

BIOMECHANICAL BASIS OF MOVEMENT
REMOTELY INSTRUCTED

APK3220C ~ 3 CREDITS ~ FALL 2020

INSTRUCTOR:

Matt Terza Ph.D.

Office: 132 - D

Office Phone: 352-294-1716

Email: mjt023@ufl.edu

Preferred Method of Contact: email
directly at mjt023@ufl.edu



COMMON OFFICE HOURS: (HELD VIRTUALL VIA ZOOM)

M Period 4 (10:40 -11:30AM)

W Period 5 (11:45 AM – 12:35 AM)

Contact me via email for an appointment if necessary.

MEETING TIME/LOCATION:

This course is Partially Synchronous and Partially Asynchronous in its delivery so please read carefully.

Asynchronous lectures, quizzes, and homeworks will be posted Monday mornings 8:00 AM.

Module quizzes and homework will be due Sunday evenings 11:59 PM (a week after being posted)

We will NOT meet synchronously for session 1 of the week. The exception to this is Thanksgiving break week where Exam 3 will be proctored on Session 1 Monday for the MWF Section (10649) only. The other two sections will still take the exam during their normal Session 2.

In general we will meet live/synchronous for the other two sessions throughout the semester. As a rule of thumb but with some variations week to week read the following for what to expect. Both of these sessions will have a strong office hours component to them with more informal discussions and problem solving. In general Session 2 will be examples and problem solving days/office hours on non-exam weeks. On exam weeks you will take your exam during this period on canvas via Honorlock. In general Session 3 will be review/discussion questions/office hours on non-exam weeks. On exam weeks this session may also include example problem solving.

Sections schedules for synchronous meetings as therefore as follows.

Section (10649): W,F Period 4 (10:40-11:30 AM) Zoom Meeting

Section (21072): T,R Period 2 (8:30-9:20 AM) Zoom Meeting

Section (10650): T,R Period 6 (12:50-1:40 PM) Zoom Meeting

COURSE DESCRIPTION: Fundamentals of kinematics and kinetics related to human movement. Basics of biomechanics applied to the concepts of injury prevention and performance improvement. Overview of various biomechanical data collection and analysis.

PREREQUISITE KNOWLEDGE AND SKILLS: junior or senior standing; (APK 2100C or BSCX094+L or BSCX086+L or PETX322+L or ZOO3733c) and MAC 1140 with minimum grades of C); or PHY 2048 or PHY 2053 with minimum grade of C

** Physics 1 concepts will be **very helpful** in this course.*

REQUIRED AND RECOMMENDED MATERIALS:

Required Textbook:

Basic Biomechanics by Susan Hall 8th Edition ISBN9781259913877

Required Software and Applications:

- Microsoft Word and Excel 2010 or later
- Muscles and Motion (online application)
- Imagej: free image analysis obtained at <https://imagej.nih.gov/ij/download.html>

COURSE FORMAT: This course will be delivered 100% online. Pre-recorded content lectures will be posted Monday morning 9:00 AM of the week for which they are assigned.

COURSE LEARNING OBJECTIVES:

1. Identify biomechanical principles/concepts and describe the impact of biomechanics research on daily life
2. Describe the basic technology behind biomechanical instrumentation with a focus on motion capture
3. Identify the planes of motion and axes of rotation involved in a given human movement pattern
4. Solve biomechanical problems related to exercise, sport, and health using calculations related to:
 - a. Linear and angular kinematic variables (including position, velocity, acceleration)
 - b. Linear and angular kinetic variables (including force, torque, momentum, impulse, work, power, and energy)
 - c. Estimating the center of mass position
 - d. Fluid mechanics
5. Describe how fluid forces influence human motion involving liquids and air
6. Explain the basic mechanical properties, interactions, and functions of bones, tendons, ligaments, muscle, joints, and cartilage

CLASS LEARNING ENVIRONMENT

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. If your preferred name is not the name listed on the official UF roll, please let me know as soon as possible by e-mail or otherwise. 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 in class, if your name and pronouns are not reflected by your UF-rostered name. I welcome you to the class and look forward to a rewarding learning adventure together.

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, 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. <https://elearning.ufl.edu/student-help-faqs/>

COURSE AND UNIVERSITY POLICIES:

ATTENDANCE POLICY:

Content lectures will be delivered asynchronous.

However, problem solving examples, material discussions, and review questions will be delivered synchronously and it would benefit you to attend these sessions and ask questions. No credit or penalties are directly applied for not attending these sessions.

You must take the exams during your scheduled class time during the week of the exam session.

PERSONAL CONDUCT POLICY: Students are expected to exhibit behaviors that reflect highly upon themselves and our University. 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 the instructor or TA in this class.

EXAM MAKE-UP POLICY: 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>

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 are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

PRIVACY: For online course with recorded materials a statement informing students of privacy related issues such as:

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 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. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

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 on 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:

Table 1: Grade Point Category Breakdown

Evaluation Components (number of each)	Points Per Component	Approximate % of Total Grade
Lecture Exams (3)	120 pts each = 360 pts	360/1000 = 36 %
Comprehensive Final Exam (1)	160 pts each = 160	160/1000 = 16 %
Module Content Quizzes (12/13)	20 pts each = 240 pts	240/1000 = 24 %
Quantitative Homework (12/13)	20 pts each = 240 pts	240/1000 = 24 %
Total	1000	100 %

Assessment Proctoring Via Honorlock

Honorlock will proctor your exams this semester. Honorlock is an online proctoring service that allows you to take your exam from the comfort of your home. You DO NOT need to create an account, download software or schedule an appointment in advance. Honorlock is available 24/7 and all that is needed is a computer, a working webcam, and a stable Internet connection.

To get started, you will need Google Chrome and to download the Honorlock Chrome Extension. You can download the extension at www.honorlock.com/extension/install

When you are ready to test, log into Canvas, go to your course, and click on your exam. Clicking "Launch Proctoring" will begin the Honorlock authentication process, where you will take a picture of yourself, show your ID, and complete a scan of your room. Honorlock will be recording your exam session by webcam as well as recording your screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device.

Good luck! Honorlock support is available 24/7/365. If you encounter any issues, you may contact them by live chat, phone (855-828-4004), and/or email (support@honorlock.com).

Lecture Exams (3) – Lecture exams will be timed Honorlock proctor Canvas quizzes scheduled during you assigned section time. Exams will consist of multiple-choice, true-false, short answer and free response problem solving questions. Students are not permitted access to any kind of materials or notes during these exams. Exam questions are generated by the course instructor. A **SCIENTIFIC** calculator will be permitted during exams and quizzes. A formula sheet will be provided so do NOT print or open you own from your desktop.

Quantitative Homework – These homework assignments will be assessed via a Canvas Quiz submission but the assignments will be given to you before to work through at your leisure. These homework assignment will contain problems regarding the current

week's topics in the content lectures and may also include movement analysis of one or more the movements for the week for which may need be asked to use imagej, provided images, and Excell. 12 of 13 of these assignments will count towards your final grade. The lowest will be dropped.

Module Quizzes – Module quizzes will be mainly conceptual quizzes based on lecture content and Muscles and Motion videos listed for the week. Although you will not have question beforehand the quizzes are open notes/videos and will have a comparatively relaxed time constraint. 12 of 13 of these quizzes will count towards your final grade. The lowest will be dropped.

Final Exam: - The final exam is a comprehensive for the semester. It will be longer than the individual lecture exams and will be scheduled during your sections assigned timeslot during finals week. This exam will be in the same style as the preceding 3 lecture exams but cover content across the semester.

GRADING SCALE: Grades will be based on a point system of 1000 total points coming from quizzes, exams, and assignments.

Once a grade is posted students have **two weeks** to dispute an error in grading.

Exams and quizzes may be reviewed during office hours throughout the semester for the benefit of feedback and learning.

More information about UF's grading policies may 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 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	630-700	90.00-100%	4.0
B+	609-629.99	87.00-89.99%	3.33
B	581-608.99	83.00-86.99%	3.0
B-	560-580.99	80.00-82.99%	2.67
C+	539-559.99	77.00-79.99%	2.33
C	511-538.99	73.00-76.99%	2.0
C-	490-510.99	70.00-72.99%	1.67
D+	469-489.99	67.00-69.99%	1.33
D	420-468.99	60.00-66.99%	1.0
E	≤ 419.99	0-59.99%	0

WEEKLY COURSE SCHEDULE:

Week	Dates	Topics	Assignments/Assessments
0	Aug 20-23	No Class – COVID Delay	
1	Aug 31 - Sept 4	S-Getting Started M1 Introduction to Biomechanics Trig Review	Module Quiz: Getting Started and Introduction to Biomechanics Homework: Trig Review
2	Sept 7- Sept 11	<i>Mon Sept 7 is a Holiday</i> M2 - Fundamental Concepts and Tools	Module Quiz and Homework: Fundamental Concepts and Tools
3	Sept 14-18	M3 - Biomechanical Instrumentation Imagej Introduction	Module Quiz and Homework: Biomechanical Instrumentation
4	Sept 21-25	M4 - Muscle Biomechanics	Module Quiz and Homework: Muscle Biomechanics
5	Sept 28- Oct 2	M5 - Tissue Loading	Module Quiz and Homework: Tissue Loading <i>Exam 1: S-M4 – Session 2 (T/W)</i>
6	Oct 5 -9	M6 - Lower Body Joint Mechanics 1	Module Quiz and Homework: Lower Body Joint Mechanics 2
7	Oct 12 - Oct 16	M7 - Lower Body Joint Mechanics 2	Module Quiz and Homework: Lower Body Joint Mechanics 2
8	Oct 19 - 23	M8 - Linear Kinematics	Module Quiz and Homework: Linear Kinematics

9	Oct 26-30	M9 - Angular Kinematics	Module Quiz and Homework: Angular Kinematics <i>Exam 2: M5-M8 Session 2 (T/W)</i>
10	Nov 2 - 6	M10 - Linear Kinetics	Module Quiz and Homework: Linear Kinetics
11	Nov 9 - 13	<i>Nov 11 holiday no class Wed</i> M11 - Equilibrium	Module Quiz and Homework: Equilibrium
12	Nov 16- Nov 20	M12 - Angular Kinetics	Module Quiz and Homework: Angular Kinetics
13	Nov 23- Nov 27	<i>Thanksgiving Break ... no class Wed-Friday</i>	<i>Exam 3: M9-M12 (Monday for 10649; Tuesday for 10650 and 21072)</i>
14	Nov 30 - Dec 4	M13 - Fluid Mechanics	Module Quiz and Homework: Fluid Mechanics
15	Dec 7 - 11	Review	
16	Dec 14 - 18	FINAL EXAM	Final Exam (S-M13)

This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However the professor reserves the right to modify, supplement and make changes as the course needs arise. This includes exam dates and lecture topics that may change depending on class progress.