Perception (Psych 30) Course Overview
Professor Kalanit Grill-Spector

Lectures: Tues, Thurs 9:30-10:45am, 200-002
Section: TBD
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Office hours: Th 11-12pm, 420-414

Teaching Assistants:

Course Objectives
The objective of this course is to help you master the fundamental facts and concepts of perceptual psychology and sensory neuroscience. This is an interdisciplinary field of science, crossing the boundaries between psychology, biology, and engineering.

My own research is on functional brain imaging, human vision and computational neuroscience. My research uses functional brain imaging magnetic resonance imaging and computational methods to study the neural basis of visual perception and link brain activations to human perception. It focuses on understanding what are the brain mechanisms underlying visual recognition and how they change over time and with learning. During lectures I will emphasize the neural bases of the perceptual phenomena that we will be studying.

There are many other professors and graduate students on campus who are interested in the problems of perception. These people are scattered in several departments: in the Psychology Department, researchers study the neural and behavioral aspects of perception in humans, in the Computer Science Department they are developing software for computer vision, in the Medical School they study the biology of perception, and in the Engineering School they build systems for human use designed around our perceptual capabilities. If you should find yourself interested in some topic that matches my interests, or those of some other scientist on campus, I will be glad to introduce you and perhaps you can become involved in a research program. I highly recommend participating in research as an undergraduate and perhaps pursuing an honors thesis. It will give a first hand flavor of the kind of research that is done that ends up in your textbook.

I am perfectly well aware, however, that most of you will not end up doing research on perception, psychology, or neuroscience. I make an effort, therefore, to present the main concepts of perception in a way that will introduce you to how scientific research is done and to stimulate your scientific curiosity. Some of the concepts covered in this course will be useful to you in various professions that you are might pursue. For example, the physiology of animal sensory systems is of real interest to the medical community.
**Book & reading materials**

Please check the coursework site regularly for lecture notes, announcements about review sessions, exams, grading, and changes in the schedule.

During the course I will cover material in the book and material in lectures that are not in the book. Lecture slides will be uploaded on the coursework site.

**Text Book:** We will be using the book, *Sensation and Perception*, by Bruce Goldstein, 8th edition (2009). Books are available for purchase at the bookstore. 3 copies are on reserve at the Green library. Another copy of the book can be found at my admin’s office (Mrs. Erlinda Veray) 420-288. This copy can be borrowed for an hour at a time, for reading at the Psychology department lobby.

**Lecture slides:** Lecture slides accompany each topic and complement the book. For some lectures the material is additional to the book and in some lectures there is significant overlap. Each lecture begins with a list of topics you should learn, this should serve as a guideline for you for what you should study about each topic. I will upload the lecture slides before the upcoming lecture to provide you the graphic visuals that accompany each topic. This way you will not need to spend time copying graphs and illustrations, and instead write only write down lectures notes during class. Some students in the past have asked why the lecture slides do not contain more text. I find that an active learning process is much better than a passive one. Thus, after the lecture, you should review the slides, read the accompanying chapter, and fill in the text from the lecture notes, this will help you actively learn the lecture materials.

**Course Work and Grading**

During the course you will be assessed in several ways, in completing your homework, in exams (midterm and final) and in an essay explaining a perceptual illusion/phenomenon (Exploratorium essay). *Final letter grades will be determined by a curve equal to the distribution of other classes at this level at Stanford University.*

**The final grade is composed of the following components:**

- Homework assignments  20%
- Midterm exam:  25%
- Exploratorium essay  10%
- Final exam  45%

**Homework assignments:** A homework assignment consisting of about 10 short answer questions will be given every week. It will be posted on coursework. The homework will be due the following **Monday no later than 11:55pm. Deadline will be strictly enforced.** Assignments should be submitted via the coursework site. If you encounter problems with uploading the files, please contact one of the TAs. **Answers to the homework questions will be posted online after the deadline has expired.** Please check the correctness of your answers by comparing it to the posted solutions. We will randomly
grade a subset of the assignments. You need to submit on time **all the assignments** in order to receive the entire 20 points.

**Exams:** There will be one in-class midterm and a final exam. The midterm will cover material taught up to that point. The final exam will cover the entire material taught throughout the quarter.

*The exams include both material from the lectures and the book. This includes material covered in the lecture that is not in the book, as well as material from the book that was not covered in the lectures.* The on-line lecture notes (available from the stanford coursework website) are the best place to start when studying for the midterms and final. We will post example exams before the midterm and final and will conduct a review session to answer your questions before each of the exams. *Books or lecture notes are not allowed in the exams.*

**Exploratorium essay:** We will have a field trip to the SF Exploratorium to visit the exhibit “seeing” which hosts more than 200 hundred sensory illusions. The field trip is a great opportunity to have a hands-on experience with sensation and perception, beyond our obvious daily encounters. At the visit pick your favorite illusion or sensory phenomenon. In your essay you will need to explain the illusion and the mechanisms underlying it. The assignment is due on December 8th. **Note that you cannot choose an illusion that was explained in the class or is in the book. If you are uncertain, contact me or one of the TAs to approve your choice.**

**Class Rules**

**Class and Classwork:**

- Please come to the lectures and sections! I try to make the lectures fun as well as informative. Sections cover the materials from a different perspective, are oriented to problem solving and are an excellent opportunity to ask questions about topics that were unclear in lectures or the book.
- Please read the book. It is a very good textbook,
- You are responsible for material covered in the lectures even if it is not in the textbook, and you are responsible for the material in the textbook even if it has not been covered in the lectures.
- Come to class on time, and don't leave before it's over. You should have sufficient time to get to your next class.
- **Laptops are not allowed in class.** My experience is that some people use laptops to write lecture notes, others use it for various (usually social) activities and some people do both. Even if you can multi-task, you are distracting your peers who are looking over your shoulder to see what is going on your chat, youtube, facebook etc. If you have a learning disability that necessitates using a laptop please come meet with me during my office hours.
- Please ask questions during class. I will try to stop every once in a while to make sure that everyone is with me, but sometimes I move too quickly. It is your
responsibility to ask a question, if only to slow me down. Please don't worry about asking a "stupid" question. Chances are that other students in the class are also confused. Asking a question shows that you're thinking. Believe me, I've asked plenty of bone-headed questions over the years.

Office Hours
• It is preferable if you email me before office hours and schedule an appointment. You can also drop in during office hours without scheduling in advance, but know that the people who have scheduled in advance will be given priority. If nobody is signed up, I may be out of my office for short periods of time, e.g., working with graduate students down the hall, but I'll check back every 15 minutes or less. So if you come by and I'm not here, just hang out for a few minutes.

• The TAs and I have set up a generous schedule of office hours for the entire quarter, every week. Please come see us regularly throughout the quarter. We will also offer a review session before each exam. In the days before an exam, we will be available at our usual office hours.

Exams
• Check the schedule for the final exam and make your travel plans accordingly. If you are on a sports team that will be traveling during one of the exam dates, you need to contact me well in advance to take the exam on the road.

• If you think your exam has been graded incorrectly, submit a written explanation along with your exam to one of the teaching assistants. *This needs to be submitted within 48 hours after the graded exam has been returned to you.*

Other Courses
After taking this course you may find that you want to learn about some of this material in more detail. Here is a partial list of related (perception, cognitive and neuroscience) courses offered at Stanford:
• Biosci 20, Introduction to Brain and Behavior (formerly Psych 20)
• Psych 50, Introduction to Cognitive Neuroscience
• Psych 120, Cellular Neuroscience.
• Psych122S, Introduction to Cognitive and Comparative Neuroscience
• Psych 202, Cognitive Neuroscience (graduate level)
• Psych 204a, Human Neuroimaging Methods (graduate level)
• Psych 204b, Computational Neuroimaging (graduate level)
• Psych 221, Applied Vision and Image Systems (graduate level)
• Psych 250, High level vision (graduate level)
• Neurobiology 206, The Nervous System (graduate level)
Other Reading:
For those of you interested in additional general reading, the following books are all very good:

- Kuffler, Nicholls, and Martin, *From Neuron to Brain*, Sinauer.