



HBIO401L – Physiology of Movement (4 Units) Spring 2024

Lecture: T/Th 3:30-4:50 PM

Location: DMC 108

Laboratory: Wed 5:00-7:50 PM

Location: PED B13

Instructors

Charles Kikutaro Crawford (Kiki), PhD

Office: PED 109

Office Hours: TBD

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Laura Held, PhD

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Lab Instructor

Office Hours:

Contact Info:

Course Description

The study of human movement including (1) bioenergetics, circulation, respiration, and the musculoskeletal system, (2) effects of exercise and training on those systems, and (3) basic laws of motion and analysis of sports locomotion. (Prerequisite: MATH 108)

Learning Objectives

- Develop a deeper understanding of the central and cross-disciplinary concepts of human biology, which in this course include: bioenergetics, physiological homeostasis and the interrelationship between form and function for the cardiovascular, musculoskeletal, and nervous systems.
- Develop critical thinking and problem-solving skills, using an interdisciplinary approach to understanding complex human movement by exploring cause-effect relationships governing human performance.
- Demonstrate proficiency in modern research methodologies that involve analyzing human movement, quantifying, and interpreting physiological & biomechanical variables.
- Improve oral, written, and electronic communication & technical presentation skills
- Apply biological and physiological knowledge towards the resolution of ethical and social issues.
- Provide sufficient knowledge and skill for entry-level employment in a wide variety of fields in the health professions or other biology-related disciplines.

Description and Assessment of Assignments

- Lecture material will be evaluated via three midterm exams and a comprehensive final exam.
- Quizzes/in-class learning assignments will be completed during lectures and cannot be made up if missed. The lowest

two scores will be dropped to allow for occasional in-class absences.

- Material covered in labs will be evaluated via laboratory exercises, quizzes, and classroom exams.

Technological Proficiency and Hardware/Software Required

All course materials and grading will be provided via Blackboard, so students should have access to that platform for this course.

USC Technology Rental Program (<https://itservices.usc.edu/spaces/laptoploaner/>): Students who need resources to participate in this class can apply to the university's equipment rental program. The Student Basic Needs team will work with you to distribute equipment (if you are eligible). Please visit <https://studentbasicneeds.usc.edu/resources/technology-assistance/> to apply and for more information.

Required Readings and Supplementary Materials

Powers, S. and E. Howley, E. (2021). Exercise physiology: Theory and Application to Fitness and Performance (11th ed.). New York, NY: McGraw-Hill. (see *Course Schedule below for chapter assignments*)

Attendance

Students are expected to attend lectures in-person and to participate in in-class activities. Students who miss class/classes will be provided with lectures and other notes shared in class. Class attendance for lecture is not mandatory and will not be awarded a grade. However, attendance and participation in the lab is required for timely submission of lab assignments. Student athletes with approved "Travel Request Letters" and students who give advance notice of religious observation will be excused.

Course Specific Policies

- A midterm exam can be taken at another date ONLY if the student has a **documented** medical or university sponsored activity excuse.
- A request to take a make-up exam must be accompanied by evidence of necessity (i.e., letter from a doctor, plane ticket to a game from an athlete). Make-up exams will be different from the scheduled exam and may be proctored by personnel who do not have extensive knowledge in the area being tested.
- Exams and lab grades will not be given a letter grade. Only the final grade will be given a letter grade.
- The final exam is cumulative.
- The only extra credit offered for this course is JEP. JEP is the oldest and largest university service- learning program in the country. It offers students the unique opportunity to combine academic coursework with experiences in the community surrounding the campus. To register for JEP, visit <http://dornsife.usc.edu/joint-educational-project/>.

Zoom Etiquette

Lectures will not be provided via Zoom (or recorded) unless extenuating circumstances require the instructor to do so. When at all possible, such exceptions will be announced ahead of schedule. During any Zoom lecture you are encouraged to leave your camera/video on but are not required to do so. However, audio should be muted unless you are asking a question.

Grading Breakdown

Assessment Tool (assignments)	% of Grade
Midterm 1	10
Midterm 2	10
Midterm 3	20
Final Exam	30
Quizzes/In-class Learning Assignments	5
Lab	25
TOTAL	100
JEP (extra Credit)	2.5

Grading Scale

Course final grades will be determined using the following scale:

Letter grade	Corresponding numerical point range
A	93-100
A-	90-93
B+	87-90
B	83-87
B-	80-83
C+	77-80
C	73-77
C-	70-73
D+	67-70
D	63-67
D-	60-63
F	Below 60

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment. Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13). Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Course Evaluations

Course evaluation occurs at the end of the semester. This evaluation process allows students to comment and rate their experience in the class. The process is conducted online and you are encouraged to take advantage of this opportunity

Course Schedule: A Weekly Breakdown

Date	Lecture Topic	Reading Assignment
Jan. 9	Introduction, Physiology of Exercise	Chapter
Jan. 11	Bioenergetics I	3
Jan. 16	Bioenergetics II	3
Jan. 18	Exercise Metabolism I	4
Jan. 23	Exercise Metabolism II	4
Jan. 25	Nervous System	7
Jan. 30	Midterm 1	
Feb. 1	Musculoskeletal System I	8
Feb. 6	Musculoskeletal System II	8
Feb. 8	Circulatory System	9
Feb. 13	Respiratory System	10
Feb. 15	Acid/Base & Temperature Regulation	11-12
Feb. 20	Physiology of Training	13
Feb. 22	MIDTERM 2	
Feb. 27	Introduction to Biomechanics, Cause-Effect	
Feb. 29	Motion Analysis	
Mar. 5	Linear Kinematics	
Mar. 7	Linear Kinematics	
Mar. 12	Spring Break	
Mar. 14	Spring Break	
Mar. 19	Angular Kinematics	
Mar. 21	Linear Kinetics ($F=ma$), Ground Reaction Force	
Mar. 26	Linear Kinetics ($F=ma$), Ground Reaction Force	
Mar. 28	Linear Impulse	
Apr. 2	Projectile Motion	
Apr. 4	Projectile Motion	
Apr. 9	MIDTERM 3	
Apr. 11	Joint Kinetics	
Apr. 16	Joint Kinetics	
Apr. 18	Joint Kinetics	
Apr. 23	Real World Examples	
Apr. 25	Review (Physiology)	
May 7	FINAL EXAM (2-4PM)	

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call
Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.