

BIOMECHANICAL INSTRUMENTATION

APK 6225 3 CREDITS SPRING 2025

<u>INSTRUCTORS</u>	<u>OFFICE & PHONE</u>	<u>EMAIL</u>
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OFFICE HOURS: **By appointment**

MEETING TIME/LOCATION: FLG 235, Thursday- period 6-8 (12:50 – 3:50 pm)

COURSE DESCRIPTION

The overarching goal of this course is to develop students' knowledge and appreciation of the instrumentation used to evaluate human motor function. We will provide a general overview of data collection techniques in biomechanics, electrophysiology of muscle and brain, and functional imaging related research. Additionally, hands on experience will be gained through laboratory experiences using motion capture, EMG, force transducers, and eye tracking. The course is broken into modules for each of the techniques in the course.

COURSE FORMAT

The class will occur in modules. Each module will include lecture, hands-on use of the specific technique, analysis by the students, and written summary of the module experiment. The students will work in group projects during the course.

REQUIRED AND RECOMMENDED MATERIALS: Notes provided by the instructors.

COURSE LEARNING OBJECTIVES: Upon completion of this course, the student will be able to:

1. Knowledge: Discuss, explain, and defend subject matters relevant to collecting data with various biomechanical instruments.
2. Skills: Discuss, explain, and compare specific skills related to collecting data with various biomechanical instruments.
3. Professionalism: Present and explain vital, relevant concepts for various biomechanical recording techniques 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 (except take home). Any cell phone or 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://my-ufl.bluera.com/>. 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 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. <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

Activity/Assignment	Points
1. Final Exam – take home	60
2. Lab Exercises (x3)	30
3. Attendance and participation	10
TOTAL POINTS	100

Final Exam (60%)

The final exam will be a take-home exam. We will provide you with questions from each section of the course including the guest lectures. The exam will be given to you by April 18th. It will be due on April 28th at 10 pm.

All exams must be returned to eachristou@ufl.edu by April 28th at 10 pm.

Lab Exercises (30%)

There will be a total of 3 lab exercises (Eye Tracking, EMG, Motion Capture) each worth 10% of your grade. The design of the lab exercise assignment will depend on the responsible faculty.

Each lab exercise should be returned to the email of the responsible faculty (see weekly schedule).

Attendance and participation (10%)

Class Participation – All students who arrive on time will begin with 10 points. The following list outlines behaviors that will result in point deductions.

- Routine Lateness -1 pt for every 5 minutes late (or for a full absence)
- Lack of professionalism (on phone, interruptions, sleeping, etc.) -1 pt
- Not participating (avoiding discussions, not asking questions) -1 pt

Any participation deductions will be communicated directly to the student at the time of the deduction or will be noted in the gradebook. If a student's lack of participation is causing a distraction or a disturbance to the overall flow or good energy of the class, the instructor will ask the student to leave, resulting in zero participation points and a written warning. Should that happen more than once, the student will receive a letter grade penalty and their advisor will be notified.

The instructor will discuss a student's grade with him or her, however: (a) grade discussion will occur during office consultation and will not occur via email, and (b) a student's grade will not be changed on any assignment, nor will his or her final grade be adjusted unless justifiably warranted (i.e., error in grading). Students are allowed **one week** from the receipt of their graded work to notify the instructor of any errors or dispute evaluation. Grade adjustments (e.g., poorly worded item on an exam, extra-credit) will occur at the instructor's discretion.

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.

Week	Date	Lecture Topic	Assignments
	Jan 16	Introduction to APK 6225	
Eye Tracking	Jan 23	Eye tracking - Lecture	
	Jan 30	Eye tracking - Demo	
	Feb 6	Eye tracking - Assignment	
EMG	Feb 13	EMG - Lecture	Eye Tracking LAB DUE gbeatty@ufl.edu
	Feb 20	EMG - Demo	
	Feb 27	EMG assignment	
Motion Capture	Mar 6	Motion Capture - Lecture	EMG LAB DUE eachristou@ufl.edu
	Mar 13	Motion Capture – Lab Demo & Assignment	
	Mar 20	NO CLASS – SPRING BREAK	
Guest Lectures	Mar 27	Josh Wong – MRI/Connectomics	Motion Capture LAB DUE juliachoi@ufl.edu
	Apr 3	Basma Yacoubi - Fatigue	
	Apr 10	Attend Daniel Corcos's seminar - CES	3-4 pm FLG 285
	Apr 17	Aparna Shukla - TMS	
FINAL	Apr 18-28	TAKE HOME FINAL	Return to eachristou@ufl.edu