

PSYC 215, Winter 2013

EXPERIMENTAL PSYCHOLOGY: PERCEPTION

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(check occasionally for newer versions)

Contact Information

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Lectures:	Mon 4:00 – 5:30 and Wed 2:30 – 4:00
Location:	Kingston Hall, Room 101

Calender Description

The course introduces sensory information processing and perception as well as the methods required to study the complex relations between the physical world of light and sound, and the subjective experience of objects and events. Topics include a short history of the field and a summary of the methodology of psychophysics, which is then followed by a thorough discussion of the mechanisms underlying touch, somatosensation, the chemical senses, hearing, and vision.

Course Objectives

This course is an introduction to how we make sense of sensory input – our only source of information about the world. We will

- explore how sensation differs from perception,
- investigate different theoretical traditions that have attempted to account for perceptual phenomena,

- 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-depth understanding of the main text is required to go into the final exam, too.

The tutorials are worth reading as well. They help you consolidating the contents of the main text and often make interesting connections and add interesting twists to the material.

You need your own copy of the text book. You have to buy it new or used. The campus book store also rents out copies of the book. There is no way you can master the course without your own copy of the text.

I also suggest to make use of the additional online material the publisher of the text provides to us. You find summaries of the chapters, a glossary of keywords, and other study material. Specifically, you find examples for multiple choice questions, fill-in-the-blanks questions and essay questions. These ones are worth studying as I will use them as a resource for our quizzes and also for the final exam.

To access the online material you first have to register with the publisher of the book:

- Navigate to <http://psychology-textbooks.com/login/index.php>
- Click on 'New Account' and use your Queen's email address to register.
- Once you get the confirmation email, go to the link they send and log in.
- In order to access the course you have to enter your enrollment key, which is “queens”

Questions

After you have read the assigned text book chapter carefully you may have questions. The more careful

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 have to supply your student number which the system uses to keep track of your questions and votes.

News and Discussion group

You will find two different forums on our Moodle site. The “News” forum I will use to distribute information to the whole class. Everyone is subscribed and every post gets forwarded to your Queen's email address, too.

I will also set up a “Discussion” group on our Moodle site which you may use to communicate between participants of the course. Use it to ask questions that others might be able to answer or to post remarks, links, etc. that others might be interested in. This group you have to actively check. You can also configure it such that post are forwarded to your email account. By default, however, that is not the case.

Lectures

I will NOT simply replicate the contents of the book in class! The book is well written and you are all experienced, inspired, mature students. I expect you to read through each week's chapter – at least the main part of the chapter. You benefit most from my classes if you read through the text BEFORE you come to class.

I will generally use the first class of every week to summarize the contents of the book chapter and to clarify things that you asked about it or that I thought they weren't presented well enough. The second session we will use to provide background material and to add material not covered in the main text. Some of it will refer to the book's “tutorials” but other material may not be mentioned in the book at all. You have to come to class and you have to take notes. Your book will be a great resource but if you don't come to class chances are you fail the course.

Evaluation

Two Group Projects (16% of final mark each; total 32%)

At the end of week 2, you will be assigned into groups of three or four students together with whom

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 the contents of the chapter and additional contents that I had presented in the two classes of that week.

Each individual quiz contributes 1% to your final mark. If you miss a quiz you cannot make up for it, even if you had good reason for missing it. However, only the 18 best ones will count, the rest you can miss or you can mess them up with no consequences for your final mark. Quizzes will be short (typically 7 questions). The whole quiz doesn't take more than 5 min. Specifically on Mondays, when we will have a quiz at the beginning of class, it is important that you arrive on time.

Make sure to bring your iClicker to class.

Final Exam (50% of final mark)

The final exam will cover all 12 weeks of the course. It will comprise:

- 50 multiple-choice, true/false, and fill-in-the-blank questions
- five short answer questions (out of 6)
- two essay questions (out of 3)

Extra marks

I will provide you with little tasks and competitions here and there which allows you to earn a few

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:

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F+	F	F-
93	87	82	78	75	72	68	65	62	58	55	52	48	24	0

The final course average will then be converted back to a final letter grade according to Queen's Official Grade Conversion Scale:

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
≥ 90	85-89	80-84	77-79	73-76	70-72	67-69	63-66	60-62	57-59	53-56	50-52	≤ 49

Group Projects

These projects encourage you to really think about perception – mostly your own perception. Essentially, you will be analyzing ‘magic tricks’ that your perceptual apparatus plays on you, that normally you might take for granted, and not even notice. There are two such projects – for the first one, you will be given a perceptual phenomenon in class, and for the second, I will also give you a few in class to choose from, but you also have the option to come up with one on your own. In that case, you have to contact the instructor of TA before you make any decisions.

You will be assigned to a group in the second week of class. You are responsible for arranging meetings as a group. **I strongly encourage you to meet regularly at scheduled times** in order to work on the two projects. Almost no classes or labs run between 5.30 and 6.30 at night, or after 9.30 at night – these may therefore be good times to meet. I would also encourage you to use the group as a place to raise questions, identify challenging problems, explore the course material, and prepare for the final exam.

You will be asked to evaluate your own work in the group, as well as that of your peers. All assessments are kept **confidential!** The aim is to ensure that everyone participates in the group activities, and also to help you think about your own part in the team. The assessment forms will be available on the course site. These forms are due on the same day as the assignments but we encourage you to hand them in individually (ie, separate from the group assignment), so that confidentiality may be preserved.

Each project has three parts:

1. Describe the phenomenon.

An essential ingredient to the study of Sensation and Perception is the ability to accurately identify an interesting observation. Most interesting phenomena provide some kind of conflict,

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

ask for Carmen Costa or Marie Tooley in the General Office. Make sure you bring your iClicker to class or otherwise you cannot participate in the quizzes.

All iClickers have to be registered to their student before we can use them. Once you have your iClicker, registration can be easily done online at <http://iclicker.com/registration>. It's a quick and easy process whereby the you must enter your Queen's student number and the iClicker's serial number, which is found on the rear of the remote.

Missed or late assignments

Missed quizzes will not be repeated. If you bring valid documentation from a health professional, funeral home, coach of sports team, etc. we can add the percentage of a missed quiz to the remaining ones. Note, that we evaluate only the 18 best of the 23 quizzes anyway.

Please see the professor or a teaching assistant AS SOON AS POSSIBLE if you are unable to complete work so that we can talk about it. In general, work that is not handed in on time will receive a mark of zero.

Request for academic accommodation

If you need academic accommodation for the final exam or special class room arrangements please visit Queen's Disability Service at <http://www.queensu.ca/hcds/ds/students/accommodations.html>

Important dates

- Jan 7: First class
- Jan 18: Last date to add or drop class without financial penalty
- Feb 18 – 22: Reading week
- March 1: Last date to drop class without academic penalty
- April 3: Last class

Academic integrity

Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility (see <http://www.academicintegrity.org>). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate Report on Principles and Priorities at <http://www.queensu.ca/secretariat/policies/senateandtrustees/principlespriorities.html>).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see Academic Regulation 1 <http://www.queensu.ca/artsci/academic-calendars/2011-2012-calendar/academic-regulations/regulation-1>), on the Arts and Science website (see <http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity>), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Copyright of Course Materials

This material is copyrighted and is for the sole use of students registered in PSYC 215. This material shall not be distributed or disseminated to anyone other than students registered in this course. Failure to abide by these conditions is a breach of copyright, and may also constitute a breach of academic integrity under the University Senate's Academic Integrity Policy Statement.

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			