

**Perception (PSY 323)**  
**Fall 2009**

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**Course Description**

This course will provide students with an introduction to the study of sensation and perception.

Perception is the active process by which organisms extract information from their surroundings. Casually, we tend to think of perception as an "automatic" process, e.g.: "You just look at something and you can see what it is, where it is, how it's moving, etc." However, what seems "easy" to us is in fact the result of an exquisitely sensitive sensory system working in concert with powerful computational machinery housed in the brain, spinal cord, and peripheral nervous system. Our perceptual faculties have been honed by evolution over many millions of years. A central focus of this course will be to examine how these sensory systems work and why they are so impressive. Though we tend not to realize it, we are all perceptual virtuosos; the average 5-year-old can easily out-perform the world's most powerful supercomputers at recognizing faces or comprehending speech.

The study of perception has a long history, spanning the disciplines of philosophy, physics, chemistry, biology, neuroscience, mathematics, computer science, statistics, and psychology. We will conduct a survey of results and insights provided by a wide variety of these disciplines. Students will be expected to have a solid grounding in the basic sciences and good intuition for elementary mathematical ideas. We will study the physical media (e.g., light, sound waves) that underlie sensation, and the biological and psychological processes by which the information provided by these media are converted into "percepts". We will study vision, audition, somatosensation (touch), olfaction (smell), taste, and a smattering of other sensory systems. (Whoever said there were only five senses!). At least half of the course focuses on vision, reflecting the fact that it is the longest-studied and (arguably) best-understood sensory modality.

Perceptual science is still very much in its infancy; there are vast tracts of unexplored territory. For many perceptual phenomena, we have only rudimentary sketches of the underlying mechanisms, but we will explore open problems and active areas of research.

## **Textbook**

*Sensation & Perception, 2nd ed.* Wolfe, J.M., Kluender, K.R., Levi, D.M., Bartoshuk, L.M., Herz, R.S., Klatzky, R.L., Lederman, S.J., and Merfeld, D. M.. Sinauer Associates, 2009.

## **Course requirements and grades**

### **Regular Exams**

(A) Three exams and one comprehensive final will be given. Final grades will be based on the highest three of the four grades. Thus, if you are happy with your grade after the first three exams, there is no need to take the final. Early, late or make-up exams will not be given without an extremely compelling excuse that is fully documented in writing. In most cases, we will end up agreeing that the (otherwise optional) final should serve as the make-up exam.

Material from lectures *and* from the assigned readings will be covered in the exams and final. Exams are multiple choice.

(B) This course satisfies a Science requirement for many students. If you want to do well on these exams you will have to work hard in this course. It will require significant investments of time and effort. You will need to know all of the material presented in the textbook (the assigned readings), and all of the material presented in the lectures. A cursory review of this material a few days before the exam will most likely not suffice for a passing grade. This is a Science course and the material is difficult. Please do not expect easy exams.

(C) You will not be permitted to wear hats with a brim during the examinations. Be sure to bring your UT Identification Card with you to the exams and be prepared to show this card. Bring your own pencil; we will bring the scantrons.

### **Optional-Final Exam**

The final exam is optional, not required. If you take all three regular exams and are content with your grade (based upon these three exams), then there is no need to take the final exam; your semester is over! If, however, you are not content with your grade and you would like to attempt to raise it, you will be allowed the opportunity to take a comprehensive final examination (covering all of the readings and the lectures). This exam is essentially a long version of the regular exams, but is comprehensive. For many students, this is a golden opportunity to demonstrate knowledge they have acquired. You will be given the full three hours to complete the exam, if you feel you need this time. If you should elect to take this optional final examination, then your final grade will be based upon the average of the highest three exam scores. In other words, if you have taken all three regular exams and the final, then the low grade will be dropped. The date, time, and place for this examination is determined by the University and will be posted by the University. Note that this exam cannot be administered early, or late, for any reason.

## **Final Grades**

The final grades will be normalized (ie, "curved") to the highest student's total grade.

Letter grade cutoffs are as follows: **A**=93-100, **A-**=90-92, **B+**=87-89, **B**=83-86, **B-**=80-82, **C+**=77-79, **C**=73-76, **C-**=70-72, **D+**=67-69, **D**=63-66, **D-**=60-62, **F**=below 60.

The total score will be rounded to the nearest decimal, e.g., 89.5% = 90%, 89.4% = 89%. No hand adjustment of these thresholds will be made once the curve is set by the highest score.

## **Exam review and grading disputes**

The exams will be available for review in the TA's office during her or his office hours. If you have a question about the grading or an exam item, please consult with the TA and then contact Dr. Pillow if necessary. Credit will be given for exam items that are clearly wrong or misleading, but students bear the responsibility of understanding concepts and vocabulary as discussed in the text and in class.

## **Other Information**

### **Class Participation**

Learning (like perception itself) is an active process. Students are strongly encouraged to attend lectures and to ask questions. (This will keep both students and instructor from falling asleep!) The goal of this course is not so much to convey a set of facts as to introduce a discipline and its preferred methods of inquiry. One of the goals of the lectures will be to interrogate the facts and ideas presented in the textbook.

### **Companion website**

The textbook has a companion website with overviews, study aides, additional information, and essays on select topics, as well as some nice demonstrations of perceptual illusions. Please take a look at this site; as it provides a nice supplement to some discussions contained in the book: <http://www.sinauer.com/wolfe2e>

### **Phones**

Please silence your phone before class and then leave it in your pocket, backpack, or purse for the duration of the class period.

## **Students with Disabilities**

The University of Texas at Austin provides, upon request, appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY.

## **Pre-requisite information**

Psychology Majors:

- PSYCHOLOGY 301 and 418 (with grade of C or better)
- plus upper-division standing

Non-Majors:

- PSYCHOLOGY 301 (with grade of C or better)
- At least one of the following (with grade of C or better):  
BIOLOGY 318M, CIVIL ENGINEERING 311S, ECONOMICS 329, EDUCATIONAL PSYCHOLOGY 371, GOVERNMENT 350K, MATHEMATICS 316, PSYCHOLOGY 317, SOCIOLOGY 317L, SOCIAL WORK 318, STATISTICS 309.

## Tentative Course schedule:

<u>Week</u>	<u>Lecture Topic</u>	<u>Reading</u>
1	Introduction / Overview	Chap. 1
2	Intro: Philosophy & Basic Methods	Chap. 1
	Light, Optics, & Early Vision	Chap. 2
3	Retina & Receptive Fields	Chap. 3
	Visual Cortex & Spatial Vision	Chap. 3
4	Mid-level vision	Chap. 4
	Object Recognition	Chap. 4
5	Exam 1 (9/22)	
	Color Vision I	Chap. 5
6	Color Vision II	Chap. 5
	Space & Depth Perception	Chap. 6
7	Bayesian Theories of Perception	Chap. 6
	Motion Perception	Chap. 7
8	Attention & Scene Perception I	Chap. 8
	Attention & Scene Perception II	Chap. 8
9	Exam 2. (10/20)	
	Intro to Sound & Hearing	Chap. 9
10	Psychoacoustics	Chap. 9
	Auditory System I	Chap. 10
11	Auditory System II	Chap. 10
	Music	Chap. 11
12	Speech Perception	Chap. 11
	Somatosensation I	Chap. 12
13	Somatosensation II	Chap. 12
	Olfaction	Chap. 13
14	Exam 3. (11/26)	
	--- Thanksgiving ---	
15	Taste	Chap 14
	Position Sense & the Vestibular System	Chap 15
TBA	Final Exam (cumulative)	