Study Guide for the final examination (Wednesday, 4 May 2011, 16:30–19:00). Be able to answer the following questions and be familiar with the concepts involved in the answers. Review your homework and lab assignments and be familiar with the concepts included in them as well.

1. Draw a diagram of the eye including the following structures: cornea, lens, pupil, iris, sclera, aqueous humor, vitreous humor, choroid, retina, fovea, optic disk and optic nerve.

2. Offer an explanation of the Hermann Grid phenomenon based on ganglion cell receptive field characteristics. Why is this explanation insufficient?

3. What happens to contrast sensitivity and visual acuity as illumination goes down? Why is 3.2 Lux, the illumination level at the end of civil twilight, used as a rule-of-thumb reference level for the lower limit of practical visual performance?

4. Discuss the evidence that our color vision is based on three different types of cone receptors.

5. What are the major types of color defective vision and what are their causes? What kind of color experiences might a deuteranope have? Why

6. What is retinal disparity? How much disparity do you need for normal stereoscopic acuity?

7. Describe the "size/distance" (size constancy) hypothesis of certain visual illusions. Pick two such illusions and explain them in terms of this hypothesis.

8. A photograph is reproduced on a flat piece of paper. While you are viewing it, what could you do to enhance the impression of depth in a photograph? What are the basic principles?

9. What do the McCollough effect and the spiral aftereffect have in common? What implication does the latter have for understanding motion perception?

10. Discuss two examples of our limited capacity to process information around us. Give an example of change blindness, inattentional blindness and the attentional blink.

11. What happens when you attempt to move your paralyzed eyes to the right? Explain the phenomenon in terms of Erik von Holst's "Reafference Principle" (*Das Reafferenzprinzip*).

12. Consider the **functional** properties of the visual system and the auditory system such as localization, object identification, basic sensory experiences. Discuss two ways in which these systems are similar and one way in which they are different.

13. There have been several recurrent themes about perceptual processing in this class. Pick one of these themes and discuss how it applies to two sensory systems of your choice by comparing and contrasting them with each other.

Psychology of Perception
Psychology 4165-100
Spring 2011

Lewis O. Harvey, Jr.–Instructor
Clare E. Sims–Assistant
09:30–9:45 TuTh

Study Guide for the first examination (Thursday, 3 March 2011, 19:30–22:00). Be able to answer the following questions and be familiar with the concepts involved in the answers. Review your homework and lab assignments and be familiar with the concepts included in them as well.

1. Define hit rate and false alarm rate. Describe the receiver operating characteristic (ROC) predicted by the High Threshold Model and by the Signal Detection Theory of detection. How do you compute sensitivity (d′) from the hit rate and the false alarm rate for the equal-variance dual-Gaussian signal detection model? (Memorize the formula).

2. Using the concepts in Lab 1, draw a psychometric function illustrating discriminating lighter and heavier weights from a standard weight. Be sure to label the axes. Indicate on the graph how the discrimination threshold (i.e., the Just Noticeable Difference) is defined. What is the relationship between the threshold as a point on a psychometric function and threshold as a theoretical concept?

3. Using the concepts in Lab 2, illustrate a signal detection model describing recognition memory performance for familiar faces (s1) and unfamiliar faces (s0). Let s0 have a mean of 0.0 and a standard deviation of 1.0. Let the distance between the two means be about 1.5. In the illustration place two response criteria corresponding to three response categories about whether or not you have seen the faces before: "no," "not sure" and "yes."

4. Describe how you measure the two-point threshold. How do somatosensory receptive fields, inferred from the two-point acuity thresholds, differ on different parts of the body?

5. Be able to identify the major components of the olfactory and the gustatory systems (don't include the projections to the brain): taste bud, papillae, olfactory epithelium, tongue, cribiform plate, olfactory bulb, glomerulus, turbinate bones, olfactory receptor, and olfactory nerve.

6. Discuss the relationship of taste and smell perception to the physical properties of the stimulus molecules.

7. What is the distinction between taste and flavor? What role does the sense of smell play in the taste and the flavor of food?

8. What is the definition of a pheromone? Discuss two pieces of evidence that humans are able to communicate with each other by means of chemical stimuli.

9. Diagram the three parts of the auditory system: Outer, middle and inner ear. How is sound mapped onto the basilar membrane? Know these terms: pinna, concha, external auditory canal, tympanic membrane, maleus, incus, stapes, semicircular canals, oval and round windows, cochlea, basilar membrane, organ of Corti, Eustachian tube, inner, outer hair cells.

10. What are the three main physical dimensions of the sound stimulus? What are the three main psychological dimensions of the sound experience? What are the relationships and interdependencies among them?

11. What is the critical band? Describe three different methods for measuring the critical band.

12. According to Plomp and Levelt (1965), how far apart in frequency must two sine wave tones be in order to sound maximally unpleasant (dissonant)? Why do some musical notes (e.g., the octave or the fifth) sound consonant when played together with the tonic while some other notes (e.g., the second or the seventh) sound dissonant when played with the tonic?

13. What are the three main components of the speech production system? What factors determine the frequency of the first and second formants? What determines the pitch of a speech sound?