



SYLLABUS

THE ART OF NEUROSCIENCE IN ITALY

Instructor: Nicole Dudukovic, Ph.D.

Language of Instruction: English

UO Credits: 4

Contact Hours: 40

Student Engagement Hours: 120

SIENA, ITALY

COURSE DESCRIPTION

This interdisciplinary science course offers an introduction to the human brain and its perceptual abilities. We will explore the contributions of Italian scientists to neuroscience and survey the field of neuroaesthetics, which examines how the brain basis of perception has implications for how we view art. We will investigate how visual and auditory perception work in the brain, and we will use this knowledge to inform our explorations of Italian art and music. Italy has a rich history of neuropsychology, or the study of human patients with brain damage, and we will conclude this course by studying the artwork of individuals with neurological disorders, observing how this artwork allows us to make inferences about brain function.

This course is designated as a Science Core Education course. At UO, core education is designed to provide a broad, interdisciplinary education that helps students think critically and creatively, communicate clearly, and reflect ethically. Specifically, in this class you will learn and practice **critical thinking** about neuroscience concepts through a quiz, a class presentation, and a final exam. In this class you will also practice **written communication** through a paper assignment, a collaborative written project, and a final exam.

COURSE OBJECTIVES AND STUDENT LEARNING OUTCOMES

By the end of this course you should be able to:

- ◆ Identify neural structures and anatomical subdivisions of the nervous system and explain the process of neural communication;
- ◆ Describe the pathways and structures involved in the neuroscience of vision and hearing;
- ◆ Communicate some key contributions of Italian neuroscientists;
- ◆ Examine visual art and music from a scientific perspective;
- ◆ Explain how art can be used to demonstrate how the brain changes after disease

INSTRUCTIONAL METHODOLOGY

This course will be conducted through readings, interactive lectures, seminar-style discussions, in-class demonstrations, excursions, and student presentations.

METHOD OF EVALUATION (GRADING)

- 15% Participation
- 15% Quiz
- 20% Italian neuroscientist collaborative project
- 20% Neuroaesthetics paper
- 10% Class presentation
- 20% Final Exam

COURSE OUTLINE (subject to minor changes)

This course will be organized into three modules that will each be focused on a specific topic and set of activities and assignments. All required readings and materials for this course will be provided by the instructor as pdfs on Canvas. To access our course Canvas site, log into canvas.uoregon.edu using your DuckID. If you have questions about using Canvas, visit the [Canvas support page](#).

Module One – The Brain and Nervous System

- M/29** **Intro to brain & behavior**
Ch. 1 from Watson, N. V., & Breedlove, S. M. (2016). *The Mind's Machine – An Introduction to Brain and Behavior*. (2nd Ed). Sunderland, MA: Sinauer Associates, Inc., 2-19.
- T/30** **Neurons and neuroanatomy**
Introduction and Neuron chapters of *Brain Facts: A Primer on the Brain and Nervous System* (2012). Society for Neuroscience, 4-17.
- W/31** **The visual system & auditory system**
Senses and Perception chapter of *Brain Facts: A Primer on the Brain and Nervous System* (2012). Society for Neuroscience, 18-25.
- Th/1** **Putting it all together – Review & Quiz**
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Module Two – Contributions of Italian Neuroscientists

- M/5** **From Mondino de Liuzzi to Leonardo da Vinci to modern day Italian neuroscience**
Pevsner, J. (2005). Leonardo da Vinci, Neuroscientist. *Scientific American Mind*, 16(1), 84-91.
Tomasello, F. (2015). The challenge of neuroscience in Italy. *International Neuroscience Journal*, 1(1), 70-71.
Willcoxon, M. (2024). Overexposure distorted the science of mirror neurons. *Quanta Magazine*. <https://www.quantamagazine.org/overexposure-distorted-the-science-of-mirror-neurons-20240402/>
- T/6** **Italian neuroscientist collaborative project**
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Module Three – Neuroaesthetics

W/7	Seeing visual art Zeki, S. (1998). Art and the Brain. <i>Daedalus</i> , 127(2), 71-103.
Th/8	Seeing visual art (continued) Reading TBD
M/12	Listening to music Deutsch, D. (2010). Hearing music in ensembles. <i>Physics Today</i> , 63(2), 40-45.
T/13	Listening to music (continued) Brattico, E. & Pearce, M. (2013). The Neuroaesthetics of Music. <i>Psychology of Aesthetics Creativity and the Arts</i> , 7(1), 48-61.
W/14	Neurological disorders and neuroaesthetics paper McDermott, A. (2023). Art and neuroscience converge to explore disorders of the brain. <i>PNAS</i> , 120(5), 1-3.
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M/19	Class presentations & wrap up
W/21	Final exam
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COURSE REQUIREMENTS

Detailed assignment guidelines will be posted on Canvas.

Readings

All assigned readings should be completed before class, and you should come prepared to discuss the readings in class.

Quiz

There will be one quiz that covers material on the brain and nervous system, including the visual and auditory pathways. Questions will be a mix of multiple-choice and short answer questions.

Italian neuroscientist collaborative project

You will work in a small group to select an Italian neuroscientist to feature in a class wiki. You will highlight and summarize the neuroscientist's contributions to the field in piece of writing geared towards a public audience.

Neuroaesthetics paper

You will select a work of Italian art or music to analyze from a scientific perspective, applying what you learned about the visual or auditory system to your experience of the visual art or music.

Class presentation

As a small group, you will select artwork that was produced by an individual with a neurological disorder. You will briefly summarize what is known about the disorder and explain how the artwork can be used to make inferences about the brain.

Final exam

The final exam will consist of short answer questions that require you to reflect back on what you have learned about the nervous system, perception, and your experience of art.

Accessible Education Statement

The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are also encouraged to contact the Accessible Education Center (AEC) in 360 Oregon Hall at 541-346-1155 or uoaec@uoregon.edu.

Academic Misconduct Statement

Academic misconduct, as defined by the University Student Conduct Code, is prohibited at UO. I will report all suspected misconduct to the Office of Student Conduct and Community Standards. By way of example, you should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. You should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. Additional information about a common form of academic misconduct, plagiarism, is available at the Libraries' Citation and Plagiarism page. If at any point you are unsure about whether a behavior aligns with academic integrity in our course, please contact me. I view student questions about academic integrity as a desire to act with integrity, so I welcome your questions.

Reporting Obligations

I am an assisting employee. For information about my reporting obligations as an employee, please see Employee Reporting Obligations. Students experiencing sex-based or gender-based discrimination, harassment, or violence, should call the 24-7 hotline 541-346-SAFE [7244] or visit safe.uoregon.edu for help. Students experiencing all forms of prohibited discrimination or harassment may contact the Dean of Students Office (541-346-3216) or the non-confidential Title IX Coordinator/OICRC at 541-346-3123. Additional resources are available at UO's How to Get Support webpage.