ENVH 504: Advanced Environmental Health Sciences Proposal Preparation
Spring Quarter, 2025
4 credits

Instructor information

Name: Joan A. Casey (preferred pronouns: she/her/hers)
Contact: jacasey@uw.edu
Office hours: Tuesday 4-5PM on Zoom

Course times and locations

Course meets 2x/week for 110 minutes each session, Tuesday/Thursday 10:30AM-12:20PM.
Location: TBD

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, Puyallup, Suquamish, Tulalip, and Muckleshoot nations.

Course Description

This course provides a high-level introduction to advanced research methods in environmental health sciences. Topics covered include: approaches to study environmental health, experimental design, data analysis, responsible conduct of research, and grant writing, specifically for the National Institutes of Health (NIH) mentored fellowship awards. By the end of the quarter, students will produce specific aims, innovation, significance, and approach sections of an NIH fellowship grant. Assignments include writing, reviewing, and completing activities to support the submission of an NIH fellowship award application.

Course Learning Objectives

This course helps students prepare to meet the following PhD in Environmental Health Sciences (PhD-EHS) degree competency: "*Upon completion of the PhD-EHS degree, students will be able to conceive, develop, conduct, and document original research that advances knowledge in the field of environmental health sciences.*" After completing this course, students will be prepared to:

- Design experiments utilizing the principles and practical aspects of good experimental design to ensure rigor, statistical power, robustness, and reproducibility, and control for bias
- Conduct human and/or animal research and communicate the results of that research according to the most current ethical and regulatory guidelines
- Manage, analyze, visualize, and share environmental and occupational health data utilizing best practices and appropriate tools
- Collect, analyze, and validate different types of data (survey, direct exposure, biomarker, surveillance, etc.) from environmental health studies using appropriate practices and methodologies
- Translate environmental health research into practice and implement evidence-based interventions

Required Textbooks & Readings

There is no required textbook for this class. Session-specific readings and podcasts will be available in a course pack through the course Canvas page. Several readings come from the following resource:

- Robertson JD, Russell SW (Stephen W., Morrison DC. The Grant Application Writer's Workbook. National Institutes of Health Version. January 2023 edition. Grant Writers' Seminars and Workshops, LLC; 2023.

A few podcasts of interest: The Effort Report; The Black Goat; All About Grants; Acadames; NIND's Building Up the Nerve

Assignments and critiques

Students will work towards a final and complete grant proposal by incrementally producing all necessary documents during the term. This means many assignments are *drafts* of sections of the proposal. Students need to complete, but not perfect, each assignment to move forward in the class.

During class, students will work together to critique and strengthen sections of their proposals. Thus, class participation is critical to the value of the course. The course grade is based on assignments (on time, effort, complete, incorporates feedback), class participation, and the final proposal. If you need to miss a session, please email the instructor in advance.

For assignments, please adhere to the following:
- NIH formatting rules: single-spaced, 1/2-inch margins, 11 pt. font. Recommended fonts: Aptos, Arial, Georgia, Helvetica, Palatino Linotype. More information is available on formatting from NIH.
- Adhere to length limits. Graders/reviewers may not read beyond the length specified.
- Use the following naming convention: LastName_FirstInitial_Assignment1.docx.

Grading

Final grades will be based on the following assessments/assignments:

Assessment/Assignment	Contribution to Final Grade
Weekly assignments	25%
Writing critiques	25%
Participation	25%
Final proposal	25%
TOTAL	**100%**

Final % scores will be converted to standard UW 4.0 scale grades using the table below. Grades below 1.7 will be recorded as 0.0 by the Registrar and no credit is earned. A minimum of 2.7 is required for students who are taking this course as a requirement for the PhD-EHS degree.

% Score	Final Grade	% Score	Final Grade
>95	4.0	73-73.9	2.8
94-95	3.9	72-72.9	2.7
92-93.9	3.8	71-71.9	2.6

90-91.9	3.7	70-71.9	2.5
88-89.9	3.6	69-69.9	2.4
86-87.9	3.5	68-68.9	2.3
84-85.9	3.4	67-67.9	2.2
82-83.9	3.3	66-66.9	2.1
80-81.9	3.2	65-65.9	2
78-79.9	3.1	<65	1.9
76-77.9	3		
74-75.9	2.9		

Late assignment policy

All assignments must be completed by the assigned dates. Late assignments due to unavoidable circumstances will be accepted at the discretion of the instructor.

COVID-related expectations

Per UW policy, this class will be conducted in person. Therefore, unless you meet the criteria for an accommodation from Disability Resources for Students (DRS) or a special arrangement approved by the SPH Office of the Dean that allows you to take the course remotely [see student communications here] you should only register for this class if you can attend in-person.

- Please contact UW Disability Resources for Students (DRS) directly if you feel you may be eligible for an accommodation based on your status as an immunocompromised individual or based on other diagnosed physical or mental health conditions that might prevent you from being able to take classes in-person.
- If you are a student enrolled in a program in SPH, and you are either living with an individual who is immunocompromised, OR you are unable to obtain a visa to travel to the US, you may be eligible for a "special arrangement" that will allow you to take this course remotely. Requests for special arrangements to take the class remotely should have been submitted to and approved by the Students and Academic Services team in the Office of the Dean before the beginning of the quarter. If you have questions about this type of arrangement, please reach out to Student and Academic Services by email at sphsas@uw.edu.
- UW no longer requires reporting of positive COVID-19 cases or wearing a facemask, except for after ending COVID-19 isolation or after COVID-19 exposure. However, please feel free to wear a mask as endeavor to create a safe and inclusive learning environment.

You are expected to follow state, local, and UW COVID-19 policies and recommendations. If you feel ill or exhibit possible COVID symptoms, you should not come to class. If you need to temporarily quarantine or isolate per CDC guidance and/or campus policy, you are responsible for notifying your instructors as soon as possible by email.

Please check your email daily BEFORE coming to class. If we need to conduct class remotely because the instructor or a guest speaker is complying with UW policies and unable to attend in person, we will send all registered students an email with a Zoom link for remote instruction.

Accreditation Requirements & Competencies Met by This Course

Council on Education for Public Health (CEPH) competencies met by this course:

- Manage, analyze, visualize, and share environmental and occupational health data utilizing best practices and appropriate tool (PhD-EHS department-level degree competency)
- Conduct human and animal research and communicate the results of that research according to the most current ethical and regulatory guidelines (PhD-EHS department-level degree competency)
- Collect, analyze, and validate different types of data (survey, direct exposure, biomarker, surveillance, etc.) from environmental health studies using appropriate practices and methodologies (PhD-EHS department-level degree competency)

CEPH Competencies Unique to ENV H 504
- Design experiments utilizing the principles and practical aspects of good experimental design to ensure rigor, statistical power, robustness, and reproducibility, and control for bias (PhD-EHS department-level degree competency)
- Translate environmental health research into practice and implement evidence-based interventions (PhD-EHS department-level degree competency)

Student responsibilities

Students are expected to regularly prepare for and attend class, avoid plagiarism, participate in class discussions, and conduct themselves in a respectful and thoughtful manner.

Course Session Schedule

Session Date	Topics	Readings and assignments	Mentor engage-ment
#1 March 26	- The scientific method - Introduction to animal research - Introduction to human subjects research and IRB	*Read*: Guidelines for Design and Statistical Analysis of Experiments Using Lab Animals *Recommended*: Complete the 1-hour UW IRB 101 Online Tutorial	
#2 March 28	- Introduction to the F31 - Introduction to NIH Reporter - Time management part I - Create a writing schedule	*Read*: Select and read the RFA to which you will apply *Read*: Ch. 6: Create a Writing Schedule *Download*: Create Your Writing Schedule *Assignment 1 due 4/1*: Mechanism, mentor, & CITI	
#3 April 2	**Lab 1: How to identify literature gaps** - Introduction to reference management software - Introduction to other online resources, including ChatGPT	*Read*: 2 complete F31 proposals *Listen*: The Effort Report, Episode 27: The Specific Aims Page (first 37 min) *Recommended*: Can Artificial Intelligence Help Scientific Writing?	

#4 April 4	• Review criteria • eRA Commons • Specific aims	• _Read_: Ch. 7: Specific Aims Section: Conceptual Frameworks for Creating a Bulleted Outline • _Assignment 2 due 4/7_: Completed [bulleted outline] of your Specific Aims page	Share bulled specific aims with your mentor

#5
April 9
	Lab 2: Critique bulleted specific aims
	  • Time management part II
	  • Grant formatting
		• _Read_: [Tips on Writing National Research Service Awards] (old but good, but some links no longer relevant)
		• _Listen_: All About Grants Podcast: [Writing a Fellowship Application]	

#6 April 11	• Real-time editing/updates • Specific aims–expanded • Gantt charts	• _Read_: Ch. 8: Writing the Specific Aims Section • _Assignment 3 due 4/14_: Updated bulleted specific aims page with tracked changes based on feedback	
#7 April 16	• Introduction to NIH • Data viz (figure replication) • Study schematics	• _Watch_: [NIH Grant Basics and Need-to-Know Resources] (try 1.25× or 1.5× speed) • _Recommended_: Watch: [Communicating Science-Data Viz]; Read: [Misleading graph]	
#8 April 18	• Significance • Innovation	• _Read_: Ch. 10: Research Strategy Section: Significance and Innovation Subsections • _Assignment 4 due 4/21_: Full specific aims page	Share your full specific aims page with your mentor
#9 April 23	**Lab 3: Peer Review two specific aims pages using the NIH template** -_Extra time_: work on project schematic		
#11 April 25	• The Approach	• _Read_: A Practical Guide to Writing a Ruth L. Kirschstein NRSA Grant Ch. 5.3: Approach	Send significance and innovation to your mentor
#10 April 30	• The scale of research (budgeting) **Lab 4: review significance and innovation sections** in small groups (~5 min to present, 5 min to read/critique, 5 min for others to respond/discuss)	• _Assignment 5 due 4/28_: 1-page significance, bulleted innovation, and project schematic • _Email_ a PO to set up a meeting in the next two weeks (ideally) to discuss your career goals and proposal. PO info available [here].	

#12 **May 2**	**Lab 5: dedicated work time for approach section**	• *Assignment 6 due 5/5*: ½ page innovation section	
#13 **May 7**	• Summary statements (activity) • Paylines • Authorship	• *Read*: Two example summary statements • *Read*: ICMJE guidelines on authorship	
#14 **May 9**	• Biosketch • Applicant's Background and Goals for Fellowship Training **Lab 6: dedicated work time for approach section**	• *Read*: Better at the Bench Week 8 • *Read:* A Practical Guide to Writing a Ruth L. Kirschstein NRSA Grant Ch. 3.1 and 3.2 • *Assignment 7 due 5/12*: approach section (6-page limit; minus power calculations and Gantt chart)	Send approach to your mentor
#15 **May 14**	• Potential problems and alternative strategies • Power calculations **Lab 7: Power calculations** • Come with R installed on your machine or with access to RStudio on the server	• *Watch*: The New Statistics • *Recommended*: Read: Moving to a World Beyond "p < 0.05"	
#16 **May 16**	**Lab 8: Peer review of the Approach Section**	• *Assignment 8 due 5/19*: approach section with power calculations and Gantt chart and biosketch (if submitting NIH grant and you'd like to submit it) using correct format	
#17 **May 21**	• Title • Letters of support • Editing our work **Lab 9: edit aims page to free up space**	• *Read*: Writing Science Ch. 16: Condensing	
#18 **May 23**	• Pre/post-award at UW (guests: Kelley Mayer and Taylor Hendricksen) **Lab 10: dedicated work time**	• *Assignment 9 due 5/28*: background and training document (6-page limit). **Those not submitting an F31 may turn in any section they would like feedback on	Share background and goals with mentor (if applicable)
#19 **May 28**	• Implementation science • Research translation • Rigor and reproducibility	• *Listen*: Using implementation science to move EH discoveries into the real world (NIEHS podcast) • *Read*: National Academies of Sciences, Engineering, Medicine, et al.	

		Reproducibility and Replicability in Science Summary	
		• *Recommended*: The Black Goat Podcast: Does Not Compute	
		• *Assignment 10 due 6/2*: list of three people submitting letters to NIH (name, degree, affiliation, one must be outside your department. ← for those submitting NIH proposals only); and ½ page write-up of how you used AI in writing your proposal	
#20 May 30	• Student perspectives on F31s (guests Nina Flores, Vivian Do, Jenni Shearston) **Lab 11: Title voting and timeline to complete all remaining documents**	• *Turn in (final) due 6/3*: full grant proposal (1-page specific aims; 6-page research strategy and references)	
August 8	**Deadline for NIH F31 proposal submission**	• Good luck!	

IMPORTANT POLICIES & RESOURCES

Communication 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 at https://sph.washington.edu/sites/default/files/inline-files/Writing-Resources-4.3.19.pdf.

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 School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-121). We expect you to know and follow the university's policies on cheating and plagiarism, and the SPH Academic Integrity Policy. 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.

Academic Integrity – AI

A new note is related to AI-based tools. These tools may be useful for starting drafts of specific grant components such as letters of support or your training plan. Please note, however, that AI results can be biased and inaccurate. It is your responsibility to ensure that the information you use from AI is

accurate. Additionally, pay attention to the privacy of your data. Many AI tools will incorporate and use any content you share, so be careful not to unintentionally share copyrighted materials, original work, or personal information. At the end of the term, I will ask for a ½ page document describing how you used ChatGPT or other AI software in producing your proposal.

Access and Accommodations

Your experience in this class is important to me. It is the policy and practice of the University of Washington 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. 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/). 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/).

This year, for example, Ramadan overlaps with ENVH 504. The instructor encourage students participating in fasting and other activities to reach out via email to request necessary accomodations.

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.

The following guidelines can add to the richness of our discussion:

- We assume that persons are always doing the best that they can, including the persons in this learning environment.
- We acknowledge that systematic oppression exists based on privileged positions and specific to race, gender, class, religion, sexual orientation, and other social variables and identities.
- We posit that assigning blame to persons in socially marginal positions is counter-productive to our practice. We can learn much about the dominant culture by looking at how it constructs the lives of those on its social margins.
- While we may question or take issue with another class member's ideology, we will not demean, devalue, or attempt to humiliate another person based on her/his experiences, value system, or construction of meaning.
- We have a professional obligation to actively challenge myths and stereotypes about our own groups and other groups so we can break down the walls that prohibit group cooperation and growth. [Adapted from Lynn Weber Cannon (1990). Fostering positive race, class and gender dynamics in the classroom. *Women Studies Quarterly, 1 & 2, 126-134*].

We are a learning community. As such, we are expected to engage with difference. Part of functioning as a learning community is to engage in dialogue in respectful ways that supports learning for all of us and that holds us accountable to each other. Our learning community asks us to trust and take risks in being vulnerable.

Here are some guidelines that we try to use in our learning process:

- Listen well and be present to each member of our group and class.
- Assume that I might miss things others see and see things others miss.
- Raise my views in such a way that I encourage others to raise theirs.
- Inquire into others' views while inviting them to inquire into mine.
- Extend the same listening to others I would wish them to extend to me.
- Surface my feelings in such a way that I make it easier for others to surface theirs.
- Regard my views as a perspective on the world, not the world itself.
- Beware of either-or thinking.
- Beware of my assumptions of others and their motivations.
- Test my assumptions about how and why people say or do things.
- Be authentic in my engagement with all members of our class.

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 at this link [https://sph.washington.edu/about/diversity/bias-concerns](). Data is collected by the Assistant Dean for EDI and the Director of Program Operations for Student and Academic Services and tracked for resolution and areas are identified for further training.

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]().