I. Bulletin description

PSYC G4485: Affective Neuroscience
Where: 405 Schermerhorn Hall
When: Spring 2013, Tuesday 10.10 – 12pm
Office Hours: By Appointment

Prerequisites: PSYC W1001 plus W1010 or 2450 or equivalent, plus permission of the instructor.

This seminar explores the neural systems and behaviors that underlie human, and sometimes animal, emotions. Question will include: why we have emotions, what is their survival value, why do we find funny jokes rewarding, and why we envy, feel guilt or joyfully embrace love. We will review some of the latest literature on these topics and discuss implications for understanding human behavior. We will finally discuss disorders such as depression, anxiety, aggression, and psychopathy that are associated with disruptions to the neural systems that regulate healthy emotion.

II. Full course description:

Emotions are at the forefront of most human endeavours. Emotions aid us in decision-making (gut feelings), help us remember, torment us, yet have ultimately helped us to survive. Over the past few decades, we have begun to characterize the neural systems that extend from primitive affective response such as fight or flight to the complex emotions experienced by humans including guilt, envy, empathy and social pain. This course will begin with an in-depth examination of the neurobiological systems that underlie negative and positive emotions and move onto weekly discussions, based on assigned journal articles that highlight both rudimentary and complex emotions. The final weeks will be devoted to exploring how the neurobiological systems are disrupted in affective disorders including anxiety, aggression and psychopathy. In addition to these discussions and readings, each student will be required to write a review paper on a topic related to one of the emotions discussed in these seminars and its underlying neural mechanisms.

III. Rationale for giving the course:

PSYC G4485 is an advanced seminar, designed particularly for graduate students, for advanced undergraduates who are majoring in Psychology or in Neuroscience and Behavior, and for students participating in the Psychology Postbac Certificate Program. These students will have priority in registration, followed by junior majors followed by non-majors.

The seminar will be well suited to students who have completed at least one neuroscience course beyond W1001, such as W1010 (Mind, Brain, and Behavior) or W2450 (Behavioral
Neuroscience). These seminars will help students to develop their oral, written, presentation and theorizing skills.

Students who complete this seminar will learn to: 1) understand experimental methods used in affective neuroscience; 2) will learn about the neural systems that underlie both complex and basic emotions; 3) critically read and interpret the primary research literature and discuss the strengths and weaknesses of experimental results; 4) conduct literature searches and synthesize these searches into a comprehensive literature review.

Prof. Mobbs’ permission to join the class is required. Attendance at the first day of class is required. Each week, students will participate in a two-hour seminar. Class time will be devoted to the presentation and discussion of journal articles. The publications have been chosen to cover the classic and currently most exciting research in Affective Neuroscience, and to serve as a stimulus for discussion. Two students sign up to lead the discussion each week.

IV. Schedule of topics and readings [subject to revision]:

This course will systematically review the main topics of Affective Neuroscience such as:

1) Introduction to Affective Neuroscience
2) The Anatomy of the Emotional Brain
3) Context and Emotion
4) Reward
5) Fear and Survival Intelligence
6) Social Emotions
7) Emotion and Decision Making
8) Understanding Other’s Emotions
9) Controlling Emotion
10) Emotion and Cognition
11) Aggression and Psychopathy
12) Fear and Survival
13) Social Learning of Fear
14) Affective Disorders

The reading list and weekly schedule
Readings: No textbook is required, but assigned readings will be made available in pdf format through CourseWorks (https://courseworks.columbia.edu).

Week 1: Tuesday 22nd January.
Introduction to Affective Neuroscience

Example presentation

Students select presentation topics this week.
**Week 2: Tuesday 29th January.**

**The anatomy of the emotional brain**


**Week 3: Tuesday 5th February.**

**Context and Emotion**


**Week 4: Tuesday 12th February.**

**Reward**


**Week 5: Tuesday 19th February.**

**Social Emotions**


**Week 6: Tuesday 26th February.**

**Emotion and Decision Making**


**Background Reading:**


**Week 7: Tuesday 5th March.**

**Understanding Other’s Emotions**


Science, 334, 1427-1430.

**Background Reading:**

**Week 8: Tuesday 12th March.  Midterm**

**SPRING RECESS**

**Week 9: Tuesday 26th March.**

**Emotion and Cognition**


**Background Reading:**


**Week 10: Tuesday 2nd April.**

**Aggression and Psychopathy**


**Background Reading:**


**Week 11: Tuesday 9th April.**

**Fear and Survival**


**Background Reading:**
Week 12: Tuesday 16th April.
Controlling Emotion


Background Reading:

Week 13: Tuesday 23rd April.
Social Learning of Fear


Background Reading:

Week 14: Tuesday 30th April.
Anxiety and Depression


Background Reading:

V. Course requirements and grading [subject to revision]:

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<th>The students write a review on a topic of their choice.</th>
<th>30%</th>
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<tr>
<td>Presentations</td>
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<tr>
<td>Midterm</td>
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<td>Participation</td>
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Participation in Journal Article Discussions (20%): All students are expected to participate in weekly discussions. As participation in seminar courses is of paramount importance, it is assumed that students will make every effort to attend each seminar meeting. If medical or other emergencies keep a student from attending class, an email (dm2912@columbia.edu) or phone call (212-854-3608) is required before class to explain the absence.

Presentation of Journal Articles (20%): Each student will be required to present two assigned journal articles on the assigned class meeting. Students are expected to present a “walk through” of the article’s Introduction, Methods, Results, and Discussion. During Week 1, students will be provided with examples of how these presentations should be conducted.

Midterm exam (30%): The students take a written midterm exam with short answer questions covering the material in the papers and the class discussions.

Literature Review (30%): All students are required to write an original, independent literature review. Though the topic of the review is chosen by the student, the topic will require approval of the instructor. Rather than simple regurgitation of previous studies and theories, emphasis will be on the creative thinking and theoretical advances of the paper. These literature reviews will be 10-15 pages in length (double-spaced, 1in margins), have at least 15 citations, written in accordance with the APA style guidelines, and submitted on the final day of class, Tuesday 30th April. No exceptions will be made for this deadline.