

BH 444/544; PHG 544 -- ETHICAL IMPLICATIONS OF EMERGING BIOTECHNOLOGY Winter 2024

CONTACT INFORMATION

Instructor: Stephanie “Malia” Fullerton, she/her, Professor, Bioethics & Humanities

Contact: smfltrtn@uw.edu

Office hours: By appointment; please do not hesitate to reach out to schedule a time

Course times and locations

All sessions: M/W, 3-4:20 pm, T-360

LAND ACKNOWLEDGEMENT

The University of Washington acknowledges the Coast Salish people of this land, the land which touches the shared waters of all tribes and bands within the Duwamish, Suquamish, Tulalip and Muckleshoot nations.

ILLNESS PROTOCOL

If you feel ill or exhibit respiratory or other symptoms, you should not come to class. Seek medical attention if necessary and notify your instructor(s) as soon as possible by email. [UW Environmental Health & Safety](#) recommends that you wear a well-fitting mask while you are symptomatic.

Additional recommendations include getting your [annual flu shot](#) and getting boosted with the updated COVID vaccines (available [at clinics and pharmacies, as well as through UW Medicine](#) and local health agencies).

Please check your email and CANVAS announcements daily BEFORE coming to class. If we need to conduct class remotely because the instructor or a guest speaker is unable to attend in person, we will send all registered students an email and/or post a CANVAS announcement with a Zoom link for remote instruction or a plan for making up the class.

COURSE DESCRIPTION

Scientific and technological innovation in biomedicine is advancing at breakneck speed, with exciting new developments ranging from precision medicine to gene editing to regenerative medicine being reported on a near daily basis. These emerging technologies and their application to disease prevention, treatment, and enhancement promise an array of individual and societal benefits; they also raise concerns related to the genetic manipulation of future generations, the automation of healthcare and medical decision-making, and the extension of human lifespan. AND, as the last several years have reminded us, no matter how good the science, biotechnology is subject to the effects of broader sociopolitical and historical phenomena. This course will introduce students to select biomedical innovations and invite sustained consideration of the diverse ethical and social implications surrounding their development and potential use.

COURSE LEARNING OBJECTIVES

After completing this course, students will be able to:

1. Describe recent innovations in biotechnology with relevance to medicine and public health
2. Identify applications of these innovations to disease prevention, therapy, and/or enhancement
3. Recognize key contextual factors (including structural inequities) likely to impact the development and implementation of emerging biotechnologies
4. Discuss implications of emerging technologies for individual autonomy and well-being, societal beneficence, public deliberation and oversight, and responsible scientific stewardship
5. Anticipate, and propose solutions to address, potential harms of emerging biotechnologies

REQUIRED TEXTBOOKS & READINGS

No textbook(s) required. All assigned readings are available at: <https://canvas.uw.edu/courses/1695266>

GRADING

Grades will be determined differently for undergraduate and graduate students.

Undergraduate Section. Undergraduates will be evaluated based on their performance on two online (closed book) exams, online posts about readings, and on classroom participation, including completion of short (mostly in-class) writing assignments.

Graduate Sections. Graduates will be evaluated based on the same assignments as undergraduates, as well as an 8-10 page term paper addressing in more depth one of the topics discussed in class. Dr. Fullerton will meet separately with the graduate section to go over this assignment; please see Term Paper submission link on Canvas for assignment expectations (a paper proposal/outline is due Week 5).

The points breakdown in each case will be as follows:

	<u>Exam 1</u>	<u>Exam 2</u>	<u>Online</u>	<u>In-Class</u>	<u>Term Paper</u>
Undergraduates	30%	40%	15%	15%	--
Graduates	20%	30%	15%	10%	25%

Please consult the daily schedule (outlined below) to find dates and submission deadlines for exams and papers. All assigned readings are subject to change, please consult Canvas for latest updates.

Exams: Each exam will be worth 100 points total (a key will be posted after all exams have been graded). Note scheduled dates for Exams 1 (Week 5) and 2 (Week 10) and notify me EARLY in the quarter if you will need an alternate test date. Tests will be completed online, but in class.

Online activities: Post one comment or question related to the assigned readings before each of at least 10 class sessions (out of 12 possible, beginning week 2). *Discussion board posts will be due by 12 am PT the night before each class session.* On-time posts = 5 points each; posts after deadline = 2 points each.

In-class activities: You will need to complete short writing assignments related to readings for the two class sessions we will miss due to holidays (on 1/15 and 1/19). Those assignments, worth 5 points each, will be due immediately ahead of the next class session and count toward "in class" participation. In addition, throughout the quarter I will periodically ask you to complete short response reflections in

class. Completion of those assignments (typically worth ~3 points each) will also count toward this portion of your grade. Please bring paper and pencil or pen with you to each class session.

Late assignment policy

All writing assignments received after deadline will receive a reduced number of points, as noted above. Late term papers WILL be accepted but will be penalized 5% per day late (including weekends). Exceptions made for students with documented disabilities or medical emergencies only.

COURSE SCHEDULE AND READINGS

Week	Date	Topic	Reading (All available on Canvas)
Week 1	Jan 1 st	NO CLASS (New Year's Day)	
	Jan 3 rd	Introduction to Course	<ul style="list-style-type: none"> White House report outlines goals... de Melo Martin, I. (2022) Ray, K. (2022) We asked for... OPTIONAL: Belmont Principles
Week 2	Jan 8 th	Precision Medicine	<ul style="list-style-type: none"> Green et al. (2023) Precision... Arthur (2023) The best way... OPTIONAL: Varagur (2023)
	Jan 10 th	Tribal Engagement [Guest: Susan Trinidad]	<ul style="list-style-type: none"> Claw et al. (2018) A framework... Liboiron (2021) Decolonizing... Schwartz (2020) A geneticist's... OPTIONAL: Carroll et al. (2020)
Week 3	Jan 15 th	NO CLASS (MLK Jr. Day) See Canvas for Writing Prompt -- Due 1/17	<ul style="list-style-type: none"> Playing God Podcast: Miracle Drugs, Million Dollar Price Tags NINDS Spinal Muscular Atrophy
	Jan 17 th	Expanded Prenatal Testing	<ul style="list-style-type: none"> Bayefsky & Berkman (2022) Johnston & Matthews (2022) OPTIONAL: Zhang (2020) The last...
Week 4	Jan 22 nd	Gene Editing: Heritable and Non-heritable	<ul style="list-style-type: none"> Almeida & Ranisch (2022) pp 1-6 Kaiser (2023) Rewriting DNA... Kolata (2023) FDA approves...
	Jan 24 th	Ethics of Gene Editing [Guest: Sarah Nelson]	<ul style="list-style-type: none"> Almeida & Ranisch (2022) pp 7-11 WHO (2021): Box 3, Table 3, Scenarios 5.1-5.2 (pp 41-45) OPTIONAL: Nuffield Council (2018): pp 7-10

Week 5	Jan 29 th	Exam Review Session Paper Proposals Due	<ul style="list-style-type: none"> Review Sheet (available on 1/26)
	Jan 31 st	EXAM 1	BRING LAPTOP TO CLASS
Week 6	Feb 5 th	Wearables and Digital Health Data	<ul style="list-style-type: none"> Babu et al. (2023) Wearable... Zinzuwadia & Singh (2022) Evans (2023) Where is all...
	Feb 7 th	Machine Learning in Medicine	<ul style="list-style-type: none"> Lee et al. (2023) Benefits, limits... Wiens et al. (2023) Current... Webster (2023) Six ways... OPTIONAL: Verma & Lerman (2023)
Week 7	Feb 12 th	Neurotechnologies	<ul style="list-style-type: none"> Abrams (2022) The future of... Drew (2022) The brain-reading... Tuffley (2023) The FDA finally...
	Feb 14 th	Neuroethics [Guest: Tim Brown]	<ul style="list-style-type: none"> Playing God Podcast: An Off-Switch for Depression? Klein et al. (2015) Engineering... OPTIONAL: Strickland & Harris (2022)
Week 8	Feb 19 th	NO CLASS (Presidents' Day) See Canvas for Writing Prompt -- Due 2/21	<ul style="list-style-type: none"> Erden & Brey (2022) Ethics guidelines for human enhancement R&D
	Feb 21 st	Stem Cell Biology	<ul style="list-style-type: none"> Blau & Daley (2019) Stem cells... Turhan et al. (2021) iPSC-derived...
Week 9	Feb 26 th	Modelling Humanness [Guest: Amy Hinterberger]	<ul style="list-style-type: none"> Hinterberger & Bea (2023) How... Moutinho (2023) Researchers... OPTIONAL: Hinterberger (2022) Composite...
	Feb 28 th	Immortality anyone?	<ul style="list-style-type: none"> Chace (2022) What happens... Bonanno (2022) We regret to... Davis (2018) Want to live longer?...
Week 10	March 4 th	Exam Review Session	<ul style="list-style-type: none"> Review Sheet (available on 3/1)
	March 6 th	EXAM 2	BRING LAPTOP TO CLASS
	March 8 th	Final Term Papers Due	
Finals Week		NO FINAL EXAM	

Communication and Writing Skills

Communication through writing and speaking is an important transferable skill for all career pathways. Establishing a strong foundation in communication skills will help you be successful throughout your future course work and career. Therefore, this course includes assignments with the goal to help you identify areas of strength and improvement in your communication. If you feel that you could benefit from additional opportunities to improve your writing skills in particular, a list of resources at the UW and others accessible online can be found on the SPH website [here](#).

IMPORTANT POLICIES & RESOURCES

Academic Integrity

Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity.

The UW Schools of Medicine (SoM) and Public Health (SPH) are committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, unauthorized use of artificial intelligence (AI) tools, and other misconduct are serious violations of the University of Washington [Student Conduct Code \(WAC 478-121\)](#). Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington [Community Standards and Student Conduct](#).

Use of Generative Artificial Intelligence in Coursework

UW instructors hold varying views on the use of artificial intelligence (AI) tools for coursework. Here is MY POLICY: I recognize that there are a variety of AI programs available to assist writers. AI programs should not be regarded as a replacement for human creativity, originality, and/or critical thinking. Writing is a craft that you must develop over time to develop your own individual voice as a writer. However, within limited circumstances, and with proper attribution, AI programs may be used as a tool.

Access and Accommodations

Your experience in this class is important to me. It is the policy and practice of the UW to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with Disability Resources for Students (DRS), please activate your accommodations via myDRS so we can discuss how they will be implemented in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), contact DRS directly to set up an Access Plan. DRS facilitates the interactive process that establishes reasonable accommodations. You may contact DRS at disability.uw.edu.

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious](#)

[Accommodations Policy \(https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/\)](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form \(https://registrar.washington.edu/students/religious-accommodations-request/\)](https://registrar.washington.edu/students/religious-accommodations-request/).

Inclusion & Diversity

Diverse backgrounds, embodiments and experiences are essential to the critical thinking endeavor at the heart of University education. In SPH, we are expected:

1. To respect individual differences, which may include, but are not limited to, age, cultural background, disability, ethnicity, family status, gender, immigration status, national origin, race, religion, sex, sexual orientation, socioeconomic status and veteran status.
2. To engage respectfully in the discussion of diverse worldviews and ideologies embedded in course readings, presentations and artifacts, including those course materials that are at odds with personal beliefs and values.
3. To encourage students with concerns about classroom climate to talk to their instructor, adviser, a member of the departmental or SPH EDI Committee, the Assistant Dean for EDI, or the program's director.

Classroom Climate

We are co-creators of our learning environment. It is our collective responsibility to develop a supportive learning environment for everyone. Listening with respect and an open mind, striving to understand others' views, and articulating your own point of view will help foster the creation of this environment. We engage our differences with the intent to build community, not to put down the other and distance our self from the other. Being mindful to not monopolize discussion and/or interrupt others will also help foster a dialogic environment.

Pronouns

We share our pronouns because we strive to cultivate an inclusive environment where people of all genders feel safe and respected. We cannot assume we know someone's gender just by looking at them. So we invite everyone to share their pronouns.

Bias Concerns

The Office of the Dean has a [student concern policy](#), a faculty concern policy and standard HR procedures for staff concerns. Our 2018 climate survey states that most people in SPH do not report bias incidents because they do not know where to go. Students are encouraged to report any incidents of bias to someone they feel comfortable with, including instructors, advisers or department staff. They can email dcinfo@uw.edu for immediate follow up. Bias concerns can be anonymously and confidentially reported via this online form: <https://sph.washington.edu/about/diversity/bias-concerns>.

Sexual Harassment

Sexual harassment is a form of harassment based on the recipient's sex that is characterized by:

1. Unwelcome sexual advances, requests for sexual favors, or other verbal or physical conduct of a sexual nature by a person who has authority over the recipient when:

- Submission to such conduct is an implicit or explicit condition of the individual's employment, academic status, or ability to use University facilities and services, or
 - Submission to or rejection of the conduct affects tangible aspects of the individual's employment, academic status, or use of University facilities.
2. Unwelcome and unsolicited language or conduct that creates an intimidating, hostile, or offensive working or learning environment, or has the purpose or effect of unreasonably interfering with an individual's academic or work performance.

If you believe that you are being harassed, or have observed harassment, you can report it to SPH using the [bias concerns link](#). The University also has designated offices to help you: [SafeCampus](#); [Office of the Ombud](#); [Title IX Investigation Office](#); and [University Complaint Investigation and Resolution Office](#).