

# PSYC\*2390, Course Outline: Winter 2016

## General Information

**Course Title: Sensation and Perception**

### **Course Description:**

This is a challenging course that begins with a discussion of how perception is measured and then moves on to a discussion of the physiological mechanisms of perception as well as illusions, perceptual anomalies, and deficits. The focus in this one-semester course will primarily be on vision and hearing, the two senses that we know most about. *Content objectives:* Everyone has a sensory system. This course will teach you how the sensory systems works and what can go wrong it, how it affects performance, and how it changes with age. You will learn how the nervous system works as it relates to perception and you will also learn how to measure perceptual sensitivity and discrimination. You will also learn some practical information that you may find useful in your day-to-day life which will enable you to recognize symptoms of selected perceptual disorders or understand how the principles of perception can be used by artists, sales-people and human factors engineers. *Process objectives:* Critical thinking skills (learning to use to evidence to evaluate the truth of statements), quantitative skills (interpreting graphs, tables, and the mathematical formulas related to the laws of perceptual performance, applying measurement techniques), listening skills (learning through listening, learning to determine what is relevant “on the fly”, note taking, learning to know how to recognize when your notes are inadequate and need “fixing up”, assertiveness skills to ask for clarification), writing skills (learning how to explain complex and abstract principles in your own words, in a clear and jargon-free manner, using concrete examples, diagrams, graphs, etc. as needed, using an outline to ensure ideas are presented in a clear and logical order).

**Credit Weight: 0.5**

**Academic Department (or campus): Psychology University of Guelph campus**

**Semester Offering: Winter 2016**

### **Class Schedule and Location:**

Schedule: Tuesday, Thursday 11:30 am – 12:50 pm

Location: MACN 105 (MacNaughton Room 105)

## **Instructor Information**

Instructor Name: Lana Trick

Instructor Email: [ltrick@uoguelph.ca](mailto:ltrick@uoguelph.ca)

Office location: MacKinnon Building (new extension) Room 4003

Office hours: Tuesday, 1-3 pm, Wednesday, 12 - 2 pm or \*by appointment

## **GTA Information**

GTA Names and Emails: Elizabeth Infante ([einfante@uoguelph.ca](mailto:einfante@uoguelph.ca)), Pietro Paletta ([ppaletta@uoguelph.ca](mailto:ppaletta@uoguelph.ca)), Thomas Horman ([thorman@uoguelph.ca](mailto:thorman@uoguelph.ca))

GTA office location and office hours: By appointment only

## **Course Content**

### **Specific Learning Outcomes:**

Specific process and content outcomes for the course.

On successful completion of this course, students will be able to do the following:

1. Measure perceptual sensitivity and discrimination using the classic techniques of psychophysics and signal detection and present the data in the form of tables or graphs.
2. Interpret formulas, graphs, and tables that present information about perceptual abilities. Interpret circuit-diagrams that display how neurons code information in the brain.
3. Describe the psychophysical laws of perception in their own words and explain what they mean in terms of day-to-day performance in simple jargon-free language, using concrete examples of their own creation. Differentiate between perceptual sensitivity and decision processes (response bias) and indicate how each is represented in signal detection theory.
4. Describe the processes involved in sensory processes and perception, starting from those involved in changing energy from one form to another (transduction) to interpretation of the information. Indicate the structures in the body and the brain that are involved in the process and describe what each structure does. Explain the basis of individual differences in perception.
5. Identify the weak points in the system, that is, places where the senses produce inaccurate information (illusions) that may have impacts on day-to-day performance.
6. Recognize the symptoms of selected perceptual disorders and indicate the effect the disorder has on performance in day-to-day tasks. Students will identify the disorder and the affected structure and indicate what can be done to prevent or alleviate the condition.

7. Indicate the basis of age-related changes in perception and what this means for performance in day-to-day tasks.

8. Specify ways in which movie-makers, artists, sales-people, and human factors engineers may apply the principles of perception in order to accomplish their various tasks.

These outcomes are evaluated on exams but these skills are developed in the worksheets.

Generic objectives for the course

1. Communication skills: Writing (explaining complex abstract processes in simple jargon-free language, and using diagrams, graphs, and concrete examples as well as an outline to ensure ideas are presented in a logical order). Listening (note-taking: taking in complex information “on the fly”, determining what is important and noting it down).

2. Critical thinking skills (evaluating arguments using evidence)

3. Quantitative skills (interpreting formulas and graphs)

### Lecture Content:

The table below lists the content of the lectures and the associated readings from the text. Please note that these dates are tentative. Although exam dates and deadlines will not change, it is possible that it may take more or less time to cover the various topics in a given year. In the event that we get off schedule, please see the class website (Courselink D2L) to see the readings required for a given exam.

Date	Content	Text materials (Goldstein, 2015. Second Custom Edition).
<p>Jan 12, 14 (Be sure to attend. Lectures start on the first day because we will be having the first exam on Jan 28)</p> <p>Top Hat practice (before the official beginning on Jan 14)</p>	<p>Introduction to Perception Review: Understanding and measuring the neural basis of perception (the action potential)</p> <p>Measuring Perception Introduction to Vision</p>	<p>Chapter 1</p> <p>Appendix on Signal Detection (pp. 395-400)</p>

Jan <b><u>19, 21</u></b>  Top Hat in-class exercises each day (Jan 19, 21)	Measuring Perception  Introduction to Vision  *In-class exercise ( <b>T1, T2</b> )	Appendix on Signal Detection (pp. 395-400) Chapter 2
Jan 26, <b><u>28</u></b> *	Introduction to Vision  * <b>Exam 1:</b> Jan 28	Chapter 2
<b>Feb 2, 4</b>  Top Hat in-class exercises each day (Feb 2, 4)	Neural Processing and Perception  *In-class exercise ( <b>T3, T4</b> )	Chapter 3
Feb <b><u>9, 11</u></b>  Top Hat in-class exercises each day (Feb 9, 11)	Cortical Organization  *In class exercise Top Hat ( <b>T5, T6</b> )	Chapter 4
READING WEEK Feb 15-19		
Feb <b><u>23, 25</u></b>  Top Hat in-class exercises each day (Feb 23, 25)	Perceiving Colour  *In class exercise Top Hat ( <b>T7, T8</b> )	Chapter 9
Mar <b><u>1, 3</u></b>  Top Hat in-class exercises each day (Mar 1, 3)	Perceiving Depth and Size  *In class exercise Top Hat ( <b>T9, T10</b> )	Chapter 10
<b>Mar 8, 10*</b>	Perceiving Depth and Size  * <b>Exam 2:</b> Mar 10	
Mar 15, 17  Top Hat in-class exercises (Mar 15, 17)	Perceiving Objects and Scenes  *In-class exercise Top Hat ( <b>T11, T12</b> )	Chapter 5
Mar <b><u>22, 24</u></b>  Top Hat in-class exercises each day (Mar 22, 24)	Perceiving Motion Hearing  *In-class exercise Top Hat ( <b>T13, T14</b> )	Chapter 8  Chapter 11

Mar <b><u>29, 31</u></b>	Hearing Auditory Localization and pathways  *In-class exercise Top Hat <b>(T15,T16)</b>	Chapter 11 Chapter 12 to page 303
Apr 5, 7	Cutaneous Senses OR Chemical Senses (based on Class vote).	Chapter 12 to page 303 Chapter 14 OR Chapter 15 based on class vote
<b>Saturday, April 15, 11:30 am – 1:30 pm *</b>	Final Exam*	

**Labs: None**

**Seminars: None**

**Course Assignments and Tests:**

<b>Assignment or Test</b>	<b>Due Date</b>	<b>Contribution to Final Mark (%)</b>	<b>Learning Outcomes Assessed</b>
Worksheet 1	Jan 27	0%	Specific: 1-7 Generic: 1-3 Study tool for Exam 1
Exam 1	Jan 28	28%	Specific: 1-7 Generic: 1-3
Worksheet 2	Mar 9	0%	Specific: 2, 4-8 Generic: 1-3 Study tool for Exam 2
Exam 2	Mar 10	30%	Specific: 2, 4-8 Generic: 1-3 Study tool for Exam 2
Worksheet 3	Apr 15	0%	Specific: 2, 4-8 Generic: 1-3 Study tool for Exam 2
Exam 3	Saturday, April 16, 11:30-1:30	30%	Specific: 2, 4-8 Generic: 1-3 Study tool for Exam 2

<b>In-class exercises (TOP HAT) See below.</b>	<b>T1: Jan 19 T2: Jan 21 T3: Feb 2 T4: Feb 4 T5: Feb 9 T6: Feb 11 T7: Feb 23 T8: Feb 25 T9: Mar 1 T10: Mar 3 T11: Mar 15 T12: Mar 17 T13: Mar 22 T14: Mar 24 T15: Mar 29 T16: Mar 31</b>	<b>12% (Best 12 of 16)</b>	<b>Learning outcomes: Specific 1-8 Generic: 1-3</b>
--	--	----------------------------	---

**Additional Notes (if required):**

The week of April 5, 7 there will be 2 more optional **BONUS** Top Hat questions. These are to make up for any possible technical glitches that occurred during the year. (If you take this option that means you will be basing your grade on the best 12 of 18 Top Hat questions).

**Final examination date and time: TBA**

**Final exam weighting: 30%**

**Course Resources**

**Required Texts:**

Goldstein, E.B. (2015). Sensation and Perception. 2nd Custom Edition. Nelson Education. Canada.

A custom version of the text has been created especially for this class in order to reduce costs for students. (This custom version is soft-cover and it only includes the chapters used in this one term course. The original text was designed for a two-term course.) This custom version is based on excerpts from the 9th edition Goldstein text (Goldstein, E.B. (2014) Sensation and Perception, ISBN 10: 1-133-95849-4). It has geometric patterns on the cover (NOT pictures of the brain). Note that earlier editions of Goldstein have different pagination and materials, so that they will not do for this course.

There are copies of the text in 3-hour reserve in the library (these can be used while in the library). In fact, there is one of the custom copies and two versions of the hard copy original (the complete 9th edition text that served as the basis of the custom copy).

**Recommended Texts: None**

**Other Resources:**

\*Courselink website. Online materials (diagrams, exercises) will be provided on the Courselink website (D2L website).

\***TopHat software.** We will be using the [Top Hat \(www.tophat.com\)](http://www.tophat.com) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.

You can visit [tinyurl.com/TopHatStudentGuide](http://tinyurl.com/TopHatStudentGuide) for the Student Quick Start Guide which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system. An email invitation will also be sent to your school email account. If you don't receive this email, you can register by visiting the course website

[tophat.com/e/062853](http://tophat.com/e/062853)

**(The full URL is <https://app.tophat.com/e/062853>)**

If asked, note that the 6-digit join code they are ask about to is **062853** for this class.

Top Hat will require a paid subscription (see below), and the standard pricing for the cheapest option is \$24 for 4-months of unlimited access. For a full breakdown of all subscription options available please visit [www.tophat.com/pricing](http://www.tophat.com/pricing).

**Additional Costs:**

**Top Hat Software:** single semester, one course cost = \$24. If you are using Top Hat In more than 1 course you can get a special deal where the subscription is \$36 and it covers the cost of all your courses for a year. For more information, see attachment on [TOP HAT \(www.tophat.cm/pricing\)](http://www.tophat.cm/pricing).

## **Course Policies**

Attendance: Regular attendance at lectures is required. Some of the lecture material is not in the text and there will be questions from lecture on exams. It is each student's responsibility to be there and take notes. Note-taking is an important skill, one that will serve you well in other courses and later in life. (Employers value this skill.) The ability to determine what is relevant "on the fly" as you listen, to record things as you go in such a way that you understand your own writing, is conducive to success in other domains. One goal for this course is to improve note-taking skills. However, if you aren't there, you can't improve your skills. Each student is responsible for acquiring his or her own notes (under no circumstances will the instructor provide you with notes). However, if you have trouble understanding your notes, or if you have difficulties understanding the material or determining what is important in the lecture or text, the instructor will be happy to go over your notes with you. During that time, you and the instructor can work on strategies to help you improve your note taking skills.

## **Grading Policies**

1. Exams: Exams will be part multiple-choice and part short essay. (The short essay part will be worth 25% of the exam.) Exams will not be cumulative though there are some types of information you cannot afford to forget (e.g. how a neuron works, what a threshold is). When studying for exams, be aware that you will be responsible for both the information presented in lecture and that presented in text. Although there is some overlap, there is also information presented in the text and not in lecture and vice versa. Generally, the highest priority should be given to information presented in both lecture and text, followed by that presented only in lecture, following by that presented only in the text. Note that each student must take all three exams. In the event that you miss an exam due to illness or serious personal issues, a makeup exam will be rescheduled for you. (It is your responsibility to inform the instructor if you miss an exam and she will then make the arrangements for the makeup exam.) Generally make-up exams occur during office hours the week following the exam). If you feel that an exam question has been mis-marked, the instructor would be happy to mark it again for you if you ask. (Your mark may not necessarily go up but she will provide detailed comments to explain what went wrong in efforts to help you for next exam.) If you are having trouble with exams, it is strongly recommend that you come visit the instructor. She will go your exam point by point with you and work together with you devise a strategy to improve your performance in later exams.

2. In-class exercises (using TopHat). In most classes there will be in-class exercises where students will have to answer course-related questions, and they will be marked on their response. We will be using the TopHat software system to administer these exercises, and you

will be answering using your cell phone, Smart Phone, IPad, or laptop computer. (See above). Generally these occur every class except for the first and last class and the days on which exams occur. (See course schedule for detail.) However, there will be Top Hat questions on the first week of class as well, but this will be a “practice” session to allow people to get used to the Top Hat system (because they are practice sessions the marks will not be counted). Students must attend the class and answer the question themselves to be eligible for a mark on the in-class exercises because feedback (the answers) will be discussed immediately after the exercise. There will be 16 of these in-class exercises; the grade will be based on the average of the best 12 of 16 of these exercises. There is no way to make up missed in-class exercises but by having the grades based on the best 12 of 16 days’ of exercise, that allows a student to miss up to 4 classes without it having a negative effect on their average in-class exercise mark. (I have included this provision to accommodate for people who are ill, have personal issues, religious holidays, technical problems, problems with the weather/ their car and have to miss a Top Hat question for that reason. This way it does not have an effect on your mark unless it happens more than 4 times during the year.)

For the in-class exercises, each student is expected to answer the question on their own, without help from other students (or the internet). Otherwise it will be considered academic dishonesty (see discussion below).

3. Worksheets: Your chances of understanding and remembering the material covered in the course will be much better if you have to work with it, using the information to solve some problem, finding the relevant information to answer some question. The worksheets are designed to help you prepare for the exams, and they will sometimes require you to apply the information you learned or make creative use of it. Worksheets will contain questions that have a similar format to the ones you will encounter on the exam and they will cover a sampling of the material. (It is impossible for single worksheet to ask every possible question.) Answering these worksheet questions will require that you to first locate the relevant places in the text or notes and then apply the information to the problem. The worksheets can help you identify gaps in your notes. (If you find gaps, contact the instructor and you and she can work together to fill in the gap.) Worksheets can also help you know when you have missed information in the text readings (skimming through material without comprehension). The worksheets themselves will not be graded but the instructor would be happy to look over your worksheet or talk to you about the questions if you are not sure of the answer. She will clarify the question and direct you to place in your notes or the text where the question is answered. If your notes or inadequate she will help you fix them up and she will explain the required concepts. However, she will not answer the question for you (doing all the work for you) or she would be robbing you of the benefit of doing the worksheet.

The best way to use the worksheets is to complete the questions just after the material is covered in lecture or after you have also read the material in your text. Generally students who do the worksheets (understanding the material and coming up with their own answers rather than just copying down what someone else has said) achieve better marks and they are much more likely to remember the information after they complete the course. If there are questions about the worksheets, be sure to email them to the instructor by no later than 1 day before the exam at 2:00 pm EST. Otherwise there is chance that she will not have enough time to respond to your question before the exam. (Naturally, you can also visit her during office hours or set up an appointment.)

### **Course Policy on Group Work:**

Some students prefer to work on their own. Others find it motivating and enjoyable to join a study group. Study groups typically work best when they are not too large (2-3 is about ideal). That way, everyone gets a chance to benefit -- everyone gets a chance to participate (to talk). That is because one of the best ways to learn something is to try to explain it to someone else. Also, sometimes you don't know you don't make sense until you try explaining things to someone else. Consequently, it would be best if everyone got a chance to do some talking. Furthermore, group work can help you know if there are gaps in your notes (you can "pool" notes). However, it is important that each student in the group can answer the worksheet questions in his or her own words. There is little benefit to parroting the answer of some other student word-for-word. Group work is definitely not permissible on exams, where word-for-word identical answers will be flagged as possible instances of cheating. One way to ensure your answer is different from others is for you to come up with your own creative example of the concept in question. (Also, making up your own example forces you to really think about the information.)

**\*Each student is responsible for doing their own work for in-class exercises and exams. Any "collaboration" here will be regarded as academic dishonesty (see below).**

### **Course Policy regarding use of electronic devices to record lectures:**

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

## **University Policies**

### **Academic Consideration**

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration:

[Academic Consideration, Appeals and Petitions](#)

### **Academic Misconduct**

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

[Academic Misconduct Policy](#)

### **Accessibility**

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.

For more information, contact CSD at 519-824-4120 ext. 56208 or email [csd@uoguelph.ca](mailto:csd@uoguelph.ca) or see the website: [Student Accessibility Services Website](#)

### **Course Evaluation Information**

Please refer to the [Course and Instructor Evaluation Website](#) .

### **Drop date**

The last date to drop one-semester courses, without academic penalty, is **March 11, 2016**. For regulations and procedures for Dropping Courses, see the Academic Calendar: [Current Undergraduate Calendar](#)