

BIS 382: The Visual Art of Biology **Interdisciplinary Arts and Sciences (IAS)** **University of Washington, Bothell, Winter 2009**

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Office Hours:
Immediately following class
or by appointment

Description

How has natural history affected art and how has art affected natural history? To answer these questions, we will explore the mutual impact of these fields, discovering how technological innovations that enhance vision—such as the microscope, the telescope, the camera and digital imaging—affect our representations of nature. We will employ a fascinating, diverse set of readings to explore how modern medical illustrations stem from Da Vinci and the traditions embedded in the anatomical theater. We will also see how nature has inspired Hollywood films (*Aliens*, *Pirates of the Caribbean: Dead Man's Chest*, *Finding Nemo*). Throughout the term, you will find examples of BioArt to contribute to a course database, and we will analyze the images in that database through a series of interdisciplinary assignments.

We will meet twice a week on Mondays and Wednesdays from 5:45 – 7:50 in room UW1-220. Our meetings will combine lecture and hands-on projects. To prepare for each class, you will need to complete the assigned readings, ensure that you understand the previous class's material and complete homework assignments.

Skills and Outcomes

These outcomes reflect the learning goals for the Interdisciplinary Arts and Sciences Program 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 be able to

- recognize the effect advances in technology have on the interplay between art and biology.
- evaluate the biases inherent to interpreting and producing visual, biological imagery.
- develop basic databasing skills necessary to catalog a collection of art.
- conduct research on efficacy of communicating biological ideas through visual media.
- communicate your research clearly while writing, talking and creating visual art.
- collaborate with others as you interpret course readings.

Course Texts

All of the readings are available on E-Reserves:

<https://eres.bothell.washington.edu/eres/coursepass.aspx?cid=1119>



How to Succeed

- Attend class. Arrive on time.
- Participate. Read the course material, enter into discussions, ask questions when you are confused, and help your classmates master the material. Provide feedback to me and to your classmates so we can learn as a team. Enroll in Blackboard, and check it regularly.
- Complete assignments on time. Assignments are due at the beginning of lecture. Late assignments will be marked down 5% of the initial grade for every late day. I do not accept assignments beyond 10 days after the due date. Extensions to the original deadline are possible, but *must be granted in writing two days before the deadline*.
- Occasionally students need to reschedule an exam. If this happens to you, you must e-mail and speak to me *at least one week prior* to the scheduled exam, and you must give me a very good reason (up to me) for requesting a makeup. If your reason is a documented disability, then we will work the Disable Student Services to schedule your exam at an appropriate time and place. I will make exceptions to this policy in the event of a *documented* serious emergency or illness, but I do require a written excuse.
- Don't use cell phones in class.
- A number of students have complained of peers who misuse laptops during class. Thus, please refrain from using laptops in class.
- Practice academic integrity. In particular, don't plagiarize. The UWB Student Handbook defines plagiarism as "the use of the creations, ideas or words of someone else without formally acknowledging the author or source through appropriate use of quotation marks, references, and the like." See <http://www.uwb.edu/students/policies/integrity.xhtml> for more information.
- When you have questions, use class time, office hours, and e-mail to obtain answers. I answer email messages within 24 hours, except on weekends and holidays. I've also posted a "General Questions" forum on blackboard, to which anyone can respond. I encourage scheduling an appointment to receive one-on-one help or to discuss any topic in greater depth. I will answer questions pertinent to a particular assignment up until 5 pm the day before it is due. Please let me know if you're struggling. I want you to enjoy this material as much as I do.
- I encourage students with disabilities to contact me so we can arrange accommodations. Please contact Rosa Lundborg at Disabled Student Services as well. She can be reached at 425.325.5307, TDD 425.352.3132, rlundborg@uwb.edu or dssuwb@u.washington.edu.

Evaluation

Assignment	Percentage
Class Portfolio (2 contributions, 5% each)	10
Assignments related to readings	10
Project	--
Topic	4
Literature Review and Claim	16
Argumentative Essay	20
Visual Art Piece	20
Bacterial Bioart	5
Participation, Worksheets	15
Total	100%

Use the table below to convert your points to a grade. Note that the bins in this table overlap, affording me some flexibility in how I determine your grade. Thus, 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. However, once grades are assigned, I will not change them!

Your points	94 – 100 %	90 – 94%	86 – 90%	82 – 86%	78 – 82%	74 – 78%
Grade	3.9-4.0	3.6-3.9	3.2-3.6	2.8-3.2	2.4-2.8	2.0-2.4
Your points	70 – 74%	66 – 70%	62 – 66%	60 – 66%	<60%	
Grade	1.6-2.0	1.2-1.6	0.8-1.2	0.7	0.0	

Assignments

Please note that I do not accept quotations in ANY written assignments. I want you to practice paraphrasing scholarly writing. For every quotation that you use, I will deduct 5% from your grade.

Class Portfolio

We will build a web-based database to explore the connections between visual art and biology, sort of an online exhibit. You will add the image, describe it, and outline its context. One of the challenges will be to identify keywords that anyone might use to recover the image. The bulk of your grade for each contribution will rely on your ability to succinctly describe the biological theme in your contribution.


The course portfolio is managed through a database program that's specifically arranged for art collections. Go to <http://mdid.uwb.edu>, and then use the login *** with the password ***. To view the images for our class, choose My Images from the first menu on the left, then View your images from the link on the page.

Submitting your contribution

1. Log on to MDID.
2. Click on "My images" from toolbar on the left.
3. Select "create new image."
4. Pull down menu should say "class images."
5. Click on "create."
6. Enter your info into the following fields. *Note: Write everything beforehand and then copy and paste into the appropriate fields; MDID will "timeout" after 20 minutes.*

Title	The title the creator gave the piece. If the piece is untitled, say so.
Creator	Who made the image?
Subject	At least three keywords or phrases that other people could use to find the image if they were searching this database. Think of words you would type into Google or look up in the index of a text book.
Description	Approximately 100 words to identify and describe the biological theme
Contributor	You
Date	When was the image created? If you can't find a date, then specify the date that you retrieved the image like this: Retrieved, 20 May 2009.
Source	Attribute your source; if you're uploading a published image, ensure that others can find it. Cite a stable URL for images retrieved online; Google Images isn't a source, and the links it generates are unstable.

7. Go the very last box on the page that says "Upload new image file". Click on "browse" and follow instructions until you find your image on your computer and upload it to the database.
8. Click on "Save changes". Now your image is in the database.
9. Click on "My Slideshows" from the bar on the top left side of the screen.
10. Choose "Add Images" from the "Class Portfolio" slide show.
11. Click on "search"
12. Type in one of your keywords, your name or the title of the image into the box labeled "search for keyword".
13. Check the "selected" box immediately under the thumbnail version of the image you've added.
14. Click on "Add selected images to slideshow" on the orange bar at the top of the screen.
15. The first option in bold print should read "Add selected images to current slideshow 'Class Portfolio'". Click the button immediately below that; the button says "add selected images".
16. This step takes you to the light table for the class portfolio.
17. Your image should be in the "scratch area" on the left side of the screen.
18. Click and drag your image onto the light table.
19. Click on the "Save changes to the light table" button on the top left side of the screen.
20. Click the OK button.
21. That's it! Now you're done!

If you need to revisit these fields to edit your data entry, go to the list of My Images, and then click on the small pencil icon ().

Feel free to add or read notes about any of the images. To do that, click on the dialogue cartoon ().

Assignments related to readings

To focus your reading, make sure that you can summarize the main point the author makes, identify the evidence used to argue that point and suggest additional avenues of research that you would pursue—if you had all the time in the world.

For each article that you read you must turn in an assignment. Note that some days have multiple readings, and you'll need to complete an assignment for each of those readings. You have two choices about what assignment to complete:

Choice 1: contribute a “unique posting” to the appropriate forum on discussion board on Blackboard. By unique posting, I mean that you cannot repeat information. If someone else has already mentioned it, you've got to come up with something else that reflects that you've done the reading.

OR

Choice 2: Write a one page (250 words) reflection on each article you've read; submit it via the digital dropbox feature on Blackboard..

You must turn in these assignments before class on the day the reading is due. I will not accept late assignments related to the readings.

Term Project

For your term project, you can research any biological theme. Take this opportunity to dive into something that you've always wanted to learn about, but never had the opportunity to explore. Want to learn more about genetic modifications? Now's your chance! Want to understand why the extinction of

an apple snail is something that concerns you? Go for it! Keep in mind, however, that you aren't simply reporting on a theme. You will be constructing an argumentative essay—complete with an arguable claim, as I've modeled for you in the lectures (see your Booth et al 2003 reading and the proposed outline at the end of this syllabus). You'll also be creating a visual art piece that reflects your claim.

You are welcome to work in a group if you choose, and if you'd like to make a video, I highly encourage you to work in a group. If you choose this route, please indicate your intent to me in writing by January 14 when your topic proposal is due. Group projects will require a contract and a reflection.

Topic

You'll make a concept map that explores the topic that you'll focus on in your research for this class.

Literature Review and Claim

In this assignment you will review the biological literature and specific examples of art pieces that relate to the claim that you'll explore in your argumentative essay and artwork. You'll state your research question and your claim. You'll also provide an APA-formatted reference list that includes the biological sources you need to research your claim and the number of art pieces you've identified are sufficient for exploring your claim.

Argumentative Essay

Revise your claim and complete your library research, pulling your thoughts together to construct a well-written, thoughtful argument that either supports or refutes your claim. The conclusions you draw in this essay will inspire your visual art piece.

Visual Art Piece

After conducting research in the scholarly literature on a biological theme and the ways in which this theme have been addressed artistically, develop your own art project. Be creative. You have access to video equipment from Information Systems (but movies should be no longer than 5 minutes), and you can use the dissecting microscope I have in my research lab. If you'd like to use the scope, you can hook it up to a digital camera or to a camera lucida to make your own drawings. You also have access to Adobe Photoshop, and we'll conduct a workshop in class to teach you the basics.

If you'd like to use the equipment from Information Systems (formerly the Campus Media Center), you will need to stop by their office (LB2-218) to complete some paper work before being allowed to work in the studio. All multimedia studio appointments must be made at least 12 hours in advance in-person or by phone (425-352-5312). Appointments may not be made by email. Check out their website for more info: <http://media.uwb.edu/studio/>.

Participation, Worksheets

Thoughtfully and respectfully participate in discussions in class and on Blackboard and complete the assigned worksheets.

Acknowledgments

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Proposed Outline

Date	Assignments Due	Topic	Claim	Readings
M Jan 5		Introduction to Bioart	Biological principles are often explored through visual images, and, in the modern bioart movement, the ethical implications of common biotechnological practices are exposed.	Booth et al. 2003
W Jan 7		The biology of seeing	Powerful images make use of the way our brains input visual information, such as the contrast and edges in Sishkin's <i>In the Forest</i> (1891).	Livingstone 2002
M Jan 12	Portfolio contribution 1	Scopes and Cameras	The development of optical technology—including microscopes and cameras—is historically interwoven with advances in the visual arts, related to capturing perspective, and with biology, for recording biodiversity.	Kemp 2006
W Jan 14	Topic	Scenes from Deep Time	Changes in the depictions of fossil ecosystems from 1830-1840 reflect fast-paced changes in scientific understanding and popular fascination with extinct species.	Rudwick 1992
M Jan 19	Portfolio contribution 2	MLK Day Holiday (No Class)		
W Jan 21	Bioart in the library Worksheet	Media workshop First half RM UW1-220 Second half RM UW1-120	Adobe Photoshop is a powerful image-making tool, and one that you can use with relatively little training to make bioart.	
M Jan 26	Scientific and Medical Illustration		Cartoon abstractions of biological and biomedical data are far easy for both specialists and the general public to interpret.	Rossner and Yamada 2004



Date	Assignments Due	Topic	Claim	Readings
W Jan 28	Literature Review and Claim	Class Portfolio Rm UW1-120	The variety of images represented in the BIS 382 class portfolio grows every year, illustrating that the visual art of biology encompasses far more than the modern bioart movement.	Kac 2007
M Feb 2		Anatomical Theater	The Bodies Exhibit perpetuates the moral problems of the Anatomical Theater of the Renaissance, sacrificing an educational opportunity, and instead promoting misconceptions about race and sex.	National Academy of Sciences, Visionary Anatomies Catalogue 2004
W Feb 4	Prelab assignment (Lab due when class ends)	Flower Anatomy	Plants have a life-cycle that's fundamentally different than the life-cycle in animals, because they have two distinct adult stages.	Lab Handout
M Feb 9		Mapplethorpe's Flowers	Mapplethorpe's flowers are a 20 th C abstraction of the anatomical theater.	Ashbery 1996
W Feb 11		ACT UP	Bioart pertaining to HIV has and continues to contain powerful sociopolitical messages that correct misconceptions about who suffers from HIV and how the virus is transmitted.	Treichler 1987
M Feb 16		President's Day Holiday (No class)		
W Feb 18	Burke Museum Worksheet	Biology of HIV	By applying knowledge of evolutionary processes, we can predict the virulence of future strains of HIV.	Freeman 2004
M Feb 23	Argumentative Essay	The Tide Pools of Puget Sound	The diversity of flora and fauna in the tide pools of Puget Sound inspire artistic creativity.	Kozloff 1993 a,b



Date	Assignments Due	Topic	Claim	Readings
W Feb 25	Questions for bioartist Fernanda Oyarzun	SciFi Movies	Biological principles—even when they're contorted to the point of inaccuracy—inspire creative movies.	LaBarbera 1996
M Mar 2	Visual Art Piece	Art Project Display/Party	You and your classmates have thoughtfully and artistically created visual art pieces that effectively and creatively communicate sophisticated biological arguments.	
W Mar 4		Interview Fernanda Oyarzun	Each bioartist has a unique background and a unique perspective on how his or her biological and artistic interests inform each other.	
M Mar 9		Bacterial Bioart I	The fact that bacterial colonies grow exponentially can be used to paint living images.	TBA
W Mar 11	Bacterial Bioart Worksheet (to be completed in class)	Bacterial Bioart II	Bioartists that work with bacteria enter creative collaborations with these organisms.	http://www.artbyhunter.com/av/hunter2.mov
M Mar 16	Finals week. No class.			

