Environmental Science Communication, EVPP 429/529

Instructor: K.L Akerlof, PhD
Email: kakerlof@gmu.edu

Class Schedule: Mondays, 4:30-7:10 pm
Location: Innovation Hall 205
Office Hours: Fridays, 10 am-noon, or by appointment (phone, Skype, or Zoom)

Course description and objectives

Environmental science communication can take many forms, from blockbuster movies to contentious stakeholder meetings. It is both studied and practiced by people from a wide array of disciplines, ranging from conservation biologists, climate modelers, and social scientists to reporters, public affairs staff, and issue advocates. Their communication goals and approaches can be quite diverse. This course will explore the ways in which communication facilitates individual- and societal-level environmental decision-making and behavior change. Communication is also increasingly being viewed by governments as a "soft" policy tool for achieving their environmental goals, such as energy efficiency and wildlife conservation, through behavioral nudges. Over the course of the term, students will partner in working with a variety of organizations to understand their communication challenges and make recommendations for ways to address them.

In addition, over the duration of the course, students will develop expertise in an area of environmental science communication of their choice, focusing on either its practical or social science dimensions. All students will become familiar with reading social science literature and thinking critically about how—and when—research findings can be applied to the practice of communication. Moreover, they will learn strategies for answering the question "did it have the desired effect?" These skills are useful not just to environmental scientists in making choices about their own outreach, but to students interested in studying this area of social science and those seeking jobs with stakeholder and public engagement components.

The reading list will primarily consist of book chapters and journal articles to be made available in Adobe PDF format. The class is open to both undergraduate and graduate students, cross-listed as EVPP 429 and EVPP 529. Graded assignments will be differentiated accordingly.

Assignments and grading

You will have four types of assignments: 1) a course project on an environmental science communication topic of interest to you; 2) participation in an online discussion board about

the weekly reading assignments; 3) a series of group assignments analyzing a science communication case study; and 4) completion of a short online module on detecting plagiarism. These assignments will constitute your grade for the term. You will be given a rubric prior to each assignment that details all required components and their associated point value.

Course project

Over the course of the term you will develop expertise on a topic of environmental science communication that is of interest to you, focusing either on its practice or relevant social science research. I encourage you to choose a field of environmental science in which you already have significant knowledge or in which you would like to build it long-term. For example, you might choose an issue related to previous papers you have written, your master's thesis or doctoral dissertation, or an area in which you might like to study or work after graduation, such as conservation biology, climate change, or energy.

You will have four assignments directly related to the course project: 1) a description of the topic you will be researching and initial resources you have identified; 2) a first draft of the research paper; 3) a final draft of the paper; and 4) a presentation to the class.

> *Project option A.* Describe one or more of the current challenges in an area of environmental science communication, such as barriers to promoting conservation behaviors for endangered species or failures in transparently addressing environmental justice community exposure to pollutants. Identify and summarize findings from the social science research literature that address these communication challenges. Are there any lessons for practitioners from this research? What questions remain? Briefly describe how *you* might try to answer one or more of these unanswered questions using social science research.
>
> *Project option B.* Plan an environmental science communication project using a social science research review to inform the design. The project can take any form of communication, from social media posts to a long-term community partnership. Describe the project plan in detail, what social science research findings inform its design, and how its effects might be evaluated. Include at least one example of potential communication content, e.g., images, a short video, graphic(s), or text.

Participation in course discussions

Each week you will be expected to contribute to a discussion of the week's readings on Blackboard by submitting a comment of 1-2 paragraphs prior to class that demonstrates understanding of the material and responds to the arguments submitted by one or more

other classmates. In weeks when you have another assignment due, it is not a requirement.

Case studies on environmental science communication and controversy
In small groups, you will learn about a case study in science communication and develop a presentation to the class that helps us understand the communicators, audiences, and the context. While you will have individual components of the project that you will submit for grade points, the projects will be conducted in teams. Much of the teamwork will be completed in course time that has been set aside for that purpose. Graduate students will be expected to lead the teams and contribute more heavily to the final products.

Extra readings (Graduate students only)
Graduate students are required to select two additional readings from the course background reference list, commenting on them on the course discussion board, and presenting on them briefly in class.

Completion of certificate on detecting plagiarism
Plagiarism is a violation of the university's Honor Code and is increasingly easy to detect because of the ubiquity of online text searches and the incorporation of these features into course software, such as Turnitin. But sometimes students don't understand what plagiarism is and how to avoid it in their own writing. At the start of the course we will discuss what constitutes plagiarism using an online instructional module developed by Indiana University (https://plagiarism.iu.edu/IUcriteria.html). Your first course assignment will be to complete the certification test found at https://plagiarism.iu.edu/certificationTests/index.html. There are both undergraduate and graduate versions of the test, and you may retake it as many times as needed. Graduate students are required to turn in the certificate and will lose points for not doing so (-3%). Undergraduate students receive points for taking the course (5%).

Grade distribution overview	**EVPP 429**	**EVPP 529**
Certificate on detecting plagiarism – *graduate students will lose points (-3% of grade) for not turning in the certificate*	5%	0%
Project assignment 1 (topic)	10%	10%
Project assignment 2 (first draft) – *not graded, but will not receive full credit on final draft if not turned in on time*	0%	0%
Project assignment 3 (final draft)	35%	35%
Project assignment 4 (presentation)	10%	10%
Class discussion board participation	15%	5%
Extra readings (graduate students only)	0%	5%
Case studies	25%	35%

Grades

Your final letter grade will be assessed based on the total points you have accumulated through completing the assignments. Grades will not be curved.

Undergraduate grading scale

A+	97-100	B+	87-89	C+	77-79	D	65-69
A	93-96	B	83-86	C	73-76	F	0-64
A-	90-92	B-	80-82	C-	70-72		

Graduate grading scale

A+	97-100	B+	87-89	C	70-79
A	93-96	B	83-86	F	0-69
A-	90-92	B-	80-82		

Course Schedule (subject to change)

Week	Date	**Topics**	**Readings & Assignments**
Week 1	Jan. 22	• Introductions • Course overview • **Environmental science communication's many goals and disciplinary approaches**	*Background reading:* Akerlof, K. L., Bromser-Kloeden, T., Timm, K., Rowan, K. E., Olds, J. L., Clarke, C., Rohring, E. B., Cloyd, E. T., Curran, K., Duesterhoeft, E. C., Farooque, M., Goldman, E., Gring-Pemble, L., Hampton, S. E., Kim, S. C., Kotcher, J., Milligan, D., Muñoz Brenes, C. L., Sandoval, C., … Zhao, X. (2021). Categorizing professionals' perspectives on environmental communication with implications for graduate education. *Environmental Communication*, *15*(4), 447–464. Akerlof, K. L., Timm, K. M. F., Rowan, K. E., Olds, J. L., & Hathaway, J. (2022). The growth and disciplinary convergence of environmental communication: A bibliometric analysis of the field (1970–2019). *Frontiers in Environmental Science*, 9, 814599.
Week 2	Jan. 29	• **Science communication research and practice**	**** Due: Plagiarism certificate** Hannam, J. (2011). Explaining the world: Communicating science through the ages. In D. J. Bennett & R. C. Jennings (Eds.), *Successful science communication: Telling it like it is* (pp. 31–44). Cambridge University Press. Fischhoff, B. (2013). The sciences of science communication.

			Proceedings of the National Academy of Sciences, 110(Supplement 3), 14033–14039. Trenholm, S. (2017). The communication tradition (Chapter 1); Definitions, models, and perspectives (Chapter 2). In *Thinking through communication: An introduction to the study of human communication*. Routledge.
Week 3	Feb. 5	• **Ethics in environmental science communication**	Cox, R. (2007). Nature's "crisis disciplines": Does environmental communication have an ethical duty? *Environmental Communication, 1*(1), 5–20. Goodwin, J. (2018). Effective because ethical: Speech Act Theory as a framework for scientists' communication. In S. Priest, J. Goodwin, & M. F. Dahlstrom (Eds.), *Ethics and practice in science communication*. University of Chicago Press.
Week 4	Feb. 12	• **Training scientists to communicate** • **Conducting the term research project**	Dudo, A., Besley, J. C., & Yuan, S. (2021). Science communication training in North America: Preparing whom to do what with what effect? *Science Communication, 43*(1), 33–63. Baram-Tsabari, A., & Lewenstein, B. V. (2017). Science communication training: What are we trying to teach? *International Journal of Science Education, Part B, 7*(3), 285–300.
Week 5	Feb. 19	• **Environmental science: Public understanding and attitudes**	**** Due: Project assignment--research topic** Allum, N., Sturgis, P., Tabourazi, D., & Brunton-Smith, I. (2008). Science knowledge and attitudes across cultures: a meta-analysis.

			Public Understanding of Science, 17(1), 35–54. Brossard, D., & Lewenstein, B. V. (2009). A critical appraisal of models of public understanding of science: Using practice to inform theory. In L. Kahlor & P. Stout (Eds.), Communicating science (pp. 25–53). Routledge. *[SKIM]* National Science Board, National Science Foundation. (2020). Science and technology: Public attitudes, knowledge, and interest. NSB-2020-7. *Science and Engineering Indicators 2020*. Alexandria, VA. https://ncses.nsf.gov/pubs/nsb20207/
Week 6	Feb. 26	• **Misinformation** • **Science communication case study presentations-Group 1**	Lewandowsky, S., & van der Linden, S. (2021). Countering misinformation and fake news through inoculation and prebunking. *European Review of Social Psychology*, *32*(2), 348–384. Watts, D. J., Rothschild, D. M., & Mobius, M. (2021). Measuring the news and its impact on democracy. *Proceedings of the National Academy of Sciences*, *118*(15).
Spring Break (Week of Mar. 4th)			
Week 7	Mar. 11	• **Evaluating science communication effectiveness** • **Science communication case study presentations-Group 2**	Atkin, C. K., & Freimuth, V. (2013). Guidelines for formative evaluation research in campaign design. In R. B. Rice & C. K. Atkin (Eds.), *Public communication campaigns* (4th ed., pp. 53–68). Sage. Valente, T. W., & Kwan, P. P. (2013). Evaluating communication campaigns. In R. B. Rice & C. K. Atkin (Eds.), *Public communication campaigns* (4th ed., pp. 83–97). Sage.

Week 8	Mar. 18	• **Communicating environmental science in traditional and new media** • **Science communication case study presentations-Group 3**	Hansen, A. (2018). Making claims and managing news about the environment (Chapter 3); The environment as news: news values, news media and journalistic practices (Chapter 4). In *Environment, Media and Communication*. Routledge.
Week 9	Mar. 25	• **Risk communication**	Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis: An International Journal, 24*(2), 311–322. Sandman, P. M. (1993). Risk = Hazard + Outrage. In *Responding to community outrage: Strategies for effective risk communication*. American Industrial Hygiene Association.
Week 10	Apr. 1	• **Public participation**	Dietz, T., & Stern, P. C. (Eds.). (2008). Introduction. In *Public participation in environmental assessment and decision making* (pp. 7–32). National Research Council. Webler, T., & Tuler, S. (2021). Four decades of public participation in risk decision making. *Risk Analysis, 41*(3), 503–518.
Week 11	Apr. 8	• **Citizen science**	Haklay, M. M., Dörler, D., Heigl, F., Manzoni, M., Hecker, S., & Vohland, K. (2021). What is citizen science? The challenges of definition. In K. Vohland, A. Land-Zandstra, L. Ceccaroni, R. Lemmens, J. Perelló, M. Ponti, R. Samson, & K. Wagenknecht (Eds.), The science of citizen science (pp. 13–33). Springer. Bonney, R., Phillips, T. B., Ballard, H. L., & Enck, J. W. (2016). Can

			citizen science enhance public understanding of science? *Public Understanding of Science*, *25*(1), 2–16.
Week 12	Apr. 15	• **Environmental education**	Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). Identifying effective climate change education strategies: A systematic review of the research. *Environmental Education Research*, *25*(6), 791–812. https://doi.org/10.1080/13504622.2017.1360842 Wals, A. E. J. (2012). Learning our way out of unsustainability: The role of environmental education. In S. D. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 628–644). Oxford University Press.
Week 13	Apr. 22	• **Individual project presentations**	**** Due: Project assignment--paper draft** ****Project assignment--paper presentations (group 1)**
Week 14	Apr. 29	• **Individual project presentations**	**** Due: Project assignment--paper presentations (group 2)** **** Due by midnight on Monday, May 6: Final project paper**

Possible syllabus changes
As the instructor, I reserve the right to make changes to the syllabus. Students will be given ample notice regarding any major changes to the course plan.

Late assignments
Assignments turned in late will be penalized by deducting 5% from the total points for each day it is late.

Gender identity and pronoun use
If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use "she/her/hers" for myself. You may address me as "KL" or "Dr./Prof. Akerlof" in email and verbally. Mason provides tools to change your name and pronouns on Mason records, see https://registrar.gmu.edu/updating-chosen-name-pronouns/.

Course materials and student privacy
I will not be video recording the classes except in the case of guest speakers who have given their approval to do so. However the PPTs from each meeting will be available on Blackboard. All course materials posted to Blackboard or other course site are private to this class; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.

- Video recordings of class meetings that include audio, visual, or textual information from other students are private and must not be shared outside the class
- Live video conference meetings (e.g. Collaborate or Zoom) that include audio, textual, or visual information from other students must be viewed privately and not shared with others in your household or recorded and shared outside the class.

General
This course adheres to all university policies described in the academic catalog. Please pay close attention to the following policies:

- **Students with disabilities**
  Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit http://ds.gmu.edu/ for information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I, Suite 2500 or can be reached at ods@gmu.edu or (703) 993-2474.

- **Diversity and inclusion**
  One of the goals for the course is to create a learning environment that fosters respect for people across identities. As a class, we welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own.

- **Academic integrity: Mason's Honor Code**
  At George Mason University, Academic Integrity is demonstrated in our work, community, the classroom and research. We maintain this commitment to high academic standards through Mason's Honor Code. It is an agreement made by all members of our community to not "cheat, steal, plagiarize, or lie in matters related to your academic work." Students sign an agreement to adhere to the Honor Code on their application for admission to Mason and are responsible for being aware of the most current version of the code.

  The integrity of the University community is affected by the individual choices made by each of us. Mason has an Honor Code with clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Paraphrased material must also be cited, using the appropriate format for this class. A simple listing of books or articles is not

sufficient. Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting. If you have any doubts about what constitutes plagiarism, please see me.

- **Academic integrity: Use of AI text-generation tools**
  Any text generated by an artificial intelligence (AI) text-generation tool (such as ChatGPT) is not accepted in this class as "the student's own work," and so will be considered similarly to text published on paper or online or text composed or significantly edited/altered by another person. The use of such text without proper attribution is a violation of academic integrity.

- **Dropping the course**
  You are responsible for understanding the university's policies and procedures regarding withdrawing from courses found in the current catalog. You should be aware of the current deadlines according to the Academic Calendar.

- **Email**
  All course information will be sent to your George Mason University email account, including changes to the class schedule due to weather conditions. Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.

- **Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking**
  George Mason University is committed to providing a learning, living and working environment that is free from discrimination and a campus that is free of sexual misconduct and other acts of interpersonal violence in order to promote community well-being and student success. We encourage students who believe that they have been sexually harassed, assaulted or subjected to sexual misconduct to seek assistance and support. University Policy 1202: Sexual Harassment and Misconduct speaks to the specifics of Mason's process, the resources, and the options available to students.

  As a faculty member and designated "Responsible Employee," I am required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per university policy 1412. If you wish to speak with someone confidentially, please contact the Student Support and Advocacy Center (703-380-1434) or Counseling and Psychological Services (703-993-2380). You

may also seek assistance from Mason's Title IX Coordinator (703-993-8730; titleix@gmu.edu).