AFFECTIVE NEUROSCIENCE
Psychology 333 -- Winter 2019
Professor Kent Berridge
(Psychology 531-01 graduate cross-listing)

Class: Mondays & Wednesdays at 1:00 – 2:30 pm, 1372 EH
Office: 4014 East Hall
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Office Hours: Wed 3:00 – 5:00 pm; or Mon after class or by appointment
Readings: Readings are posted on the Canvas website

Description: This 3-credit course will focus upon topics in the affective neuroscience of motivation. Please note that dates and readings may change, and syllabus may be updated during the semester (especially readings). The latest version is always posted on Canvas. The date of a syllabus is displayed at page bottom so you will know if you have the latest version.

Tentative Weekly Schedule (see Canvas for latest schedule):

January 9: Monday  Wednesday
Introduction

January 14 & 16: Traditional concepts of motivation & interaction with learning
January 21 & 23: MLK Day  Traditional emotion & brain
January 28 & 30: Limbic system  Limbic system
February 4 & 6: New limbic systems  New limbic systems
February 11 & 13: Pleasure Neuroscience  Pleasure Neuroscience
February 18 & 20: Pleasure consciousness  1st Exam Feb 20
February 25 & 27: Dopamine in reward  Dopamine
March 4 & 6: Winter Break Week
March 11 & 13: Addiction  Addiction
March 18 & 20: Addiction & thirst  Thirst & salt appetite
March 25 & 27: Hunger  2nd Exam Mar 27
April 1 & 3: Hunger-Reward & Pain  Pain, fear & stress
April 8 & 10: Fear & Sex  no class
April 15 & 17: Sex  Sex & Aggression
April 22: Aggression

In class exams are February 20 and March 27. Third exam (not cumulative) is in the official final exam period: Wednesday May 1st at 1:30 pm - 3:30 pm
Grading
Your grade will be based on 3 exams, and on your depth paper, online comments and class participation.
Relative weighting for grades will be:

- Online comments & class discussion = 10%
- Paper & depth panel/presentation = 20%
- Exams = 20%, 25%, 25%

Other Student Responsibilities & Grading

Our goal in this class is to make you into an expert in affective neuroscience 😊
You’ll encounter scientific controversies. You’ll learn to choose and justify your own positions.

Commit to Read!: The readings are a major part of this class and there is a lot of reading. You can choose somewhat what to read but everyone must read before class! Reading before class (and sometimes re-reading again after class) is essential to determining what you gain from this course, and I ask you to commit to keep up with reading.

Every student is expected to read all assigned regular articles prior to that class. In addition, students in Psych 333 must choose one extra reading for each topic prior to discussion (or two extra readings for the topics you give online comments on; and all readings for the topic you write your paper on [up to 4 extra readings]). Students enrolled in Psych 531 must read all readings for each topic.

3 Comments Online: We have online discussions to help stimulate thought about weekly topics. Everyone must contribute 3 online comments (half-page length). One comment is expected per month. Two comments must be given before a topic is covered in class (due by 3 pm Sunday before topic; double-length if you miss deadline), and the remaining comment can be entered within 1 week after the topic is discussed. You are also expected to participate in class discussion of topics you comment on.

Depth topic: Paper & Expert panel discussion. Everyone will pick 1 depth topic for a paper (7-10 pages) and expert panel. I will pose questions to guide you for each topic. The expert panel will post a web entry to summarize its opinion (e.g., wiki; 1 – 2 pages total). The panel entry must be posted by Saturday midnight before the week of the topic so that everyone can read in time for class. Panel members will also be expected to help in class discussion of that topic. Your paper on the depth topic is due within two weeks of class discussion of the topic (or before the beginning of Finals period for topics near the end of semester).

Scholarly Ethics: In writing papers or exam essays, we follow these steps: First we read, then we think and discuss in class, and then we write our own conclusions. It is never acceptable to copy-and-paste. It’s not even acceptable to closely paraphrase a source without giving credit to it. However, you are certainly allowed to quote from or refer to a source -- as long as you use quotation marks when quoting, and acknowledge the source. In short, you are okay as long as you write your own thoughts in your own words, and give credit to others when using their thoughts in your writing.

Note on Mental Health and Wellbeing: The University of Michigan is committed to the wellbeing of students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, remember you can contact Counseling and Psychological Services (CAPS) at any hour at (734) 764-8312 or https://caps.umich.edu/ or the University Health Service (UHS) at (734) 764-8320 and https://www.uhs.umich.edu/mentalhealthsvcs.

Depth Topic List

- Brain limbic systems
- Pleasure generators in the brain
- What do reward electrodes really do?
- Unconscious emotion?
- What is dopamine’s role in reward?
- Addiction

- Thirst and salt appetite
- Hunger
- Connecting Hunger & Reward: new brain circuits
- Sex
- Stress, Fear, & Pain
- Aggression
Reading List – Psychology 333

Traditional Motivation & Learning Concepts

Regular readings:

Extra readings:

Traditional Emotion Concepts

*Does the brain have specialized emotion structures or does all the brain generate emotion?*

Regular readings:
James, W., What is an emotion, *Mind*, 9 (1884) 188-205.

Extra readings:

Old Limbic System

*What is the limbic system? Is it still a good idea?*

Regular readings:
**Extra readings:**


**New Limbic system**

*How should new limbic structures fit into the limbic system? (nucleus accumbens, ventral pallidum, extended amygdala, orbitofrontal cortex, ventromedial cortex [infralimbic and limbic cortex], insula cortex, etc?)*

**Regular readings:**


**Extra readings:**


**Expanding new limbic system?**

*Is nearly every brain structure part of the limbic system? Even sensory and motor structures?*


**Pleasure**

*Where does pleasure come from? What in the brain generates pleasure? What are the roles of cortex versus subcortical brain structures in pleasure? Can a pleasure ever be truly unconscious and yet exist?*

**Regular readings:**


**Extra readings:**


**Optional extra readings on pleasure electrodes**


**Can pleasure ever be unconscious?**

Yes or no?

**Regular readings:**


**Extra readings:**


**What is the role of dopamine in reward?**


**Regular readings:**


Extra reading:

Addiction
What makes addiction so compulsive? Escape from withdrawal? Distorted learning circuits? Incentive-sensitization? Or what?? And should addiction be viewed as a brain disease?

Regular readings:

Extra reading:
Lewis, Marc. 2017. Addiction & the brain: development, not disease (reply to Berridge). Neuroethics, 1-10

Thirst & Salt Appetite

Regular reading:

Extra reading:


**Hunger**

*Is hunger driven by a body weight set-point? What brain mechanisms control appetite?*

**Regular readings:**


*Extra reading:*


Bolles: "Some functionalistic thoughts about regulation"

**New hunger-reward connections**

*How does hunger alter the brain’s response to food reward stimuli? How do hypothalamic regulatory and limbic reward structures interact? Does food addiction exist?*

**Regular readings:**


*Extra readings:*


Pain, Fear & Disgust

What in the brain causes pain? What is special about insula cortex? How do acupuncture or hypnosis control pain?

Regular readings:


Extra reading:


Sex

What brain systems generate sexual desire? Are male and female ‘styles’ of human sexuality entirely different, with different neural systems? Or are they essentially similar? What determines human sexual orientation or gender identity? How do sexual stimuli & experiences (including pheromone exposure) alter subsequent physiology or fertility?

Regular readings:


Extra readings by subtopic:

- Brain mechanisms in female & male

**Sexual orientation & gender identity**


**Experiential control of sexual physiology:**


**More detail on experiential controls of physiology (if you're really interested)**


**Culture & Identity:**

Aggression

What are the chief brain bases of aggression? Do different types of aggression correspond to different neural systems? Can any type of pathological aggression be controlled in principle via drugs? Can any type of pathological aggression be controlled by psychosurgery? In violent patients? In prisoners?

Regular readings:


Extra readings:


