

**As of 03/25/2021; this syllabus may be amended as we get more news regarding Covid-related issues.**

**University of Southern California – Human and Evolutionary Biology  
HBIO 205Lxg – The Science of Human Performance (4 Units)  
Fall 2021**

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

Office Hours: Tuesday and Wednesday 11:00 AM -12:00 PM

Office: PED 109a

Email: [girandol@usc.edu](mailto:girandol@usc.edu)

Telephone: (213) 740-6151

A sign-up sheet will be provided for students who want to sign up for office hour slots. Special office hour appointments should be organized in advance via email correspondence to me. I will respond to all emails within 48 hours either individually via email or as a group in class (if the topic is relevant for all students attending the class). For answers to complex questions, the student may be encouraged to schedule a visit during office hours.

**Lecture:** 9:00 AM - 9:50 AM MWF WPH B27  
10:00 AM -10:50 AM MWF WPH B27

**Laboratory:** (All in PED B16)  
M: 2:00 PM – 3:50 PM  
T: 8:00 AM - 9:50 AM, 12:00 PM -1:50 PM, 6:00 PM - 7:50 PM  
Th: 8:00 AM - 9:50 AM, 10:00 AM -11:50 AM, 12:00 PM - 1:50 PM  
F: 10:00 AM - 11:50 AM, 12:00 PM -1:50 PM, 2:00 PM - 3:50 PM

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

Office: PED 108a

Office Hours: by appointment

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

I will respond to all emails within 48 hours either individually via email or as a group in class (if the topic is relevant for all students attending the class).

Lab Instructor: Bara Floyd, M.S.

Office: PED 109b

Office hours: Wednesday and Friday, 12:00 PM – 2:00 PM

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

I will respond to all emails within 48 hours either individually via email or as a group in class (if the topic is relevant for all students attending the class).

Lab Instructor: Helaine Lopes, Ph.D.

Office: PED 109c

Office hours: by appointment

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

I will respond to all emails within 48 hours either individually via email or as a group in class (if the topic is relevant for all students attending the class).

Lab Instructor: Joshua Carlos, M.S.

Office: PED 109e

Office hours: Tuesday and Wednesday, 12:30 PM – 1:30 PM; Thursday, 2:00 PM – 4:00 PM

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

I will respond to all emails within 48 hours either individually via email or as a group in class (if the topic is relevant for all students attending the class).

### **Technological Proficiency and Hardware/Software Required:**

- Because the possibility always exists that we will have to go back to virtual classes, you should have an internet-enabled device with browser capabilities, such as a tablet or laptop/desktop computer.
- This course requires the use of Blackboard whether the class will be in person or virtual. Blackboard will be your gateway to access Zoom (if we have to give lectures virtually), to upload most assignments and to view your grades. Blackboard will also be the repository of lecture slides and lectures on Zoom if we go virtual. If classes go online, students will need to download Respondus Lockdown Browser to take all scheduled exams. Information for these resources can be found at the ITS Customer Support Center: <https://itservices.usc.edu/contact/>.
- This course also requires the use of Microsoft Word, Excel and Powerpoint.
- USC Technology Rental Program (<https://itservices.usc.edu/spaces/laptoploaner/>): Students who are in need of 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.

### **Sharing of Course Materials Outside of the Learning Environment is Strictly Prohibited**

- USC has a strict policy (SCampus Section 11.12[B]) that prohibits sharing of any synchronous and asynchronous course content outside of the learning environment. Any student who violates this policy will be prosecuted to the maximum extent allowable by the USC Student Conduct Code, including failure of the course and suspension from the University.

*Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. 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.*

## **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 to the typical individual who has the desire to exercise and wishes to better understand the 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
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.

**V. Laboratory Component:**

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

Office: PED 108a

Office Hours: by appointment

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

**Tentative Lecture Schedule:**

<b>Week</b>	<b>Lecture Topic</b>	<b>Reading</b>
Aug 23	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
Aug30	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.	Ch. 2,5
Sept 6	Energy Intake: Caloric cost of foods and beverages. Caloric balance. Caloric cost of carbohydrates, fats, proteins, and alcohol; Concepts of caloric balance <b>Sept 6 is holiday</b>	Ch. 5,22
Sept 13	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
Sept 20	Obesity: The etiology of obesity – How do people get fat?; Genetic verses environment; Trends in the U.S. and the world; Possible solutions	Ch. 22
Sept 27	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 MIDTERM EXAM will most likely be this week.</b>	
Oct 4	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	Ch. 15,16
Oct 11	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>Oct 14,15 are holidays</b>	Ch. 15,16
Oct 18	Pulmonary system as it is affected by exercise – Anatomy of the system; Lung volumes; Ventilation; Gas exchange; Hemoglobin	Ch. 7,8
Oct 25	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
Nov 1	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. <b>SECOND MIDTERM EXAM This week!</b>	Ch. 6,8
Nov 8	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
Nov 15	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
Nov 22	Environmental Physiology <b>Nov 24-28 is University Holiday</b>	Ch 12,13
Nov 29	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 Dec. 3	Ch. 12,13
May 4-12	<b>FINAL EXAM</b> dates: Section 38411 (MWF 9:00 AM) – Monday, Dec. 13: 11-1 Section 38420 (MWF 10:00 AM) – Monday Dec 13, 8-10 AM	

## **VII. Academic Accommodations:**

Any student requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (the instructor)

as early in the semester as possible. DSP is located in Student Union (STU) 301 and is open 8:30-5:00pm Monday – Friday. The phone number for DSP is 213) 740-0776.

### **VIII. Academic Integrity:**

Students who violate University standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the University. Since dishonesty in any form harms the individual, other students and the University, academic integrity policies will be strictly enforced. I expect you will familiarize yourself with the Academic Integrity guidelines found in the current SCampus.

### **IX. Academic Integrity Violations:**

- Academic dishonesty/misconduct (plagiarism, cheating, unauthorized collaboration, etc.) will not be tolerated. All academic integrity violations will result in a grade sanction and will be reported to the Office for Student Judicial Affairs. It is your responsibility to “reasonably” protect your own work from the plagiarism of others.
- If plagiarism is detected on a group project, all members of the group will be held responsible.
- You are expected to be familiar with the Academic Integrity guidelines found in the current SCampus (student guidebook). An electronic version is available at <http://usc.edu/scampus>.

### **X. Disruptive and Threatening Student Behavior:**

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students’ ability to learn and an instructor’s ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.