

ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health

[Jump to Today](#)  [Edit](#)

ENVH 465A / 565A: Geographic Information Systems (GIS) in Public Health

3 credits, graded

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Office hours available by appointment

Lectures on Tuesdays 3:30-4:50pm in-person at Hans Rosling Center for Population Health room 135.

Computer Labs on Fridays in the Magnuson Health Sciences Building - Health Sciences Library Computer Classroom C (See note below on the need for your ID card to access the library, and rules for working in the lab). There are two sections, and please attend the section you signed up for, unless approved by instructor/TA that there is room to accommodate you working in the other section.

12:30-1:50pm

2:00-3:20pm

Both 465/565 will meet for one combined Tuesday 90-minute lecture/discussion session each week. Additionally, each course will meet separately for a Friday 90-minute hands-on lab session in a computer lab.

Note: there is no final exam for this course. Students will present the final projects in the last week of classes during the lecture period.

Note Regarding Access/Working in Health Sciences Library

Students, staff, and faculty may need to have their UW ID to key into the 2nd floor library entrance to get in the library. Per library staff in 2021: the 3rd floor entrance is locked for Autumn (we aren't allowing the general public into the Library for Autumn.)

Library-specific COVID policies are evolving.

1. Please refer to the library's latest hours/requirements/recommendations: <https://hsl.uw.edu/>
[\(https://hsl.uw.edu/\)](https://hsl.uw.edu/)
2. COVID-19 specific guidance for the library is here: <https://hsl.uw.edu/reopen-covid-uw/>
[\(https://hsl.uw.edu/reopen-covid-uw/\)](https://hsl.uw.edu/reopen-covid-uw/)
3. As of Sept 28, 2022, there website says: "We recommend wearing a well-fitted, high-quality mask while in the Library."
4. UW policy (Sept 9, 2022) states: "Face coverings are strongly recommended indoors (in locations where they are not required) during the first two weeks of autumn quarter (starting September 28, 2022 through October 11, 2022)."

Course Overview

The goal of this course is to familiarize students with the applications of Geographic Information Systems (GIS) in Public Health, and to provide students with practical experience using GIS methods to conduct spatial analyses. Lectures, case studies, and hands-on computer lab exercises will highlight the principles, methods, and techniques of spatial analysis to solve practical public health problems within a variety of health sub-disciplines, focusing on environmental health, but also exploring infectious diseases, health services and community health. Topics covered by this course include spatial data representation and management, visualization of spatial data using traditional GIS-based maps or newer interactive mapping technologies, and exploratory spatial data analyses.

Undergraduate students (ENV H 465) will focus on using existing health related datasets to conduct practical GIS analyses that solve common spatial analyses that might be encountered in daily public health practice.

Graduate students (ENV H 565) will focus on conducting original independent GIS analyses, using data that they have sourced themselves, to address a public health issue that they have identified.

Learning Objectives

By the end of this course, students in **both ENV H 465 and 565** should be able to:

- Solve practical Public Health spatial problems using GIS methods
- Differentiate between different spatial object representations, such as raster versus vector data, different map projections and coordinate systems
- Describe major sources of spatial data used in the Public Health, including those that come from the census, satellite imagery, street address geocoding, global positioning system, and health services
- Critique and produce maps
- Use spatial joins, buffer analyses, spatial overlays and map algebra, basic spatial statistics and cluster analyses
- Explain the value of GIS within Public Health, and be able to cite key studies in which GIS was used in environmental health, infectious disease, health services, and community health
- Demonstrate the ability to work effectively and co-operatively as part of a team

Additionally, graduate students in **ENV H 565** should be able to:

- Work independently to develop their own GIS project
- Effectively communicate the findings of a spatial data analysis
- Demonstrate fluency in technical writing and oral presentation

Class Format

Instruction will consist of a 90-minute lecture and a 90-minute supervised computer lab session each week. Each week will examine a specific public health topic with lecture, discussion, and readings demonstrating the use of GIS for spatial problem solving. The same topic will be explored with a hands-on computer lab exercise, which will provide practical experience with using GIS. The exercises may be conducted individually or in two-person student teams to allow for peer-learning and teamwork.

For undergraduate students (ENV H 465), the last two weeks of the course will be devoted to each student (individually, not in teams) conducting a final project assignment – an analysis of an instructor-provided GIS dataset to answer a set of provided questions. Students will be expected to apply the GIS skills they have learned in the class exercises in order to finish their final project assignment. The deliverable for the final project assignment will consist of concise answers to the questions provided. It will be due on the day after the last class at noon.

For graduate students (ENV H 565), the last two weeks of the course will be devoted to each graduate student (individually, not in teams) conducting an original GIS analysis final project. Unlike the projects undertaken by the undergraduate students, graduate students will be expected to:

1. Identify a real-world public health question or research hypothesis that involves spatial data analysis
2. Identify and collect spatial data to address their question/hypothesis
3. Use the methods acquired from the lab exercises to analyze their project data
4. Write a clear and concise (no more than 6-pages, single-spaced, not including figures & tables) final project report summarizing hypothesis, methods and findings.
5. Share what they learned from their project with the rest of the ENV H 565 class, by presenting a 1-slide oral summary at the end of the class.

The instructor will be available to advise on the analysis.

Please see the Assignment page on course Canvas site for the due dates of all exercises, assignments, and projects.

Student Assignments and Grading

For undergraduate students (ENV H 465):

Lab exercise reports = 50%

Final project assignment = 50%

For graduate students in (ENV H 565):

Lab exercise reports = 50%

Final project assignment = 35%

Final presentation = 15%

For all students in both courses, lab exercise reports will be prepared and submitted to the course website by each team (each student should submit their own copy of the lab report to the Canvas Assignment -- it can be the identical lab report for the team). The reports are due one week after the lab (at noon 12pm). Reports will be graded on the completeness of work, validity of findings, and quality of explanation. Specific questions asked in the lab assignments should be answered in the lab reports. Maps should be of good quality (e.g., with symbol legends, scale bars). The reports should be concise, typed, clearly organized, and submitted on time. 10% of each lab report score will be deducted for each day late.

For undergraduate students (ENV H 465), the final project assignment should completely and concisely address each of the questions asked in the assignment using the data provided. The work should be done independently of other students. Responses will be graded on accuracy, quality of the

work (e.g., maps should be of good quality with symbol legends, scale bars, legible text), and should be submitted on time. 10% of the score will be deducted for each day late.

For graduate students (ENV H 565), a final project report should be prepared as described above. The report should have a clear structure (Using the following headings: Introduction, Methods, Results, Discussion, References), using tables and figures judiciously to support and communicate findings. Maps should be of good quality (e.g., with symbol legends, scale bars, legible text). The final report should be concise, typed, clearly organized, and submitted on time. 10% of the score will be deducted for each day late.

Graduate students (ENV H 565) will also prepare a final 2-minute "rapidfire" project presentation consisting of a single PowerPoint slide and summary of the main public health question that was addressed and the findings. This presentation will be delivered during the last 2 lecture days to all students in the class (undergrads are expected to attend and learn from the graduate students presentations). The presentation will be given a full score if the student gives an oral presentation. If a presentation is not given, the student will receive a score of zero.

Student Responsibilities

Students in both ENV H 465 and 565 are expected to:

1. Participate in class discussions/group work.
2. Read the assigned readings.
3. Prepare and submit lab reports on time. Reports should be concise and clearly written.
4. Prepare and submit final project work on time.
5. Learn how to use citations: For ENVH 565 final project reports, give credit, when and where credit is due: if you mention other people's data, studies, etc., please be sure to cite it appropriately (see: <http://guides.lib.uw.edu/research/citations/citation-basics>)
(<http://guides.lib.uw.edu/research/citations/citation-basics>)

GIS Software, Texts and Readings:

GIS software

We will be using ESRI ArcGIS. <http://www.esri.com/software/arcgis> 
(<http://www.esri.com/software/arcgis>)

You will be able to access this software on the computers in the Health Sciences Library computer lab. You can access the lab outside of class hours, when the library is open and others aren't using the computer lab.

UW students can also use ArcGIS by remotely logging into their CSDE accounts, which are paid for by the Student Technology Fee (this works well for both PC and Mac users):

<https://csde.washington.edu/computing/accounts/> ↗

(<https://csde.washington.edu/computing/accounts/>)

UW maintains a site license for ArcGIS for use on department machines:

<https://depts.washington.edu/arccgis/pages/> ↗ (<https://depts.washington.edu/arccgis/pages/>)

If you would like to install a 1-year student license of ArcGIS on your own Windows PC, email the instructor for a license number and installation instructions.

While our course will focus on ArcGIS, the GIS skills are applicable to other GIS software, some of which are open source and freely available:

Maptitude (<http://www.caliper.com/> ↗ (<http://www.caliper.com/>))

GRASS (<http://grass.osgeo.org/>)

↗ (<http://grass.osgeo.org/>)_QGIS (<http://www.qgis.org/en/site/> ↗ (<http://www.qgis.org/en/site/>))

Increasingly R (<http://www.r-project.org/> ↗ (<http://www.r-project.org/>)) is being used to perform spatial data analyses. If you would like to learn R spatial analysis, please consider the Instructor's online learning material and registering for independent study with the Instructor separate from this course:

<https://www.edmundseto.com/edmundseto/introduction-to-spatial-analysis-for-r-a-focus-on-environmental-health/> ↗ (<https://www.edmundseto.com/edmundseto/introduction-to-spatial-analysis-for-r-a-focus-on-environmental-health/>)

Recommended (but not required) course texts:

Cromley and McLafferty (2011) GIS and Public Health, 2nd Edition, The Guilford Press, New York. (*Pretty much the only overarching GIS textbook that focuses on Public Health that's relatively current. ~\$52 used on Amazon*).

Kurland and Gorr (2012) GIS Tutorial for Health: Fourth Edition, ESRI Press, New York. (*An "exercise" oriented book with health services related examples. ~\$20 used on Amazon*).

Land Acknowledgment

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.

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](#).

<https://uwnetid.sharepoint.com/sites/SPH-Curriculum/CEPC/CEPC-Meeting-Materials/CEPC%20Meetings%202022-2023/CEPC%20Retreat%202022.09.16/here>.

COVID Protocols and Safety

Updated per 9/22/2022...

All UW students are expected to follow [state](https://doh.wa.gov/emergencies/covid-19), [local](https://kingcounty.gov/depts/health/covid-19.aspx), and [UW COVID-19 policies and recommendations](https://www.washington.edu/coronavirus/).

Please be extra conscientious about masking during the first few weeks of the quarter, because we will have a lot of members of the community traveling and can reasonably expect to see a surge in COVID cases.

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 [campus policy](https://www.ehs.washington.edu/covid-19-prevention-and-response/covid-19-isolation-guidance), you are responsible for notifying your instructors as soon as possible by email. **If you receive a positive COVID-19 test result, you must report to campus Environmental Health & Safety (EH&S) by emailing covidehc@uw.edu or calling 206-616-3344.**

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. Please also keep an eye out for email communications from the University or the School of Public Health that will inform you of any future changes to policies or guidelines.

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 \(WAC 478-121\)](https://apps.leg.wa.gov/WAC/default.aspx?cite=478-121) [↗](https://apps.leg.wa.gov/WAC/default.aspx?cite=478-121). We expect you to know and follow the university's policies on cheating and plagiarism, and the [SPH Academic Integrity Policy](https://sph.washington.edu/students/academic-integrity-policy) [↗](https://sph.washington.edu/students/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](https://www.washington.edu/cssc/) [↗](https://www.washington.edu/cssc/).

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](https://depts.washington.edu/uwdrs/) [↗](https://depts.washington.edu/uwdrs/).

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 and 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 onto 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

According to the UW First Year Programs, being an ally is not just about intention, it's also about behavior. 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. Faculty training and consultation on pronoun use is available for SPH faculty from the Assistant Dean for EDI. Including pronouns on syllabi is optional as we work to develop and provide further training to all teaching faculty.

Bias Concerns






The Office of the Dean has a [student concern policy](https://sph.washington.edu/students/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 the online form found here: <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 Harrassment

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](https://sph.washington.edu/about/diversity/bias-concerns)  (<https://sph.washington.edu/about/diversity/bias-concerns>). The University also has designated offices to help you: [SafeCampus](https://www.washington.edu/safecampus/)  (<https://www.washington.edu/safecampus/>); [Office of the Ombud](https://www.washington.edu/ombud/)  (<https://www.washington.edu/ombud/>); [Title IX Investigation Office](https://www.washington.edu/titleix/report/)  (<https://www.washington.edu/titleix/report/>); and [University Complaint Investigation and Resolution Office](https://www.washington.edu/compliance/uciro/)  (<https://www.washington.edu/compliance/uciro/>).

Safety

Call SafeCampus at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.









Excused Absence from Class









Students are expected to attend class and to participate in all graded activities, including midterms and final examinations. A student who is anticipating being absent from class due to a Religious Accommodation activity needs to complete the Religious Accommodations request process by the second Friday of the quarter. Students who anticipate missing class due to attendance at academic conferences or field trips, or participation in university sponsored activities should provide a written notice to the instructor ahead of the absence. The instructor will determine if the graded activity or exam can be rescheduled or if there is equivalent work that can be done as an equivalent, as determined by the instructor.








Medical Excuse Notes


Students are expected to attend class and to participate in all graded activities, including midterms and final examinations. To protect student privacy and the integrity of the academic experience, students will not be required to provide a medical excuse note to justify an absence from class due to illness. A student absent from any graded class activity or examination due to illness must request, in writing, to take a rescheduled examination or perform work judged by the instructor to be the equivalent. Students are responsible for taking any number of examinations for which they are scheduled on a given day and may not request an adjustment for this reason alone.









Course Summary:










Date	Details	Due
Fri Sep 30, 2022	 ENV H 465/565 A Au 21: Friday Labs https://canvas.uw.edu/calendar?event_id=2905957&include_contexts=course_1580150	12:30pm to 3:30pm
	 ENVH 465/565 Lab Orientation https://canvas.uw.edu/calendar?event_id=2905930&include_contexts=course_1580150	12:30pm to 3:30pm
	 ENV H 465 Lab https://canvas.uw.edu/calendar?event_id=2905937&include_contexts=course_1580150	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2911160&include_contexts=course_1580150	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2911191&include_contexts=course_1580150	2pm to 3:30pm
	 ENV H 565 Lab https://canvas.uw.edu/calendar?event_id=2905902&include_contexts=course_1580150	2pm to 3:30pm
Tue Oct 4, 2022	 ENVH 465/565 - Introductions (you, me, the course, the GIS Lab, and someone named John Snow) https://canvas.uw.edu/calendar?event_id=2905911&include_contexts=course_1580150	3:30pm to 5:20pm
	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2905913&include_contexts=course_1580150	3:30pm to 5pm










Date	Details	Due
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905947&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911203&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Friday Labs (https://canvas.uw.edu/calendar?event_id=2905958&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENVH 465/565 Lab Exercise 1 (https://canvas.uw.edu/calendar?event_id=2905897&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENV H 465 Lab (https://canvas.uw.edu/calendar?event_id=2905938&include_contexts=course_1580150)	12:30pm to 2pm
Fri Oct 7, 2022	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911161&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911192&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 565 Lab (https://canvas.uw.edu/calendar?event_id=2905940&include_contexts=course_1580150)	2pm to 3:30pm










Date	Details	Due
Tue Oct 11, 2022	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar? event_id=2905914&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar? event_id=2905948&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar? event_id=2911204&include_contexts=course_1580150)	3:30pm to 5pm
	 ENVH 465/565 - Exploratory Data Analysis, Environmental Health (https://canvas.uw.edu/calendar? event_id=2905907&include_contexts=course_1580150)	3:30pm to 4:50pm
Fri Oct 14, 2022	 ENV H 465/565 A Au 21: Friday Labs (https://canvas.uw.edu/calendar? event_id=2905959&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENVH 465/565 Lab Exercise 2 (https://canvas.uw.edu/calendar? event_id=2905915&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENV H 465 Lab (https://canvas.uw.edu/calendar? event_id=2905909&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar? event_id=2911162&include_contexts=course_1580150)	12:30pm to 2pm









Date	Details	Due
Tue Oct 18, 2022	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2911193&include_contexts=course_1580150	2pm to 3:30pm
	 ENV H 565 Lab https://canvas.uw.edu/calendar?event_id=2905941&include_contexts=course_1580150	2pm to 3:30pm
	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2905932&include_contexts=course_1580150	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2905949&include_contexts=course_1580150	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2911205&include_contexts=course_1580150	3:30pm to 5pm
	 ENVH 465/565 - Spatial Stats, Infectious Disease https://canvas.uw.edu/calendar?event_id=2905927&include_contexts=course_1580150	3:30pm to 4:50pm
Fri Oct 21, 2022	 Exercise 1 https://canvas.uw.edu/courses/1580150/assignments/7728934	due by 12pm
	 Exercise 2 https://canvas.uw.edu/courses/1580150/assignments/7728935	due by 12pm
	 ENV H 465/565 A Au 21: Friday Labs https://canvas.uw.edu/calendar?event_id=2905960&include_contexts=course_1580150	12:30pm to 3:30pm






Date	Details	Due
	 ENVH 465/565 Lab Exercise 3 (https://canvas.uw.edu/calendar?event_id=2905925&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENV H 465 Lab (https://canvas.uw.edu/calendar?event_id=2905910&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911163&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911194&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 565 Lab (https://canvas.uw.edu/calendar?event_id=2905942&include_contexts=course_1580150)	2pm to 3:30pm
Tue Oct 25, 2022	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905933&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905950&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911206&include_contexts=course_1580150)	3:30pm to 5pm









Date	Details	Due
	 ENVH 465/565 - Community Health and Built Environment (https://canvas.uw.edu/calendar?event_id=2905904&include_contexts=course_1580150)	3:30pm to 4:50pm
	 Exercise 3 (https://canvas.uw.edu/courses/1580150/assignments/7728936)	due by 12pm
	 ENV H 465/565 A Au 21: Friday Labs (https://canvas.uw.edu/calendar?event_id=2905961&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENVH 465/565 Lab Exercise 4 (https://canvas.uw.edu/calendar?event_id=2905926&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENV H 465 Lab (https://canvas.uw.edu/calendar?event_id=2905916&include_contexts=course_1580150)	12:30pm to 2pm
Fri Oct 28, 2022	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911164&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911195&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 565 Lab (https://canvas.uw.edu/calendar?event_id=2905922&include_contexts=course_1580150)	2pm to 3:30pm
Tue Nov 1, 2022	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905935&include_contexts=course_1580150)	3:30pm to 5pm









Date	Details	Due
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905951&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911207&include_contexts=course_1580150)	3:30pm to 5pm
	 ENVH 465/565 - Healthcare services, Location-Allocation (https://canvas.uw.edu/calendar?event_id=2905901&include_contexts=course_1580150)	3:30pm to 4:50pm
Fri Nov 4, 2022	 Exercise 4 (https://canvas.uw.edu/courses/1580150/assignments/7728937)	due by 12pm
	 ENV H 465/565 A Au 21: Friday Labs (https://canvas.uw.edu/calendar?event_id=2905962&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENVH 465/565 Lab Exercise 5 (https://canvas.uw.edu/calendar?event_id=2905943&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENV H 465 Lab (https://canvas.uw.edu/calendar?event_id=2905917&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911165&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911196&include_contexts=course_1580150)	2pm to 3:30pm









Date	Details	Due
Tue Nov 8, 2022	 ENV H 565 Lab (https://canvas.uw.edu/calendar?event_id=2905928&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905912&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905952&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911208&include_contexts=course_1580150)	3:30pm to 5pm
	 ENVH 465/565 (Discuss final project) (https://canvas.uw.edu/calendar?event_id=2905895&include_contexts=course_1580150)	3:30pm to 4:50pm
	 ENVH 465/565 - GPS and Mobile GIS (https://canvas.uw.edu/calendar?event_id=2905931&include_contexts=course_1580150)	3:30pm to 4:50pm
Fri Nov 11, 2022	 ENV H 465/565 A Au 21: Friday Labs (https://canvas.uw.edu/calendar?event_id=2905963&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENVH 465/565 Lab Exercise 6 (https://canvas.uw.edu/calendar?event_id=2905945&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENV H 465 Lab (https://canvas.uw.edu/calendar?event_id=2905939&include_contexts=course_1580150)	12:30pm to 2pm










Date	Details	Due
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911166&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911197&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 565 Lab (https://canvas.uw.edu/calendar?event_id=2905903&include_contexts=course_1580150)	2pm to 3:30pm
Mon Nov 14, 2022	 Exercise 5 (https://canvas.uw.edu/courses/1580150/assignments/7728938)	due by 12pm
Tue Nov 15, 2022	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905934&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905953&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911209&include_contexts=course_1580150)	3:30pm to 5pm
	 ENVH 465/565 (should be working on final project) (https://canvas.uw.edu/calendar?event_id=2905905&include_contexts=course_1580150)	3:30pm to 4:50pm


Date	Details	Due
	 ENVH 465/565 - Spatial Sampling and Spatial Interpolation (https://canvas.uw.edu/calendar?event_id=2905894&include_contexts=course_1580150)	3:30pm to 4:50pm
	 ENV H 465/565 A Au 21: Friday Labs (https://canvas.uw.edu/calendar?event_id=2905964&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENVH 465/565 Lab Exercise 7 (https://canvas.uw.edu/calendar?event_id=2905944&include_contexts=course_1580150)	12:30pm to 3:30pm
	 ENV H 465 Lab (https://canvas.uw.edu/calendar?event_id=2905919&include_contexts=course_1580150)	12:30pm to 2pm
Fri Nov 18, 2022	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911167&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911198&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 565 Lab (https://canvas.uw.edu/calendar?event_id=2905929&include_contexts=course_1580150)	2pm to 3:30pm
Tue Nov 22, 2022	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905908&include_contexts=course_1580150)	3:30pm to 5pm

Date	Details	Due
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905954&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911210&include_contexts=course_1580150)	3:30pm to 5pm
	 ENVH 465/565 (Optional open lab today to work on your final project) (https://canvas.uw.edu/calendar?event_id=2905946&include_contexts=course_1580150)	3:30pm to 4:50pm
	 ENV H 465/565 A Au 21: Friday Labs (https://canvas.uw.edu/calendar?event_id=2905965&include_contexts=course_1580150)	12:30pm to 3:30pm
Fri Nov 25, 2022	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911168&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911199&include_contexts=course_1580150)	2pm to 3:30pm
Mon Nov 28, 2022	 Exercise 6 (https://canvas.uw.edu/courses/1580150/assignments/7728939)	due by 12pm
	 Submit slides for Project Presentation (https://canvas.uw.edu/courses/1580150/assignments/7728933) (ENV H 565 AA)	due by 12pm

Date	Details	Due
Tue Nov 29, 2022	 Submit slides for Project Presentation https://canvas.uw.edu/courses/1580150/assignments/7728933 (ENV H 565 AB)	due by 12pm
	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2905936&include_contexts=course_1580150	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2905955&include_contexts=course_1580150	3:30pm to 5pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2911211&include_contexts=course_1580150	3:30pm to 5pm
	 ENVH 465/565 (Optional open lab today to work on your final projects) https://canvas.uw.edu/calendar?event_id=2905896&include_contexts=course_1580150	3:30pm to 4:50pm
Fri Dec 2, 2022	 Exercise 7 (optional) https://canvas.uw.edu/courses/1580150/assignments/7728940	due by 12pm
	 ENV H 465/565 A Au 21: Friday Labs https://canvas.uw.edu/calendar?event_id=2905966&include_contexts=course_1580150	12:30pm to 3:30pm
	 ENVH 465/565 (Optional open lab today to work on your final projects) https://canvas.uw.edu/calendar?event_id=2905906&include_contexts=course_1580150	12:30pm to 3:20pm

Date	Details	Due
	 ENV H 465 Lab (https://canvas.uw.edu/calendar?event_id=2905920&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911169&include_contexts=course_1580150)	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911200&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 565 Lab (https://canvas.uw.edu/calendar?event_id=2905923&include_contexts=course_1580150)	2pm to 3:30pm
	 ENV H 465/565 A Au 20: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905900&include_contexts=course_1580150)	3:30pm to 5pm
	 ENV H 465/565 A Au 21: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2905956&include_contexts=course_1580150)	3:30pm to 5pm
Tue Dec 6, 2022	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health (https://canvas.uw.edu/calendar?event_id=2911212&include_contexts=course_1580150)	3:30pm to 5pm
	 ENVH 465/565 - Last day of class (Project presentations for 565 students) (https://canvas.uw.edu/calendar?event_id=2905898&include_contexts=course_1580150)	3:30pm to 4:50pm

Date	Details	Due
Fri Dec 9, 2022	 ENV H 465/565 A Au 21: Friday Labs https://canvas.uw.edu/calendar?event_id=2905967&include_contexts=course_1580150	12:30pm to 3:30pm
	 ENVH 465/565 (Optional open lab today to work on your final projects) https://canvas.uw.edu/calendar?event_id=2905899&include_contexts=course_1580150	12:30pm to 3:30pm
	 ENV H 465 Lab https://canvas.uw.edu/calendar?event_id=2905921&include_contexts=course_1580150	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2911170&include_contexts=course_1580150	12:30pm to 2pm
	 ENV H 465/565 A Au 22: Geographic Information Systems (GIS) In Public Health https://canvas.uw.edu/calendar?event_id=2911201&include_contexts=course_1580150	2pm to 3:30pm
	 ENV H 565 Lab https://canvas.uw.edu/calendar?event_id=2905924&include_contexts=course_1580150	2pm to 3:30pm
Mon Dec 12, 2022	 465 Final Assignment https://canvas.uw.edu/courses/1580150/assignments/7729581 (ENV H 465 AB)	due by 12pm
	 465 Final Assignment https://canvas.uw.edu/courses/1580150/assignments/7729581 (ENV H 465 AA)	due by 12pm
	 565 Final Project Report https://canvas.uw.edu/courses/1580150/assignments/7728932 (ENV H 565 AA)	due by 12pm

Date	Details	Due
	 565 Final Project Report https://canvas.uw.edu/courses/1580150/assignments/7728932 (ENV H 565 AB)	due by 12pm