

**USC** Dornsife  
College of  
Letters, Arts  
and Sciences

**HBIO 205Lxg – The Science of Sport**

**4 units**

**Spring 2022**

**Lectures:** MWF 9:00 AM - 9:50 AM (section 38411)

**Location:** THH 202

T/Th 9:30 AM - 10:50 AM (section 38420)

**Location:** THH 212

**Labs:**

Monday:

9:00 AM – 10:50 AM

Tuesday:

10:00 AM-11:50 AM, 12:00 PM – 1:50 PM, 2:00 PM-3:50  
PM, 4:00 PM -5:50 PM, 6:00 PM- 7:50 PM

Thursday:

12:00 PM – 1:50 PM

Friday

10:00 AM-11:50 AM, 12:00 PM-1:50 PM, 2:00 PM-3:50 PM

**Location:** PED B16

**Instructor: Robert Girandola, Ed.D.**

**Office:** PED 109

**Office Hours:** Tuesday , Wednesday, 11:00 AM –12:00 PM

**Contact Info:** [girandola@usc.edu](mailto:girandola@usc.edu), (213) 740-6151

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

**Office:** PED 109

**Office Hours:** by appointment

**Contact Info:** [agnguyen@usc.edu](mailto:agnguyen@usc.edu)

**Laboratory Instructor: Joshua Carlos, M.S.**

**Office:** PED 109

**Office Hours:** TBA

**Contact Info:** [jcarlos6@usc.edu](mailto:jcarlos6@usc.edu)

**Laboratory Instructor: Bara Floyd, M.A.**

**Office:** PED 109

**Office Hours:** TBA

**Contact Info:** [gbfloyd@usc.edu](mailto:gbfloyd@usc.edu)

**Laboratory Instructor: Helaine Lopes, Ph.D.**

**Office:** PED 109

**Office Hours:** TBA

**Contact Info:** [lopes@usc.edu](mailto:lopes@usc.edu)

For Spring 2022, the course is anticipated to be fully in person.

## **Course Description:**

This course will deal with the physiological and nutritional basis of human performance. It will be a combination of lecture and laboratory exercises to better help students understand the factors that facilitate and limit optimal performance. It is not a course aimed solely at elite students, but also the typical individual who has the desire to exercise and wishes to better understand that factors that are involved in exercise tolerance. *Not available for major credit.*

## **Recommended Text (Optional):**

1) **Physiology of Sport & Exercise** by W.L.Kenney, J. Wilmore & D.L. Costill

### **Required Lab Manual:**

2) **Laboratory Manual for the Science of Human Performance** by Kim Henige, Ed.D

## **I. Objectives:**

A. To understand the physiological and nutritional factors that facilitate and limit optimal performance.

B. To gain knowledge in health, exercise and nutrition related issues for healthy life-style decisions.

## **II. Class Schedule:**

<b>Week</b>	<b>Topic</b>
1	Metabolism
2	Metabolism
3	Energy Demand
4	Energy Intake & Weight Control
5	Weight Control, Obesity – First Exam
6	Nutrition & Performance
7	Drugs & Ergogenic Aids
8	Pulmonary Function
9	Pulmonary Function & Cardiovascular
	<b>Spring Break</b>
10	Cardiovascular – Second Exam
11	Oxygen Consumption
12	Muscular System
13	Environmental Physiology
14	Environmental Physiology
15	Environmental Physiology
	<b>FINAL EXAM</b>

### III. Grading and Grading Scale:

1. First mid-term – 25% (after 5 weeks)
2. Second mid-term – 25% (after 10 weeks)
3. Final Exam – 25%
4. Laboratory Grade – 25%

\***Exact** Dates for first two exams will be announced in class.

**Grading Scale:** Each exam will be curved and assigned a letter grade based upon the following criteria:

- Average score = C
- Average score + 1 Standard Deviation (SD) = B
- Average score + 2 SD = A
- Average score – 1 SD = D
- Average score – 2 SD = F

### IV. Course Make-up Policy:

If a student has a legitimate excuse for missing one of those exams, a make-up exam in ESSAY format will be given at a mutual date determined by the instructor and student.

### Tentative Lecture Schedule:

<b>Week</b>	<b>Lecture Topic</b>	<b>Reading</b>
Jan 10	Metabolism: The production of ATP. How do muscle cells convert Carbohydrates, Fats, and Proteins into useable energy (ATP)? – Glycolysis; Aerobic metabolism: Krebs Cycle and Cytochrome Chain	Intro + Ch 2
Jan 17	Energy Demands: The caloric cost of both rest and activity. Principles related to resting and basal metabolic rate (RMR and BMR) – Resting metabolic rate; Caloric cost of various activities; Individual variations. <b>Monday, Jan 17 is a holiday, MLK Day.</b>	Ch. 2,5
Jan 24	Energy Intake: Caloric cost of foods and beverages. Caloric balance. Caloric cost of carbohydrates, fats, proteins, and alcohol; Concepts of caloric balance	Ch. 5,22
Jan 31	Weight Control: How does an individual gain or lose weight? Separating fact from fiction. Concepts of weight loss with dietary restriction and exercise; Myths of weight control, especially weight loss; Drugs and other substances used for weight loss; Concepts of weight gain. How does fat-free mass increase?	Ch. 15,22
Feb14	Obesity: The etiology of obesity – How do people get fat?; Genetic verses environment; Trends in the U.S. and the world; Possible solutions <b>First Mid Term exam will most like be this week</b>	Ch. 22
Feb 21	Obesity: The etiology of obesity – How do people get fat?; Genetic verses environment; Trends in the U.S. and the world; Possible solutions. <b>Monday, Feb 21 is Presidents Day, University holiday</b>	
Feb 28	Nutrition: For optimal health and for human performance – What is an ideal diet; The caloric nutrients: Fat, Carbohydrate, Protein; The non-caloric	Ch. 15,16

	nutrients: Vitamins and Minerals; Dietary programs that effect human athletic performance; Nutrient supplements and ergogenic aids	
Mar 7	Nutrition: For optimal health and for human performance – What is an ideal diet; The caloric nutrients: Fat, Carbohydrate, Protein; The non-caloric nutrients: Vitamins and Minerals; Dietary programs that effect human athletic performance; Nutrient supplements and ergogenic aids  <b>SPRING BREAK WILL BE FROM MARCH 13-20</b>	Ch. 15,16
Mar 21	Pulmonary system as it is affected by exercise – Anatomy of the system; Lung volumes; Ventilation; Gas exchange; Hemoglobin	Ch. 7,8
	<b>SECOND MID TERM EXAM WILL MOST LIKELY BE GIVEN THE WEEK OF MARCH 28</b>	
Mar 28	The Cardiovascular system as it is affected by exercise – Discussion of the heart, blood vessels and blood; Cardiovascular dynamics during rest and exercise; The cardiovascular system as a limiting factor in aerobic exercise; Cardiovascular benefits of exercise: coronary heart disease	Ch. 6,8
Apr 4	The Cardiovascular system as it is affected by exercise – Discussion of the heart, blood vessels and blood; Cardiovascular dynamics during rest and exercise; The cardiovascular system as a limiting factor in aerobic exercise; Cardiovascular benefits of exercise: coronary heart disease	Ch. 6,8
Apr 4	Oxygen consumption during exercise of various intensities – The use of oxygen consumption ( $VO_2$ ) to determine metabolic cost, intensity, and type of fuel; The concept of $VO_2$ Max to determine athletic potential and the effects of training; The lactate threshold as an indicator of endurance potential or anaerobic power	Ch. 11
Apr 11	Oxygen consumption during exercise of various intensities – The use of oxygen consumption ( $VO_2$ ) to determine metabolic cost, intensity, and type of fuel; The concept of $VO_2$ Max to determine athletic potential and the effects of training; The lactate threshold as an indicator of endurance potential or anaerobic power	Ch. 11
Apr 18	Environmental Physiology	Ch 12,13
Apr 25	The environment and its effect on human performance – Exercise at altitude; Exercise in a hot environment; Exercise in a cold environment; Exercise and air pollution. Classes end April 29	Ch. 12,13
May 3-10	<b>FINAL EXAM</b> dates: Section 38411 (MWF 9:00 AM) – Friday, May 6, 8:00 AM - 10:00 AM Section 38420 (T Th 9:30 AM) – Tuesday, May 10, 8:00 AM – 10:00 AM	

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](http://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on [Research and Scholarship Misconduct](#).

### 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](http://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

### Support Systems:

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*  
[studenthealth.usc.edu/counseling](http://studenthealth.usc.edu/counseling)

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

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*  
[suicidepreventionlifeline.org](http://suicidepreventionlifeline.org)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*

[studenthealth.usc.edu/sexual-assault](http://studenthealth.usc.edu/sexual-assault)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086*  
[eeotix.usc.edu](http://eeotix.usc.edu)

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*  
[usc-advocate.symplicity.com/care\\_report](http://usc-advocate.symplicity.com/care_report)

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.usc.edu](http://osas.usc.edu)

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) 821-4710*

[campussupport.usc.edu](http://campussupport.usc.edu)

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*

[diversity.usc.edu](http://diversity.usc.edu)

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*

[dps.usc.edu](http://dps.usc.edu), [emergency.usc.edu](http://emergency.usc.edu)

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) 442-120 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu)

Non-emergency assistance or information.

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

[ombuds.usc.edu](http://ombuds.usc.edu)

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) 442-3340 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu)*

[chan.usc.edu/otfp](http://chan.usc.edu/otfp)

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