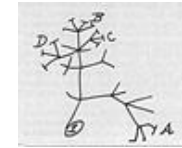


BIS 382A and B: The Visual Art of Biology Syllabus



Darwin's Tree of Life, 1837

**Professor Price, Interdisciplinary Arts and Sciences (IAS)
University of Washington, Bothell, Autumn 2015**

Dr. Becca Price, beccap@uw.edu, uw2-220, Office hours: noon – 1:00 pm MW in UW2-220. You can also make an appointment to meet with me online or face-to-face. Online appointments are held through the “Conference” in Canvas.

Class is from 1:15-3:15 in UW1-051. Section A meets Mondays; Section B meets Wednesdays. *Please attend the section for which you are registered; both sections are full, and we need the whole classroom to ensure that everyone has space.*

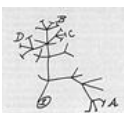
Contents

1. About this course: Description, Skills and outcomes, The nature of a hybrid course
2. Assignments: Participation in face-to-face meetings, Short assignments (readings, discussion boards, etc.), Final Projects (Artistic visualization, Artist's statement, Scientific visualization)
3. Grading/Evaluation
4. Proposed Outline

1. About this course

Description

Biologists and artists interpret the world in complementary ways, especially because both tend to use sight to observe the details they study. Both of these kinds of scholars also communicate with each other and with the general public through visualizations. How are the methods behind and the purposes of their visualizations similar and different? We'll explore this question by critiquing scientific illustration and the contemporary bioart movement and by discussing readings. You'll learn about different biotechnologies through experiments you conduct at home. You'll have the opportunity to explore a biological topic in depth, creating both artistic and scientific representations of that topic that you'll share with your classmates.



Students majoring in any degree offered by IAS begin the process of creating a capstone portfolio in *BIS 300: Interdisciplinary Inquiry* and conclude it in *BIS 499: Capstone Portfolio*. I encourage IAS students to add the work that they complete in this course to their archive on their UW Google Site. More information about the IAS degree portfolio is [here](#).

There are no pre-requisites for the course; come prepared to do 300-level work, and excited to do biology and art.

Learning Goals

These goals reflect the [learning objectives](#) for Interdisciplinary Arts and Sciences at UWB: think about how this course provides you with opportunities to think critically, share leadership and collaborate in your learning, conduct interdisciplinary research and communicate your scholarship both orally and in writing. My aim is to teach you about the intersections in biology and art, but also to help you prepare for the portfolio you will compile in your senior seminar. Upon successfully completing this course, you will learn to

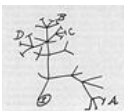
1. Create thought-provoking, well-researched, and revised artwork that offers commentary on a biological topic and uses a biological medium. Create complementary artwork that clearly explains a biological topic.
2. Use artistic critique as a way to describe and evaluate works of art that are in the public sphere as well as works of art generated in class.
3. Practice different biological laboratory techniques that you can do in your own home.
4. Brainstorm, record your learning, and practice communicating through online media such as discussion boards and e-portfolios.

The nature of a hybrid course

This is a hybrid course, meaning that we meet once a week in person; additional “class time” will be spent doing biology labs on your own—experiments that you can do with a computer or with basic kitchen supplies. Homework is required to prepare for both kinds of class “meetings.” Our face-to-face meetings will involve workshops and discussions. Online work typically involves readings, discussion boards, and your SketchLab Notebook. Active participation in both the on-campus and online activities is required in order to pass this course.

Hybrid courses require as much or more time doing assignments and may not work well for all students. To succeed, you should:

- organize your time well; you are managing many demands.
- be prepared to read, write, and sketch a lot.
- be comfortable with using the Internet, email, taking and uploading pictures.
- have easy access to computers and fast-speed Internet.
- be willing to discuss and interact with others online.
- be self-motivated enough to finish assignments on deadline with little-to-no supervision.



2. Assignments

Before Thanksgiving, homework assignments are due Wednesdays and Fridays at 1:15. The assignments that are due on Wednesdays are generally readings and discussions. The assignments that are due on Fridays are generally a combination of biological and artistic experiments that are due in your online SketchLab Notebook. The lab activities that you'll be doing take about 4 hours to complete; sometimes this means collecting data over several days. After Thanksgiving, homework assignments are due on Mondays.

People learn better when they paraphrase what they read, rather than when they quote it. Because I want you to practice paraphrasing, **for every quotation that you use, I will deduct 5% from the grade for that assignment. A quotation that is not acknowledged with quotation marks and a proper in-text citation is plagiarism, will result in a grade of zero, and will be reported.**

My goal is to grade your assignment within a week of you turning them in.

Participation in face-to-face (f2f) meetings

The f2f meetings in this course anchor your entire learning experience. This is the chance where you get to learn from critique, check in with your colleagues and instructor. These meetings put the online learning experiences into the right context.

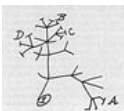
Please participate actively during our class meetings to learn the material—this means listening attentively as well as contributing thoughtfully. Come to class with your homework completed. I'll use the following guidelines to determine your participation grade:

- 90%-100% **Excellent.** You courteously and productively contribute to all of the class discussions and critique sessions, and you listen attentively. Your comments are insightful and draw from the material we've been studying.
- 80%-90% **Good.** You courteously and productively contribute to most of the class discussions and critique sessions, and you listen attentively. Your comments are mostly insightful and often draw from the material we've been studying.
- 70%-80% **Basic.** You courteously and productively contribute to at least half of the class discussions and critique sessions, and you tend to listen attentively. Your comments are sometimes insightful but oftentimes not relevant to class material.
- >70 **Substandard.** In-class participation is very weak.

I understand that personal challenges may arise during the quarter. To accommodate these challenges, I will drop your lowest participation grade.

Short assignments (e.g., readings, discussion boards, etc.)

All of the assigned texts are articles that are available through Canvas. You will discuss these online within small groups. With online discussions, we do not have the benefit of non-verbal feedback, so this format requires different communication skills.



An online posted message must be substantive and initiate, add to, or summarize themes/ideas in a discussion to demonstrate your critical thinking ability. A comment like “I agree” or “Good point” will not ‘count’ as a posting, although you may certainly make them. The value of online discussions is that they are reflective. The content of your post is more important than the grammar and spelling you use. Online postings add to everyone’s reading load for the course. Keep this in mind when posting and make your points clearly and concisely.

Several websites, online texts, and books on physical reserve are available to help you find examples of bioart and to help you with your final projects. Please find them on our [library guide](#).

SketchLab Notebook

Artists and biologists alike keep notes to track their discoveries. Artists use sketchbooks, and scientists use lab notebooks. In this interdisciplinary course, you’ll create a SketchLab Notebook. This is where you’ll record the data you collect during your laboratory experiments, and also generate ideas about what kind of artwork you want to make in this course. You’ll use the e-Portfolio feature in Canvas to set up your SketchLab Notebook.

Your Biology Project

So many aspects of biology are cyclic, like sleep habits, eating habits, reproductive cycles, seasons, sound waves...Your task is to record one of these cycles that occurs *in your own life*, turn it into a piece of art and then interpret your creation in a short paragraph. Please record at least 15 repetitions within your cycle.

Final Projects

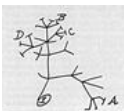
Your final project is composed of two visualizations on the same biological theme that you’ve researched:

Scientific visualization

One of these visualizations is strictly scientific. The point of the project is to communicate information about your scientific topic to your audience. You will be writing about the science behind your topic in a number of short homework assignments.

Artistic visualization/Artist’s statement

The other visualization is artistic. The point of this project is to comment on your scientific topic. You’ll write an artist’s statement to accompany your artistic piece. In this artist’s statement, you will discuss the commentary you are making, how it builds on the literature you’ve read on the topic as well as other readings in this class, and the ideas and goals for your artwork.

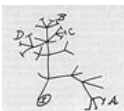


3. Grading/Evaluation


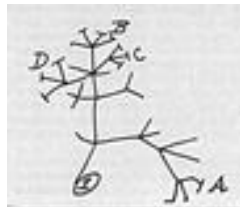
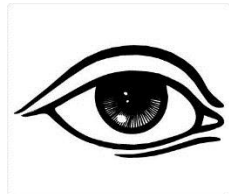
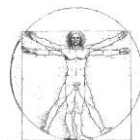
Assignments	% of Grade
Participation in face-to-face meetings	15
Short assignments (e.g., online discussions, lectures, and readings)	20
SketchLab Notebook	20
Your biology project	5
Final Projects	--
Scientific visualization	20
Artistic visualization/Artist's statement	20
Total	100

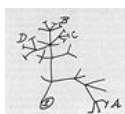
Use the table below to convert your percentages to a grade on the 4.0 scale. The bins in this table overlap, affording me some flexibility in how I determine your grade. If your performance improves drastically, or if I feel that your assignments do not reflect your clear and innovative thinking, I will boost your grade. Once grades are assigned, I will not change them.



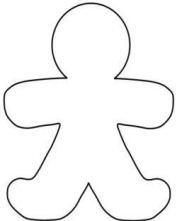
Your points	97 – 100%	92 – 97%	86-92%	81 – 86%	76 – 81%	71 – 76%	65 – 71%	60 – 65%	<60%
Grade	3.9 – 4.0	3.5 – 3.9	3.0 – 3.5	2.5 – 3.0	2.0 – 2.5	1.5 – 2.0	1.0 – 1.5	0.7 – 1.0	0

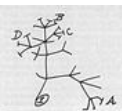





5. Proposed Outline

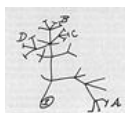
	Homework	Lab	f2f Meeting	Connection to learning goals (LGs)
A. Illustrating biology				
<p>1. <i>Getting started</i> Sept 30 – Oct 6</p> 			<p>Section A: 5 Oct Section B: 30 Sept</p>	<p>Set ground rules and begin thinking about how scientists visualize data to help you create your scientific visualization.</p> <p>LG: 1</p>
<p>2. <i>Evolution</i> Oct 7 – Oct 13</p> 	<p>Due: Oct 7</p> <p>Gould 1989 & questions Survey Set up SketchLab Notebook Intros</p>	<p>Due: Oct 9</p> <p>Heights data Evolution lab Reply to Gould Discussion</p>	<p>Section A: 12 Oct Section B: 7 Oct</p>	<p>Use depictions of evolutionary relationships as a vehicle for learning to critique scientific visualizations and to help you create your scientific visualization. Practice biological techniques for depicting evolution.</p> <p>LGs: 1, 3, 4</p>
<p>3. <i>Sight</i> Oct 14 – Oct 20</p> 	<p>Due: Oct 14</p> <p>Livingstone 2002 & questions Discussion: To see is to know</p>	<p>Due: Oct 16</p> <p>Reflection about heights Vision experiments Reply to Livingstone Discussion</p>	<p>Section A: 19 Oct Section B: 14 Oct</p>	<p>Use the way humans see as a vehicle for learning to critique scientific visualizations and to help you create your scientific visualization. Practice conducting experiments using yourself as a subject.</p> <p>LGs: 1, 3, 4</p>
<p>4. <i>Medical illustration</i> Oct 21 – Oct 27</p> 	<p>Due: 21 Oct</p> <p>Sappol 2004 & questions Discussion: Sharing images Reply to Discussion on To see is to know</p>	<p>Due: 23 Oct</p> <p>Your Biology data Reply to Sappol Discussion</p>	<p>Section A: 26 Oct Section B: 21 Oct</p>	<p>Use your own data to begin creating artwork. Study the anatomical theater represents both scientific and artistic visualizations.</p> <p>LGs: 2, 3, 4</p>

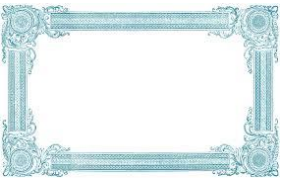


	Homework	Lab	f2f Meeting	Connection to learning goals (LGs)
B. What is bioart				
5. <i>What is (found) art?</i> Oct 28 – Nov 3 	Due: 28 Oct Discussion: Your Biology concept Reply to Sharing Images of Bioart Discussion Mitchell (intro & ch1) 2010 & questions	Due: 30 Oct Flower dissection Reply to Mitchell (intro & ch1) Reply to Your Biology Concept Discussion	Section A: 2 Nov Section B: 28 Oct	Use data you collected to begin creative artwork. Critique the bioart movement to compare scientific and artistic visualizations. LGs: 1, 2, 3, 4
6. <i>Bioart</i> Nov 4 – Nov 15 	Due: 4 Nov Reflect on Your Biology Project Mitchell (ch1 & ch 2) 2010 & questions Submit 3 possible topics for your final assignments.	Due: 6 Nov Microbiology - takes 4-5 days in a row to complete Reply to Mitchell (ch1 & ch2)	Section A: 9 Nov Section B: 4 Nov <i>Vote by Nov 3!</i>	Revise your own artwork based on critical feedback you received. Continue experimenting with biotechnologies that you might use in your artistic visualization. LGs: 1, 2, 3, 4
7. <i>Is that bioart?</i> Nov 16 – Nov 22 	Due: 11 Nov Find, read, & report about two papers about one of your topics Due: 18 Nov Find, read, & report about two more papers related to your topic	Due: 20 Nov DNA Extraction	Section A: 16 Nov Section B: 18 Nov <i>No class Nov 11. Happy Veteran's Day!</i>	Research a biological topic and begin generating artwork to explore and communicate that topic through artistic and scientific visualizations. Continue experimenting with biotechnologies that you might use in your visualization. LGs: 1, 3, 4



	Homework	Lab	f2f Meeting	Connection to learning goals (LGs)
C. Synthesis				
<p>8. <i>Brainstorming on your topics</i> Nov 23 – Nov 29</p> 	<p>Due: 25 Nov</p> <p>Develop the scientific and artistic concepts for your final project. Write a description of each and then a paragraph comparing the two concepts, about 250 words in each paragraph.</p> <p>Complete any additional readings necessary to make your visualizations.</p>	<p>Nothing due</p> <p><i>Happy Thanksgiving!</i></p>	<p><i>Dr. Price is holding office hours in UW2-220 from noon – 3:15 on Nov 23. Office hours and class are canceled on Nov 25.</i></p>	<p>Research a biological topic and begin generating artwork to explore and communicate that topic through artistic and scientific visualizations.</p> <p>LGs: 1, 4</p>
<p>9. <i>You, Scientific Illustrator</i> Nov 30 – Dec 6</p> 	<p>Due: 30 Nov</p> <p>Your scientific visualization. <i>Bring this to class.</i></p>	<p>Nothing due</p> <p>Work on revisions</p>	<p>Section A: 30 Nov Section B: 2 Dec</p>	<p>Create artwork that communicates a well-researched biological topic. Use artistic critique to help your colleagues improve their artwork.</p> <p>LGs: 1, 2</p>
<p>10. <i>You, Bioartist</i> Dec 7 – Dec 13</p> 	<p>Due: 7 Dec</p> <p>Your artistic visualization and artist's statement. <i>Bring these to class.</i></p>	<p>Nothing due</p> <p>Work on revisions.</p>	<p>Section A: 7 Dec Section B: 9 Dec</p>	<p>Create artwork that offers commentary on a well-researched biological topic. Use artistic critique to help your colleagues improve their artwork.</p> <p>LGs: 1, 2</p>



	Homework	Lab	f2f Meeting	Connection to learning goals (LGs)
<p>11. <i>Final exhibit</i></p> 	<p>Due: Dec 14 for section A and Dec 17 for Section B</p> <p>Submit these to Canvas <i>and bring them to class:</i></p> <ul style="list-style-type: none"> Artistic visualization Artist's statement Scientific visualization 		<p>Section A: Dec 14 Section B: Dec 17</p>	<p>Present your revised artistic and scientific visualizations. Courteously and constructively critique work by your peers.</p> <p>LGs: 1, 2</p>

Credits

- Darwin, C. 1837. Tree of Life [ink and paper]. Retrieved from [https://en.wikipedia.org/wiki/Tree_of_life_\(biology\)](https://en.wikipedia.org/wiki/Tree_of_life_(biology)).
 - da Vinci, L. ca 1490. Vitruvian Man [ink and paper]. Retrieved from https://en.wikipedia.org/wiki/Vitruvian_Man.
 - Mapplethorpe, R. 1985. Orchid [gelatin silver print]. Retrieved from <http://www.christies.com/lotfinder/photographs/robert-mapplethorpe-orchid-1985-5420684-details.aspx>.
 - Kac, E. 2000. GFP Bunny [transgenic rabbit]. Retrieved from <http://www.ekac.org/gfpbunny.html>.
- All other drawings are royalty free clipart.

