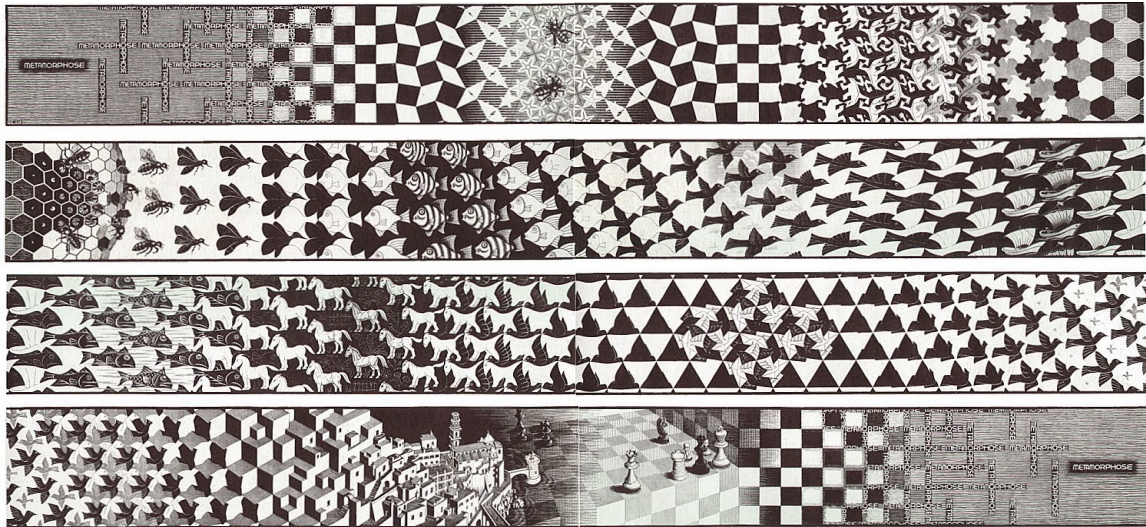


## The Science of Creativity and Learning



Jeff Leake, M.F.A., **Instructor**; [jleake@pdx.edu](mailto:jleake@pdx.edu)  
Bill Griesar, Ph.D., **Instructor**; [griesar@pdx.edu](mailto:griesar@pdx.edu)  
Dustin Lao, Peer Mentor, [ldustin@pdx.edu](mailto:ldustin@pdx.edu)

Please use these email  
addresses, *NOT d2l*

OFFICE HOURS: TBA

**SPRING TERM**: April 2 – June 10, T-TH, 12:00-1:50

ART SUPPLIES (required): Sketchbook (standard 11" x 14" drawing, 80 pound weight paper), colored pencils (basic set, 12 assorted colors), graphite drawing pencils, white plastic eraser, Air Dry Clay.

NOTE: *You will need \$2.50 for the miracle berry experiment.*

### GOAL OF THE COURSE:

Creativity is one of the most complex and uniquely human behaviors that we exhibit. By exploring the biological drives behind our aesthetic experiences, and by examining physically what happens when we engage in creative activities, we can learn a great deal about how we perceive and interact with the world around us.

In this course we will directly examine how vision, sound, touch and other stimuli are essential for perceptual experience. We will explore the surprising history of anatomical study, the depiction of brains and bodies in medical texts and art, and the

neurobiological mechanisms that generate behavior, and explore how stimuli affect the nervous system, driving conscious and unconscious responses that drive us to create and learn.

In addition, we will examine how our critical, adaptive, neurobiological networks develop, operate, and inevitably decay. How does decay, and also drug action, provoke change in what we see, hear, taste and feel? How does knowledge of neuroanatomy allow us to attempt structural replacement of our eyes, ears, and limbs? What does it ultimately mean to be information processing networks of neurons and also new machines? Who benefits from these technologies, and how does our evolving scientific understanding affect ethical decision making and creative responses to perceived aspects of our world?

GRADES: Grades are based on the following 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 an ABOVE AVERAGE grade, a C is AVERAGE, and a D is BELOW AVERAGE.***

You can earn points in this class in the following ways...

**\*\*\*\* DEADLINES ARE IMPORTANT: LATE WORK RECEIVES NO CREDIT. \*\*\*\***

### **READING RESPONSES** (27 points)

Reading Response 1: (3 points)

Reading Response 2: (3 points)

Reading Response 3: (3 points)

Reading Response 4: (3 points)

Reading Response 5: (3 points)

Reading Response 6: (3 points)

Reading Response 7: (3 points)

Reading Response 8: (3 points)

Reading Response 9: (3 points)

Reading Response 10: (3 points)

### **PROJECTS** (30 points)

Project 1: Mirror Drawing Experiment (5 points)

Project 2: Blurred Drawing (5 points)

Project 3: Bind touch Sculpture (5 points)

Project 4: Miracle Berry Experiment (5 points)

Project 5: Exquisite Corpse Ear (5points)

Project 6: Brain Map (5points)

**SCIENCE BLOG** (10 points)

**MENTOR SESSIONS** (15 POINTS)

**FINAL PROJECT** (15 points)

Final Project: Art and Science Teaching Project

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

***NOTE: 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.***

**EXCUSES**: Life has ups and downs, and everyone struggles sometimes with family, work, and other personal concerns and commitments. However, unless there is a serious, unexpected, sudden, and significant emergency, *please do not petition for special treatment regarding deadlines for projects, quizzes, or exams.* I am required to treat all students fairly, and that means each of you must think ahead and plan for when assignments are due. Everyone is subject to the same course expectations ...

## THE CLASSES

### **WEEK ONE: April 3-April 5** WHAT ARE YOUR SENSES:

#### ASSIGNED

Science Lecture Blog (Due Week 9)

Outreach Blog (Due Week 9)

PROJECT 1: Mirror Drawing Experiment (Due Tuesday Week Two)

READING 1: How Many Senses Do We Have?

READING 2: Making Sense of the World, Several Senses at a Time

#### **DUE**

READING RESPONSE 1 DUE (Thursday 4/4)

*Collect \$2.50 for the miracle berry experiment*

LECTURE (Thursday 4/5): Intro to vision (Bill Griesar)

### **WEEK TWO: April 10-April 12** VISION:

#### ASSIGNED

READING 3: How Our Sense Of Touch Affects Everything We Do

PROJECT 2: Blurred Drawing (Due Tuesday Week Three)

#### **DUE**

READING RESPONSE 2 DUE (Tuesday 4/10)

PROJECT 1 DUE (Tuesday 4/10)

LECTURE (Thursday 4/12): More on vision (Bill Griesar)

### **WEEK THREE: April 17 – April 19** SOMATOSENSATION:

#### ASSIGNED

READING 4: Beyond Taste Buds: The Science of Delicious

PROJECT 3: Bind touch Sculpture (Due Tuesday Week Four)

#### **DUE**

READING RESPONSE 3 DUE (Tuesday 4/17):

PROJECT 2 DUE (Tuesday 4/17)

LECTURE (Tuesday 4/17): Somatosensation (Bill Griesar)

### **WEEK FOUR: April 24 – April 26** GUSTATION AND OLFACTION:

#### ASSIGNED

READING 5: 12 Sound Artists Changing Your Perception of Art

PROJECT 4: Miracle Berry Experiment (Due Tuesday Week Five)

#### **DUE**

READING RESPONSE 4 DUE (Tuesday 4/24):

PROJECT 3 DUE (Tuesday 4/24)

LECTURE (Thursday 4/24): Chemical senses (Bill Griesar)

**WEEK FIVE: May 1 – May 3 AUDITION:**

ASSIGNED

READING 6: Why is a STEAM curriculum perspective crucial to the 21st century

PROJECT 5: Exquisite Corpse Ear (Due Tuesday Week Six)

DUE

PROJECT 4 DUE: (Tuesday 5/1)

READING RESPONSE 5 DUE (Thursday 5/3):

LECTURE (Thursday 4/5): Audition (Bill Griesar)

**WEEK SIX: May 8 – May 10 WHAT IS OUTREACH:**

ASSIGNED

READING 7: Six Things You Should Know About How Your Brain Learns

Final STEAM Teaching Project (Due Week 10)

DUE

READING RESPONSE 6 DUE (Tuesday 5/8)

PROJECT 5 DUE: (Tuesday 5/8)

**WEEK SEVEN: May 15 – May 17 THE CHANGING BRAIN:**

ASSIGNED

READING 8: Neuroscience and Learning: Implications for Teaching Practice

PROJECT 6: Brain Map (Due Week Tuesday Week Eight)

DUE

READING RESPONSE 7 DUE (Tuesday 5/15):

**WEEK EIGHT: May 22 – May 24 THE SCIENCE OF LEARNING:**

ASSIGNED

Create Lesson Plans

READING 9: The neuroscience of creativity: How the brains of innovators are wired differently

DUE

READING RESPONSE 6 DUE (Tuesday 5/22):

PROJECT 8 DUE: (Tuesday 5/22)

Sign up for final presentations

**WEEK NINE: May 29 – May 31 THE SCIENCE OF CREATIVITY:**

ASSIGNED

READING 10: Speaking of Psychology: The neuroscience of creativity

DUE

READING RESPONSE 9 DUE (Tuesday 5/29)

**WEEK TEN: June 5 – June 7**

TEACHING PRESENTATIONS (Tuesday 6/5, Thursday 6/7)

**DUE**

Science lecture blog (Tuesday 6/5)

READING RESPONSE 10 DUE (Tuesday 6/5)

**FINAL: There is no final, have a great summer!**

**A REMINDER:** Life has ups and downs, and everyone struggles sometimes with family, work, and other personal concerns and commitments. **However, unless there is a serious, unexpected, sudden, documented, significant emergency, *please do not petition for special treatment regarding deadlines for projects.***

**Once again, I am required to treat all students fairly, and consistently, and that means each one of you must 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...*