Psychology 347: PERCEPTION

FALL TERM 2026 HYBRID COURSE

September 28 – December 11, 2026

IN PERSON CLASSES meet on PSU campus (Fariborz Maseeh, Room B128) Wednesdays, 11:00am – 12:05pm

ZOOM CLASSES meet on Canvas, Mondays, 11:00am – 12:05pm; TA REVIEWS and some classes Fridays 11:00am – 12:05pm

STUDENT HOURS ONLINE:
By appointment, ZOOM (**Bill & Jeff**)
By appointment, ZOOM: (**Grad course TA**)
Friday review sessions (**All course TAs**)

Bill Griesar, Ph.D., **Instructor**; griesar@pdx.edu
Jeff Leake, M.F.A., **Instructor**; jleake@pdx.edu

Please use these email addresses, *NOT Canvas*

Clementine Friedlander-Levy, **Undergraduate Teaching Assistant**; clementi@pdx.edu
Monse Guillen, **Undergraduate Teaching Assistant**; mguillen@pdx.edu
TBD, **Graduate Teaching Assistant**;

NO TEXTBOOK IS REQUIRED. USE YOUR OWN BRAIN 🤓 ***NO AI PERMITTED ON ASSIGNMENTS. ALL REQUIRED COURSE RESOURCES ARE AVAILABLE ONLINE.***

BOOK *(highly recommended, but not required):* Hallucinations, by Oliver Sacks

ART SUPPLIES *(required):* Sketchbook (standard 11" x 14" drawing, 80 pound weight paper, with at least 24 sheets), colored pencils (basic set, 12 assorted colors), Assorted graphite sticks, Pink pearl eraser, pipe cleaners (though these can be replaced with any found objects). *See Canvas course website for more details on what you'll need.*

GOAL OF THE COURSE: Perception involves the routing, identification, and interpretation of energy and information in our environment, both external and internal. Typically, it begins with detection of stimuli by sensory neurons, and the relay of this information to specific neural networks in the brain.

In this class we will investigate the mechanisms that underlie sensory detection of specific categories of stimuli (e.g., in visual, auditory, olfactory, gustatory, somatosensory (including touch, proprioception, nociception), and vestibular realms) and the CNS networks involved in perceptual discrimination, interpretation, and complex cognitive responses. We'll also look at how these critical, adaptive networks develop, and how they are influenced by drugs and, ultimately, decay.

We'll explore how artists have approached, understood and integrated aspects of sensory detection and perception into often extraordinary works that compel, move, inspire, and affect our understanding of ourselves and our world. We'll visit online museums to view art with an eye towards the neural mechanisms involved in perception, and we'll create objects designed to help reflect on and understand the concepts we'll discuss.

GRADES: Grades are based on a point scale: 90 points and above = A; 80 – 89 points = B; 70 – 79 points = C; 60 – 69 points = D; 59 points or below = F. ***An A or B is ABOVE AVERAGE, a C is AVERAGE, and a D is BELOW AVERAGE.*** AI use is not permitted in assignments. You can earn points (a maximum of 100) in the following ways.

******* DEADLINES ARE IMPORTANT: Late work earns half credit. It's difficult in a large class to track late assignments, so after one week ALL late assignments will be zeroed out. *** *No late assignments are accepted after Week Ten of term*.**

QUIZZES (40 points)
Each timed, online, one attempt, available from Wednesday – Sunday
Quiz One: Psychophysics, neurons, and synapses (10 points)
Quiz Two: Gustation, olfaction, and somatosensation (10 points)
Quiz Three: Visual system (10 points)
Quiz Four: Auditory and vestibular systems (10 points)

ART PROJECTS (25 points)
Art Project 1: Neuron model building (5 points)
Art Project 2: Neuron metaphor drawing (5 points)
Art Project 3: Tactile Drawings (5 points)
Art Project 4: Grid Drawing (5 points)
Art Project 5: Sensory neuron model (5 points)

DISCUSSION FORUMS (30 points)
Students are required to post *their own responses* to questions in our ten weekly discussion forums, which cover topics we'll be learning about in Zoom class meetings, online video lectures and other resources and links on Canvas. **AI use = zero points.**

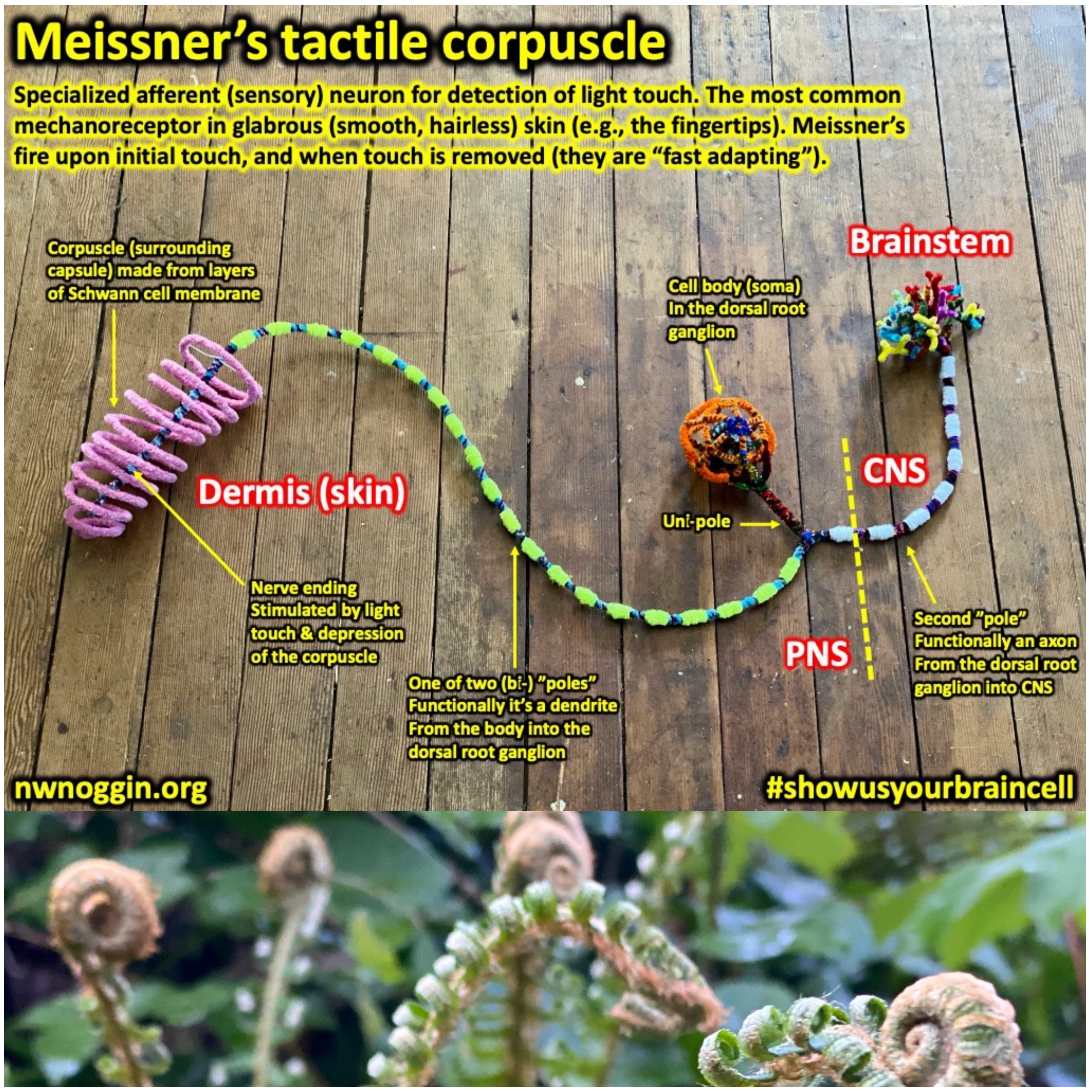
Each post must be at least 100 words (~300 max) and you must respond to TWO peers in at least 50 words each. FORUM POSTS ARE DUE THURSDAYS (by 11:59pm); peer responses DUE by SUNDAY (by 11:59pm).

FINAL ART PROJECT (10 points)
The final gestalt poster project consists of two parts.
Part One: prepare four collages or drawings that are examples of gestalt grouping principles followed by a written explanation of how those principles are working.
Part Two: prepare a formal analysis of a well-known work of art, identifying the principles you chose for your collages or drawings within the image and clearly stating where and how those are operating within that work of art. The gestalt collages, famous artwork, and written descriptions for both will be fixed to an 18"x24" (minimum size) poster and submitted online as a *.jpg or *pdf file.

EXTRA CREDIT (2 points max): *Occasionally* there are opportunities to join research studies and/or attend coursework-related talks for extra credit. We will let you know about these options. You can earn an extra 2 points for participating in one study or event. Research studies and events are not always open or accessible to everyone; however, it is our goal to offer multiple opportunities throughout the term.

ACADEMIC HONESTY: Any evidence of cheating or plagiarism **or use of AI** will lead to serious academic consequences, including possible failure of the course and/or dismissal from school. Academic integrity is a vital part of the educational experience at PSU. The Student Code of Conduct is the university's policy on academic dishonesty. Plagiarism is also a violation of the PSU Code of Student Conduct. For more see: http://www.pdx.edu/dos/psu-student-code-conduct

INCOMPLETES: Incompletes are rarely given, and are based on criteria described in the university catalog. **Incompletes are not appropriate when less than ¾'s of the course work has been scored.** No incomplete will be assigned without a written formal agreement and timeline related to course completion. The Office of the Registrar's website has the full Incomplete Grades policy.



<u>CHALLENGES</u>: ***Look over course requirements in our syllabus, and on Canvas. If you are unclear about what's expected for an assignment, or assessment, please let us know.*** Life DEFINITELY has ups and downs, and everyone struggles sometimes with family, work, and other personal concerns and commitments. But not everyone has access to the same resources, or experiences the world in the same way ❤️. If there is a serious, unexpected, and significant emergency, please get in touch! Be aware that we are obligated to treat all students fairly, and that means each of you should ask questions, think ahead and plan for when assignments are due.

Everyone is subject to the same course expectations.

THE CLASSES

WEEK ONE (9/28 – 10/2): Introduction

***MEET:** ONLINE Monday/Friday, IN PERSON Wednesday, all 11:00am – 12:05pm
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
Introductions, syllabus; History of perception; philosophical considerations; Psychophysics, measuring the threshold, signal detection theory

WEEK TWO (10/5 – 10/9): Sensory detection

***MEET:** ONLINE Monday/Friday, IN PERSON Wednesday, all 11:00am – 12:05pm
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
* ART PROJECT 1: Neuron model (pipe cleaners - or any found objects)
Neurons carry information-rich electrical messages and communicate with each other by releasing chemical messengers (neurotransmitters). Neurons, membranes, protein machines, forces, resting potentials**,** the action potential, synapses

WEEK THREE (10/12 – 10/16): Chemical senses

***MEET:** ONLINE Monday/Friday, IN PERSON Wednesday, all 11:00am – 12:05pm
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
* ART PROJECT 2: Neuron metaphor (drawing supplies)
Gustation and olfaction; taste and smell versus flavor; differences with other senses (ipsilateral projection, limbic targets); taste receptor cells, taste buds and papillae; basic tastes; labeled line vs. pattern coding; a few receptor mechanisms gustatory pathways); Olfaction (smell); flavor is so much more than taste; olfactory neurons, glomeruli, bulb, and CNS projection targets; vomeronasal organ and the Flehmen response

WEEK FOUR (10/19 – 10/23): Neuroesthetics

***NO CLASS WEDNESDAY (10/21): Outreach in Astoria, Oregon**
***MEET:** ONLINE Monday/Friday, all 11:00am – 12:05pm
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
*** *QUIZ ONE:** History, psychophysics, neurons and synapses
- AVAILABLE 10/21 – 10/25

** ART PROJECT 1 DUE BY SUNDAY
Neuroesthetics (the biology of beauty and art)

WEEK FIVE (10/26 – 10/30): Neuroesthetics & Somatosensation

***MEET:** ONLINE Monday/Friday, IN PERSON Wednesday, all 11:00am – 12:05pm
***CLASS ON FRIDAY (New material on somatosensation, not TA-led review)**
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
* ART PROJECT 3: Tactile Drawings

** ART PROJECT 2 DUE BY SUNDAY
Mechanical senses (touch, proprioception) vs. protective senses (temperature, pain, itch, deep sensual touch); mechanoreceptor physiology & mechanisms (e.g., Meissner's, Pacinians, Ruffini's, Merkel's receptors, muscle spindle receptors, Golgi tendon organs); Dorsal column/trigeminal nerve for CNS delivery of mechanoreception; Anterolateral system for detection, delivery and mapping of emotionally salient stimuli; receptors/ receptor mechanisms (nociceptors, thermoreceptors, itch-sensitive neurons, deep touch receptors), pathways (spinothalamic, spinoreticular, spinomesencephalic); Hypothalamic detection/response, cortical networks for somatosensory integration (S1/S2 (parietal lobe), insula, anterior cingulate)

WEEK SIX (11/2 – 11/6): Gestalt

***MEET:** ONLINE Monday/Friday, IN PERSON Wednesday, all 11:00am – 12:05pm
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
*** *QUIZ TWO:*** Gustation, olfaction, somatosensation

- AVAILABLE 11/4 – 11/8

** ART PROJECT 3 DUE BY SUNDAY
Lecture on Gestalt (important for final project)

WEEK SEVEN (11/9 – 11/13): Vision

***NO CLASS WEDNESDAY: Happy Veteran's Day!**
***MEET:** ONLINE Monday/Friday, all 11:00am – 12:05pm
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
* ART PROJECT 4: Grid Drawing
Nature of the stimulus (narrow range of electromagnetic energy), eye anatomy (cornea, pupil, iris, lens, retina); presbyopia, myopia; retinal network physiology (e.g., photoreceptors, bipolar cells, ganglion cells, horizontal and amacrine cells); rods vs. cones (S, M, L), Ishihara testing; Intrinsically photosensitive ganglion cells, circadian cycles; sensitivity vs. acuity, center/surround receptive fields, parvocellular vs. magnocellular pathways; central visual targets (LGN to V1, superior colliculi, hypothalamus, pre-tectal region); visual hemifields, nerves vs. tracts; Optimal stimuli, receptive fields; columnar organization of neocortex; functional organization of V1 (orientation specificity); P pathways & object recognition in ventral temporal lobe, visual agnosia, prosopagnosia; M pathways & spatial mapping in parietal lobe

WEEK EIGHT (11/16 – 11/20): Vision & Audition

***MEET:** ONLINE Monday/Friday, IN PERSON Wednesday, all 11:00am – 12:05pm
***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY
** ART PROJECT 4 DUE BY SUNDAY

Physical features of stimulus (frequency, amplitude, complexity) vs. perceptual experiences of sound (pitch, loudness, timbre); ear anatomy (outer, middle, inner; pinna, tympanic membrane, ossicles, oval window, cochlea); structure and function (e.g., pinna size vs. frequency/amplitude detection); acoustic reflex; Physiology of cochlea; inner/outer hair cells; stimulus transduction mechanism; frequency coding (tonotopy); physical coding of frequency, amplitude and complexity in the cochlea; central pathways for audition; sound localization

WEEK NINE (11/23 – 11/27): Vestibular Function

***NO CLASS WEDNESDAY OR FRIDAY: Happy Thanksgiving!**

***MEET:** ONLINE Monday, 11:00am – 12:05pm

***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY

** ***QUIZ THREE:*** Visual system

- AVAILABLE 11/25 – 11/29

Physiology of vestibular organs (semicircular canals, otolith organs); vestibulo-ocular reflex; detection for three vestibular "modalities" (angular motion/acceleration and semicircular canals, gravity/tilt and linear acceleration and otolith organs); anatomy of vestibular organs (canals, vestibules, ampullae, cristae, hair cells; utricle/saccule and macula, otolithic membrane, otoconia); CNS pathways for vestibular perception

WEEK TEN (11/30 – 12/4): Hallucinations & Museum Tour

READ (highly recommended): Oliver Sack's "Hallucinations"

***MEET:** ONLINE Monday/Friday, IN PERSON Wednesday, all 11:00am – 12:05pm

***POST:** Discussion FORUM by THURSDAY; student responses by SUNDAY

** ***QUIZ FOUR:*** Auditory and vestibular systems

- AVAILABLE 12/2 – 12/6

** ART PROJECT 5 DUE BY SUNDAY

*** VIRTUAL MUSEUM TOUR MONDAY**

Hallucinations, drug effects, and other sources of perceptual distortion; Charles Bonnet Syndrome; Musical Ear Syndrome, sensory deprivation experiments.

FINAL PROJECT DUE ONLINE BY WEDNESDAY, DECEMBER 9th

(Maximum DRC extensions to Thursday 12/10)

A REMINDER: We are obligated to treat all students fairly, and that means each of you should ask questions, think ahead and plan for when assignments are due.

Everyone is subject to the same course expectations.

Note that sometimes, for a myriad of reasons, life intervenes to create ongoing difficulties with class attendance, and meeting academic requirements. *In these cases, it's often best to withdraw from the course, and perhaps re-enroll at a less stressful time.*

Access and inclusion for students with disabilities

PSU values diversity, equity, and inclusion. Our goal is to create a learning environment that is accessible, equitable, inclusive, and welcoming. I am committed to fostering mutual respect and full participation for all students. If any aspects of instruction or course design result in barriers to your inclusion or learning, the Disability Resource Center (DRC) provides accommodations in the learning environment.

If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the DRC to schedule an appointment and initiate a conversation about reasonable accommodations. The DRC works with students who have physical, learning, cognitive, mental health, sensory, chronic illness, and all other disabilities.

If you already have accommodations: Please contact us to make sure that we have received your Faculty Notification Email, and to discuss your accommodations.

The DRC is located in Smith Memorial Student Union, Suite 116. You can also contact the DRC at 503-725-4150, drc@pdx.edu, or visit the DRC website.

It can be challenging to do your best in class if you have trouble meeting basic needs like safe shelter, sleep, and nutrition. Resource centers across campus are here to provide assistance, referrals, and support. Please contact anyone on this list for assistance:

- Basic Needs Hub: email to connect with the basic needs hub basicneedshub@pdx.edu.
- Portland State Food Pantry: email to connect with the PSU food pantry pantry@pdx.edu.
- C.A.R.E. Program: email to connect with the CARE Program askdos@pdx.edu, or call (503) 725-4422.
- Student Health & Counseling: email to connect with student health and counseling askshac@pdx.edu, or call (503) 725-2800.

Mental health emergencies

If you are having a mental health emergency and need to speak with someone immediately, come into SHAC at any time during SHAC hours of operation. After hours and weekends call the Multnomah County Crisis Line 503-988-4888.

PSU CARES

Connects students with resources when they are experiencing distress or other concerns that might impact their personal or academic success.

- Make a referral to PSU CARES
- Call PSU CARES: 503-725-4422
- Email PSU CARES: askdos@pdx.edu

PSU desires to create a safe campus. As part of that mission, PSU requires all students to take the Understanding Sexual Misconduct and Resources learning module. If you or someone you know has been harassed or assaulted, you can find the appropriate resources on PSU's Sexual Misconduct Response website.

Title IX reporting statement

Students frequently come to us for assistance in matters not related to the course material. Please be aware that PSU's policies require instructors to report any instance of sexual harassment, sexual and relationship violence and/or other forms of prohibited discrimination to university officials, who will keep the information private. If you would rather share information about these matters with a PSU staff member who does not have these reporting responsibilities and can keep the information confidential, please use these campus resources:

- Connect with Confidential Advocates: 503-894-7982 or schedule online to talk with a Confidential Advocate (for matters regarding sexual harassment and sexual and relationship violence).
- Center for Student Health and Counseling: 1880 SW 6th Ave #200; 503-725-2800

Discrimination and Bias Incidents

The Office of Equity and Compliance (OEC) addresses complaints of discrimination, discriminatory Harassment, and sexual harassment against employees (faculty and staff). If you or someone you know believes they have been discriminated against, you may file a complaint. Someone from the OEC will contact you to discuss how to best address your complaint.

The Bias Review Team (BRT) gathers information on bias incidents that happen on and around campus, and gives resources and support to individuals who experience them. You can report a bias incident you experienced or learned about. A member of the BRT will contact you if you indicate you would like to be contacted.

Religious accommodations statement

If you would like to obtain religious accommodations, such as flexibility in attending evening courses or an extension on assignments, please contact your instructors. If you need additional assistance, please contact the Office of the Dean of Student Life (DOSL) by emailing askdos@pdx.edu.

Cultural Resource Centers statement

Cultural Resource Centers (CRCs) create a student-centered, inclusive environment that enriches the university experience. They honor diversity, explore social justice issues, celebrate cultural traditions, and foster student identities, success, and leadership. They provide opportunities for student leadership, employment, and volunteering; student resources such as computer labs, event, lounge, and study spaces; and extensive programming. All are welcome!

- Multicultural Student Center
- La Casa Latina Student Center
- Native American Student and Community Center
- Pan African Commons
- Pacific Islander, Asian, and Asian American Student Center
- Middle East, North Africa, South Asia Student Center

Recordings in Zoom classes

We use technology for virtual meetings and recordings in this course. Use is governed by FERPA, the Acceptable Use Policy and PSU's Student Code of Conduct. A record of all meetings and recordings is kept and stored by PSU, in accordance with the Acceptable Use Policy and FERPA. Your instructor will not share recordings of your class activities outside of course participants, which include fellow students, TAs/GAs/Mentors, and any guest faculty or community based learning partners that we may engage with.

You may not share recordings outside of this course.
Doing so may result in disciplinary action.