PSY 323: Human Visual Perception Syllabus , Fall 2020

Fridays 10:20 a.m. – 12:40 p.m.

Olin 101

Instructor

Tom Hutcheon, Ph.D.

thutcheo@bard.edu

Office hours will be held on Zoom:

Mondays 10:00 a.m. – 11:00 a.m. (https://bard.zoom.us/Monday)

Fridays 1:00 p.m. – 2:00 p.m. (https://bard.zoom.us/Friday)

COURSE DESCRIPTION

In 2015, the world was divided into two groups: those who saw The Dress as black and blue, and those who saw it as white and gold. This division highlights a fundamental question in the study of visual perception, how can the same visual stimulus lead to such different perceptual experiences? This seminar will begin to address this and related questions by studying the anatomy and physiology of the visual system along with the cognitive processes that turn raw sensory information into our perception of the world. We will explore what happens when things go right, what happens when things go wrong, and the factors that influence what different people actually "see".

COVID-19 Policies

The format of this seminar will differ from previous semesters in four primary ways.

1. All students and faculty will wear appropriate masks and practice social distancing in the classroom.

2. Students will display the "green pass" from their Involvio app upon entering the classroom.

3. The first 20 minutes of each class can be completed remotely; the last two hours will occur in-person.

4. Office hours will take place on Zoom.

REQUIRED READING MATERIALS

All assigned readings will be available through the course Google Classroom site: Human Visual Perception Google Classroom.

COMPONENTS OF THE COURSE GRADE

Weekly discussion questions (25% of final course grade)
Every week you will be expected to submit one question or comment about **each** of the assigned readings. These questions/comments should be emailed to me (thutcheo@bard.edu) by Fridays at 10:20 a.m. These questions are intended to help you think deeply about the articles and to help me organize our class discussion.

Figure/Table Presentations (25% of final course grade)
On the first day of class, you will be assigned 4 figures/tables from readings over the first half of the semester. For those figures/tables, you will be the class expert and will be expected to explain all aspects of the figure/table as well as the importance of that figure/table to the paper.

Research Report (50% of final course grade)
In this assignment, you will propose a novel experiment that is relevant to the topics covered in this course. This project will be broken down into five parts

1) An initial 1-paragraph proposal in which you describe your general research idea. This proposal should include a summary of at least one relevant article that has not been read as part of class. Proposals should be submitted through the course Google Classroom site by the start of class on October 23rd.

2) A data analysis plan in which you outline your independent variables, dependent variables, and expected results. You will receive a template for this later in the semester. I will use this to generate data for you to analyze and report in your final paper. Data analysis plans should be submitted through the course Google Classroom site by the start of class on November 6th.

3) A draft of your paper for which you will receive feedback. This is an ungraded assignment. The length is up to you. You will receive feedback on your draft by the next class period. Final Paper drafts should be submitted through the course Google Classroom site by the start of class on November 20th. Drafts submitted after this time will not be read.

4) A five-minute PowerPoint presentation presented to the class describing your rationale, methods, results, and conclusions during class on December 11th.

5) Final paper written in APA style (8 to 12 pages). This should be written as if you had collected the data and include your data analysis. Final Papers should be submitted through the course Google Classroom site by the start of class on December 18th.

SUMMARY OF DUE DATES
Weekly discussion questions: Prior to the start of each class
Figure/Table Presentations: Will be assigned during first class meeting
Paper Proposal: October 23
Analysis Plan: November 6
Paper Draft: November 20
Final Presentations: December 11
Final Research Report: December 18

STUDENTS WITH DISABILITIES

Students with a documented disability who need reasonable academic accommodations should contact me as soon as possible to discuss your needs. I can only accommodate your needs if you allow me sufficient time to prepare. Informing me of a need on the day of an exam or on the date an assignment is due is NOT sufficient. As stated in the college handbook, "Students who claim physical, learning, or psychological disabilities should register with the Disability Support Coordinator at the start of the semester or as soon as the diagnosis is made." Additional information can be found on the Bard College Learning Commons website (http://inside.bard.edu/learningcommons/).

ACADEMIC INTEGRITY

All students are assumed to have read the Bard College Handbook and are familiar with the school's policies regarding Plagiarism and Academic Dishonesty. Violations of these policies are taken extremely seriously and one violation will result in a failing grade for the course and a referral to the Dean of Students for further action.

HEALTH AND SAFETY

Please do not attend class if you are sick, feel ill, know you may have been exposed to coronavirus, or have any of the symptoms listed on Involvio, the College daily health screen app. Please note that you will not be penalized for absences and I will make lecture and lab content available to you if you are unable to attend class due to coronavirus.

September 4th – Introduction and basic anatomy of the visual system

September 11th – Expectations and experience impact what we see

Readings:

Ramachandran, V. S. (1992). Blind spots. *Scientific American, 266*, 86-91.

Chase, W. G., & Simon, H. A. (1973). Perception in chess. *Cognitive Psychology, 4*, 55 – 81.

Eberhardt, J. L., Goff, P. A., Purdie, V. J., Davies, P. G. (2004). Seeing black: Race, crime, and visual processing. *Journal of Personality and Social Psychology, 87*, 876 – 893.

Assignment:

Weekly discussion questions #1

September 18th – What does the brain "see"?

Readings:

Hubel, D. H., & Wiesel, T. N. (1959). Receptive fields of single neurones in the cat's striate cortex. *Journal of Physiology, 148*, 574-591.

Kanwisher, N., McDermott, J., & Chun, M. M. (1997). The fusiform face area: A module in human extrastraiate cortex specialized for face perception. *The Journal of Neuroscience, 17*, 4302-4311.

Quiroga, R. Q., Reddy, L., Kreiman, G., Koch, C., & Fried, I. (2005). Invariant visual representations by single neurons in the human brain. *Nature, 435*. 1102-1107.

Assignment:

Weekly discussion questions #2

September 25th – Perception of color

Readings:

Hansen, T., Olkkonen, M., Walter, S., & Gegenfurtner, K. R. (2006). Memory modulates color appearance. *Nature Neuroscience, 9*, 1367-1368.

Franklin, A., Piling, M., Davies, I. (2005). The nature of infant color categorization: Evidence from eye movements on a target detection task. *Journal of Experimental Child Psychology, 91*, 227-248.

Winawer, J., Witthoft, N., Frank, M. C., Wu, L., Wade, A. R., Boroditsky, L. (2007). Russian blues reveal effects of language on color discrimination. *Proceedings of the National Academy of Sciences*, 104, 7780-7785.

Assignment:
Weekly discussion questions #3

October 2nd – Are faces special?

Readings:

Yin, R. (1969). Looking at upside-down faces. *Journal of Experimental Psychology, 81*, 141-145.

Tanaka, J. W., & Farah, M. J. (1993). Parts and wholes in face recognition. *The Quarterly Journal of Experimental Psychology, 46*, 225-245.

Jenkins, R., White, D., Van Montfort, D., Burton, A. M. (2011). Variability in photos of the same face. *Cognition, 121*, 313-323.

Assignment:
Weekly discussion questions #4

October 9th – How do we select out relevant information in the environment?

Readings:

Treisman, A., & Gelade, G. (1980). A feature-integration theory of attention. *Cognitive Psychology, 12*, 97 – 136.

Lavie, N., Ro, T., & Russell, C. (2003). The role of perceptual load in the processing of distractor faces. *Psychological Science, 14*, 510 – 515.

Phelps, E. A., Ling, S., & Carrasco, M. (2006). Emotion facilitates perception and potentiates the perceptual benefits of attention. *Psychological Science, 17*, 292 – 299.

Assignment:
Weekly discussion questions #5

October 16th: How do we allocate attention across visual space?

Readings:

Motter, B. C. (1994). Neural correlates of feature-selective memory and pop-out in extrastriate area V4. *Journal of Neuroscience, 14*, 2190-2199.

Chiu, Y.-C., Yantis, S. (2009). A domain-independent source of cognitive control for task sets: Shifting spatial attention and switching categorization rules. *Journal of Neuroscience, 29*, 3930-3938.

Wolfe, J. M., & Utochkin, I. (2019). What is a preattentive feature? *Current Opinions in Psychology, 29* 19-26.

Assignment:
Weekly discussion questions #6

October 23rd: What do eye movements tell us about how we perceive the world?

Yarbus, A. L. (1969). Eyemovements and vision. New York: Plenum Press. (Chapter 7).

Goldinger, He, Papesh (2009). Deficits in cross-race face learning: Insights from eye movements and pupillometry. *Journal of Experimental Psychology: Learning, Memory and Cognition, 35*, 1105 1122.

Guo, L., Courtney, S. M., & Fischer, J. (2020). Knowledge of objects' physical properties implicitly guides attention during visual search. *Journal of Experimental Psychology: General.* Advance online publication

Assignment:
Final Paper Proposal
Weekly discussion questions #7

October 30th: Seeing in three-dimensions

Readings:

Held, R., & Hein, A. (1963). Movement-produced stimulation in the development of visually guided behavior. *Journal of Comparative and Physiological Psychology, 56*, 872 – 876.

Fox, R., Aslin, R. N., Shea, S. L., & Dumais, S. T. (1980). Stereopsis in human infants. *Science, 207*, 323-324

Tong, F., Nakayama, K., Vaughan, J. T., & Kanwisher, N. (1998). Binocular rivalry and visual awareness in human extrastriate cortex. *Neuron, 21*, 753-759.

Assignment:
Weekly discussion questions #7

November 6th: Individual differences in visual perception

Readings:

Joseph, R. M., & Tanaka, J. W. (2002). Holistic and part-based facial recognition in children with Autism. *Journal of Child Psychology and Psychiatry, 43*, 1-14.

Palmeri, T. J., Blake, R., Marois, R., Flanery, M. A., & Whetsell, W. (2002). The perceptual reality of synesthetic colors. *Proceedings of the National Academy of Sciences, 99*, 4127 – 4131.

Key, A. P., & Dykens, E. M. (2018). Eye tracking as a marker of hyperphagia in Prader Willi syndrome. *Developmental Neuropsychology, 43*, 152 – 161.

Assignment:
Analysis Plan
Weekly discussion questions #8

November 13th: Perceiving race

Readings:

Golby, A., Gabrieli, J., Chiao, J., & Eberhardt, J. L. (2001). Differential responses in the fusiform region to same-race and other-race faces. *Nature Neuroscience* 4**,**

Hughes, B. L., Camp, N. P., Gomez, J., Natu, V. S., Grill-Spector, K., & Eberhardt, J. L. (2019). Neural adaptation to faces reveals racial outgroup homogeneity effects in early perception. *PNAS,*

Milner, A. N., George, B. J., Allison, D. B. (2016) Black and Hispanic men perceived to be large are at increased risk for police frisk, search, and force. PLoS ONE 11(1): e0147158

Assignment:
Weekly discussion questions #9

November 20th: What do visual illusions tell us about perception?

Readings:

Eagleman, D. M. (2001). Visual illusions and neurobiology. *Nature Neuroscience, 2*, 920-926.

Purves, D., Monson, B. B., Sundararajan, J., & Wojtach, W. T. (2014). How biological vision succeeds in the physical world. *Proceedings of the National Academy of Sciences, 111*, 4750-4755.

Check out: http://illusionoftheyear.com/

Assignment:
Final Paper Draft
Weekly discussion questions #10

December 4th: Perceptual deficits

Readings: TBD

Assignment:
Weekly discussion questions #11

December 11th: Final Presentations

Assignment:
Final presentations

December 18th: Recap

Assignment:
Final papers due