

PSYC 111 PERCEPTION (Spring 2015)

Lecture Time T,TH 9:00-10:30am
Lecture Location B21 Stiteler Hall

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Readings

Textbook: "Sensation & Perception", Wolfe et al, 4th ed. Sinauer Associates
Textbook website: "Sensation & Perception" website:
<http://sites.sinauer.com/wolfe3e>
<http://sites.sinauer.com/wolfe4e>
Miscellaneous: Posted to Canvas and/or available online
<https://upenn.instructure.com/courses/1271569>

Exams- Midterm February 12; March 19; April 16 Each midterm = 20% of grade
Final TBD Final exam = 40% of grade

Prerequisites

No prerequisites are required, except curiosity about perception.

Office hours by appointment

Office hours scheduled by appointment must be confirmed via email on the morning of the day of the scheduled appointment. If a confirmation email is not sent, the appointment will be considered canceled.

Exam review and grade disputes

The exams will be available for review in the TA's office during office hours. Exams are designed to gauge your command of the material, but are not designed to trick you. If you think an exam question was incorrectly scored or was ambiguously worded, email the TA first. The TA and instructor will consider the issue and make a decision. The request must be made within 1 week of the exam date. If the dispute cannot be resolved, I will read and re-grade the entire exam, not just the question under dispute. I reserve the right to increase, maintain, or lower your original exam grade.

Academic Integrity

You are responsible for knowing UPenn's Code of Academic Integrity. Any suspected instances of academic dishonesty will be investigated and penalized appropriately as dictated by university guidelines. Consequences for academic dishonesty can be severe. Ignorance of the code is not excuse. If you have questions or concerns, please contact me or the TA. To review http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html

Objectives:

This course will provide a thorough introduction to the scientific study of perception. Perception is the objective but fallible representation of behaviorally relevant properties of the environment based on information gathered by the senses. The perceptual systems of animals that perceive have been honed by evolution over millions of years to perform perceptual tasks that improve behavioral outcomes and further reproductive success. The ease with which we accurately perceive (i.e. represent) the world around us belies the extraordinarily powerful computations that make such representations possible. The modern study of sensation and perception draws on a wide variety of disciplines (physics, chemistry, biology, neuroscience, statistics, computer science, mathematics, and psychology). This course will focus on insights about how certain sensed physical quantities are converted into representations of objects (e.g. what that is), object properties (e.g. how big that is), object relations (e.g. how far this is from that), and events (e.g. how fast that moves). Understanding the processes underlying perception is one of the great scientific challenges of our age.

For each sensory-perceptual system (e.g. vision, audition, touch) that we study, we will discuss: i) the properties of the environment that the system represents, ii) the physical stimulus that its sensors transduce (light, sound waves, force), iii) the computations that the various stages of processing carry out, and iv) the remarkable accuracy of the resulting percepts. We will study techniques for modeling the underlying physical, biological, and psychological processes that lead to perception. We will study methods that have been devised for measuring perceptual performance. Finally, we will use the rare, sometimes spectacular, and always entertaining failures of perception (i.e. illusions) as tools for understanding particular perceptual phenomena.

The course will focus primarily on vision, reflecting the fact that vision is the best understood perceptual system. We will also spend significant time on how information is combined between the senses. In all areas, we will make an effort to discuss ongoing research in the field.

Tentative List of Topics

The Problem of Perception

Light

Visual system

Optics

Animal eyes and optical tradeoffs

Methods for measuring sensation & perception

Retina & retinal receptive fields

Visual Cortex

Spatial Vision

Mid-level Vision

Bayes' Rule

Gestalt Laws

Depth Cue Processing

Depth Perception & Cue Combination

Motion Processing

Motion Perception

Eye movements

Sound waves

Auditory System

Psychoacoustics

Auditory Cue Combination:

Localization

Visual-Auditory Cue Combination:

Ventrilloquist & McGurk Effects

Visual-Vestibular Cue Combination: