

# Psychology 410: Cerebrarte Cerebros y Arte en Chile



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A collaborative course: Portland State University & Academic Programs International.



**NO TEXTBOOK IS REQUIRED FOR CEREBROS Y ARTE EN CHILE (PSY 410).**

**\*ALL REQUIRED RESOURCES ARE AVAILABLE ONLINE AND ALL AROUND YOU.**

ART SUPPLIES: **BRING PIPE CLEANERS, AND FABRIC.** Also a Sketchbook (standard 11" x 14" drawing, 80 pound weight paper, at least 24 sheets), colored pencils (basic set, 12 assorted colors), assorted graphite sticks, Pink pearl eraser. *See Canvas course website for more details on what you'll need.*

### **GOAL OF THE COURSE:**

In this course we will directly examine sensation and perception through the vibrant art and neuroscience research traditions around Valparaíso, Chile.

We'll explore how neurons carry information, and how research in Chile (involving the giant axons of the Humboldt squid!) led to our understanding of the electrical signaling that links our experiences to the world.

We'll delve into the rich history and exciting present of research at the Centro Interdisciplinario de Neurociencia de Valparaíso (CINV) and Universidad de Chile en Valparaíso, make art and contribute to interdisciplinary neuroscience engagement through Ciencia al Tiro, a local STEM outreach nonprofit.

Perception often begins with the detection and transduction of energy (e.g., light, sound waves, chemicals, the pressure of touch) by specialized sensory neurons (e.g., photoreceptors, inner hair cells, taste./olfactory receptors, mechanoreceptors), and the relay of this information through specific neural networks in the brain.

However perception itself is more complex, mixing multiple modes of sensory inputs with implicit and explicit predictions and biases based on our personal developmental experience. We each perceive sights, smells, sounds and bodily feelings, but also our social circumstances and time, and these perceptions drive what we individually think about and what we do.

Living and studying in a new cultural and language environment directly challenges these ingrained neural networks of perceptual bias and prediction by undermining expectations about what we'll see, hear, taste and smell, and how others perceive us and our behavior, introducing surprise and novelty, and often pulling us into the conscious present. We'll explore how this experience alters our brains, along with our own perceptions as these changes are underway!

We'll experience how artists have manifested these perceptual, social and cultural experiences into often extraordinary works that compel, move, inspire, and affect our understanding of ourselves and our world. Likewise, we will develop our own art journals that interpret our perceptual experiences in a different environment.

**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.** You can earn points (a maximum of **100**) in the following ways...

**\*\*\*\*\* DEADLINES ARE IMPORTANT: Late work receives half credit.**

**ART & NEUROSCIENCE JOURNAL** (40 points)

*How is neuroscience research a global project? What are the distinct Chilean contributions to the field? Reflect on your experiences from visits to relevant sites. Although it is not limited to these this will include responses to four different prompts found in the discussion forum of our class on Canvas.*

**ART PROJECTS** (30)

Art Project 1: Neuron model (with reference to Chile)

Art Project 2: Neuron screen print

Art Project 3: Arpillera (with reference to neuroscience of memory, stress and resilience)

**FINAL BLOG POST** (30)

Prepare a blog post for publication on nwnoggin.org, drawing on selections of your art projects, images and text from your Art and Neuroscience journals.

ACADEMIC HONESTY: Any evidence of cheating or plagiarism will lead to serious academic consequences, including possible failure of the course and/or dismissal from school. Plagiarism is also a violation of the PSU Code of Student Conduct. For more information see: <http://www.pdx.edu/dos/psu-student-code-conduct>

STUDENTS WITH DISABILITIES: Welcome to the course! If you are a student with a documented disability and registered with the Disability Resource Center (DRC), please contact the instructor to facilitate arranging academic accommodations. If you have a disability and have not yet registered with the DRC, please contact the DRC.

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. Incompletes are not assigned without a written formal agreement and timeline related to course completion.

***CHALLENGES***: *Carefully look over the course requirements in our syllabus, and on Canvas. If you are unclear about what's expected for an assignment, 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, documented and significant emergency, please get in touch! But 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.*

**PLEASE NOTE: The most current, updated schedule is on CANVAS.**

## **ARRIVAL (7/14 - 7/16)**

### **FRIDAY**

Arrival in Santiago, Chile

**Arrive BEFORE 10:00 AM**

API organized airport reception and transfer to Valparaíso/Viña del Mar

Move-in with host families

API cultural, health, and safety orientation neighborhood walking tour

API organized group welcome dinner

### **SATURDAY**

Museo Fonck

Valparaíso Historical and Street Art tour

Visit to Concon Sand Dunes

### **SUNDAY**

Visit to Matetic Vineyards, Casablanca Valley, with wine tasting included

## **THE CLASSES**

### **WEEK ONE (7/17 – 7/21):**

#### **Introduction, Electrophysiological Properties of Neurons & Synapses**

\* **JOURNAL PROMPT** (see Discussion Forum): Create a sensory map of Valparaíso

**\*\* JOURNAL PROMPT DUE IN DISCUSSION FORUM BY SUNDAY**

\* **ART PROJECT 1: Chilean Neuron model**

**\*\* ART PROJECT 1 DUE BY SUNDAY**

### **MONDAY**

Introductions, **Welcome to Valparaíso! Neurons carry information-rich electrical messages and communicate with each other by releasing chemical messengers (neurotransmitters).** Cell membranes, protein machines, forces, resting potential, action potential, synapses;; introduction to Art Project 1

### **TUESDAY**

*How do neurons carry information in the form of electric current, and communicate chemically across synapses to form neural networks for sensation and perception?*

Visit to Fine Art Museum

### **WEDNESDAY**

*Who are we meeting on Thursday? What is the focus of their research? What questions do you have?*

**THURSDAY**

*FIELD TRIP:* Visit to Centro Interdisciplinario Neurociencia Valparaíso (CINV):  
Discussion with neuroscientists

**WEEK TWO (7/24 – 7/28):****Neuroaesthetics, Gestalt & Chemical Senses**

\* [JOURNAL PROMPT \(see Discussion Forum\): An ode to a neuron](#)

\*\* **JOURNAL PROMPT DUE IN DISCUSSION FORUM BY SUNDAY**

\* [ART PROJECT 2: Neuron Screen Print](#)

\*\* **ART PROJECT 2 DUE BY SUNDAY**

**MONDAY****NEUROAESTHETICS** (the biology of beauty and art)

investigate how the brain processes and perceives art, beauty, and other aesthetic experiences, and how these experiences can affect our behavior and emotions.

**TUESDAY****GESTALT**

Gestalt psychologists emphasized that organisms perceive entire patterns or configurations, not merely individual components; also an introduction to gustation and olfaction; taste/smell versus flavor; differences with other senses (ipsilateral projection, limbic/paralimbic targets)

**WEDNESDAY**

**CHEMICAL SENSES:** GUSTATION: taste receptors, taste buds, papillae; basic tastes; labeled line vs. pattern coding; receptor mechanisms gustatory pathways; flavor is so much more than taste; OLFACTION: olfactory neurons, glomeruli, bulb, and central projection targets; vomeronasal organ and the Flehmen response. Screen printing workshop at Casaplan Art gallery.

**THURSDAY**

*FIELD TRIP:* Visit to murals, art galleries in Valparaíso, and the Pablo Neruda House

**WEEK THREE (7/31 – 8/4):****The neuroscience and art of stress and change**

\* [JOURNAL PROMPT \(see Discussion Forum\): Art, trauma and the Chilean experience](#)

\*\* **JOURNAL PROMPT DUE IN DISCUSSION FORUM BY SUNDAY**

\* [ART PROJECT 3: Arpillera \(linked to neuroscience of memory, stress and resilience\)](#)

\*\* **ART PROJECT 3 DUE BY SUNDAY**

**MONDAY**

**STRESS AND THE BRAIN:** Autonomic nervous system, emotional reactivity versus regulation, HPA axis, impacts of social stress on hippocampus/MTL; the epigenetics of multigenerational trauma; confirmation bias, belief perseverance; culture shock, social

and perceptual challenges, and acquiring new cultural competency: *what is happening in our brains as we change and adapt?*

### TUESDAY

**DEALING WITH TRAUMA, ANXIETY AND STRESS:** Suggestions from neuroscience research. Forest bathing, meditation, exercise, exploratory activity, video games, art therapy, making art, psychedelics, bringing more brains and biases into the room. *Do human brains experience neurogenesis?*

### WEDNESDAY

**CHILEAN RESPONSE TO NATIONAL TRAUMA**

### THURSDAY

*FIELD TRIP:* Arpillera workshop

### WEEK FOUR (8/7 – 8/11):

**What have we learned, and how will we share it?**

\* [JOURNAL PROMPT \(see Discussion Forum\): Reflection on Valpo](#)

\*\* **JOURNAL PROMPT DUE IN DISCUSSION FORUM BY SUNDAY**

\* [FINAL BLOG POST](#)

\*\* **FINAL BLOG POST DUE BY SUNDAY**

### MONDAY

**HOW DO WE SHARE NEUROSCIENCE AND ART?** *What have you learned? What are you motivated to share with others?* Posting expectations and requirements.

### TUESDAY

**WORK ON POSTS COLLABORATIVELY;** Finalizing arpillera project.

### WEDNESDAY

**WORK ON POSTS COLLABORATIVELY;** Finalizing arpillera project.

### THURSDAY

*Field Trip:* School visit/outreach with Ciencia Al Tiro!

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 challenging time.*

## TITLE IX REPORTING OBLIGATIONS

Portland State is committed to providing an environment free of all forms of prohibited discrimination and sexual harassment (sexual assault, domestic and dating violence, gender or sex-based harassment and stalking). If you have experienced any form of sexual harassment, know that help and support are available. PSU has staff members trained to support survivors in navigating campus life, providing academic support and more. Information about PSU's support services on campus, including [confidential services](#) and [reporting options](#), can be found on PSU's [Sexual Misconduct Response website](#) or you may call a Confidential Advocate at 503.894.7982 or by scheduling [online](#). You may also report any incident of discrimination or discriminatory harassment, including sexual harassment, to the **Title IX Coordinator**, [Office of Equity and Compliance](#), or the [Office of the Dean of Student Life](#).

Please be aware that all PSU faculty members and instructors **are required to report** information of an incident that may constitute prohibited discrimination, including sexual harassment and sexual and relationship violence. This means that if you tell me about a situation of sexual harassment or discrimination, I have to share the information with the University's Title IX Coordinator or the Office of the Dean of Student Life. However, the information will be kept private and only those with a need to know will be provided with what you disclose.

Please complete the required student module [Understanding Sexual Misconduct and Resources](#) in Canvas, which provides information about PSU policy and resources. You may also report sexual and relationship violence to law enforcement on campus with [Campus Public Safety Office \(CPSO\)](#).

Or you may file an [anonymous report with Campus Public Safety Office](#) or a [Bias Incident report](#) with the [Bias Review Team \(BRT\)](#). PSU does not typically investigate the reports that are made through these two avenues. These reports help PSU understand what students and employees are experiencing on and around campus and provide support where needed.

### The Center for Student Health & Counseling (SHAC)

**Think SHAC First!** [The Center for Student Health & Counseling \(SHAC\)](#) provides high quality, accessible, [medical](#), [counseling](#), [dental](#), and [health promotion services](#) to all PSU students taking 5+ credit hours, regardless of the type of insurance coverage. Office visits at SHAC are FREE!

Students taking 1+ credit hours can access [SHAC Dental Services](#). SHAC has an incredible staff of health care professionals who are dedicated to keeping you healthy so you can stay in the classroom and focus on learning. For a full list of services and more information visit [pdx.edu/health-counseling](http://pdx.edu/health-counseling).

**Medical Excuse Notes:** [The Center for Student Health and Counseling \(SHAC\)](#) does not provide medical excuse notes for absences from classes, labs, studios or exams, or for missed deadlines due to short-term illness, injury, or other clinical appointments. Visit the [SHAC Medical Excuse Policy](#) at [pdx.edu/health-counseling/our-policies](http://pdx.edu/health-counseling/our-policies) for more information.

**Mental Health Emergencies:** If you are having a mental health emergency and need to speak with someone immediately, come in to SHAC at ANY time during SHAC [hours of operation](#). After hours and weekends call the Multnomah County Crisis Line 503.988.4888 or use the 24/7 [mySSP mental health support resource](#) 866.743.7732.