

Preliminary Syllabus (details to follow; schedule subject to change)

HBIO 409 Metabolic Diseases

Spring 2019

Department of Biological Sciences, Human & Evolutionary Biology
University of Southern California

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Prerequisite: BISC 220L

Class Time & Locations: Tuesdays and Thursdays 11:00 am to 12:20 pm in SOS B38, SHS 163, and RRI B17 or other TBA (see schedule).

Course Overview & Objectives: This course is focused on the metabolic dysfunctions associated with obesity and diabetes. Students will read primary research papers aimed at understanding the causes and consequences of these two conditions and exploring the basic science paving avenues for treatment. Additionally, all students will conduct an “in-class” experiment in a laboratory setting that builds upon this background literature. This will offer hands-on experience with the research process, from experimental design to data collection to data analyses to scientific writing.

Readings & Materials: Empirical papers and review articles will be provided as PDFs on blackboard (see schedule).

Grades: Points earned on each of the following assignments/modules will be tallied and divided by the total number of possible points (100) to calculate a final grade (as percentage). That percentage will be given a letter grade according to the traditional scale shown below.

Assignments/Modules

- 25 pts for in class/lab participation
- 20 pts for the midterm exam
- 15 pts for the lab report
- 25 pts for the scientific manuscript
- 15 pts for the final

Grading Scale

93-100 = **A**, 90-92 = **A-**, 87-89 = **B+**, 83-86 = **B**, 80-82 = **B-**, 77-79 = **C+**,
73-76 = **C**, 70-72 = **C-**, 67-69 = **D+**, 63-66 = **D**, 60-62 = **D-**, 0-59 = **F**

Participation. Research is an interactive process that includes discussion of data, methodologies, and ideas found in the background literature, performing experiments, analyzing data output, and writing up/presenting the outcomes. Thus, a significant portion of the grade will

be based on participation in these various activities. Students are expected to read the assigned articles before class, attend each class, and contribute to class discussion based on the reading material. In some cases, there will be a short pop participation quiz, based on concepts found in the readings, at the beginning of the lecture.

We will also be conducting an experiment during the course of semester. Students are expected to participate in these research-related activities during the assigned lab times. Lab times will fall outside of normal class in some cases (~60-90 minutes/week). These assigned lab times will differ for each student in accordance with the experimental schedule (to be arranged). Additionally, students are required to complete animal care and use and general lab safety training modules prior to participation in the experiments. Absence from and/or tardiness to these lab and lab-related activities will be penalized with a 5 point (that's a 20%) deduction on the Participation grade.

Midterm. The midterm exam will include a combination of short answer and multiple choice questions based on the materials covered in weeks 1-6. Midterms must be taken on the date listed on the schedule below, unless you have a documented, university-sanctioned excuse. Students with an excused absence are required to take a make-up exam. Make-up exams, which will differ from the in-class exam, must be arranged ahead of the scheduled exam and accompanied by legitimate documentation for absence (e.g., doctor's letter, athletic release). Make-up exams may be proctored by someone who is not familiar with the test material.

Lab report. The lab report will be a detailed write up of the methods and results, including statistics and data figures, from the in-class experiment. These two components will be graded and given written feedback by the instructor and then will be revised accordingly for inclusion in the scientific manuscript (see below). Details regarding content and format will be provided in class. Lab reports are due by 5 pm on April 4; late reports will receive a grade deduction of 2 points per day.

Scientific manuscript. This will take the form of an empirical paper, which includes a Title Page, Abstract, Introduction, Methods, Results, Discussion, and References, and will be based on the experiment conducted in class. Details regarding content and format will be provided in class. The scientific manuscript is due by 5 pm on April 23; late manuscripts will receive a grade deduction of 3 points per day.

Final. The final exam will include a combination of short answer and multiple choice questions based on the materials covered in the weeks after the midterm. The exam must be taken on the date listed on the schedule below, unless you have a documented, university-sanctioned excuse. Students with an excused absence will be required to take a make-up exam. Make-up exams, which will differ from the in-class exam, must be arranged ahead of the scheduled exam and accompanied by legitimate documentation for absence (e.g., doctor's letter, athletic release). Make-up exams may be proctored by someone who is not familiar with the test material.

Schedule (*tentative*: schedule and topics are subject to change)

Date	Topic	Location	Readings
Jan 8	Course Overview	SOS B28	N/A
Jan 10	Metabolism Overview	TBD	TBA
Jan 15	General Lab Safety Training	TBD	Online Training Modules
Jan 17	DAR Care and Use Training	TBD	Online Training Modules
Jan 22	Metabolic Sensing: Sugars	SOS B28	TBA
Jan 24	Metabolic Sensing cont'd	SOS B28	TBA
Jan 29	Homeostasis	SOS B28	TBA
Jan 31	Obesity: Metabolic Causes, Consequences, Prevalence I	SOS B28	TBA
Feb 5	Obesity: Metabolic Causes, Consequences, Prevalence II	SOS B28	TBA
Feb 7	Diabetes/Insulin Resistance I	SOS B28	TBA
Feb 12	Diabetes/Insulin Resistance II	SOS B28	TBA
Feb 14	Genetic Factors	SOS B28	TBA
Feb 19	Review for Midterm Exam		
Feb 21	Midterm Exam	SOS B28	
Feb 26	Environmental Factors: Nutrition & Diet	SOS B28	TBA
Feb 28	Sugars vs Fats	SOS B28	TBA
Mar 5	Gut Microbiome	SOS B28	TBA
Mar 7	Epigenetic/Epigenetic Inheritance	SOS B28	TBA
Mar 12	No Class: Spring Break		
Mar 14	No Class: Spring Break		
Mar 19	Gut Microbiome	SOS B28	TBA
Mar 26	Physical Activity	SOS B28	TBA
Mar 28	Data Analyses; Scientific Writing I: Methods and Results	SOS B28	TBA
Apr 2	Lab Report Overview	SOS B28	
Apr 4	Lab report due ; Scientific Writing II: Abstract, Introduction, Discussion, References	SOS B28	TBA
Apr 9	Treatments: Dietary & Pharmacological	SOS B28	TBA
Apr 11	Treatments: Dietary & Pharmacological	SOS B28	TBA
Apr 16	Treatments: Surgical	SOS B28	TBA
Apr 18	Prevention & Policy	SOS B28	TBA
Apr 23	Paper due	SOS B28	
Apr 25	Review for Final Exam	SOS B28	
TBD	Final Exam	TBD	

Academic Conduct

Plagiarism is presenting someone else's ideas as your own, either verbatim or recast in your own words. Plagiarism is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, Behavior Violating University Standards <https://scampus.usc.edu/1100-behaviorviolating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity <http://equity.usc.edu/> or to the Department of Public Safety <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Blackboard

Reading assignments will be periodically posted on blackboard. However, the information posted on blackboard is not the only material that will be on the exams. Material may come from class discussions and lab activities.

Electronic Devices

Please turn off or disable all cell phones or other electronic communication devices during class time. Using a laptop in class to take lecture notes is permitted. However, please turn off your browser, email, messaging and any other programs that do not involve the course material.