

PSYC 215, Winter 2013

- survey the methods that are used to study sensation and perception,
- trace the functional and anatomical organization of the different sensory modalities, from sensory transduction and signal transmission, through stages of information processing, to perception.

We will cover the basic principles involved in seeing and hearing, in touch, taste and smell. Many principles are common to more than one sense domain, and commonalities will be emphasized whenever possible. Throughout, we assume that the goal of perception is behaviour. Perception is our only means of extracting information from the environment, allowing us to experience the discrete objects, people and events “out in the world” that drive our behaviour.

I hope that you will appreciate at the end of the course the fascination of a field that has puzzled philosophers and scientists alike over the centuries, as it is at the centre of one of the most important questions we can possibly ask: Who are we and what can we possibly know about ourselves and the rest of the world?

Textbook

We will be using a text book by George Mather from the University of Sussex in the UK: Foundations of Sensation and Perception. The book is shorter than many other texts, but very concise and well written. It doesn't come with many bells and whistles, but it's got everything that is important. Also, it comes at a very competitive price. Some of the other books I have used in the past cost twice as much.

We will cover chapters 1 through 12, one chapter each week. Contents from the last two chapters may appear here and there, but we don't cover them systematically.

Every chapter consists of a main text and a supplementary tutorial. Please read the main text **BEFORE** class. That way you will benefit much more from the lectures, you'll do well on the quizzes. An in-

you have read the material, the more interesting questions you will have. Ask them! The class is too big to have an interactive discussion, but you can post your questions online and I will try to address them in class. Before you post your own question, though, please read through the list of already posted ones. Someone else might have asked your question already. If that is the case you can indicate your interest in the question by tagging it with your “Vote”. The system will count all votes and will use the count to rank the questions with respect to interest and relevance.

The earlier you post your question the more likely it is that it will be read and voted for by others in the course. Also, if you find a questions already posted that is close to what you wanted to ask, it might be wise to tag that question rather than formulating your own, because that will increase the total count rather than distributing it over two different questions. However, you can tag each question only once.

For each week (and each chapter) you can post your questions until Tuesday night. The earlier you post them the more time I have to prepare responses and address them in class.

The system is available to you at <http://www.biomotionlab.ca/psyc215/questions/>

you will be working on your first group project. Assignment to a group is random, so don't expect to be with your good old friends. Rather expect to make new ones. Once the first assignment is completed, we'll re-shuffle and you will then work on a second group assignment with another group.

For both projects, you will be presented with a perceptual phenomenon in class. You will then be asked to write a report (maximum 8 pages, double spaced, not including references and figures) about it. The report should:

- a) identify and describe the demonstrated phenomenon and the problem/question that it represents,
- b) come up with a reasonable hypothesis to explain the phenomenon, and
- c) suggest an experiment to test this hypothesis.

Please look at more detailed instructions in the section Group Projects below.

Key dates for group projects:

- Mon, Jan 21 Demonstration for Project 1
- Mon, Feb 4 Project 1 and assessment forms due
- Mon, Feb 25 Demonstration for Project 2
- Mon, Mar 11 Project 2 and assessment forms due

Each of the two group projects contributes 16% to your final mark for a total of 32% for the group projects. Most of your mark on each assignment comes from the group mark on the assignment, but peer-assessment of your participation in the group may also be considered.

Quizzes (18% of final mark)

We will have short quizzes in every class. We don't want to spend too much time on them and therefore, they all have a multiple-choice format so that we can use the iClicker system.

In our Monday lecture, the quiz will be at the beginning of the class. Questions refer to the contents of the main text of the chapter that we will cover this week, but they will be relatively general. In our Wednesday class, the quiz will be at the end of class, and questions will be a bit more specific, referring to both -19.465 -1.165 herpao7ciddi andal both -19. chapI thdu will be pcipatioh ontents of your final meour finecifeo th spaxpect to mn tl ofit(i)-1.- ouT ofeothduith yp withtl of2914.5ecifr) aHowizze,tim rea

extra marks if you are up for it. I will also appreciate your involvement with the Moodle Discussion group and the Questions site (see above) by giving extra marks to the ones who contribute regularly.

Marking Scheme

The two group projects and the essay questions in the final exam will be marked using letter grades. Everything else initially gets a numerical percentage mark. For purposes of calculating your course average the letter grades of the parts will be translated into numerical equivalents using the Arts & Science Letter Grade Input Scheme:

something that is odd. What is it? Describe it and include the necessary details while omitting irrelevant information, so that the essence of the phenomenon is accurately presented. Try to describe the perceptual phenomenon in such a way that someone who has not witnessed it understands what you are talking about.

2. *Develop a testable hypothesis to 'explain' what you observe.*

Your explanation doesn't have to be correct. However, it should make sense in terms of what you have learned about sensation and perception (both specific facts and general principles), and it should be plausible. Your explanation should also be testable – you should be able to think up an experiment that could, in principle, disprove your explanation.

3. *Design an experiment that could either test or disprove your proposed hypothesis.*

Don't worry too much about technical details like number of participants, number of trials, statistically methods, etc. Rather concentrate on the logic of your design. What do you present to the participants? What are the independent variables (that is, what do you manipulate)? What is the dependent variable (that is, what exactly do you measure)? Critically assess what the outcome of your experiment can tell you. What outcome do you expect? Will the experiment be able to prove your hypothesis? Will it be able to disprove alternative explanations?

Do not write more than 8 double-spaced pages (not counting references and figures). Eight double-spaced typed pages is not a lot of space, so it is important to be concise, and only convey the most important information. Sorting out the important stuff from the details is part of the challenge!

Please format your paper into three distinct sections as indicated above. On the other hand, make sure you turn in a coherent paper rather than independent sections that individual members of your group wrote independently. You have to work on this as a group.

Example: Let's say we show you a demonstration of the Zöllner Illusion (e.g. <http://www.ritsumeai.ac.jp/~akitaoka/zollnere.html>). In the first part of your paper you would describe the drawing (horizontal, parallel lines superimposed with oblique shorter lines which intersect the long ones), and you would clearly identify the perceptual conflict apparent in this illusion: While you can verify with a ruler that the horizontal lines are clearly parallel they don't look parallel at all! In the second part you would reason about why this might be the case. You might connect it to contrast enhancement phenomena we talked about in class: Maybe the difference in orientation between the long and the short lines appears to be larger than it really is? You might have learned already about orientation tuning of V1 cells and about the phenomenon of lateral inhibition and may be able to connect the two. Finally, you'd think about an experiment that could test your hypothesis. If it is correct, how would the strength of the illusion depend on the angle between the vertical and the oblique lines? How would you design an experiment that would measure the strength of the illusion depending on the angle?

Other information

iClicker

For the weekly quizzes and for occasional polls and short experiments in class, you need an iClicker. If you don't have one yet, you either have to purchase one from the campus computer store (about \$40), or you may be able to borrow one from the Department of Psychology. Bring a \$30 cash deposit and

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ask for Carmen Costa or Marie Tooley in the General Office. Make sure you bring your iClicker to

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Class Schedule

Date	Chapter	Assignments
Mon Jan 7	1: General principles	
Wed Jan 9		
Mon Jan 14	2: Chemical senses	
Wed Jan 16		
Mon Jan 21	3: Body senses	Project 1 demo
Wed Jan 23		
Mon Jan 28	4: Physics and biology of audition	
Wed Jan 30		
Mon Feb 4	5: Perception of sound	Project 1 due
Wed Feb 6		
Mon Feb 11	6: Physics of vision – light and eye	
Wed Feb 13		

Reading week: Feb 18 – 22

Date	Chapter	Class	Assignments
Mon Feb 25	7: Visual physiology	Questions	Project 2 demo
Wed Feb 27		Lecture	
Mon Mar 4	8: Spatial vision	Questions	
Wed Mar 6		Lecture	
Mon Mar 11	9: Shape and object perception	Questions	Project 2 due
Wed Mar 13		Lecture	
Mon Mar 18	10: Depth perception	Questions	
Wed Mar 20		Lecture	
Mon Mar 27	11: Motion perception	Questions	
Wed Mar 29		Wrap-up	
Mon Apr 1	12: Colour vision		
Wed Apr 3			