 9)	
November 4	Discussion 9 (Module 9)	
November 6	Lecture 10 (Module 10)	**Quiz 9**
November 11	No Class – Veteran's Day	
November 13	Lecture 11 (Module 11)	**Quiz 10**
November 18	Discussion (Modules 10 & 11)	
November 20	Lecture 12 (Module 12)	**Quiz 11**
November 24-29	No class - Thanksgiving Break	
December 2	Review Exam 3	
December 4-5	READING DAYS	
December 12	**Exam 3**	**Exam 3 (Modules 9-12)**

SUCCESS AND STUDY TIPS

Success in any university course requires dedication and hard work on the part of the student. Attending class regularly and studying on a daily basis is essential to excel in learning movement neuroscience. Here are my tips for learning in this course:

- Complete the readings *prior* to class.
- **Go to class** and **participate** in small-group discussions.
- Make sure you know the neuroscience vocabulary. Use the flashcard from Neuroscience Textbook Student Resources to remember these neuroscience terms.
- If there is something in the textbook that was NOT covered in lectures, you are not expected to know it. There is a lot in the text that we don't have time to cover.
- Practice **drawing** diagrams and figures to help **understand** and **analyze** neural circuits and processes.
- Read quiz and exam questions carefully *before* answering.
- **Ask** the instructor questions if you don't understand a concept presented in class.
- Study daily. Review material in small sections (don't get overwhelmed by reading the entire chapter).