

# Brain, Mind, and Consciousness

Cowell 39

Winter 2015; UC Santa Cruz

Class Meetings

T&Th 6-7:45 pm; Stevenson 175

## Syllabus

### Head Instructor:

Associate Professor Rasmus Grønfeldt Winther

Teaching Website: <http://www.rgwinther.com/Teaching.html>

Office: Cowell Annex 104

Office Hours: Tuesdays 4 – 5:30 pm and by appointment.

### Head Student Mentor:

Tanner Person

[tperson@ucsc.edu](mailto:tperson@ucsc.edu)

Section 8

Tu 2-3:45PM

### Student Mentors:

Alicia Ginsberg <a href="mailto:aginsber@ucsc.edu">aginsber@ucsc.edu</a> Section 2 W 3:30-4:40PM	Jameson Hubbs <a href="mailto:jhubbs@ucsc.edu">jhubbs@ucsc.edu</a> Section 3 Th 2-3:45PM	Jonathan Bridge <a href="mailto:jvbridge@ucsc.edu">jvbridge@ucsc.edu</a> Section 2 W 3:30-4:40PM	Ketty Blum <a href="mailto:kblum@ucsc.edu">kblum@ucsc.edu</a> Section 1 W 2-3:10PM
Mattia Damaggio <a href="mailto:mdamaggi@ucsc.edu">mdamaggi@ucsc.edu</a> Section 7 Th 12-1:45PM	Michelle Dick <a href="mailto:mdick@ucsc.edu">mdick@ucsc.edu</a> Section 8 Tu 2-3:45PM	Naomi Farrell <a href="mailto:nfarrell@ucsc.edu">nfarrell@ucsc.edu</a> Section 4 F 12-1:45PM	QC Vu <a href="mailto:cqv@ucsc.edu">cqv@ucsc.edu</a> Section 1 W 2-3:10PM
Rian Weaver <a href="mailto:rlweaver@ucsc.edu">rlweaver@ucsc.edu</a> Section 6 M 10-11:45AM	Stacy Wu <a href="mailto:sw56923@ucsc.edu">sw56923@ucsc.edu</a> Section 4 F 12-1:45PM	Zeki Schwartz <a href="mailto:zschwartz@ucsc.edu">zschwartz@ucsc.edu</a> Section 5 Tu 12-1:45PM	

## Course Description

This course is an interdisciplinary adventure of the study of brain, mind, and consciousness. Students from all majors are welcome to engage and discuss these topics from their unique area of concentration. Topics of interest examined in this course include philosophy, cognitive science, neuroscience, psychology, artificial intelligence and their contributions to the study of consciousness. Weekly topics to be discussed include: Pedagogy; Thomas Kuhn's Model of Science; Tools for Thinking: Maps, Analogies, and Distinctions; Neuroscience; Perception; Embodied Cognition and Metaphor; Mindfulness; Abstracting the Mind: Plurality and Unity; Artificial Intelligence and Sex; Final Reflections.

The course will consist of two weekly lectures and a section. These sections will relate to the weekly lecture and homework material while maintaining the integrity of the section's theme. This will provide space for students to critically analyze and connect these topics with their own academic and personal interests.

Interdisciplinary studies is still an emerging platform, but academics as varied as neuroscientist V. S. Ramachandran and UCSC philosophy professor Rasmus Grønfeldt Winther have professed its necessity for educational advancement. Many argue our traditional educational programs have fragmented our knowledge so each of us has a specialty while remaining ignorant of the advances of other disciplines, especially in regards to topics as broad and ambiguous as the phenomenon of consciousness. By utilizing an interdisciplinary approach in our education, we aspire both to foster comprehensive knowledge and encourage students to learn from one another to help guide future studies.

## Learning Outcomes

- *Fundamentals.* Students will become acquainted with basic principles and practices of cognitive science and philosophy of science.
- *Theory.* Students will become familiar with the mind-body connection through topics such as sensation and perception, neuroplasticity, and mindfulness.
- *Practice.* Students will gain knowledge of practical applications of cognitive science, technology, and social behavior.
- *Socio-ethico-political context.* Students will delve into the social, ethical, and political

relevance of studies associated with brain, mind, and consciousness.

- *Interdisciplinarity.* Students engage with one another and learn from each other's expertise to bridge gaps between diverse fields of study.
- *Research projects.* Students will demonstrate academic initiative with an in-depth research project of a topic of their choice related to the brain, mind and consciousness.

## Sections

There will be weekly sections associated with the class. Section attendance is required. There will be 8 sections with individual themes related to the class:

1. *Abnormality in Perception & Consciousness*
  - a. Student Mentors: Ketty Blum & QC Vu
  - b. Location: Cowell Senior Common Room
  - c. Time: Wednesdays 2:00-3:10PM
2. *Artificial Intelligence & Consciousness*
  - a. Student Mentors: Jonathan Bridge & Alicia Ginsberg
  - b. Location: Esselen Nation Conference Room
  - c. Time: Wednesdays 3:30-4:40PM
3. *Authority & the Absurd*
  - a. Student Mentor: Jameson Hubbs
  - b. Location: Esselen Nation Conference Room
  - c. Time: Thursdays 2:00-3:45PM
4. *Development of Self*
  - a. Student Mentors: Naomi Farrell & Stacy Wu
  - b. Location: Cowell Senior Common Room
  - c. Time: Fridays 12:00-1:45PM
5. *Myths & Metaphors*
  - a. Student Mentor: Zeki Schwartz
  - b. Location: Cowell Senior Common Room
  - c. Time: Tuesdays 12:00-1:45PM
6. *Self & Nature*
  - a. Student Mentor: Rian Weaver
  - b. Location: Cowell Conference Room 132
  - c. Time: Mondays 10:00-11:45AM
7. *Truth & Language*
  - a. Student Mentor: Mattia Damaggio
  - b. Location: Cowell Senior Common Room
  - c. Time: Thursdays 12:00-1:45PM

8. *The Variety of Human Experience*

- a. Student Mentors: Michelle Dick & Tanner Person
- b. Location: Esselen Nation Conference Room
- c. Time: Tuesdays 2:00-3:45PM

Section Locations:

- Cowell Senior Common Room: [http://maps.ucsc.edu/content/403/map\\_detail](http://maps.ucsc.edu/content/403/map_detail)
- Cowell Conference Room 132: [http://maps.ucsc.edu/content/7282/map\\_detail](http://maps.ucsc.edu/content/7282/map_detail)
- Esselen Nation Conference Room: Across the hall from the [Career Center](#)

Within sections, the reading and class material will be discussed as well as additional questions and materials relating to the section's theme.

## Methods & Expectations

+ **Journals.** You are expected to purchase a little booklet in which you will **keep a journal**. In this journal, challenge yourself to jot down philosophical, critical, and scientific thoughts on brain, mind, and consciousness. Have fun with it. Please always bring these journals to lectures and sections, as our teaching process will often include questions that you are expected to answer/free-think in your journals.

+ **Dialogue.** Practice communicating ideas effectively with fellow students, your student mentor, the professor, and guest lecturers. Try brainstorming out loud while remaining open-minded about ideas that may conflict with yours. You are encouraged to ask questions and challenge assumptions of the complex and urgent material presented.

+ **Diversity of Learning Processes.** The lecture learning process will involve a mix of dialogue, lectures (powerpoint + whiteboard), video clips, journal writing, peer-pair and peer-group discussions, and calling randomly on students. In sections, speak up and participate. At home and elsewhere, jot down ideas in your journal, be curious about the writing & reading advice listed below, and talk with friends, acquaintances, and strangers about course themes. Be engaged.

+ **No Electronics.** We ask you to be seriously committed to this potentially transformative class. This will include (i) doing all the reading and (ii) **turning off** all cell phones, computers, and access to social media (Facebook, Twitter, etc.) while in the classroom (lecture or section). We implore you to try to take notes by hand, the "old school" way – you can reformulate those into a Word doc later. **Dare to turn off all your electronics during classtime.**

+ **All assignments are mandatory.** Late assignments will drop by one full letter grade for every day it is late. Your final grade will also drop by one full letter grade if you miss an

assignment.

+ **Attendance is mandatory.** Attendance will be taken at every class and section. Although we do NOT recommend that you do so, you may miss up to three lectures or sections, no questions asked. Missing more than three lectures or sections (e.g., 1 lecture + 2 sections) results in your final grade dropping at least a full letter grade (you may also fail the course).

## Grading Breakdown

- Participation (Lecture + Section) - 10%
- Reading Responses - 20%
- Midterm - 30%
- Final Presentation - 10%
- Final Report - 30%

### Reading Responses

Reading responses are **maximum 2 pages** and include (i) a summary, (ii) a critical analysis, and (iii) a self-reflection of the main course readings listed on this syllabus and how they relate to themes, readings, journals, movies, etc. from your section. There will be no explicit prompts for each reading response unless otherwise stated. This is because reading responses are intended to demonstrate the student's general understanding of the reading and provide space for critical thinking and development of a personal connection to the course material.

Reading responses for the weekly material will be due **every week in section** except week 1 and week 5.

### Midterm

The midterm will cover all material from the first day of lectures until the date of the midterm. Unless stated otherwise, the midterm will not include any materials from sections. Students will be expected to demonstrate that they have learned the course material on this syllabus and can critically think about the topics presented.

### Final Report & Final Presentation

Students will individually complete a project to further examine a topic discussed within the course, or related to the material. This will be an in depth research project that must be approved by the professor and/or student mentors for relevance and substantial quality. The final project will consist of at minimum a **10 page research paper** as well as a **10-15 minute presentation**, and must cite evidence **from at least nine scholarly sources**. Reports should include at minimum a review of the relevant literature and an articulation of a new testable

hypothesis or theory. Fuller details of the Final Report will be discussed.

1. *Review Section*: Students will pick a topic that can be handled in a few weeks, form a hypothesis or a generalization and evaluate it on the basis of evidence for and against it before reaching a conclusion.

2. *Novel Hypothesis/Theory Section*: Students will develop a hypothesis or theory about some aspect of brain, mind, and consciousness, cite evidence for and against it before reaching a conclusion, and propose experiments to test the theory.

## Writing & Reading Advice

Writing is essential to our craft as intellectuals and academics. Your writing can always improve. Here are some relevant online resources. Read and enjoy.

1. The single best book on writing!

<http://www.amazon.com/Stein-Writing-Successful-Techniques-Strategies/dp/0312254210/>

2. Guidelines for philosophical writing:

<http://www.hps.cam.ac.uk/research/wp.html>

<http://www.anthoniflood.com/blanshardphilostyle.htm>

<http://www.jimpryor.net/teaching/guidelines/writing.html>

<http://www.public.asu.edu/~dportmor/tips.pdf>

3. Guidelines for essay writing, in general:

<http://www.westmont.edu/~work/material/writing.html>

4. Oxford English Dictionary. You have online access to this extraordinary resource at:

<http://www.oed.com.oca.ucsc.edu/>

5. "Politics and the English Language." Please read this funny and useful essay by George Orwell (author of *1984*) here:

<http://www.resort.com/~prime8/Orwell/patee.html>

6. From the inimitable Kurt Vonnegut:

<http://kmh-lanl.hansonhub.com/pc-24-66-vonnegut.pdf>

7. "10 tools for improving your writing" by RG Winther:

[http://www.rgwinther.com/Winther\\_10\\_tools\\_for\\_improving\\_your\\_writing.pdf](http://www.rgwinther.com/Winther_10_tools_for_improving_your_writing.pdf)

Reading carefully is also critical. Here is a great guide for learning and practicing this skill:

<http://www.amazon.com/How-Read-Book-Intelligent-Touchstone/dp/0671212095/>

## **DRC Accommodation**

If you qualify for classroom accommodations because of a disability, please get an Accommodation Authorization from the Disability Resource Center (DRC) and submit it to instructor in person within the first two weeks of the quarter. Contact DRC at 459-2089 (voice), 459-4806 (TTY), or <http://drc.ucsc.edu> for more information on the requirements and/or process.

## **WARNING**

**Academic misconduct will not be tolerated. Please consult:**

[http://www.ucsc.edu/academics/academic\\_integrity/index.html](http://www.ucsc.edu/academics/academic_integrity/index.html)

## **Course Outline**

N.B. Exact assigned readings are subject to change. Any such changes would be announced during lecture and on eCommons.

### **Week 1: Pedagogy**

January 6 - Introduction

January 8 - Pedagogy (RG Winther)

**Reading:** Freire, Paulo. *Pedagogy of the Oppressed*. New York: Continuum, 2000. Chapters 1 and 2 (pp. 43-86) and last part of Chapter 4 (pp. 167-183). (Book for purchase in Bay Tree Bookstore.)

### **Week 2: Thomas Kuhn's Model of Science**

January 13 - Paradigms (RG Winther)

**Reading:**

(1) Hacking, Ian "Introductory Essay" (pp. vii-xxxvii) and Kuhn Chapters 1, 4, and 5 (pp. 1-9; 35-51) of Kuhn, Thomas. 2012 (1962). *The Structure of Scientific Revolutions*. 50<sup>th</sup> Anniversary Edition, with an introduction by Ian Hacking. Chicago: Chicago University Press. (Book for purchase in Bay Tree Bookstore.)

(2) (on eCommons) Dyson, Freeman J. (2012). "Is Science Mostly Driven by Ideas or by Tools?"

January 15 - Revolutions (RG Winther)

**Reading:** Kuhn *The Structure of Scientific Revolutions* Chapters 10-13 (pp. 111-172).

### **Week 3: Tools for Thinking: Maps, Analogies, and Distinctions**

January 20 - Scientific Theories as Maps.

**Reading** (*When Maps Become the World*, RG Winther, book under contract with University of Chicago Press; book parts on eCommons – comments welcome!):

1. <http://ihr.ucsc.edu/when-maps-become-the-world/>
2. Introduction: “City Streets, the Milky Way, and Scientific Theories as Maps of the World.”
3. Chapter 4 “Pluralism.”

Recommended: Chapter 2 “The Map Analogy.”

January 22 - Distinctions and Binaries: Promises and Perils (RG Winther)

**Reading** (on eCommons):

- (1) “The Knife and the One” (RG Winther)
- (2) Zerubavel, Eviatar. 1991. *The Fine Line. Making Distinctions in Everyday Life*. University of Chicago Press. 1-14, 24-28, 115-122.

### **Week 4: Neuroscience**

January 27 - Building Blocks of the Brain: Neuron and Glia Form & Function

**Guest Lecturer:** Robin Dunkin (<http://williams.eeb.ucsc.edu/members/robin.htm>)

**Reading** (on eCommons): Lemaire, Valérie et al. (2012). “Long-Lasting Plasticity of Hippocampal Adult-Born Neurons.”

January 29 - Neural Reuse and Hebbian Learning: Two Kinds of Neuroplasticity in the Brain

**Guest Lecturer:** Michael Anderson (<http://www.fandm.edu/michael-anderson>)

**Reading** (on eCommons): Doidge, Norman. 2007. *The brain that changes itself: stories of personal triumph from the frontiers of brain science*. Preface and Chapter 1 (pgs. 5-25) New York: Viking, 2007.

### **Week 5: Perception**

February 3 - The Suggestible Nature of Motion Perception

**Guest Lecturer:** Nicolas Davidenko (<http://people.ucsc.edu/~ndaviden/>)

**Reading** (on eCommons): Ramachandran, Vilayanur S. (1986). “The Perception of Apparent Motion.”

February 5 - Midterm Exam.

### **Week 6: Embodied Cognition and Metaphor**

February 10 - Metaphors & Analogies of the Internal (RG Winther)

**Reading** (on eCommons): Pinker, Steven. *The Blank Slate: The Modern Denial of*

*Human Nature*. New York: Viking, 2002. 1-13, 59-72, 421- 434.

February 12 - Embodied Meaning, Thinking, and Communication

**Guest Lecture:** Ray Gibbs (<http://people.ucsc.edu/~gibbs/vita.pdf>)

**Reading:** (on eCommons): Gibbs, Ray. (2003). "Embodied Experience and Linguistic Meaning."

### **Week 7: Mindfulness**

February 17 - Enduring Wisdom, Mindfulness & Emerging Neuroscience

**Guest Lecturer:** Craig Schindler (<http://www.projectvictory.net/leaders.htm>)

**Reading:** TBD

February 19- Dragon Taming for Smart People

**Guest Lecturer:** Dada Nabhaniilananda (<http://www.themonkdude.com>)

**Reading:**

(1) Meditation & Spirituality FAQ

<http://www.themonkdude.com/meditation-spirituality/>

(2) Nabhaniilananda, Dada (2014). "As Egoless as the Moon and Stars."

<http://www.themonkdude.com/as-egoless-as-the-moon-and-stars/>

### **Week 8: Abstracting the Mind: Plurality and Unity**

February 24 - A History of the Action Potential

**Guest Lecturer:** Natalia Carrillo (<http://unam.academia.edu/NataliaCarrillo>)

**Reading** (on eCommons):

(1) "Action Potential" Wikipedia.

(2) Huxley, Andrew. (2002). "From overshoot to voltage clamp."

February 26 - "The Couch or the Bottle: Levels of Abstraction and the Anxious Mind"

**Guest Lecturer:** Brian Cantwell Smith

(<http://www.ageofsignificance.org/people/bcsmith/index.html>)

**Reading** (on eCommons):

Required: "Putting the World Together, Keeping the World Apart."

Recommended:

"God, Approximately. Reconciling our Understanding of Matter and Mattering."

"Rehabilitating Representation" (BCS would particularly appreciate student feedback on this *unpublished* piece.)

### **Week 9: Artificial Intelligence and Sex**

March 3 - Artificial Intelligence and Alan Turing (RG Winther)

**Reading** (on eCommons):

- (1) Turing, A.M. (1950). Computing machinery and intelligence. *Mind*, 59, 433-460.  
<http://www.loebner.net/Prizef/TuringArticle.html>
- (2) Harnad, Stevan (2012). Alan Turing and the “Hard” and “Easy” Problem of Cognition: Doing and Feeling. (*Turing100: Essays in Honour of Centenary Turing Year 2012*)  
<http://eprints.soton.ac.uk/340293/1/harnad-huma-turingessay.pdf>

March 5 - Neuro-Biological Explanations of Sexual Orientation and Their Counter-explanations

**Guest Lecturer:** Fabrizzio McManus (<http://www.rgwinther.com/Students.html>)

**Reading** (on eCommons): McManus. 2012. “The Structure of Explanations and Counter-Explanations of Homosexuality” *Open Journal of Philosophy* 2 (4): 235-243,  
<http://www.rgwinther.com/McManusFabrizzio2012TheStructureofExplanationsandCounterExplanationsofHomosexuality.pdf>

### Week 10: Final Reflections

March 10 - Choosing Our Way Through Life

**Guest Lecturer:** Frank Andrews (<http://www.heartfeltyes.com>)

**Reading:** Andrews, Frank. *The Art and Practice of Loving: Living a Heartfelt Yes*. Palo Alto, CA: Magic, 2010. Print.

March 12 - Grand Finale

**Reading:** TBD

### Finals Week

March 19 - **Thursday 12:00-3:00PM** - Final Presentations

**Due:** Final Report

**Note:** Finals will be held with your section in locations TBA.