

Syllabus

BI/EE/EH 795: Urban Biogeoscience and Environmental Health: From Research to Policy

Summer 2021

Credits: 0, 2, or 4

Course meetings: Wednesdays, 2:00 pm to 3:15 pm over Zoom

Course instructor

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5 Cummington Mall, BRB 431

Office Hours: Tuesday, 2:00 pm – 3:00 pm and by appointment ([schedule meetings here](#))

Course description

This course prepares graduate students to address urban environmental challenges through hands-on training in a semester-long internship with the government, non-governmental organizations (NGOs), and/or the private sector to learn how cities are tackling urban environmental challenges, including but not limited to mitigation and adaptation to climate change, protecting vulnerable populations from air pollution, and issues related to water quality and quantity. The course consists of 7 required sessions, described in detail below.

Course learning objectives

Upon completion of this course, students will be able to:

1. Communicate and transfer scientific knowledge to the needs of governments, NGOs, or the private sector to advance the organization's efforts tackling urban environmental challenges.
2. Create a stakeholder presentation or write a policy brief that comprehensively communicates an urban environmental challenge and proposes a method for solving that problem in collaboration with the host organization.
3. Navigate professional settings through training in conflict management and resolution and other professional development sessions.
4. Apply effective elevator pitches and other communication strategies that provide insight into personal career and research interests.

Learning resources

Materials:

- 99pi (2020). "The Weather Machine." 99% Invisible. <https://99percentinvisible.org/episode/the-weather-machine/>
- FitzGerald, E (2020). "Missing the Bus." 99% Invisible. <https://99percentinvisible.org/episode/missing-the-bus/>
- Harman, B.P., et al. (2015). "Urban partnerships and climate adaptation: challenges and opportunities." *Current Opinion in Environmental Sustainability* 12: 74-79.
- Levanthal Map & Education Center. (2020). "Bending Lines, Maps and Data from Distortion to Deception." Digital Exhibitions. <https://www.leventhalmap.org/digital-exhibitions/bending-lines/>
- Ramaswami, A., et al. (2016). "Meta-principles for developing smart, sustainable, and healthy cities." *Science*, 352(6288), 940-943
- Sallis, J. F., et al. (2016). "Use of science to guide city planning policy and practice: how to achieve healthy and sustainable future cities." *The Lancet* 388.10062 (2016): 2936-294

Online Resources

The class uses the BU URBAN website (<https://sites.bu.edu/urban/current-students/internship-course/>) to share all handouts, reading material, and other files throughout the semester.

Teaching methodology/Course format

Students are expected to have selected the internship organization prior to the first course session. The internship matching process is facilitated by BU URBAN faculty and staff who can help identify an internship organization and project appropriate for the student. This process begins 3-4 months in advance of the semester start, around the same time students sign up for this course (June for Fall, October for Spring, January for Summer).

The first meeting of the course takes place during the first week of the semester and students learn about the logistics of the course and fill out a pre-course survey. The subsequent class meetings are designed to enable students to report on their internship progress and receive feedback on their work. An individual meeting with the instructor mid-way through the internship enables further discussion about internship progress, successes, and challenges the student faces in their internships. In addition, students participate in group-based learning exercises that cover communication and professional development skills. Students also present findings from their internship at either the BU URBAN Introductory Workshop or the BU URBAN Spring Symposium. The final presentation will be evaluated based on presentation format and aesthetics and how well the student presents their work verbally. To communicate these findings and experiences, students also create a policy brief or stakeholder presentation that summarizes their experiences during the internship. On the last day of classes students submit their policy briefs or stakeholder presentations and complete the post-internship assessment. Information gathered from the pre- and post-internship assessments enable improvements of the learning outcomes of the course and the overall internship experience. Students also complete BU course evaluations at the end of the semester.

Students are expected to spend a minimum of 6 hours/week in their internships to earn 2 course credits or 12 hours/week to earn 4 course credits. SPH Students may also take the course for 0 credits provided that it is approved as a doctoral research rotation within the Department of Environmental Health.

Assessments

The course consists of pre- and post-internship assessments (5% total), participation in course meetings (5%), participation in the internship (40%), elevator pitch (5%), informational interviews (15%), policy brief or stakeholder presentation (15%), peer-review of policy brief or stakeholder presentation (5%), and a final presentation (10%). Assessment guidelines are listed below.

1. Pre- and post-internship assessment, 5% total

Students are required to complete the pre- and post-internship assessments for program evaluation and understanding student learning gains.

2. Participation in the course meetings 5%

Students are required to attend course meetings and actively participate in discussions in order to acquire full credit for the course.

3. Participation in the internship 40%

Students are required to spend a minimum of 80 hours participating in the internship. Depending on the agreement between the student and the organization the internship can be

completed by participating 6 hours per week throughout the semester or through more concentrated experiences for shorter periods of time.

4. Elevator Pitch 5%

Effective science communication includes concise, well-packaged statements about the who, what, why, and how of a project that can be conveyed to various audiences. Having an effective elevator pitch can come in handy at conferences, stakeholder meetings, or job interviews.

5. Informational Interviews 15%

Students will use the elevator pitches they create during this course to conduct three informational interviews with professionals from a variety of career sectors of interest, including, but not limited to, government, NGOs, and the private sector. These interviews will provide a real-world opportunity for students to convey their work to a variety of audiences, while learning more about different career paths.

6. Policy Brief or Stakeholder Presentation 15%

This assignment is meant to give students the opportunity to communicate the insights derived from the internship experience in the form of a policy brief or stakeholder presentation. We identify additional organizations and stakeholders that may benefit from receiving this policy brief or presentation during a class discussion and target the product for those recipients. The presentation serves three purposes: it can be shared with the internship organization as a product of the student's work, can be shared with the identified organizations or stakeholders of interest, and will be posted on the program website to give an overview of how students have applied their scientific knowledge to inform policy and practice.

7. Peer-Review of Policy Brief or Stakeholder Presentation 5%

Peer review is a required skill for many career tracks. Constructive feedback and peer-review are meant to improve a document's readability and add context. Students practice this skill by reviewing each other's policy briefs.

8. Final Presentation 10%

This assignment gives each student an opportunity to share their internship experience and findings with their peers and other partners.

Grading policy

Students will be assigned the following final letter grades, based on course assessments.

Course Average	Final Grade
94-100	A
90-93	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
60-69	D
<60	F

Course policies and student expectations

Late-work policy: Late work is not accepted, except in extenuating circumstances in which case a doctor's note or similar is required.

Attendance and/or participation policy: Attendance at all meetings is required.

Course preparation: Required readings are available on the website.

Boston University: Standards of Academic Honesty

Below is a reprint of the Boston University Academic Conduct Code as it appears on the following website: <https://www.bu.edu/academics/policies/academic-conduct-code/>

Departures from this code can have serious repercussions.

"All students entering Boston University are expected to maintain high standards of academic honesty and integrity. It is the responsibility of every student to be aware of the Academic Conduct Code's contents and to abide by its provisions. The Academic Conduct Committee of the individual school or college, which is composed of students, faculty and staff, has jurisdiction over all charges of academic misconduct brought against students.

In all charges of academic misconduct against a student, the student is entitled to full procedural fairness in any disciplinary proceedings. The Academic Conduct Code details the guidelines governing disciplinary proceedings. It also articulates the University's philosophy of discipline, defines violations of the code, and enumerates penalties applicable under the code."

Academic misconduct is any intentional act or omission by a student which misrepresents his or her academic achievements, or any attempt to misrepresent his or her academic achievements. The following acts constitute academic misconduct. This is not an exhaustive list.

- *Cheating on examinations:* The use or attempted use of any unauthorized books, notes or other materials in order to enhance the student's performance in the examination, copying or attempting to copy from another student's examination, permitting another student to copy from an examination or otherwise assisting another student during an examination, or any other violation of the examination's stated or commonly understood ground rules.
- *Plagiarism:* Any representation of the work of another as one's own constitutes plagiarism. This includes copying or substantially restating the work of another person without the use of quotation marks or other indication that the words of another have been copied, the use of any written or oral work from which the student has obtained ideas or data without citing the source or collaborating with another person in an academic endeavor without acknowledging that person's contribution.
- *Submitting the same work in more than one course without the consent of all the instructors*
- *Misrepresentation or falsification of data*
- *Allowing another student to represent your work as his or her own*
- *Violating the rules of an examination or assignment*

All work that you submit must be written in your own words and have the appropriate citations.

Be sure to complete the [plagiarism tutorial](#) and review [tips for avoiding academic dishonesty](#).

Course Schedule

Each class starts with a brief check in to see how students are progressing in their internships. Schedules and topics are subject to change.

Session	Date	Topic	Assignments Due Prior to Class Meeting
1	June 2	Introduction, expectations of internships and timescales	Pre-internship assessment due. (Link)
2	June 9	How do public-private partnerships contribute to ecologically sustainable and healthy cities? Discuss informational interview strategy	Readings available on website.
3	June 23	How to write effective policy briefs	Review instructions on how to write a policy brief.
4	July 7	Developing effective elevator pitches	Readings on elevator pitches on website. Written version of the elevator pitch is due. 3 Informational Interview targets identified.
5	July 14	Developing effective presentations for stakeholders	Readings on making effective presentations and sharing your science with a broad audience on website. Complete 3 informational interviews
6	July 28	Peer review and discussion of policy briefs or stakeholder presentations	Review guidelines on how to carry out effective peer review. First draft of policy briefs or stakeholder presentation due to instructor and your peer editor by July 28.
7	Aug. 18	Practice talks	Presentations for Intro workshop due in class. policy briefs or stakeholder presentation and post-internship assessments due at 5 pm. Please send policy briefs or stakeholder presentation to urban@bu.edu and fill out post-internship assessment online.
	TBD	BU URBAN Intro Workshop	Presentation at BU URBAN Introductory Workshop for incoming trainees

Session Outlines

Session One

Session-specific descriptions: Students introduce themselves and exchange information on their internship organizations and projects. Through a “quick write” exercise we discuss what is expected of the internship experience. We will identify additional partners that may find the results of the internship valuable and assess which of these we can prepare the policy briefs for.

Active learning activities: Quick write – Students get prompted to write down their ideas on internship expectations. It provides the opportunity for students to access prior knowledge and result in discussion of each point that was written down by students afterwards.

Course preparation, including assignments, required readings or other preparation for in-class activities:
Students complete pre-internship assessment.

Session Two

Session-specific descriptions: Since each student’s internship focuses on a grand challenge, we talk about how public-private partnerships in general contribute to planning healthy, sustainable, and equitable cities.

Active learning activities: Four Corners – students split up into groups and are presented with an urban problem. They discuss the problem in their group and come up with research questions that can help understand the issue. All groups reconvene to discuss each scenario and tie it back to the overarching theme of the session.

Course preparation, including assignments, required readings or other preparation for in-class activities:

Explore the Bending Lines exhibit and find an example that relates to your research or internship

- Leventhal Map & Education Center. (2020). “Bending Lines, Maps and Data from Distortion to Deception.” Digital Exhibitions. <https://www.leventhalmap.org/digital-exhibitions/bending-lines/>

Read or listen to one of the following, your choice (available on website):

- 99pi (2020). “The Weather Machine.” 99% Invisible. <https://99percentinvisible.org/episode/the-weather-machine/>
- FitzGerald, E (2020). “Missing the Bus.” 99% Invisible. <https://99percentinvisible.org/episode/missing-the-bus/>
- Harman, B.P., et al. (2015). "Urban partnerships and climate adaptation: challenges and opportunities." *Current Opinion in Environmental Sustainability* 12: 74-79.
- Ramaswami, A., et al. (2016). “Meta-principles for developing smart, sustainable, and healthy cities.” *Science*, 352(6288), 940-943
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Session Three

Session-specific descriptions: Students share their elevator pitches they prepared, and we work through improving these with the “Message Box” exercise. We practice elevator pitches for different audiences.

Learning objectives: Develop a strong elevator pitch that connects an urban problem with a research agenda, and benefit to the community.

Active learning activities: Turn and Talk – Students select a partner (preferably not from their own discipline) and present their elevator pitches. Students take turns to on giving effective feedback on the elevator pitches and we work through the “Message Box” exercise to improve the elevator pitch and tailor it to different audiences.

Course preparation, including assignments, required readings or other preparation for in-class activities:
Review resources on the elevator pitch available on the website and be prepared to fill out a “Message Box” worksheet. Bring your written elevator pitch with you and identify your targets for your three informational interviews

Session Four

Session-specific descriptions: This class consists of two parts: We will review how policy briefs are used and what distinguishes good policy briefs from bad ones. Later on, the group discusses which of the policy briefs we read were effective at communicating the policy issue, how the problem was presented, whether all stakeholders were mentioned, how the potential policy change could impact the stakeholders and otherwise rate them based on the information we gathered from the guest speaker. We identify best strategies on writing policy briefs and discuss what each student will cover in their policy brief and how this relates to their own internship experience.

Learning objectives: Writing an effective policy brief that highlights how applied scientific knowledge can result in policy changes.

Active learning activities: Group discussion where each student is asked to weigh in.

Course preparation, including assignments, required readings or other preparation for in-class activities:
We will read and examples of policy briefs and instructions on how to write a policy brief, made available on the website.

Session Five

Session-specific descriptions: Students storyboard their stakeholder presentation with input from other students in the course. We also work towards improving graphical representation of data.

Learning objectives: Preparing compelling presentations is important in communicating science to policy makers and others.

Active learning activities: Think-Pair-Share. Give students a few minutes to storyboard their presentation. Students turn to a partner to share their presentation outlines and graphics. As a group we discuss these outlines and improve them.

Course preparation, including assignments, required readings or other preparation for in-class activities:
Readings on data presentation (Kelleher, C., and Wagener T. (2011) "Ten guidelines for effective data visualization in scientific publications." Environmental Modelling & Software 26.6: 822-827) and a guide on making effective presentations is made available on the website. **Be prepared to storyboard your presentation! In addition, all three informational interviews must be completed before this session.**

Session Six

Session-specific descriptions: We discuss and work through peer-review guidelines before we review the peer-reviews students have carried out on each other’s work.

Learning objectives: Carrying out effective peer-review for publication of documents.

Active learning activities: Turn and Talk and Discussion. Students partner with their peers to discuss the each other’s reviews, later we discuss the reviews as a group.

Course preparation, including assignments, required readings or other preparation for in-class activities:
Prepare by reading guidelines on peer-review available on the website. Carry out a peer-review on your peer’s policy brief. **First draft of policy briefs due to the instructor and your peer editor by July 28.**

Session Seven

Session-specific descriptions: Students practice their presentations and provide feedback. We also reflect on lessons learned from the internship, discuss whether some of the techniques we talked about in class were useful in navigating the internship and how we see the projects developing that were part of the internships.

Learning objectives: Improving public presentation skills and clearly communicating project outcomes.

Active learning activities: Turn and Talk and Discussion. Students partner with their peers to discuss the each other's feedback, later we discuss the overall process as a group. During the group reflection, each student is asked to weigh in.

Course preparation, including assignments, required readings or other preparation for in-class activities:
Come prepared to give your presentation. Complete post-internship assessment.

Session Eight

Session-specific descriptions: We host the introductory workshop to which we invite previous cohorts. Trainees share the results of their internship projects.

Learning objectives: Public speaking; relating how scientific knowledge and advances are integrated into urban environmental policy at the local level.

Assessment guidelines

1. Pre- and post-internship assessments, 5% total

Students are required to complete the pre- and post-internship assessments for program evaluation and understanding student learning gains.

Exceeds expectations (2.5): Student fills out the assessments with thought and rigor.

Does not meet expectations (0): Student does not fill out the assessments properly and does not put any thought into the assignment.

2. Participation in the bi-weekly class meetings 5%

Students are required to attend class meetings and actively participate in discussions on topics listed in the class schedule in order to acquire full credit for the course.

Exceeds expectations (4.5-5): Student regularly participates in discussions and activities in a productive fashion, gives thoughtful answers, asks thought-provoking questions, and brings in relevant material from other sources and/or courses.

Meets expectations (4-4.4): Student participates in discussions and activities, demonstrates a solid fund of knowledge, and is generally prepared for class.

Does not meet expectations (<4): Student does not participate in a substantive way in discussions and activities, responses indicate a lack of preparation for class, and is absent or late on multiple occasions.

3. Participation in the Internship 40%

Students are required to spend a minimum of 80 hours participating in the internship.

Exceeds expectations (46-40): Student participates in the internship in a productive fashion, asks thought-provoking questions, takes the internship project into a useful direction, and contributes to the organization's goals.

Meets expectations (31-35): Student participates in the internship, demonstrates a solid fund of knowledge, and is generally interested in the organization's work.

Does not meet expectations (<30): Student does not participate in a substantive way in the internship, does not complete the minimum of 80 hours of required contact time at internship organization, is absent or late on multiple occasions, and does not advance the organization's project in a meaningful manner.

4. Elevator Pitch 5%

Effective science communication includes concise, well-packaged statements about the who, what, why, and how of a project that can be conveyed to various audiences. Having an effective elevator pitch can come in handy at conferences, coffee shops, airports, stakeholder meetings, or job interviews.

Exceeds expectations (4.5-5): Student prepares for class discussion on elevator pitches and prepares a well thought out elevator pitch with little jargon.

Meets expectations (4-4.4): Student's elevator pitch includes some jargon and misses some important components that describe the importance of their work.

Does not meet expectations (< 4): Student does not prepare an elevator pitch, the elevator pitch leaves out major components of the work, or the elevator pitch is full of jargon or not concise/straight forward.

5. Informational Interviews 15%

Students will use the elevator pitches they create during this course to conduct three informational interviews with professionals from a variety of career sectors of interest, including, but not limited to, government, NGOs, and the private sector. These interviews will provide a real-world opportunity for students to convey their work to a variety of audiences, while learning more about different career paths.

Exceeds expectations (10 -15): Student conducts three informational interviews, or conducts two and has made progress toward the third.

Meets expectations (5 - 10): Student conducts two informational interviews, or conducts one and has made progress toward the second.

Does not meet expectations (< 5): Student conducts one informational interview or has made progress toward the first.

6. Write-up of Policy Brief or Stakeholder Presentation 15%

This assignment is meant to give students the opportunity to communicate the insights derived from the internship experience in the form of a policy brief or stakeholder presentation. The assignment serves three purposes: it can be shared with the internship organization as a product of the student's work, can be shared with other organizations that may be interested in the topic, and will be posted on the program website to give an overview of how students have applied their scientific knowledge to inform policy and practice.

Exceeds expectations (13.5-15): Student presents a thought-out, comprehensive policy brief or stakeholder presentation that includes a good background on current policy, policy alternatives, and best practices moving forward. All stakeholders that are affected by the policy change are mentioned and the policy change implications are explained in detail.

Meets expectations (12-13.4): Student presents a policy brief or stakeholder presentation that includes some background on current policy, policy alternatives, and best practices moving forward, but some details are missing. Only some stakeholders that are affected by the policy change are mentioned or the policy change implications could use more detail.

Does not meet expectations (<12): Student presents a policy brief or stakeholder presentation that includes some background on current policy, policy alternatives, and best practices moving forward, but some significant policy information or important parts of the policy brief are missing. Significant stakeholders that are affected by the policy change are not mentioned or the policy change implications are not described.

7. Peer-Review of Policy Brief or Stakeholder Presentation 10%

Peer review is a required skill for many career tracks. Constructive feedback and peer-review are meant to improve a document's readability and add context. Students practice this by reviewing each other's policy briefs and stakeholder presentations.

Exceeds expectations (4.5-5): Student prepares for a well thought out peer review that provides constructive input and improves their peer's product.

Meets expectations (4-4.4): The peer review submitted by the student is not thorough and the tone used in the review is more damaging than it is helpful and constructive.

Does not meet expectations (<4): The peer review submitted by the student is incomplete, the tone is inappropriate, and the student does not contribute thoughtful input and only comments on style or minor errors.

8. Final Presentation 10%

This assignment gives each student an opportunity to share their internship experience and findings with their peers and other partners.

Exceeds expectations (9-10): Student delivers a compelling presentation that clearly outlines the organization and project objective and goals. The presentation hits on project advances that were made during the internship and explains how this information is used to further project goals. The presentation also connects this project to larger urban environmental problems and environmental policy. The student is well prepared to answer questions and encourages discussion and is able to respond in a manner that can be easily understood by audience members outside of their field.

Meets expectations (8-9): Student delivers a clear presentation that outlines the organization and project objective and goals. The presentation hits on project advances that were made during the internship and explains how this information is used to further project goals. The presentation also connects this project to larger urban environmental problems but not environmental policy or vice versa. The student has some trouble answering questions or can only respond to questions using field-specific jargon that cannot be understood by most audience members.

Does not meet expectations (<8): Student delivers a presentation that could benefit from better organization. The presentation only lightly touches on or omits organization and project objective and goals. The presentation does not connect this project to larger urban environmental problems or environmental policy. The student has trouble answering questions and can only respond to questions using field-specific jargon that cannot be understood by most audience members.