



Course Syllabus

HBIO 205Lxg – The Science of Sport

4 Units

Spring 2024

Lecture: Tue, Thu 9:30-10:50

Classroom Location: [THH 212](#)

Instructor: Helen Soultanakis, Ph.D.

Office: [AHF B37](#)

Office Hours: M & W 10-11 am; Tue 11-12 pm, or by appointment

Contact Info: soul@usc.edu

Laboratory Director: Anh-Khoi Nguyen, Ph.D.

Office: PED 109

Office Hours: by appointment

Contact Info: agnguyen@usc.edu

Lab Instructors: (*Attendance in Labs is mandatory*)

Helaine Lopes, Ph.D. Contact Info: lopes@usc.edu

Lisa Le, M.A. Contact Info: lelisa@usc.edu

Joshua Carlos, M.S. Contact Info: jcarlos6@usc.edu

Gudrun Bara Floyd, M.A. Contact Info: gbfloyd@usc.edu

Charles Kiki Crawford, Ph.D. Contact Info: charles.crawford@usc.edu

Lab Location: PED B16

Lab Instructors' Office: PED 109

Office Hours: TBA

Course Description

This course will deal primarily with the basic scientific principles that govern exercise training and sport activities. It consists of both a lecture and laboratory portion to better help students understand the biological factors that facilitate and limit optimal performance. The course is addressed towards individuals who have the desire to exercise and wish to better understand their physical capabilities and the factors involved in exercise tolerance. It is also applicable to elite athletes participating in collegiate sports who wish to better understand the limits for performance and adaptations to training. Nutritional guidelines and practices that in combination with sports training can provide optimum health throughout one's lifetime are also addressed.

Learning Objectives

- To understand the responses and adaptations of exercising skeletal muscle.
- To understand the responses and adaptations of the cardiorespiratory system to sport and exercise.
- To understand the importance of nutrition in fueling optimal performance.
- To understand the physiological responses and challenges imposed by exercise of varying intensity and duration.
- To develop an understanding of the processes that support the elevated energy consumption during exercise.
- To understand the biological factors that facilitate and limit optimal performance.
- To conduct and understand measurements of body composition and energy expenditure at rest and during exercise.
- To gain knowledge of how sport and exercise combined with healthy nutrition can combat chronic diseases and improve health.

Required Text

Physiology of Sport & Exercise, 8th Edition, by Kenney, Wilmore, Costill (2021). Human Kinetics; Hardcover ISBN-10: 1718201729/ ISBN13: 978-1718201729; E-Textbook ISBN: 9781718210387.

Description and Assessment of Assignments

Written Exams will be administered in person on specific days during the class period (see Course Schedule below). Exams may be delivered electronically and, if so, will require installation of [Respondus Lockdown Browser](https://download.respondus.com/lockdown/download.php?id=945755274) <https://download.respondus.com/lockdown/download.php?id=945755274>, on a PC or Mac computer (Chromebooks are not supported).

- Lecture material will be evaluated via two midterm exams (2x25% of grade) plus a comprehensive final exam (25% of grade). *Note: 3 Midterm exams will be administered with the lowest score dropped in tabulating your final score for lecture.*
- The laboratory portion will be evaluated separately (see Lab Syllabus) via laboratory exercises and quizzes as well as a classroom final exam. The lab portion will represent 25% of your final course grade.
- Extra credit (up to +5% of the final course grade) can be acquired by attending the JEP program and fulfilling the program requirements <https://dornsife.usc.edu/joint-educational-project/student-sign-up/>.

Technological Proficiency and Hardware/Software Required

Although there are no specific technology/software requirements *per se*, you will need an internet-enabled device with browser capabilities, such as a tablet, laptop, or desktop computer, to access Blackboard, which will be the gateway for any assignments as well as the repository for lecture slides, videos, and other course materials. Should we need to go online, lectures will be delivered via Zoom. Exams may be delivered electronically and, if so, will require installation of **Respondus Lockdown Browser** that you can find in the following link: <https://download.respondus.com/lockdown/download.php?id=945755274> on a PC or Mac computer (Chromebooks are not supported). Support for these resources can be found at the [ITS Customer Support Center](https://itservices.usc.edu/) <https://itservices.usc.edu/>.

USC Technology Rental Program

If students need resources to successfully participate in this class, such as a laptop or internet hotspot, you may be eligible for the university's equipment rental program. To apply, please apply through the following link: <https://studentbasicneeds.usc.edu/resources/technology-assistance> .

Attendance

Class attendance for lectures is not monitored and does not count towards your course grade, but students are responsible for all material presented in lectures. Attendance is highly recommended as the in-class discussions will help you to better understand the presented concepts. Lecture slide sets will be shared with students via Blackboard before or after the lecture. Lectures will **not** be provided online or recorded, and student's missing lectures are encouraged to seek out classmates for any information not included in the slide-sets.

In contrast to the lectures, **attendance in the labs is required** for participation and timely submission of lab assignments. Information for lab procedures will be provided by your individual Lab instructors. Student athletes with approved "Travel Request Letters" and students who give advance notice of religious observation conflicts, as well as verified medical issues, will be allowed to make-up the lab assignments.

Course Specific Policies

- A midterm exam can be taken at another date ONLY if the student has a **documented** medical excuse, religious conflict, or athletic/competition excuse.
- Exams and lab grades will not be given a letter grade. Only the final grade will be assigned a letter grade.
- The final exam is cumulative and must be taken at the scheduled time and date as dictated by university policy.
- A request to take a make-up exam must be accompanied by evidence of necessity (i.e. a medical excuse, or a letter from the athletic department for traveling/competing athlete, etc.). When allowed, a make-up exam will be different in content and may differ in format from the originally scheduled exam. Make-up exams may also be proctored by personnel who do not have knowledge in the area being tested.
- Extra credit will be offered for this course via JEP. Early in the semester, a JEP representative will visit our class to discuss the opportunities available. To register for JEP, visit <http://dornsife.usc.edu/joint-educational-project/>

Zoom Lectures: Lectures will **not** be provided via Zoom (or recorded) on a regular basis. However, extenuating circumstances (eg. Instructor illness) may require such presentations. During any Zoom lecture you are encouraged to leave your camera/video on but are not required to do so. Audio should be muted unless asking a question.

Grading Timeline

Midterm I – Thursday, February 8th, 2024

Midterm II – Thursday, March 7th, 2024

Midterm III – Thursday, April 4th, 2024

Final Exam – Tuesday, May 7th, 2024 (8:00 AM-10:00 AM)

(Laboratory grading schedule is provided separately in the lab syllabus/handbook).

Grading Breakdown

Assessment Tool (assignments)	Points	% of Grade
Midterm 1	100	25*
Midterm 2	100	25*
Midterm 3	100	25*
Final Exam	100	25
Lab	100	25
TOTAL	400	100
JEP (extra Credit)		0-5
<i>*The lowest grade of the 3 midterms will be dropped</i>		

Grading Scale

- For your midterm and final exam grades you will be able to observe the points you receive on each exam on Blackboard with a maximum of 100 points for each. You can apply the scale provided below to determine your approximate letter grade on each portion.
- The lab portion of the course employs a separate grading scheme that will be discussed in your first lab section meeting with your individual instructor. The % of your final Lab grade will be incorporated in the calculation of your final grade for the course.
- For the final calculation of your grade the percentages (25% for each) of the 2 midterms, the final exam, and your Lab grade will be added together to yield your final course grade.

Letter Grade	Points/Percentage
A	93.0 – 100
A-	90.0 – 92.9
B+	87.0 – 89.9
B	83.0 – 86.9
B-	80.0 – 82.9
C+	77.0 – 79.9
C	73.0 – 76.9
C-	70.0 – 72.9
D+	67.0 – 69.9
D	63.0 – 66.9
D-	60.0 – 62.9
F	< 60.0

Course Schedule: A Weekly Breakdown

Week (starting on)	Date	Lecture Topic	Reading Assignment
Week 1 01/8		Introduction to HBIO-205 and What is Sports Science? Research in Exercise Science	PPT <i>(Power Point presentations)</i>
Week 2 01/15		Major Muscle Groups, Muscles and Bones The Basic Functional Movement Patterns	PPT
Week 3 01/22		Muscle Structure and Muscle Fiber Types From Nerve Impulse to Muscle to Action	Ch. 1, 3
Week 4 01/29		Body Composition and Healthy Weight Nutrition and Essential Nutrients A Healthy Balanced Meal & Tools for Healthy Eating	Ch. 17
Week 5 02/5	Thurs- Feb 8th	Nutrition and Fitness MIDTERM 1	
Week 6 02/12		Energy Expenditure VO2 max and training adaptations VO2 max and health status	Ch. 5
Week 7 02/19		Bioenergetics-Basic Energy Systems in Sports Anaerobic & Aerobic Energy Systems -Determinants of Fatigue	Ch. 6
Week 8 02/26		The Cardio-Respiratory System Your Heart's contribution to Sport and Exercise	Ch. 7, 8
Week 9 03/04	Thurs - Mar 7th	Your Lungs' contribution to Sport and Exercise MIDTERM 2	Ch. 9
<i>Week 10 03/11</i>	<i>Spring Recess Mar 11th-16th</i>	<i>No Classes</i>	
Week 11 03/18		Adaptations to Aerobic & Anaerobic Training High Intensity Interval Training (HIIT)	Ch. 10, 12
Week 12 03/25		Adaptations and Benefits to Resistance Training The Science of Weight & Resistance Training,	Ch. 11
Week 13 04/01	Thurs – April 4th	US Physical Activity Guidelines Cardiovascular Disease and Physical Activity MIDTERM 3	Ch. 22
Week 14 04/08		Optimizing Performance in Sport Overtraining Environmental Influences during Exercise	Ch. 13, 14
Week 15 04/15		The Science of Sport applied to: Running, Swimming, Football (Soccer)	PPT & articles
Week 16 04/22		Sport throughout our Lifetime Review for FINAL EXAM	Ch. 20
FINAL EXAM	Tues – May 7th	FINAL EXAM (8AM – 10AM)	

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 extra-curricular 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.

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)

[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.