BIOPSYCHOLOGY OF MOTIVATION
Psychology 433 -- Fall 2010-
The University of Michigan
Professor Kent Berridge

Class: Mondays & Wednesdays at 1:00 -2:30 pm in Rm. 3254 LSA
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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 during the semester. 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):

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<th>Monday</th>
<th>Wednesday</th>
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<tr>
<td>September 8:</td>
<td>Introduction</td>
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<tr>
<td>September 13 &amp; 15:</td>
<td>Traditional concepts of motivation &amp; interaction with learning</td>
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<td>September 20 &amp; 22:</td>
<td>Traditional emotion &amp; brain</td>
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<td>September 27 – 29:</td>
<td>Limbic system</td>
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<td>October 4 &amp; 6:</td>
<td>New Limbic systems</td>
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<td>October 11 &amp; 13:</td>
<td>Pleasure neuroscience</td>
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<td>October 18 &amp; 20</td>
<td>Study Break</td>
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<td>October 25 &amp; 27:</td>
<td>Dopamine in reward</td>
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<td>November 1 &amp; 3:</td>
<td>No class</td>
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<td>November 8 &amp; 10:</td>
<td>Addiction &amp; thirst</td>
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<td>November 15 &amp; 17:</td>
<td>No class</td>
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<td>November 22 &amp; 24</td>
<td>2nd Exam Nov 22</td>
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<td>Nov 29 &amp; Dec 1:</td>
<td>Pain, fear &amp; stress</td>
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<td>December 6 &amp; 8:</td>
<td>Sex</td>
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<td>December 13:</td>
<td>Aggression</td>
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In class exams are October 20 and November 22. Final exam is Tuesday December 21 (4-6 pm)
**Grading**

Your grade will be based on 3 exams, and on your depth paper, online entries and class participation. Relative weighting for grades will be:

- Online comments & class discussion = 10%
- Paper & class 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 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]).

**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).

**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.

**Ethical note on writing**

Here’s the order of how we write comments, papers or exam essays. 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 can always quote or refer to another source as long as you acknowledge the source and use quotation marks when quoting. This is essential ethics for scholarship. In short, we always write our own thoughts in our own words, and give credit to others for their thoughts.

**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 433

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:


**Can pleasure be unconscious?**

*Yes or no?*

**Regular readings:**


**Extra readings:**


**Electrical Brain Stimulation & Pleasure**

*Do reward electrodes cause pleasure? If not, what do they cause?*

**Regular readings:**


**Extra reading:**


What is the role of dopamine in reward?


Regular readings:


Extra reading:


Addiction


Regular readings:


Extra reading:


**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?

Regular readings:

Extra readings:


Pain, Fear & Stress
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:

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:**


