University of Southern California
Department of Biological Sciences; Human & Evolutionary Biology
The Neurobiology of Feeding Behavior and Obesity (4 units; HBIO-435)
Spring 2018

Instructor: Scott E. Kanoski, Ph.D.
Office Hours: Thursday 3:30 P.M. (SHS 165)
Email: kanoski@usc.edu

Lecture: Tuesdays and Thursdays, 2:00-3:20 P.M. (VKC 202)

Laboratory: None

Course Description:
This course covers the neurobiological systems that control feeding behavior and energy balance. Emphasis is given to the determinants and pathophysiology of obesity with particular focus on the endocrine systems that communicate between the peripheral and the central nervous system to influence feeding behavior.

I. Texts:

Required:

1) **Course Reader (digital copy available at www.universitycustompublishing.com, hard copy available from USC bookstore)**
2) **Selected scientific journal papers provided by instructor via Blackboard**

II. Grading Outline:

15%	Quizzes and Participation	150 pts.
15%	Midterm 1	150 pts.
25%	Midterm 2	250 pts.
20%	Writing Assignments	200 pts.
25%	Final	250 pts.

Total = 1000 pts.

- The grading scale will be based on a traditional grading scale as follows:

A (92.5-100%)	**A- (89.5-92.49%)**	
B+ (87.5-89.49)	**B (82.5-87.49%)**	**B- (79.5-82.49%)**
C+ (77.5-79.49%)	**C (72.5-77.49%)**	**C- (69.5-72.49%)**
D+ (67.5-69.49%)	**D (62.5-67.49%)**	**D- (59.5-62.49%)**
F (<59.5%)		

Quizzes and Participation Component

Students are expected to read the assigned readings prior to class and to attend each lecture. The participation portion of your grade is substantial (15% of total grade) and is based on a combination of: [1] performance on brief quizzes held at the beginning of some classes (70% of participation component). [2] your contributions to class discussions, presentations, and exercises (30% of participation component).

Midterms

The midterm exams (15% of course grade Midterm 1, 25% of course grade for Midterm 2; 40% total) will cover material from the readings and from class discussion and lectures. The format of the midterm is short answer and multiple choice. A request to take a make-up exam must be accompanied by evidence of a university-sanctioned excused absence (letter from a doctor, athletic release) and must be made 1 week in advance of 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.

Writing Assignments

There will be three relatively short writing assignments. In total the writing assignments comprise 20% of your total course grade, with the 1st two writing assignments comprising 10% (5% each), and the 3rd writing assignment comprising 10% of your total course grade. The topics of the writing assignments will be discussed in more detail class, and will be largely driven by individual interests of the students.

III. Lecture Schedule:

Date	Lecture Topic	Readings
Week 1 (1/9)	Introduction	None
(1/11)	Obesity Epidemiology and Pathophysiology	Course Reader Ch 1 (Bray)
Week 2 (1/16)	Obesity Epidemiology and Pathophysiology II	Primary Readings (Blackboard)
(1/18)	No Class	Writing Assignment I Due
Week 3 (1/23)	Energy Balance Overview	Course Reader Ch 2 (Levitsky); Primary Readings (Blackboard)
(1/25)	Research Methods	Primary Readings (Blackboard)
Week 4 (1/30)	Taste / Flavor Processing	Course Reader Ch 3 (Rolls); Primary Readings (Blackboard)
(2/1)	The Vagus Nerve and Meal Size Control	Primary Readings (Blackboard)
Week 5 (2/6)	Sugars and Metabolism	Primary Readings (Blackboard)
(2/8)	Causes of Obesity I: Dietary and Environmental	Course Reader Ch 4 (Rolls and Moran) + Primary Readings (Blackboard)
Week 6 (2/13)	**MIDTERM I**	None
(2/15)	Causes of Obesity II: Genetic and Evolutionary	Primary Readings (Blackboard)
Week 7 (2/20)	No Class	Writing Assignment II Due
(2/22)	Central Nervous System Feeding Centers: Leptin and the Hypothalamus	Course Reader Ch 5 (Ruppel Shell) + Primary Readings (Blackboard)
Week 8 (2/27)	Central Nervous System Feeding Centers: Brainstem	Primary Readings (Blackboard)
(3/1)	Gut-brain signals: CCK, Ghrelin	Ch 6 (Teff and Kapadia) + Primary Readings (Blackboard)
Week 9 (3/6)	Gut-brain signals: GLP-1, Amylin	Primary Readings (Blackboard)
(3/8)	Neuropeptide and Neurotransmitter Appetite Signals	Primary Readings (Blackboard)

(3/13)	Spring Break (No Class)	None
(3/15)	Spring Break (No Class)	None
Week 10 (3/20)	The Gut Microbiome	Primary Readings (Blackboard)
(3/22)	**MIDTERM II**	None
Week 11 (3/27)	Liking vs. Wanting, and Food Reward	Course Reader Ch 7 (Skibicka and Kanoski) + Primary Readings (Blackboard)
(3/29)	Learning, Memory, and Feeding	Primary Readings (Blackboard)
Week 12 (4/3)	Obesity Pathophysiology Continued: CNS outcomes	Course Reader Ch 8 (Kanoski, Hsu, Pennell) + Primary Readings (Blackboard)
(4/5)	Prevention & Treatment: Dieting and Exercise	Course Reader Ch 9 (Bray) + Primary Readings (TBD)
Week 13 (4/10)	Prevention & Treatment: Pharmacological and Surgical	Course Reader Ch 10 (le Roux and Neff) + Primary Readings (Blackboard)
(4/12)	Prevention & Treatment: Policy / Society	Primary Readings (Blackboard)
Week 14 (4/17)	Obesity Documentaries	Primary Readings (Blackboard)
(4/19)	No Class	Writing Assignment III Due
Week 15 (4/24)	Novel Research Methods and "Neural Circuits" in Obesity Research	Course Reader Ch 11 (Krashes)
Week 15 (4/26)	Review for Final	None
TBD	**FINAL EXAMINATION**	None

IV. 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 if requesting accommodations for the course. 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.

V. 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.

VI. 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.

VII. 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.

VIII. Blackboard

Lecture slides will be posted on blackboard. However, the information posted on Blackboard is not the only material that will be on the exam. If you attend class regularly you will be updated on the status of lecture notes and course material/announcements.

IX. 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. Unrelated to electronic devices, for one point extra credit on one of your quizzes, send your favorite cute animal meme to kanoski@usc.edu by January 31st 2018.