

Welcome to the "Research Methods for a Better World" Course Materials Folder

Thanks for being here! This folder contains open-access teaching materials developed for a course on research methods at an undergraduate or graduate level, based on a course taught within a graduate Environmental Science and Policy program at Pace University.

The included lecture slides were developed specifically for students in the environmental field, but they can be readily adapted for use in other applied disciplines, including public health, urban planning, international development, and beyond. The course was designed for mixed modality delivery — students watch certain lectures in advance, then participate in in-person, discussion and activity-based sessions. However, the structure is flexible and can be adjusted for fully in-person or online formats.

The syllabus outlines a 13-week plan, to intentionally leave space for instructors to incorporate additional topics or tailor content based on disciplinary context and local needs.

I hope you find these resources useful in your teaching and learning – feel free to adapt, build upon, and share them in the spirit of open education and making research matter for the real world. Please feel free to contact me with any suggestions, questions, or just to say if/how you are using these materials. I look forward to hearing from you!

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Co-Founder of [Participatory Science Solutions LLC](#)

New book! [Science with Impact: How to Engage People, Change Practice, and Influence Policy](#)
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SCI398: RESEARCH METHODS FOR A BETTER WORLD

course description

This course is designed to help you develop research skills that prioritize real-world impact from the very beginning of the scientific process — not just at the end. We will explore how to design research that is both methodologically rigorous and ethically grounded. You'll learn how to frame questions that matter to both science and society, conduct contextual literature reviews that consider multiple ways of knowing, and engage in stakeholder analysis not as an afterthought, but as an integral part of research design. We will also explore how to identify and navigate bias, build collaborative relationships, and align your work with policy and community priorities. The goal is to prepare you for your capstone research project—and to equip you with tools to carry out meaningful, impactful science throughout your career.



course learning objectives

This course will teach you to critically read, discuss, and evaluate research in your discipline with an emphasis on ethics, uncertainty, and inclusive knowledge-making. You'll develop key skills for writing a feasible and thoughtful research proposal brief and poster presentation, including formulating research questions, discussing who will be involved in your research, and integrating ethical considerations into your design. You will also build communication skills for engaging both academic and public audiences—not just when presenting results, but throughout the research process. We'll explore how values shape science, and how to responsibly engage with different knowledge systems and communities. By the end of the course, you'll have developed a well-rounded proposal brief and a deeper understanding of how science interacts with society.

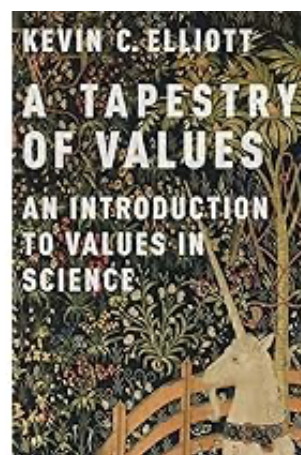
departmental learning outcomes

This class also satisfies three learning outcomes for your program: 1) Understand the various approaches to measurement and how they reflect different perspectives on society and policy, 2) Develop your ability to collect evidence and critically analyze using rigorous empirical methods, 3) Develop presentation skills through presentation of contextual research analysis.



Course Readings

For this course, we will be reading two books (and some additional peer-reviewed articles). Both of these books are accessible through the University library, and you can also request the books through your own town/city library. If you prefer to purchase copies of the books (recommended, as they can be helpful throughout your graduate education and beyond) please click the book icons to do so and see the discount code information below.



Use Discount Code: IMPACT for 20% off

course assessment

20% participation and respectful behavior

This class will work best if students take an active role – you will get more out of it and I will be able to better tailor my instruction to your needs and interests. Full participation requires coming on time and prepared to discuss the readings and engaging fully in weekly workshops. If this is difficult for you (for example, if you feel shy or nervous), please speak with me during virtual office hours and we will work out a strategy! If you are struggling with regular attendance, please sign up for office hours to discuss (also see the course policy on absences and lateness).

25% research notebook

During this course you will maintain a (non-digital) research notebook, where you will keep an evolving record of your notes, ideas, and weekly writing assignments for the course. You can bring this notebook to the exam, so use it to take detailed notes of the lectures and readings. Each week there will be a prompt for writing in your research notebook, which you should bring to class. I will collect this notebook twice during the semester to grade it, in Week 5 and in Week 10. Please try not to lose it! If you're worried about misplacing it, take photos of the pages each week.



25% homestretch exam

Students will be assigned an exam close to the end of the semester which will be designed to assess understanding of the course material. You will be allowed to bring your research notebook to the exam, but no electronic devices.

30% research proposal brief and poster presentation

For your final assignment, you will submit a capstone/thesis proposal brief (**15%**) and present a research poster (**15%**). These will synthesize the work you've done throughout the semester, including insights from your research notebook, class discussions, and feedback. The proposal brief will outline your research question(s), motivation, relevant literature/policy context, methodology, and key stakeholders. The poster presentation will give you the chance to visually communicate your project and gather feedback in preparation for the next stage of your research journey.

Weekly topics and readings (subject to change)

Week	Topic and Lecture	Tentative Reading	Activities
1	Introduction to the course: The why, what and who of research	Introduction to Science with Impact and Chapter 1 of Tapestry of Values	Class discussion on what "research with impact" means for each of us
2	The impact of science on society - Why Facts Don't Change Minds, and What Does	Chapters 1-2 of Science with Impact	Watch "Don't Look Up"; Class discussion about science skepticism
3	A Brief History of Science	Chapter 3 of Science with Impact; Chapter 2 of Tapestry of Values	Class discussion about importance of history of science in understanding research today
4	Research Paradigms	Chapter 4 of Science with Impact; Chapter 3 of Tapestry of Values	Formulate research questions and discuss our motivations for doing research
5	Ethical considerations with location, materials, and populations	Chapter 5 of Science with Impact	Do IRB training; Class discussion; Hand in Research Notebook for grading/feedback
6	The power of numbers (surveys, quantitative methods)	TBD	Practice survey design
7	Perspective matters (qualitative methods)	"Less is more: the potential of qualitative approaches in conservation research"	Watch "Blood on the Mountain"; Practice interviewing techniques
8	Participatory Science / Decolonizing Methodologies	Chapter 6 of Science with Impact	Class discussion to think more about the "who" in research: who matters, who decides?
9	Doing Research (Data collection, analysis, and interpretation)	Chapter 9 of Science with Impact	Participate in mini research project with class
10	Homestretch exam		Hand in research notebook for grading/feedback
11	What Research Will You Do?	Chapter 7 of Science with Impact; Chapter 8 of Tapestry of Values	Work on Final Project Brief
12	Communicating Science and Influencing Policy	Chapters 8 and 10 of Science with Impact	Tabling in public space (have conversations with the public about their perceptions of research)
13	Final Projects	None	Final Project Brief and Poster Presentation

resources for students

the most important thing - self-care

Your academic success in this course and throughout your college career depends heavily on your personal health and well-being. Stress is a common part of the college experience, and it often can be compounded by unexpected life changes outside the classroom. The University Community strongly encourages you to take care of yourself throughout the term, before the demands of midterms and finals reach their peak.

Please feel free to talk with me about any difficulty you may be having that may impact your performance in this course as soon as it occurs and before it becomes unmanageable. It is also important for you to be aware that as a faculty member, I am a non-confidential resource. This means that if you share information with me about sex-based misconduct, I must report it to others with a need to know. I will disclose to as few individuals as possible, but as a non-confidential resource, I do not have the ability to promise that I will not tell others within the University about the information that has been shared with me. Please know there are a number of other support services on campus that stand ready to assist you. I strongly encourage you to contact them if needed.

important university resources (click on links below)

[Counseling Center](#)

[Dean for Students' Office](#)

[Health Care Unit](#)

[Office of Multicultural Affairs & Diversity Programs](#)

[Link to Report Incidents of Bias / Concern](#)

[Sexual Assault Prevention & Education](#)

[International Student / Scholars](#)

accommodations for students with disabilities

The University's commitment to equal educational opportunities for students with disabilities includes providing reasonable accommodations for the needs of students with disabilities. To request an accommodation for a qualifying disability, a student must self-identify and register with the Coordinator of Disability Services for his or her campus. No one, including faculty, is authorized to evaluate the need and arrange for an accommodation except the Coordinator of Disability Services. Moreover, no one, including faculty, is authorized to contact the Coordinator of Disability Services on behalf of a student. For further information, please see [Information for Students with Disabilities](#) on the University's web site or contact the campus Counseling Center 212-346-1526.

course policies

classes

All readings, details on assessment and other course information will be available digitally on Classes, as well as occasional class updates and a variety of external links and resources. Assigned readings will be available on classes the week before they are expected to be read.

lateness and attendance

Make sure to be on time for class: lateness to class will significantly impact your in-class engagement grade, and being more than 20 minutes late to class is considered an absence. Late assignments will incur a 20% per day penalty, and assignments that are more than three days late will not be accepted unless written documentation is provided to support a justified excuse.

plagiarism and academic honesty

As your professor, I hold high expectations regarding professional behavior both for myself and for my students. This means being honest - if you made a mistake or forgot something, tell me the truth - I commit to the same standards. Plagiarism or cheating is unacceptable and will result in disciplinary actions such as, but not limited to, a failing grade in the assignment or the course, or suspension from the University. If you have questions or

concerns about this or would like further clarification, please contact me directly or see the Academic Integrity Policy in the online student handbook.

supporting an inclusive learning environment

The most productive learning environments are those in which all students feel like they belong and are an important part of the class. As your professor, I am fully committed to creating an inclusive learning environment where diverse perspectives are recognized, respected, and seen as a source of strength. To help accomplish this, 1) During the first week of class, I will invite everyone to introduce themselves with the name/ pronouns they would like others to address them with; 2) I have actively incorporated readings and lecture material to highlight perspectives that have not been included enough in the mainstream environmental movement, including those of people who identify as belonging to indigenous, Black, Latinx and other communities of color, as well as those of people with physical and/or learning differences; 3) Please let me know if something said or done in or outside the classroom, by either myself or other students, is particularly troubling or causes discomfort or offense. If you would prefer to discuss the issue with someone else, please consider reaching out to someone from one of the Student resources offices provided on the previous page.

Capstone/Thesis Project Brief Template

Let this build on the questions, insights, and interests you've explored all semester. Keep all answers very short (1-2 sentences each). Generative AI is not permitted for this assignment.

Name:

Tentative Project Title:

What's a working title for your capstone or thesis?

Main Area of Interest:

What big topic or field are you diving into?

What's Driving You?:

What's your motivation for exploring this topic?

Why This Matters:

In one sentence, describe the core problem or challenge your research addresses.

What We Know (and Don't Know):

In 2–3 sentences, summarize what the research or policy literature says about this topic, and where there are gaps. (Include in-text citations.)

How You're Contributing:

In one sentence, explain how your project will help fill the research gap.

Your Research Question(s) or Objective(s):

What are you hoping to find out or achieve? (Include hypotheses if you have them.)

Your Research Approach:

Which research paradigm(s) are you working within, and why?

Who Cares—and Why?:

Which organizations, communities, companies, municipalities, or groups are connected to your research? Who would benefit from or be affected by your research? Why should they care?

How Will You Involve Them?:

What stage or stages of the research process would be essential for engaging others in your research? How specifically will you involve them in the process?

Where Will the Study Happen?:

Where is your research based geographically, and why does this place matter?

Ethical Considerations:

Are there any ethical issues you anticipate? If so, how will you handle them?

Methodological Approaches:

Explain the methodology you plan to use to approach the research.

How You'll Analyze Your Data:

Will your analysis be inductive or deductive? Briefly describe how you'll analyze your data.

Sharing Results:

How do you plan to share your findings (and with whom)?

Preferred Capstone Advisor:

Who would you most like to work with on your project?

References:

List at least ten peer-reviewed sources published within the last 10 years (APA or MLA style).

Each week, students have prompts based on the reading/lecture material for writing in their research notebook, which is worth 20% of their overall course grade.

Week	Topic	Questions
1	Introduction to research method with impact	What/who is research for? Who can be a scientist? What does "research with impact" mean to you in the context of your degree? What do you hope to learn in this course?
2	Why facts alone don't change minds, and what does	What social or natural science topics do you wish you could convince others to understand better? How do you think you could communicate with them about those topics? Have you had positive or negative (or both) experiences trying to talk with people about these topics?
3	A brief history of science for society	List 5 words that come to mind when you think of the history of science. When do you think the history of science began and why? Why do you think the history of science is important for reflecting on how science is done and perceived today?
4	Understanding different research paradigms and methodologies	Why do you personally think research can be important for your degree or future career in policy/science? What are your motivations for doing research? Which research paradigms do you think your motivations fit into and why?
5	Ethical issues in research	What ethical concerns do you need to think about in relation to the research you plan to do for your capstone? (include location, populations, methods, etc.) What are potential ways that you could mitigate or address these issues?
6	Quantitative methods and understanding uncertainty	Pick one of the topics that you are considering for your capstone research and come up with 2 "bad" research questions, and write about how you could improve them to make them good research questions. Why is it important to be upfront about uncertainty in research?
7	Qualitative methods and validity	In what ways is quantitative research limited in understanding human values, attitudes and behaviors? How can qualitative research help ensure that there is "internal" validity to a given study? Why is it so important to be cognizant of inequalities and power relations when conducting social science research? How can qualitative research help us to develop better questions?
8	Participatory and transformative methodologies	Why is it important to understand science as a verb, rather than a noun? Why is it important to consider the "who" when doing research? Who do you think you could involve/consider in your capstone research project and how might you involve them?
9	Data collection and analysis	Write in your research notebook about your experience participating in the class research project. Did this help you to think about how you'll do your own capstone research in any

		way?
10	Exam	None
11	What research will you do? (Developing project briefs)	Do you think it is important to consider how research is shared beyond academic spaces? Why or why not? How do you think you could consider sharing the results of your capstone research with those who could use the information? Who could provide you with feedback on this process?
12	Communicating and engaging with others	What do you think most researchers get wrong in terms of communicating with the public / trying to influence policy and what could they do differently? How do you think these lessons can apply to the research that you plan to do for your capstone?
13	Final poster presentations	What do you think you learned in this course about research and its role in/for society?