AFFECTIVE NEUROSCIENCE
Psychology 333 -- Winter 2016
(531-02 grad cross-listing)
Professor Kent Berridge

Class: Mondays & Wednesdays at 1:00 -2:30 pm, 3463 MH
Office: 4038 East Hall
Email: berridge@umich.edu
Phone: 763-4365
Office Hours: T 2:30-4:00 or by appointment

Readings: Readings are posted on the Ctools website

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

Tentative Weekly Schedule (see Ctools for latest schedule):

| January 6: | Monday | Introduction |
| January 11 & 13: | Traditional concepts of motivation & interaction with learning |
| January 18 & 20: | MLK Day | Traditional emotion & brain |
| Jan 25 – 27 | Limbic system | Limbic system |
| Jan 1 - Feb 3: | New limbic systems | New limbic systems |
| February 8 & 10: | Pleasure Neuroscience | Pleasure Neuroscience |
| February 15 & 17: | Pleasure consciousness | 1st Exam Feb 17 |
| February 22 & 24 | Dopamine in reward | Dopamine |
| February 29 & Mar 2: | Winter Break Week |
| March 7 & 9: | Addiction | Addiction |
| March 14 & 16: | Addiction & thirst | Thirst & salt appetite |
| March 21 & 23 : | Hunger | 2nd Exam Mar 23 |
| March 28 & 30 | no class | Hunger-Reward & Pain |
| April 4 & 6: | Pain, fear & stress | Fear & Sex |
| April 11 & 13: | Sex | Sex & Aggression |
| April 18 : | Aggression |

In class exams are February 17 and March 23. Third exam (not cumulative) is in the official final exam period: Wednesday, April 20th at 4:00 pm - 6:00 pm

1/3/2016
**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 😊*

**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 the all assigned regular articles prior to that class. In addition, you are expected to 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]).

**3 Comments Online:** We will 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 that week’s topics (entered by 3 pm Sunday prior to that week’s topic; double-length if you miss the deadline), and the remaining comment can be entered within 1 week after the topic is discussed. You are also expected to participate in discussion in class 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).

**Ethical note on writing:** 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 or simply closely paraphrase something from the web or a publication. You are certainly allowed to quote or refer to another source -- as long as you acknowledge that source and use quotation marks when quoting. In short, we always write our own thoughts in our own words, and we give credit to others when we present their thoughts in our writing.

**Note on Mental Health and Wellbeing:** 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 be unconscious?

Yes or no?

Regular readings:


Extra readings:


What is the role of dopamine in reward?


Regular readings:


Extra reading:


Addiction


Regular readings:


Extra reading:


1/3/2016
**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:**


Bolies: "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:**

1/3/2016


**Pain & Fear (and Stress & Disgust)**

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

**Regular readings:**


**Extra reading:**


Hilgard: Hypnotic experience


**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 experient control 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:**


