

USC Dornsife
College of
Letters, Arts and
Sciences

**HBIO 420L – Applied Human Physiology Human (4 units)
Spring 2022**

Lectures: Monday/Wednesday/Friday 10:00 a.m. – 10:50 a.m.

Location: THH 102*

Instructor: Kurt E. Kwast, Ph.D.

Wednesday 12:30 p.m. – 2:00 p.m., Friday 12:00 p.m. – 1:30 p.m.,
and by appointment

Location: AHF B39*

Contact Info: kwast@usc.edu

Lab: Monday 2:00 – 4:50 p.m. (38490R)

Monday 5:00 – 7:50 p.m. (38492R)

Wednesday 11:00 a.m.– 1:50 p.m. (38489R)

Wednesday 2:00 – 4:50 p.m. (38491R)

Thursday 11:00 a.m.– 1:50 p.m. (38493R)

Thursday 5:00 – 7:50 p.m. (38495R)

Location: PED B12*

Peer Tutor: TBA

Review Sessions: TBA

Contact Info: TBA@usc.edu

Office: TBA

Lab Instructor: Alexis Camacho

Office hours: TBA and by appointment

Contact Info: ascamach@usc.edu

Location: TBA

Lab Instructor: Joshua Carlos

Office hours: TBA and by appointment

Contact Info: jcarlos6@usc.edu

Location: TBA

Lab Instructor: Gudrun “Bara” Floyd

Office hours: TBA and by appointment

Contact Info: gbfloyd@usc.edu

Location: PED 109

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

Office Hours: by appointment

Contact Info: agnguyen@usc.edu

Office: PED 109

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

Course Description

Exploration of the function of cells, tissues, organs, and organ systems with focus on the integration within and between the integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, respiratory, immune, renal, digestive, and reproduction systems, and its application in human health and disease. *Course Prerequisite: BISC 220L; Suggested Course Prerequisite: HBIO 301*

Course Learning Objectives

The primary learning objective is for students to be able to identify the structural components of the human body and The primary objective of HBIO 420 is to ensure that students can explain and describe how the human body works.

- Students should be able to recognize, explain, and provide examples of homeostasis and the mechanism involved, including the roles of negative and positive feedback.
- Students should be able to identify structural components and explain the functional attributes of each of the body's organ systems as well as elucidate and demonstrate the interrelationships within and between them.
- Students should be able to model, interpret, explain, and predict the integrated responses of the organ systems to physiological and pathological stressors.
- Students should be able to describe and explain the pathophysiology of common diseases as well as use critical thinking skills to make real-world connections between life-style choices and homeostatic imbalances that comprise our current, global health crises.

Relevant Human Biology BS & BA Degree Learning Objectives Addressed in Part by This Course

- Develop a deeper comprehension of the central and cross-disciplinary concepts of human biology, which include bioenergetics, the interrelationship of human form and function, physiological homeostasis, and biomechanics.
- Develop proficiency in modern methodologies pertinent to research in biological and medical sciences.
- Think critically, analyze, synthesize, and use information to solve real-world problems.
- Develop sufficient depth of knowledge and skill for graduate study in the health professions or other biology-related disciplines or entry-level employment in a wide variety of health-related fields.

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 most 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 and exams will require [Respondus Lockdown Browser](#). Support for these resources can be found at the [ITS Customer Support Center](#).

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 [submit an application](#). The Student Basic Needs team will contact all applicants in early August and distribute equipment to eligible applicants prior to the start of the Fall semester.

USC Technology Support Links

[Zoom information for students](#)

[Blackboard help for students](#)

[Software available to USC Campus](#)

Required Materials

Human Physiology: An Integrated Approach. 8th ed. Silverthorn. Pearson Publishing, New York, NY, 2016, with Modified Mastering A & P/ET VP A/C, 8/E, ISBN 9780134269221

Hardcopies of the text can be obtained from the campus bookstore and various online retailers including Amazon. There are many purchasing options including an eText, loose leaf, and hardback version of the text but you must purchase Modified Mastering as this is required for access to the Pearson website where all homework and pre-lecture assignments will be completed. It is not necessary for you to purchase Learning Catalytics as it will not be used this semester.

Laboratory Manual for Applied Systems Physiology by Henige, K., and M. Matveyenko.

The spiral bound hard copy is available for purchase at the campus bookstore and USC Custom Publishing, and an electronic version is available from USC Custom Publishing.

Description and Assessment of Assignments

Written Exams will be administered in person on specific days during the class period (see Course Schedule below). Exams will be used to assess all of the learning objectives. Exams may include multiple choice, multiple answer, true or false, fill-in-the-blank, short answer, or essay questions. A request to take a make-up exam must be accompanied by evidence of a university-sanctioned excused absence (e.g., a letter from a doctor, athletic release, etc.) and must be made before the date of the scheduled exam. Make-up exams may be given in a different format from that of the scheduled exam (e.g., essay). Students who live in a different time zone in which synchronous exam completion would be extremely inconvenient should contact me during the first week of class in order to potentially make other arrangements for taking exams.

In-Class Work will be unscheduled and will be used to assess all learning objectives, especially the last two. Work may include small group assignments, polls, a summary of lecture points, open-note quizzes, problem solving in groups, a submitted question of a “muddy point,” or other assignments to be submitted or reported on by the end of class. When working in groups, all members will receive the same score for the work product. Students who miss an assignment as a result of either arriving late or leaving early will not have the opportunity to make up the work. However, the lowest three in-class assignments will be dropped to allow for occasional absences. Students who live in a different time zone in which synchronous in-class assignment completion would be extremely inconvenient should contact me during the first week of class in order to potentially make other arrangements for completing in-class work.

Pre-Lecture and Homework Assignments will be completed at the Pearson website, with a link provided in Blackboard. Typically, these assignments will be posted on Fridays at 5:00 p.m., with homework assignments due Wednesday by 9:00 p.m. and pre-lecture assignments due at the beginning of the class period in which the material will be covered (the day of the week will vary depending on the lecture schedule). Please check the Pearson calendar every Friday evening to see when specific assignments are due.

Grading Breakdown

Assignment	Points	% of Grade
In-Class Learning Assignments	50	5
Pre-lecture Assignments	50	5
Homework Assignments	100	10
Midterm Exam 1	120	12
Midterm Exam 2	120	12
Midterm Exam 3	120	12
Final Exam	190	19
Laboratory	250	25
Total	1000	100

Grading Scale

Letter Grade	Point Ranges	Grade Point Value
A	930 - 1000	4.0
A-	900 - 929	3.67
B+	870 - 899	3.33
B	830 - 869	3.0
B-	800 - 829	2.67
C+	770 - 799	2.33
C	730 - 769	2.0
C-	700 - 729	1.67
D+	670 - 699	1.33
D	630 - 669	1.0
D-	600 - 629	0.67
F	<600	0.0

Individual assignments, exams and labs will be scored but not assigned a letter grade. Only the final point tally will be assigned a letter grade.

Late Work

All in-class assignments will be due by the end of class and cannot be made up if missed. Similarly, all pre-lecture and homework assignments will have published due dates and will not be accepted late. However, the lowest three assignments of each will be dropped to allow for occasional in-class absences and missed pre-lecture or homework assignment deadlines.

Communication Policies

Students are *strongly* encouraged to contact the instructor in regard to all matters involving course content or policy during Zoom office hours. Should you have a question about specific course content and cannot attend office hours, students are encouraged to submit their question to the course blog. Should you need to communicate with the instructor outside of class or office hours about a question other than course content, please email the instructor from your USC email account *making sure to include in the subject line the course number and your full name* (expect significant delays or no response if this information is omitted). Simple questions will be answered by email but, for more complex discussions, students may be instructed to visit office hours. Best attempts will be made to answer all emails within 48 hours, 72 hours over a weekend and the work day following a holiday. Note that the instructor may not respond to non-emergency emails 24 hours preceding an exam and may not respond to emails sent from non-USC accounts.

To promote independence and critical thinking, students are encouraged to work through the following process for obtaining answers to course-related questions before contacting the instructor. First, consult the course syllabus. If you cannot find the answer you need, next consult a classmate. If you still cannot find a satisfactory answer, email the instructor using your USC email *making sure to include the course number and your full name in the subject line* (expect significant delays or no response if this information is omitted). In your email, please indicate the steps you have gone through to seek the answer for your question. Use your USC email account for all correspondence with the instructor.

Technology Policies

During synchronous Zoom sessions, it is expected that students will use their internet-enabled device(s) to participate in activities guided by the instructor alone. Such activities include looking up terms, doing research, and completing in-class work. Please make sure all electronic devices are silenced so as not to disturb classmates or the instructor during synchronous sessions. Use of electronic devices for other purposes during class is strongly discouraged and you may be asked to put a device away should your instructor deem it to be disruptive to class. If you require an internet-enabled device, please see the “Technological Proficiency and Hardware/Software Required” section above.

Attendance

Attendance is mandatory given in-class assignments cannot be made up unless a student has been excused from such an assignment due to a university-sanctioned excuse (*e.g.*, illness, religious holiday, athletic event, etc.). If remote students are allowed to enroll and if they live in a time zone in which attending class would be extremely inconvenient, they need to contact the instructor to make other arrangements for the assessment of in-class skill sets.

Diversity, Equity, and Inclusion Statement

I and your laboratory instructors are committed to the creation and maintenance of inclusive learning spaces in which you will be treated with respect and dignity, and where all individuals are provided equitable opportunity to participate, contribute, and succeed. In HBIO 301, all students are welcome regardless of race/ethnicity, gender identities/expressions, sexual orientation, socio-economic status, age, disabilities, religion, regional background, Veteran status, citizenship status, nationality and other diverse identities that each of you and the faculty bring to class. I view the diversity that all of us bring to this class as a coveted resource that cultivates strength and benefit.

Your success at USC and beyond is enhanced by the innovation and creativity of thought that inclusive classrooms facilitate. However, the success of an inclusive classroom relies on you, your peers, and our participation, support, and understanding. I encourage you to speak up and share your views but to also understand that you are doing so in a learning environment in which all of us are expected to engage respectfully with regard to the dignity of others.

It is my intent that all students be well served by this course and that your learning needs be addressed both in and out of class. If any of your needs are not being met, please talk directly to me or to the appropriate resource provider listed at the end of this syllabus.

Zoom Etiquette (if applicable)

In order to simulate an in-classroom experience during synchronous Zoom sessions, one that promotes positive interactions and feedback to the instructor and fellow students, students are strongly encouraged to attend the sessions dressed in classroom attire and to turn on their webcams if they are located in a learning-appropriate environment. So as to circumvent Zoombombing, synchronous Zoom sessions will be password protected and students will only be allowed to enter through the USC's Blackboard site when displaying their full name as it appears in the class roster (aliases are not permitted). Microphones should be muted unless actively asking questions or involved in discussion. In-meeting chat will likely be enabled but actively monitored for disruptive or inappropriate posts and recorded for further review. Disruptive or inappropriate behavior will not be tolerated and anyone engaging in such behavior shall be removed from the session. Should bandwidth be an issue, try joining with the video from your webcam and use your cellphone for the audio. If you have any questions or concerns about complying with these policies, please email the instructor.

Synchronous Session Recordings

If we are instructed to do so by the administration, all synchronous sessions (save for office hours) will be recorded and posted on Blackboard, typically within a few hours of the session.

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. (See Section C.1 Class Notes Policy).

Tentative Course Schedule

Date	Lecture Topic	Silverthorn (8 th ed.)
Jan. 10	Introduction / Homeostasis	Ch. 1
Jan. 12	Bioenergetics & Membrane Physiology	Ch. 1 - 4
Jan. 14	Bioenergetics & Cellular Metabolism	Ch. 1 - 5
Jan. 17	Martin Luther King Junior Holiday	
Jan. 19	Membrane Physiology	Ch. 5
Jan. 21	Endocrinology I: Hypothalamus and Pituitary	Ch. 7
Jan. 24	Endocrinology II: Hormones, Homeostasis & Pathology	Ch. 7
Jan. 26	Endocrinology II: Hypothalamus and Pituitary	Ch. 7
Jan. 28	Neurophysiology: Neurons	Ch. 8
Jan. 31	Neurophysiology: Neurons	Ch. 8
Feb. 2	Neurophysiology: Signal Transduction	Ch. 8
Feb. 4	Neurosensory Physiology	Ch. 10
Feb. 7	Muscle Physiology	Ch. 12
Feb. 9	Muscle Physiology	Ch. 12
Feb. 11	MIDTERM EXAM 1	
Feb. 14	Muscle Bioenergetics and Force	Ch. 12
Feb. 16	Cardiovascular Physiology	Ch. 14
Feb. 18	Cardiovascular Physiology	Ch. 14
Feb. 21	Presidents' Day Holiday	
Feb. 23	Cardio- and Vascular-Dynamics	Ch. 15
Feb. 25	Regulation of Ventilation & Circulation	Ch. 16-18
Feb. 28	Regulation of Ventilation & Circulation	Ch. 16-18
Mar. 2	Renal Physiology	Ch. 19

Mar. 4	Renal Physiology	Ch. 19
Mar. 7	Fluid & Electrolyte Balance	Ch. 20
Mar. 9	Fluid & Electrolyte Balance / Digestive Physiology	Ch. 20 & 21
Mar. 11	MIDTERM II	
Mar. 14 -18	Spring Break	
Mar. 21	Digestive Physiology	Ch. 21
Mar. 23	Digestive Physiology	Ch. 21
Mar. 25	Homeostatic Control of Digestion and Metabolism	Ch. 22
Mar. 28	Metabolic Regulation and Control of Body Temperature	Ch. 22
Mar. 30	Advanced Endocrinology and Metabolic Control	Ch. 23
Apr. 1	Advanced Endocrinology	Ch. 23
Apr. 4	Immunology	Ch. 24
Apr. 6	Immunology	Ch. 24
Apr. 8	Immunology / Physiology of Reproduction	Ch. 24 & 26
Apr. 11	Physiology of Reproduction	Ch. 26
Apr. 13	Exercise Physiology	
Apr. 15	Exercise Physiology	
Apr. 18	MIDTERM III	
Apr. 20	Physiology of Altitude: Hypobaric	
Apr. 22	Physiology of Altitude: Hypobaric & Exercise	
Apr. 25	Diving Physiology	
Apr. 27	Diving Physiology	
Apr. 29	Selected Topics	
May 9	Semi-Comprehensive FINAL EXAMINATION 10:00 am – 12:00 pm	

Support Systems:

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

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

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

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

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

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

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

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, 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

Non-emergency assistance or information.

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

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

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.