

## **APK 3200 Motor Learning**

Instructor: Dr. Stephen A. Coombes  
Email: [scoombes@ufl.edu](mailto:scoombes@ufl.edu)  
Office: FLG 170-H  
Phone: 352-294-1768  
Office Hours: By Appointment  
Class Room: FLG 220  
Class Days/Time: M, W, F (period 3)

### **Course Overview and Objectives**

This is an introductory course in motor control and learning. It is designed to provide a basic understanding of theoretical concepts on how we learn to control movement and become skilled at movements. The course will blend behavioral evidence with cutting edge neuroscience research on motor learning and control. Specific learning objectives for the class are as follows:

At the completion of this course, students should:

1. Appreciate various theoretical concepts of how humans control movement and how new movements are learned and retained.
2. Understand factors that can affect the quality of movement performance and learning.
3. Understand the neurological and mechanical processes out of which complex movement behaviors are created.
4. Application of these concepts for therapeutic purposes.

### **Recommended Textbook**

RA Schmidt and TD Lee. *Motor Control and Learning. A Behavioral Emphasis. 5<sup>th</sup> edition. Human Kinetics. ISBN 0-7360-7961-0*

Additional papers will be provided for specific topics.

### **General Course Policies**

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>.

**Attendance:** Make every effort to attend all lectures. Attendance will not directly affect your grade.

**Make-up quizzes:** Unexcused absences on quiz days will result in a zero on the quiz. 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. There will be no make-up quizzes. Instead, in case of an excused absence, the following quiz will count twice. Documentation of the illness or emergency will be required.

**Accommodations:** Students requesting classroom or other special accommodations must first register with the Dean of Students Office—Disability Resource Center (DRC). The Dean of Students Office will provide documentation to the student who must then present the documentation to the instructor when requesting accommodation. For optimal consideration, you must see the professor within the first three days of class.

**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 CANVAS. This is how your course instructor will communicate with you. All course grades will be posted on CANVAS. Any discrepancies should be pointed out to the instructor on or before the last day of finals week.

**Academic Honesty:** 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 (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor. 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.

**COURSE GOALS:** The following table describes the UF General Education student learning outcomes (SLOs) and the specific course goals for APK 3200. By the end of this course, students should be able to:

Gen Ed SLOs	APK 2100c Course Goals	Assessment Methods
<ul style="list-style-type: none"> <li><b>Content:</b> Demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.</li> </ul>	<ul style="list-style-type: none"> <li>Appreciate various theoretical concepts of how humans control movement and how new movements are learned and retained.</li> <li>Understand factors that can affect the quality of movement performance and learning.</li> <li>Understand the neurological and mechanical processes out of which complex movement behaviors are created.</li> <li>Application of these concepts for therapeutic purposes.</li> </ul>	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Oral presentation</li> <li>Exams</li> </ul>
<ul style="list-style-type: none"> <li><b>Communication:</b> Communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.</li> </ul>	<ul style="list-style-type: none"> <li>Communicate with peers and professionals using appropriate terminology.</li> </ul>	<ul style="list-style-type: none"> <li>Oral communication assessment based on paper presentation</li> </ul>
<ul style="list-style-type: none"> <li><b>Critical Thinking:</b> Analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems.</li> </ul>	<ul style="list-style-type: none"> <li>Predict motor dysfunctions if given the anatomical brain lesion</li> <li>Predict potential causes of deficits in motor control/learning Predict optimal conditions for motor control/learning</li> </ul>	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Oral presentation</li> <li>Exams</li> </ul>

### Course Examinations and Grading

Activity/Assignment	Points
1. Midterm I	20
2. Midterm II	20
3. Final Exam	20
4. Quizzes x 4	24
5. Presentation	16
<b>TOTAL POINTS</b>	<b>100</b>

**Midterm I:** Questions will be based on lectures from week 1-5

**Midterm II:** Questions will be based on lectures from week 7-11

**Final Exam:** Questions on the final exam will be based on week 13-15 (presentations)

**Quizzes:** There will be a total of 4 quizzes. These quizzes are intended to encourage reading and attendance. Quiz 1 and 2 will occur between week 1-5. Quiz 3 and 4 will occur between week 7-11.

**Presentation:** This presentation will be based on the pre-assigned project. The length of the presentation should be 10 minutes and should be in the format of a powerpoint presentation. The 10-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. This proposal presentation will worth 16% of your course grade and will be evaluated based on the following criteria: a) the evaluation from me; b) your grade from your group peers in terms of your participation in the presentation. Each person in the group will grade their group peers for their contribution to the presentation. The total grade will be your group presentation grade (from me) x group peers grade. For example, if your group grade from me is 90% (14.4 points) but you did not contribute much to your presentation (e.g. average grade from your peers is 50%), then your total grade for the presentation will be 7.2 points.

Papers have been pre-selected for presentations. Details will be provided in class.

**Grades:** The total points earned from quizzes and presentation will be summed. There is no curve for this course. 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:

[www.registrar.ufl.edu/catalog/policies/regulationgrades](http://www.registrar.ufl.edu/catalog/policies/regulationgrades)

Letter Grade	Percent of Total Points	GPA Equivalent
A	95.00-100%	4.0
A-	90.00-94.99%	3.67
B+	87.00-89.99%	3.33
B	83.00-86.99%	3.0
B-	80.00-82.99%	2.67
C+	77.00-79.99%	2.33
C	73.00-76.99%	2.0
C-	70.00-72.99	1.67
D+	67.00-69.99%	1.33
D	63.00-66.99%	1.0
D-	60.00-62.99	0.67
E	0-59.99%	0

**Instructor Evaluations:** Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu>.

## **Tentative Lecture Schedule**

This is an approximation of what the semester will consist of. This outline is subject to change at any point during the semester. Please make a habit to check the CANVAS announcements regularly as this is where schedule changes will be posted.

Week 1 - Motor neuroscience methods

Week 2 - Cortical and subcortical motor system

Week 3 - Classification and measurements

Week 4 - Human information processing - Stimulus identification/information extraction

Week 5 - Human information processing – Response selection/programming

Week 6 - Midterm exam I

Week 7 - Feedforward and feedback control I

Week 8 - Feedforward and feedback control II

Week 9 - Augmented feedback

Week 10 - Speed/accuracy and coordination &

Week 11 - Presenting scientific data

Week 12 - Midterm exam II

Week 13 - Presentations

Week 14 - Presentations

Week 15 – Presentations

Final – Wednesday 13<sup>th</sup> December – Period 3. Room 220

Phone number and contact site for university counseling services and mental health services: 392-1575, <http://www.counseling.ufl.edu/cwc/Default.aspx>

University Police Department: 392-1111 or 9-1-1 for emergencies