

SYLLABUS

PSYC380: ADVANCED PERCEPTION --- WINTER 2016

COURSE OBJECTIVES

This course is designed to provide you with a set of tools necessary for doing independent basic research in Perception. The topics presented in the course are by no means comprehensive. In terms of learning about perception itself, we can only touch a few selected concepts. In terms of tools, we can also only provide entry points and an overview. Central goals of the course are therefore:

- Provide important access points and signposts to experimental design with Matlab and the Psychophysics Toolbox.
- Give you confidence into your programming skills and the joy of having control of stimulus and design.
- Consolidate your knowledge in sensation and perception by applying a few central concepts.

CONTACT INFORMATION

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Office hours: Fridays 10:00 – 11:30

Teaching assistant: Suzette Fernandes, suzette.fernandes@queensu.ca

Classes: Tue. 11:30 – 1:00 and Fri. 2:30 – 4:00

Room: Humphrey 219

SCHEDULE

With two classes per week, we will use the Tuesday classes mainly for lectures and the Friday classes mainly for labs and exercises. In practice, we will probably have small exercises on the computers during the lectures as well, and we might have short presentations by myself or our TA occasionally on Fridays, too.

There will be four parts to this course, each taking up three weeks:

1. INTRODUCTION IN MATLAB

Over the first three weeks, I introduce you to Matlab, a versatile programming language which is widely used in experimental psychology. Our approach is based on materials provided by a Matlab course offered by University College London. There are many others out on the Internet, but I found this one most useful for our purposes and added only a few things to it. The original URL is here: <http://www.icn.ucl.ac.uk/courses/MATLAB-Tutorials/>

While we work on basic Matlab skills we will also learn about a few mathematical concepts that will come in useful. They include:

- Basics about programming
- Vectors and matrices
- VERY basic trigonometry
- Waves, frequency, sound

2. INTRODUCTION TO THE PSYCHOPHYSICS TOOLBOX

Matlab consists of a base package that can be complemented by toolboxes, which cover more specific functionality. In this second part, we will explore the Psychophysics Toolbox. It provides a very handy set of tools to generate visual and auditory stimuli with well-defined properties and accurate timing. It also helps to collect participant responses accurately.

We will use a selection of sample demo scripts provided by Peter Scarfe (University of St. Andrews) to understand how the PsychToolBox works and then start to develop our own scripts and functions. Many of the scripts we will work on are taken from this webpage: <http://peterscarfe.com/ptbtutorials.html>

In the lectures, we will talk about psychometric functions and the theories behind them, about units used to characterize visual stimuli, and about the limits of spatial acuity of the observer's eye.

3. DEVELOPMENT OF VERSATILE EXPERIMENTAL TOOLBOX

After Reading Week, we will take on a somewhat larger project. We want to apply the things we have learned so far to the development of a new toolbox. We will call it the PLD tools, short for point-light-display tools. The toolbox implements an easy interface to programming a whole suite of experiments around the perception of biological motion.

In my lectures, I will cover principles of experimental design, on the one hand, and provide you with an overview of biological motion research, on the other hand.

4. WORKING ON YOUR OWN PROJECT

During the last three weeks of the course, you will be working on your own project. I will provide you with a choice of a few projects and you will pick one of them. You will program the stimuli and you will try to embed them into an experimental program with which you can eventually collect psychophysical data.

In the lectures I will provide the background of these projects. Furthermore, I am planning to cover Signal Detection Theory and Bayesian reasoning – two theoretical concepts which are essential to many aspects of the study of perception.

ASSIGNMENTS AND EVALUATION

IN-CLASS TESTS AND WORKSHEETS: 36%

We will have small in-class tests at the end of weeks 3, 6, and 9. There might be occasional worksheets during other classes, too. Most of them will be programming exercises. Please upload your assignments to our Moodle server. The name of every single file that you upload should begin with your initials (e.g. NFTmyfirstprogram.m).

FINAL PROJECT: 40%

I will be evaluating

- Functionality of the program
- Elegance of the code
- Quality of the annotations

FINAL EXAM: 24%

I will provide you with a mix of multiple-choice questions, little programming tasks, and short answer questions about the contents of the course.

MISCELLANEOUS

PERCENTAGE AND LETTER GRADES

The different assignments will be marked using numerical percentage marks. The final course average will then be converted 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

MISSED OR LATE ASSIGNMENTS

In general, work that is not handed in on time will receive a mark of zero.

Things happen, though. Please see the instructor AS SOON AS POSSIBLE if you are unable to complete work so that we can talk about it. If you bring valid documentation from a health professional, funeral home, coach of sports team, etc. we can add the percentage of a missed assignment to the remaining ones.

REQUEST FOR ACADEMIC ACCOMMODATION

Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Wellness Services (SWS) and register as early as possible. For more information, including important deadlines, please visit the Student Wellness website at: <http://www.queensu.ca/studentwellness/accessibility-services/>

LOCATION AND TIMING OF FINAL EXAMINATIONS

As noted in Academic Regulation 8.2.1, "the final examination in any class offered in a term or session (including Summer Term) must be written on the campus on which it was taken, at the end of the appropriate term or session at the time scheduled by the Examinations Office."

The exam period is listed in the key dates prior to the start of the academic year in the Faculty of Arts and Science Academic Calendar and on the Office of the University Registrar's webpage. A detailed exam schedule for the Winter Term is posted the Friday before Reading Week. Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel /holiday plans or flight reservations.

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.

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