

USC Dornsife
College of Letters,
Arts and Sciences

HBIO407L – Endocrinology and Metabolism (4 units)

Spring 2023

Lectures: Tuesday/Thursday; 09:30-10:50 am

Location: LVL 17

Labs: Monday, 11:00-01:50 pm; Tuesday, 02:00-04:50 pm; Wednesday, 11:00-01:50 pm; Wednesday, 02:00-04:50 pm

Location: PED B12

•Instructor: Lorraine P. Turcotte, PhD, Professor (she/her/hers)

Office: AHF 247

Office Hours: Tuesdays, 11:30 am -1:00 pm & by appointment

Tuesday office hours: A sign-up sheet will be available at the front of the classroom for students who want to sign up for Tuesday office hour slots.

All office hours will be held in **AHF 251**.

Please be on time for office hours and wait outside the room in the waiting room.

By appointment: Special office hour appointments should be organized in advance via email correspondence with Dr. Turcotte. These office hours can be on Zoom or in person.

Contact Info: turcotte@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). For answers to complex questions, the student may be encouraged to schedule a visit during office hours.

•Instructor: Helaine Lopes, PhD, Adjunct Assistant Professor (Teaching)

Office Location: PEB 109

Office Hours: *By appointment*

Contact Info: lopes@usc.edu

•Lab Director: Anh-Khoi Nguyen, PhD (he/him/his)

Office: PEB 109

Office Hours: by appointment

Contact Info: agnguyen@usc.edu

I will respond to all emails within 48 hours via email.

•Lab Instructor: Bara Floyd, MS (she/her/hers)

Office: PED 109

Office hours: TBA

Contact Info: 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: Lauren Visconti, MS

Office Location: PED 109

Office hours: TBA

Contact Info: lmv_967@usc.edu

•Peer Tutor: Cindy Gu

Contact Info: cindygu@usc.edu

Course Description

- Regulation of metabolic pathways and hormonally induced signaling pathways in health and metabolic diseases.
- This course has a capstone project and thus it is strongly recommended that students take the course in their senior year.

Learning Objectives

- to describe the structure and function of selected endocrine cells and tissues as well as the signaling pathways and biological actions induced by selected hormones.
- to relate the knowledge of endocrine hormones to pathological conditions such as obesity and type 2 diabetes.
- to analyze differences in hormone levels with different physiological, nutritional and pathophysiological conditions and correlate changes in hormone levels with the development of clinical symptoms.
- to compile, analyze, synthesize and criticize primary research articles and prior knowledge obtained in earlier classes to formulate a testable hypothesis associated with independent research project.
- to design experiments, safely use the scientific equipment necessary to collect the data, statistically analyze the results, present and interpret the results, and respond to questions about the experiments and results
- to recommend ways by which dietary and physical activity interventions would help to reduce the rates of type 2 diabetes in different socioeconomic settings.
- to discover and discuss the impact of human diversity as manifested by age, disability, gender, ethnicity and social status on the development of endocrinal pathologies.

Prerequisite(s): HBIO 302L

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) 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/> and <https://blackboardhelp.usc.edu/>.
- 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.

Required Readings and Supplementary Materials

- 1) **Essential Endocrinology and Diabetes.** 7th edition. Holt, R.I.G. and Hanley, N.A. Blackwell Publishing, Malden, MA, 2021.

\$44-54 on Amazon https://www.amazon.com/Essential-Endocrinology-Diabetes-Essentials-Richard-ebook-dp-B08XYCXS99/dp/B08XYCXS99/ref=mt_other?_encoding=UTF8&me=&qid=1633544132

\$45 (ebook) or \$56 (soft cover) on Wiley [Essential Endocrinology and Diabetes, 7th Edition | Wiley](#)

- 2) **Biochemistry (Illustrated Review).** 7th edition, Ferrier, D. Wolters Kluwer/Lippincott Williams & Wilkins, United Kingdom.

The Biochemistry (Illustrated Review) textbook can be purchased at the bookstore, on Amazon or if you go directly to the publisher's website. Amazon has this book available as e-text for rent or download. This book can also be found under the "View Online" option of the link below which is linked to the USC library. Before access is provided, you will be prompted for your USC credentials.

https://uosc.primo.exlibrisgroup.com/permalink/01USC_INST/hs9vaa/alma991043480725303731

- 3) **Lab Manual; available in the bookstore**

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).

Description and Assessment of Assignments

- Class material will be evaluated via quizzes, four exams (three midterms & one final) and one lab grade.
- Grades will be recorded in the Blackboard gradebook except for the final exam and the final grade.

Exams

- Exams will be a combination of multiple-choice, true or false, short-answer response, and problem-solving questions. There will be four exams; three midterms and one final exam. The exams will provide a summative assessment of your understanding of the material covered in class. The final exam will be cumulative.

- Class notes and textbook information will form the basis of the material that will be on the exams. If you attend class regularly, you will be updated on the status of lecture notes and course material/announcements.

- Every week, students will be given a short quiz to practice the material and to become familiar with the types of questions that will be asked in the exams.

- A midterm exam can be taken after the specified date **ONLY** if the student has a **documented** excuse. A request to take a make-up exam must be accompanied by evidence of necessity (illness, travel with a USC team). Make-up exams will be different from the scheduled exam and will be proctored by different personnel.

Labs

- The lab grade will be calculated from lab reports and exams, which will be explained in detail by your lab TA or lecturer.

Grading Breakdown

Assignment	% of Grade
Midterm 1 – Turcotte	15
Midterm 2 - Turcotte	22.5
Midterm 3 – Lopes	15
Final – Lopes	22.5
Lab Grade	25
Total	100

Grading Timeline

- **All graded work will be returned no later than one week after the submission deadline.**

- JEP work must be registered with JEP and with ME, Dr. Turcotte, by **January 31st**. If you are not registered with ME by February 2nd, JEP will NOT count towards your final grade. It can give you up to **2% extra points on the final grade**. 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. At the beginning of the semester, a JEP representative will visit our class and tell you more about the opportunities available that semester.

Late work

- If the submission deadline for an assignment is missed, the assignment may be submitted up to one week late. A **20% grade deduction** will be applied to all late assignments.

- If you miss submitting work for an unavoidable, documented, and serious reason, discuss the situation with me during office hours.

Grading Scale

- A grade of zero will be applied to submitted work that does not comply with the USC standards of academic conduct. Such work may not be resubmitted for a new grade.
- Exams and lab grades will not be given a letter grade. **Only the final grade will be given a letter grade.**
- Grades are NOT rounded or curved.** A grade of 86.99 is a B grade. A final grade of 89.99 will **NOT** be reflected as an A-. It is always difficult to miss a grade boundary by a small amount. But to round up would defeat the purpose of having an objective grading scale and it would also mean that announcing a specific grade boundary is not accurate. That would be unfair. Therefore, I make the grade boundary objective and sharp. **There are NO exceptions.**
- Course final grades will be determined using the following scale:

A	94-100
A-	90-93.99
B+	87-89.99
B	83-86.99
B-	80-82.99
C+	77-79.99
C	73-76.99
C-	70-72.99
D+	67-69.99
D	63-66.99
D-	60-62.99
F	≤59.9%

Classroom Norms

- To promote a respectful, professional, and productive classroom environment, the following expectations will be maintained during all class sessions.
 - Do not interrupt when someone else is speaking
 - You can criticize ideas, but not people
 - Avoid inflammatory language
 - Either support assertions with evidence, or speak from personal experience
 - Do not dominate the discussion
 - Make a single point each time you speak, rather than making a series of statements at once

Course Schedule: A Weekly Breakdown

Date	Lecture Topic	Lab	Ferrier	Holt Hanley
Jan. 10	Course Overview: Endocrine System Overview			1
Jan. 12	Classification of hormones; Secondary Messenger Systems			2
Jan. 17	Catecholamines; production & secretion			2, 3
Jan. 19	Catecholamines; secondary messenger system & biological actions			2, 3

Jan. 24	Insulin; production & secretion			3, 6
Jan. 26	Insulin; secondary messenger system & biological actions			3, 6
Jan. 31	Midterm 1			3, 6
Feb. 2	Insulin; secondary messenger system & biological actions			5, 6
Feb. 7	Cortisol; production & secretion			2, 3, 11
Feb. 9	Cortisol; secondary messenger system, biological actions			2, 3, 11
Feb. 14	Glucagon; production & secretion, biological actions			11
Feb. 16	GH & IGF1; production & secretion, biological actions		23, 24	
Feb. 21	Feed-Fast cycle		23, 24	11
Feb. 23	Review			5
Feb. 28	Midterm 2			
Mar. 2	T1DM			11
Mar. 7	Insulin resistance & T2DM			12
Mar. 9	Diabetes; overarching considerations			13
Mar. 14	Spring Recess			
Mar. 16	Spring Recess			
Mar. 21	Diabetes; microvascular complications			14
Mar. 23	Adipose Tissue & Obesity			15
Mar. 28	Inflammation			
Mar. 30	Obesity; metaflammation			
Apr. 4	Midterm 3			
Apr. 6	Metabolic syndrome			15
Apr. 11	Metabolic Syndrome; NAFLD			
Apr. 13	Metabolic Syndrome			
Apr. 18	Metabolic syndrome; hypertension			
Apr. 20	Metabolic syndrome; atherosclerosis			
Apr. 25	Metabolic syndrome; myocardial infarction			
Apr. 27	Metabolic syndrome; Dietary changes	Capstone Presentations		
May 19	Final; 8-10 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. 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. 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
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
eotix.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.