

USC Dornsife
College of Letters,
Arts and Sciences

HBIO407L – Endocrinology and Metabolism (4 units)

Spring 2020

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

Location: LVL 17

**Labs: Monday, 11:00-01:50 pm; Wednesday, 08:00-10:50 am; Thursday,
02:00-04:50 pm**

Location: PED B12

Professor: Lorraine P Turcotte, PhD

Office Location: AHF 247

Office Hours: Tuesday; 11:00 am- 01:00 pm and by appointment

Contact Info: turcotte@usc.edu

Assistant Professor (Teaching): Gioia Polidori, PhD

Office Location: AHF B40

Office Hours: Tuesday & Thursday; 11:00 am- 01:00 pm

Contact Info: gpolidor@usc.edu

Lab Director: Bara Floyd (Interim)

Office: PED 109

Office Hours: By appointment

Contact Info: gbfloyd@usc.edu

Lab Instructor: Bara Floyd, MS

Office Location: PED 109

Office Hours: TBA

Contact Info: gbfloyd@usc.edu

Lab Instructor: Carina Pautz

Office hours: TBA

Contact Info: cpautz@usc.edu

Location: PED 109

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

Required Readings and Supplementary Materials

- 1) **Essential Endocrinology and Diabetes.** 6th edition. Holt, R.I.G. and Hanley, N.A. Blackwell Publishing, Malden, MA, 2007.
- 2) **Biochemistry (Illustrated Review).** 7th edition, Ferrier, D. Wolters Kluwer/Lippincott Williams & Wilkins, United Kingdom.
- 3) **The Metabolic Syndrome.** 2nd edition. Byrne CD and Wild SH. Wiley-Blackwell Publishing, 2011. This book can be downloaded for FREE on the library website at <https://ebookcentral.proquest.com/lib/socal/detail.action?docID=819330>
- 4) **Lab Manual; available in the bookstore**

Description and Assessment of Assignments

- Class material will be evaluated via homework assignments and exams.
- Material covered in labs will be evaluated via homework and lab assignments as well as classroom exams.

Grading Breakdown

<u>Assignment</u>	<u>% of Grade</u>
Pathway Poster	5
Midterm 1	20
Midterm 2	25
Final Exam	25
Lab Grade	25
TOTAL	100

Assignment Submission Policy

- Assignments will be handed in at the beginning of class on the assigned due date.

Additional Policies

- The grading scale is based on the traditional scale as follows:

	A (≥94%)	A- (≥90%)
B+ (≥87%)	B (≥84%)	B- (≥80%)
C+ (≥77%)	C (≥74%)	C- (≥70%)
D+ (≥67%)	D (≥64%)	D- (≥60%)
F (≤59.9%)		

- A midterm exam can be taken after the specified date **ONLY** if the student has a **documented** medical excuse.
- Exams and lab grades will not be given a letter grade. Only the final grade will be given a letter grade.
- The final exam is cumulative.
- The final exam will not be available for review.
- A request to take a make-up exam must be accompanied by evidence of necessity (ie: letter from a doctor, plane ticket to a game from an athlete) and must be made before the date of the scheduled exam. Make-up exams will be different from the scheduled exam and may be proctored by personnel who do not have extensive knowledge in the area being tested.
- **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.**
- 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. To register for JEP, visit <http://dornsife.usc.edu/joint-educational-project/>.

- Notes will only be posted on blackboard for the second part of the class. 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.

- Final grades will **NOT** be posted on Blackboard.

Course Schedule: A Weekly Breakdown

Date	Lecture Topic	Ferrier	Holt/Hanley	Byrne/Wild
Jan. 14	Course Overview: Endocrine System Overview		1	
Jan. 16	Classification of hormones		2	
Jan. 21	Hormone Production; Secondary Messenger Systems		2, 3	
Jan. 23	Secondary Messenger Systems; Feedback Loops		2, 3	
Jan. 28	Catecholamines ; production		3, 6	
Jan. 30	Catecholamines ; secretion		3, 6	
Feb. 4	Catecholamines ; secondary messenger system & biological actions		3, 6	
Feb. 6	Cortisol - <u>Pathway Diagram DUE</u>		5, 6	
Feb. 11	Insulin; production & secretion		2, 3, 11	
Feb. 13	Insulin; secondary messenger system		2, 3, 11	
Feb. 18	Midterm 1			
Feb. 20	Insulin ; biological actions	23	11	
Feb. 25	Glucagon	23	11	
Feb. 27	GH and IGF1		5	
Mar. 3	Feed-Fast cycle	23, 24		
Mar. 5	Diabetes; overview		11	
Mar. 10	T1DM		12	
Mar. 12	Insulin resistance & T2DM		13	
Mar. 17	Spring Break			
Mar. 19	Spring Break			
Mar. 24	Diabetes; microvascular complications		14	
Mar. 26	Midterm 2			
Mar. 31	Insulin resistance & NAFLD			15
Apr. 2	Adipose Tissue		15	
Apr. 7	Obesity			
Apr. 9	Inflammation			
Apr. 14	Obesity; metaflammation		15	13/14
Apr. 16	Obesity; hormonal changes		6/8/15	
Apr. 21	Metabolic syndrome; hypertension			

Apr. 23	Metabolic syndrome; atherosclerosis			12
Apr. 28	Metabolic syndrome; myocardial infarction			10
Apr. 30	Metabolic syndrome; dietary changes & exercise			10/17
TBA	Final			

•For the date and time of the final exam for this class, consult the USC Schedule of Classes at www.usc.edu/soc

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 scientific misconduct, policy.usc.edu/scientific-misconduct.

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 of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.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 of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

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 at USC - (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.