The Visual System Fall 2017 Syllabus

I. Course Description

The aim of this course is to provide a concise description of visual system organization and function, from the structure of the individual photopigment molecules that capture light to the neural circuits that mediate higher visual functions such as object recognition. In studying the visual system, we will learn about many principles and experimental methods that apply through many domains of sensory and cognitive neuroscience.

Lectures will largely cover the function of mammalian visual system structures, although we will briefly visit invertebrate eyes. Lectures will include opportunities to practice newly learned skills and discuss course material in the form of clicker questions. As such, it is necessary to complete assigned reading before lecture. Discussion sections will provide an opportunity to work on homework assignments in groups, to ask questions about lectures, and occasionally to engage in group discussion of primary source literature (journal articles).

II. Instructors

Dr. Hannah Bishop
email: hibishop@uoregon.edu
office: 216 LISB
Office Hours (216 LISB): Tuesday 11:00 am – 12:00 pm
…and by appointment

Conor O'Sullivan
email: conoro@uoregon.edu
office:
Office Hours (216 LISB):
…and by appointment

III. Course Details

a. Required Text

Assigned readings are from the 2nd edition of An Introduction to the Visual System by Martin Tovée. There are two copies available in the science library on reserve. Additional assigned readings will be in the form of chapters or journal articles, which will be posted on Canvas.

b. Required Supplies

iClicker (available at the Duck Store).

c. Assignments

iClicker Participation (100 pts):

You can earn up to 100 pts for lecture participation, which will be scored using iClickers. Each click counts as 5 pts toward participation. Responses will not be scored for correctness. However, you may see similar questions on exams, so it is a good idea to pay attention to iClicker questions. There will be at least 25 opportunities for clicker participation, which will be spread through each lecture and across classes. Responding to

at least 20 of ≥25 clicker questions will earn full credit (100 max pts available) which allows for any missed sessions, iClicker failure, etc. If you miss more than 5 iClicker opportunities due to absences, failure to bring your iClicker to class, or failure to register your iClicker, points will be deducted from your participation score.

Homework Assignments (120 pts):

Discussion section participation and associated homework assignments are worth 120 pts of your final grade. There are nine discussion sections, seven of which will have an associated homework assignment, each worth 20 points: 5 points for participation and 15 points for the assignment that is due the following week. The lowest score will be dropped, which will also account for missed assignments. Homework will be posted on Thursday and will be due the following Thursday in class or via Canvas.

Paper Discussions (80 pts):

We will spend two discussion sections discussing a selected journal article as a class. Each discussion is worth 40 pts each, 20 pts for a short write-up that you will turn in at the beginning of class, and 20 pts for discussion participation. Grading rubrics for the writing assignment and participation will be provided.

Group Presentations (200 pts):

Group presentations will be on a topic of your choosing in the visual system. Your topic may stem from items covered in lecture or one that is of general interest to you. Topics and presentation outline are due for review 2 weeks before your scheduled presentation date. Groups may present in class or create a YouTube video, which should be approximately 15 minutes in duration. A grading rubric will be provided.

Exams (500 pts):

There will be two midterm exams and one final exam. Each exam will have problems to be solved along with some multiple choice and short answer questions. Each midterm exam will be 150 pts, and the final exam will be 200 pts. **No makeup exams will be given for any reason.** In the unforeseen event that a midterm is missed, a typewritten petition explaining why the exam is missed must be submitted within three days of the exam. If approved, the points of the missed exam will be added to the original points of the final exam.

d. Grading

Category	Points	Point Breakdown
Participation (iClicker)	100	≥25 iClicker opportunities at 5 pts each, 100 pt max
Homeworks	120	20 pts per homework, lowest score dropped. Participation (5 pts) and assignments (15 pts)
Paper discussions	80	40 pts per discussion, 20 pts for write-up, 20 pts for participation
Group Presentations	200	See rubric for breakdown
Exams	500	3 exams, 150 pt midterms, 200 pt final
Total	**1000**	

Grade	Points
A+	970-1000
A	930-969
A-	900-929
B+	870-899
B	830-869
B-	800-829
C+	770-799
C	730-769
C-	700-729
D+	670-699
D	600-669
F	0-599

e. Classroom Etiquette

Please arrive on time – lectures and discussions begin promptly. Please do not leave early as this is disruptive to everyone. If you have an unusual circumstance and must leave early, please inform the instructor, and sit near the exit so your leaving is not disruptive. Finally, please be respectful of your fellow students.

f. Email Etiquette

Please include "Bi 399" in the subject line, so your email can be attended to in time. We will try to answer your email in a timely manner; however, we do not always check our email in the evenings or during weekends.

g. Policy on Missed Assignments

All assignments must be turned in on time. Assignments turned in late require approval from the instructor prior to the assignment due date.

h. Plagiarism and Cheating

Academic misconduct will not be tolerated. You are expected to do your own work on all assignments and exams. Using another student's iClicker during class constitutes cheating. You are encouraged to discuss ideas with other students and study together, but do not copy someone else's work or allow anyone to copy yours. All students are expected to conform to the Student Conduct Code. Please note that Instructors are required to file a written report of any academic misconduct with the Director of Student Conduct and Community Standards.

IV. Class Schedule and Reading Assignments

Week	Date	Topic and Reading Assignments
1	26 Sep	**Course Overview and Introduction** (No reading)
	28 Sep	**Talk by Marty Usrey in 110 Willamette**
	29 Sep	**Light and optics** (Land & Nilsson 23-45) / **Homework 1**
2	3 Oct	**Eye structure and basic neuron function** (Tovée 19-28; Neuroscience Online, Chapter 1)
	5 Oct	**Phototransduction** (Tovée 28-33; 36-41)
	6 Oct	**Homework 2**
3	10 Oct	**Circuits and retinal cell types** (Reading posted to Canvas)
	12 Oct	**Receptive fields** (Tovée 33-36; Luo 4.14-4.18)
	13 Oct	**Homework 3/Midterm review**
4	17 Oct	**Midterm I**
	19 Oct	**Color vision** (Tovée 44-60; Luo 4.19-4.20)
	20 Oct	**Paper I**
5	24 Oct	**Visual pathways** (Tovée 62-70)
	26 Oct	**Thalamus and V1** (Tovée 78-88)
	27 Oct	**Homework 4**
6	31 Oct	**Thalamus and V1 continued** (Tovée 78-88)
	2 Nov	**Dorsal stream processing** (Tovée 70-76)
	3 Nov	**Homework 5/Midterm review**
7	7 Nov	**Object and face recognition** (Tovée 109-125)
	9 Nov	**Midterm II**
	10 Nov	**Homework 6**
8	14 Nov	**Optogenetics** (Luo 13.25; Deisseroth 2010)
	16 Nov	**Imaging** (Tovée 8-15)
	17 Nov	**Paper II**
9	21 Nov	**Visual attention** (Tovée 126-131)
	23 Nov	**No Lecture – Thanksgiving**
	24 Nov	**No Discussion – Thanksgiving**
10	28 Nov	**Development and plasticity** (Tovée 89-99)
	30 Nov	**Synthesis and review**
	1 Dec	**Homework 7/Final review**
11	6 Dec	**FINAL EXAM 12:30 PM**