PSYCH 417
Seminar in Perception: Visual Processing

Course Meeting Time:

Tues/Thurs 3-4:20p, Location: 3401 Walnut St, Room 314C

Instructor Information:

Instructor: Nicole Rust
Office: Room 317 C-Wing, 3401 Walnut Street (3417 entrance)
Phone: (215) 898-4587
Email: nrust@psych.upenn.edu * Email is always the best way to contact me

Description:

This seminar will focus on how visual information is processed by the eye and the brain to produce visual perception. These issues will be explored through lectures and student presentations of journal articles, combined with Matlab-based tutorials and exercises. The course requires no prior knowledge of visual processing, computer programming, and a limited math background, but familiarity with some basic neuroscience principles (e.g. neurons fire action potentials and neurotransmitters are released at synapses) will be assumed.

Course Web Site: Canvas https://canvas.upenn.edu/

Prerequisites: BBB 109 or Psych 149 or Psych 217 or permission of instructor

Requirements:
Attendance	15%
Matlab homework (9 assignments)	50%
Journal Club Presentation	10%
Final Project + Presentation	25%

Student presentations of journal articles: Each student will be required to read and present one journal article in class during the semester.

Matlab exercises: Matlab tutorials and associated assignments will be given in class most Tuesdays and will be due one week later (Tuesday at 11:59p EST). This will allow students time to ponder the assignment and then have two opportunities to ask questions in class. Assignments should be submitted to Nicole Rust via email (you will receive detailed instructions with your first homework assignment).

Final projects: Each student will be required to create a Matlab tutorial on a topic related to Visual Processing and present their tutorial in class. Final projects are due at 11:59 EST on the last day of class (4/28).

Late penalties: The penalty for both late homeworks and final projects is 10% per day for the first 5 days and is capped at 50% thereafter. Exceptions must be negotiated beforehand with Dr. Rust.

Topics include: Behavioral experiments / psychophysics, color processing, retinal ganglion cells, V1 orientation and direction tuning, white noise receptive field mapping, object recognition, visual attention; computer programming in MATLAB; professional development skills including oral communication and critical thinking.

Schedule (tentative):

1/15	Intro to visual processing
1/20-1/22	Intro to Matlab and Intro to Journal Presentations (HW1 assigned)
1/27-1/29	Visual psychophysics (HW2 assigned)
2/3-2/5	Color (HW3 assigned)
2/10-2/12	Center-surround retinal ganglion receptive fields (HW4 assigned)
2/17-2/19	Orientation tuning (HW5 assigned)
2/24-2/26	Direction tuning and reverse correlation (HW6 assigned)
3/3	Discussion: career development issues
3/5	Class cancelled
3/10-3/12	Spring Break
3/17-3/19	Noise and population coding (HW7 assigned)
3/24-3/26	Object recognition (HW8 assigned)
4/31-4/2	Attention (HW9 assigned)
4/7-4/9	Students meet with Prof. Rust to discuss final project ideas
4/14	Class cancelled
4/16	Final Project Presentations
4/21-4/23	Final Project Presentations
4/28	Final Project Presentations