This course is an advanced seminar that will take a deep dive into theories of emotion. We will look at emotion from multiple perspectives: developmental, social and cognitive, and review and compare the major theorists from the field. We’ll then look at the body’s response and functioning during emotional reactivity — including the microscopic neuroendocrine and cellular perspectives, the brain and nervous system function, and the entire body functioning as an integrated whole. The last third of the class will look at new technologies of emotion sensing and mimicry. We will look at these technologies through the eyes of emotion psychologists and the alternative emphases they bring, relative to those offered by computer scientists. As emoting devices continue to evolve and become more an everyday aspect of our world, we will explore the potential for empirically-trained psychologists to guide and support the understanding of these developments in the general population.

Prerequisites: Psychology 52 (Research Methods)

Specific learning outcomes of this class:

1. Review critical theories in the areas of emotion, emotion physiology, and affective computing.
2. Acquire a deep understanding of how social and biological factors interact with both the design and the ecological perception of computer interfaces, games, toys, mobile devices and wearable sensors.
3. Gain the capability to imagine the role that a psychologist plays in acting as a bridge between engineers and business professionals in emerging technology.
4. Apply your understanding to a critical analysis of a topic of choice
Texts
There is a heavy reading load for this class, so class participation is highly important.

Each week, students will be asked to develop 1-3 thought statements or questions based on the readings. These will be handed in at the end of class. Since this is an advanced seminar, all students are expected to contribute during class and these questions will be used to facilitate group discussions. At least half of each 3-hour class will be organized as a discussion rather than lecture.

Additionally, each week we will review the product or service of an affective computing–based company and discuss its implications. Students will form small groups and sign up to lead these discussions.

Final Paper

You will choose a topic for your final paper about halfway through the semester, and submit a small (page or less) description.

The focus of the paper could focus on:

- An aspect of the emotional response system that you find particularly interesting. Examples of this could include, for example: Facial expressions and their similarity across cultures; response of the heart rate to emotional stimuli; the effect of a congenital condition (such as autism) on emotion regulation, or an aspect of social or developmental psychology that you have been studying.

- The company whose product you were responsible for reviewing, or another company’s product

Once you have chosen your topic, you will be asked to do one of two things:

1. You may write a theory paper that uses current, peer-reviewed empirical research. Using what you learn about Affective Computing during the second half of the semester, explain how you would approach your topic with a technological toolset. This might include the design of an experiment, including testable hypotheses and a specific method for collecting the data. If you haven’t chosen a specific product, how might you use wearable devices or another aspect of human computer interface design to test a hypothesis? Use your knowledge of quantitative and
qualitative research methods to design your research.

2. You may complete a condensed version of #1, above (with less lit review), and instead focus on the design and an actual small pilot experiment. For example, if you are interested in anxiety, perhaps you might look for an experiment in the literature and aim to replicate and pilot it with a few participants while devising a way to include or improve upon physiological correlates as an additional measure**

**Please speak with me very early on in the semester if you are interested in the project option as I’d like to work closely with you. This option may be conducted in groups of 2 or 3, but papers must be written and will be evaluated independently. I will provide access to a few different devices, however groups will need to share, so early focus on this option, again, is necessary

Papers will be evaluated on three criteria:
1. Comprehension of current theories of emotion
2. Comprehension of how engineers use technology to sense, mimic or otherwise enhance understanding of emotion
3. Your ability to use your new knowledge of computational tools to come up with an approach to studying emotion within the topic that you have chosen.

Grade:
20% Class participation
20% Weekly Homework
20% Product Presentation
40% Final Paper

READINGS

Week 1: Emotion Theory
“Introduction to Emotion Theory”


Week 2: Emotion Theory
“Emotions in Social Life”


Week 3: Emotion Theory:
“Cognitive Perspectives”


Week 4: Emotion Theory: “Emotion Regulation and Clinical Perspectives”


Week 5: Emotion Physiology “The Human Nervous and Endocrine Systems”


Week 6: Emotion Physiology “The Brain”

Week 7: Emotion Physiology: “ANS Psychophysiology: SC, HRV, and EMG”


Week 8: Emotion Physiology: “EEG and Nuclear Imaging”


(Proposals for paper/project due)

Week 9: Affective Computing: “Introduction to Affective Computing”

Week 10: Affective Computing: Affect Detection


Week 11: Affective Computing “Games and Systems That Can Learn and Respond to Emotion”


Week 12: Affective Computing: “Introduction to Wearables”

International Conference on Human-Computer Interaction, August, New Orleans, LA, 1538-1542


You are expected to be honest in all of your academic work. The University policy on academic honesty is distributed annually as section 4 of the Rights and Responsibilities handbook (http://www.brandeis.edu/studentaffairs/srsrcs/rr/RR13_14.pdf). Instances of alleged dishonesty will be forwarded to the Dean of Students Office for possible referral to the Student Conduct Process. Potential sanctions include failure in the course and suspension from the University. If you have any questions about expectations, pleas

Four-Credit Course (with three hours of class-time per week)

Success in this 4 credit hour course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (readings, papers, discussion sections, preparation for exams, etc.).