

Human Dimensions of Environmental Change

Graduate Seminar in Risk Communication

16:378:502

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Department of Human Ecology
Spring, 2025
Tuesdays 6-9 pm Online

The course will focus on the theory and practice of effective risk communication, using applied examples and cases related to food, health, technology, and the environment. It will be interdisciplinary, drawing on perspectives from psychology, anthropology, sociology, political science, philosophy, and communications.

Course Learning Objectives

Goal 1: Become familiar with key theories and seminal books and papers in risk communication.

Objective 1.1: Analyze and assess the merits of various theoretical and practical approaches to risk communication rooted in different disciplinary perspectives.

Objective 1.2: Synthesize class materials and discussions and apply them to your own research and practice.

Goal 2: Acquire and practice basic skills necessary to communicate about risk issues.

Attendance

The class meets in person on Mondays from 1:00 to 4:00 pm in Blake Hall 131. Attendance and participation are mandatory. Missing more than one class for reasons other than those permitted under Rutgers guidelines (serious illness, confidential or sensitive personal reasons, religious observance, participation in Rutgers-approved activities) can reduce your final grade. Missing three classes will result in a failing grade. If you will be absent from a class for any reason, please report your absence through the University Absence Reporting Website <https://sims.rutgers.edu/ssra> The University also recommends that you contact your professors directly to let them know of your absence.

Grading

Grading will be based on weekly class assignments (40%), participation (20%) a Final Project (40%).

Books/Readings

All readings are available through the Canvas site for the course. Because they build on each other, it will usually make sense to read them in the order they are listed.

Class Assignments

Because reading and thinking about the material before class is so important, I want to provide some incentive (beyond your own insatiable thirst for knowledge) to do both. As part of your overall grade, you must submit a brief (1-2 pages maximum) reflection paper on the assigned readings to be discussed. Please submit the reflection paper by 1:00 pm on Sunday before class (i.e., 24 hours before our class meetings), using the Canvas Submit Assignment function. These will be graded pass/fail.

Please note: These short reflection papers are intended to help you *think* about the material, not serve as a vehicle to repeat or summarize what you read. The idea is to stimulate careful, critical reading and formation of your viewpoints, which will be the basis of our discussions. The ideas presented in the readings are also designed to help you develop your final projects and future research and practice.

Class Discussion

All class members are expected to contribute to our weekly seminar discussions based on the assigned readings. We will respect each other as colleagues in these discussions. You won't be judged on how much you say, but on the quality/content of your contributions.

Final Papers and Projects

In addition to the chapters and articles assigned to the entire class, each seminar member will complete a final project. The assignment is to prepare a written summary of the central scientific, social, political, and communications issues related to a risk communication problem/issue of their choice. Based on the written summary, you will design risk communication materials to address the problem and present these to the class.

We will use American Psychological Association (APA) formatting for references in all written reports. For guidance in how to use APA formatting see: <http://libguides.rutgers.edu/writing>.

Grading: The following university scale will be used.

A	90-100
B+	88-89
B	80-87
C+	78-79
C	70-77
F	69 and under

Contact Information

Dr. Hallman's virtual office hours are by appointment. Office phone number: 848-932-9227. Email: hallman@sebs.rutgers.edu

Academic Honor and Integrity

Plagiarism will not be tolerated in any form. This includes the improper citation of materials from any source, including the Internet. If you have any questions about how to properly attribute information, words or ideas produced by others, please bring them up in class; chances are that others have the same questions.

The Rutgers University Policy on Academic Integrity considers cheating, fabrication, facilitation of academic dishonesty, plagiarism, and the denial of access to others of materials or information as violations of academic integrity. All violations will be dealt with according to the procedures described in the policy found at <http://academicintegrity.rutgers.edu/> The consequences of violations of academic integrity range from loss of class credit to expulsion from the University.

I invite you to join the Rutgers Science Communication Initiative

More information is available at <https://scicomm.rutgers.edu/>.

Academic Support Services

- Rutgers has a variety of resources for academic support. For more information, check the [Academic Support website](#).
- Rutgers has Learning Centers on each campus where any student can obtain tutoring and other help. For information, check the [Learning Center website](#).
- Rutgers also has a Writing Center where students can obtain help with writing skills and assignments. Learn more at the [Writing Center website](#).

- Many library resources are available online. Assistance is available through phone, email, and chat. For information, check the [Rutgers Libraries website](#).

Rutgers Health Services

- Rutgers Health Services is dedicated to wholistic health for the body, mind, and spirit. It accomplishes this through a staff of qualified clinicians and support staff and delivers services at several locations throughout the New Brunswick-Piscataway area. For more information, check the [Rutgers Health Services website](#).

Accommodations for Accessibility

Requesting accommodations

Rutgers University welcomes students with disabilities into all the University's educational programs. To receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation. More information can be found in the [Documentation Guidelines](#) section of the [Office for Disability Services](#) website.

If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the [Registration Form](#) on the Office for Disability Services website.

Go to the [Student section of the Office of Disability Services](#) website for more information.

Basic Needs Resources

If you have difficulty affording groceries or accessing sufficient food, or lack a safe and stable place to live, please contact the Rutgers Student Food Pantry and the Dean of Students (contacts below). If you are comfortable doing so, please notify me (or Dr. Robson), as we may be able to provide additional support.

Rutgers Student Food Pantry

<http://ruoffcampus.rutgers.edu/food/> 848-932-5500

College Ave Student Center, Room 115 (126 College Ave). Check their website for hours and additional locations. The Rutgers Student Food Pantry is dedicated to helping all Rutgers students in need of food, no questions asked. Students are provided with groceries that typically last about one week.

Dean of Students Office

<http://deanofstudents.rutgers.edu/> 848-932-2300

88 College Avenue, New Brunswick, NJ 08901

Mon-Fri, 8:30am-5:00pm

The Dean of Students Office at Rutgers University-New Brunswick provides solutions, services, and support to help students navigate Rutgers University. The Office serves as a student support network by providing advocacy, problem resolution, and critical incident intervention for those times when additional assistance is needed. Please call to schedule an appointment to meet with a representative from the Dean's office.

Note: Assignments are DUE before the Date Listed.**Readings are Subject to Change****Jan. 27 Introduction to Risk Issues –**

Introduce yourself.

Tell us one thing you want us to know about you.

Tell us one thing that you think we want to know about you.

Tell us one thing that you think we would get wrong about you.

And tell us about a risk topic about which you want to communicate.

Feb. 3 Science Literacy, What People Think They Know, and the Problems with The Deficit Model: Setting your goals -

Watch: Defining and Achieving Science Communication Goals

<https://www.youtube.com/watch?v=ovI3LLXYAsQ>

Read:

Hallman, W. K. (2017). What the public thinks and knows about science—And why it matters. *The Oxford handbook of the science of science communication*, 61-72.

National Academies of Sciences, Engineering, and Medicine. (2016). *Science literacy: Concepts, contexts, and consequences*. National Academies Press. Summary (pgs. 1-9).

Kahan, D. M. (2015). Climate-science communication and the measurement problem. *Political Psychology*, 36, 1-43.

Sturgis, P., & Allum, N. (2004). Science in society: re-evaluating the deficit model of public attitudes. *Public understanding of science*, 13(1), 55-74.

Nisbet, M. C., & Scheufele, D. A. (2009). What's next for science communication? Promising directions and lingering distractions. *American journal of botany*, 96(10), 1767-1778.

Simis, M. J., Madden, H., Cacciatore, M. A., & Yeo, S. K. (2016). The lure of rationality: Why does the deficit model persist in science communication? *Public understanding of science*, 25(4), 400-414.

Lundgren & McMakin (2018). A Handbook for Communicating Environmental, Safety, and Health Risks. Chapter 7 – Determine Purpose and Objectives (pgs. 109 – 115).

Feb. 10 Advancing Effective Science Communication Research and Practice

Read *Communicating Science Effectively*. <https://www.nap.edu/download/23674> Preface, Summary, Chapter 1 (Pgs. 1-22) and Chapter 2 (Pgs. 23-34).

Students give short presentations on the science behind the risks they wish to communicate.

Feb. 17 Approaches to Risk - Theory

Watch: TBD

Read:

Lundgren & McMakin (2018). A Handbook for Communicating Environmental, Safety, and Health Risks. Chapter 2 – Approaches to Communicating Risk (pgs. 11 – 28).

Zinn J. O. (2008). Social Theories of Risk and Uncertainty. Chapter 1 – Introduction: The Contribution of Sociology to the Discourse on Risk and Uncertainty (pgs. 1-17).

Tulloch, J. (2008). Culture and Risk. In J. O. Zinn (ed). Social Theories of Risk and Uncertainty. (pgs. 138 -167).

Beck, U. (2006). Living in the world risk society: A Hobhouse Memorial Public Lecture given on Wednesday 15 February 2006 at the London School of Economics. *Economy and Society*, 35(3), 329-345. <https://doi.org/10.1080/03085140600844902>

Mythen, G. (2018). The Critical Theory of World Risk Society: A Retrospective Analysis. *Risk Analysis*, 1-11

Feb. 24 **Risk Perception –**

Watch: Public Perceptions on the Acceptance of New Technologies Enabling Foods
<https://www.youtube.com/watch?v=Tcf99h3niS0>

Read:

Slovic, P. (1987). Perception of risk. *Science*, 236(4799), 280-285. DOI: 10.1126/science.3563507

Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S., & Combs, B. (1978). How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits. *Policy sciences*, 9(2), 127-152. <https://www.jstor.org/stable/4531720>

Sandman Responding to Community Outrage (2012). Responding to Community Outrage
<http://psandman.com/media/RespondingtoCommunityOutrage.pdf>

Weinstein, N. D. (1989). Optimistic biases about personal risks. *Science*, 246(4935), 1232-1234.

Lerner, M. J., & Miller, D. T. (1978). Just world research and the attribution process: Looking back and ahead. *Psychological bulletin*, 85(5), 1030.

Mar. 3 **Processing of Risk Information: Gist, Mental Models, Heuristics –**

Watch: Valerie Reyna – Communicating the Gist: Misinformation, memory, and meaning
<https://www.youtube.com/watch?v=6D-3UZMvHuU>

Read:

Blalock, S. J., & Reyna, V. F. (2016). Using fuzzy-trace theory to understand and improve health judgments, decisions, and behaviors: A literature review. *Health Psychology*, 35(8), 781-792.

Reyna, V. (2018). When irrational biases are smart: A fuzzy-trace theory of complex decision-making. *Journal of Intelligence*, 6(2), 29 (pgs. 1-16).

Lusk, J. L. (2014). Are you smart enough to know what to eat? A critique of behavioural economics as justification for regulation. *European Review of Agricultural Economics*, 41(3), 355-373.

Garvin, T. (2001). Analytical paradigms: the epistemological distances between scientists, policy makers, and the public. *Risk Analysis*, 21(3), 443-456.

Morgan, M. G., Fischhoff, B., Bostrom, A., & Atman, C. J. (2002). *Risk communication: A mental models approach*. Cambridge University Press.

Chapter 2 (pgs. 19-33)

skim Chapter 7 (pgs. 125-159).

<https://www.visualcapitalist.com/18-cognitive-bias-examples-mental-mistakes/>

50 Cognitive Biases in the modern world. <https://www.visualcapitalist.com/50-cognitive-biases-in-the-modern-world/>

Cognitive Bias Codex. <https://www.visualcapitalist.com/wp-content/uploads/2017/09/cognitive-bias-infographic.html>

Mar. 10 **Principles, Constraints, and Ethics**

Read:

Lundgren & McMakin (2018). A Handbook for Communicating Environmental, Safety, and Health Risks. Chapter 4 – Constraints to Effective Risk Communication (pgs. 45-67).

Chapter 5 – Ethical Issues (pgs. 69-87).

Chapter 6 – Principles of Risk Communication (pgs. 89-105).

Mar. 24 **Affect and Risk / Communicating Science and Risk Through Storytelling**

Watch: *For fun* - Any good scary movie of your choice.

How to induce fear <https://www.youtube.com/watch?v=XEJKhFWU-I>

Why are things creepy? <https://www.youtube.com/watch?v=PEikGKDV5Cc>

What is the scariest thing? <https://www.youtube.com/watch?v=9VmwsG8Eabo>

Read:

Kok, G., Peters, G. J. Y., Kessels, L. T., Ten Hoor, G. A., & Ruiters, R. A. (2018). Ignoring theory and misinterpreting evidence: the false belief in fear appeals. *Health Psychology Review*, 12(2), 111-125.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological bulletin*, 127(2), 267.

Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences*, 111(Supplement 4), 13614-13620.

For fun - The scariest urban legends by state - <https://www.titlemax.com/discovery-center/lifestyle/scariest-urban-legends-by-state/>

Mar. 31 **Probability, Uncertainty, and Innumeracy**

Watch: TBD

Read:

Bernstein, P. L. (1998). Introduction – Against the Gods: The Remarkable Story of Risk.

Wardman, J. K., & Mythen, G. (2016). Risk communication: against the Gods or against all odds? Problems and prospects of accounting for Black Swans. *Journal of Risk Research*, 19(10), 1220-1230.

van der Bles, A. M., van der Linden, S., Freeman, A. L., Mitchell, J., Galvao, A. B., Zaval, L., & Spiegelhalter, D. J. (2019). Communicating uncertainty about facts, numbers and science. *Royal Society open science*, 6(5), 181870 (pgs. 1-42).

Peters, E. (2017). Overcoming innumeracy and the use of heuristics when communicating science. *The Oxford Handbook of the Science of Science Communication*, 389 – 398.

Gigerenzer, G., & Edwards, A. (2003). Simple tools for understanding risks: from innumeracy to insight. *BMJ*, 327(7417), 741-744.

Life expectancy by activity/behavior <https://www.titlemax.com/discovery-center/lifestyle/life-expectancy-by-activity-behavior/>

Apr. 7 **Analyzing Your Audience and Developing Your Message and Methods**
Watch: TBD

Read:

Lundgren & McMakin (2018). *A Handbook for Communicating Environmental, Safety, and Health Risks*.

Chapter 8 – Analyze Your Audience (pgs. 117 – 133).

Chapter 9 – Develop Your Message (pgs. 135-151).

Chapter 10 – Determine the Appropriate Methods (pgs. 153- 166).

Compass Message Box Workbook and Compass Message Box

Apr. 14 **Science Communication: A Conversation about Knowledge and Competencies**

Read:

Brooks, A. W., & John, L. K. (2018). The Surprising Power of Questions. *Harvard Business Review*.

Vollebregt (2019). A Quick Guide to Asking Better Questions

<https://medium.com/@marcvollebregt/a-quick-guide-to-asking-better-questions-6b0dd6a2501>

Apr. 21 **Traditional Media and Social Media**

Watch: TBD

Read:

Lundgren & McMakin (2018). *A Handbook for Communicating Environmental, Safety, and Health Risks*.

Chapter 16 – News Media (pgs. 259 – 283).

Chapter 19 – Social Media (347 – 369).

Sandman, P. M. (1988). Telling Reporters About Risk. *Civil Engineering*. (Pgs. 36-38).

Liang, X., Su, L. Y. F., Yeo, S. K., Scheufele, D. A., Brossard, D., Xenos, M., ... & Corley, E. A. (2014). Building Buzz: (Scientists) Communicating Science in New Media Environments. *Journalism & mass communication quarterly*, 91(4), 772-791.

Flaxman, S., Goel, S., & Rao, J. M. (2016). Filter bubbles, echo chambers, and online news consumption. *Public opinion quarterly*, 80(S1), 298-320.

Lee, N. M., & VanDyke, M. S. (2015). Set it and forget it: The one-way use of social media by government agencies communicating science. *Science Communication*, 37(4), 533-541.

Anderson, A. A., Brossard, D., Scheufele, D. A., Xenos, M. A., & Ladwig, P. (2014). The “nasty effect:” Online incivility and risk perceptions of emerging technologies. *Journal of Computer-Mediated Communication*, 19(3), 373-387.

Visualizing the social media universe

<https://www.visualcapitalist.com/visualizing-the-social-media-universe-in-2020/>

Apr. 28 **Communicating about Risks Using Visual Presentations – Warning Signs, Infographics, Charts, Graphs, Maps, and Posters**

Listen to: Gerald Wilde on his “Risk Homeostasis Theory” ~ 11 minutes of audio

<https://www.cbc.ca/player/play/2683559824>

Read:

Collins, D. (2015). Why Do we Ignore Safety and Warning Signs – Sometimes with Tragic Results?

(Skim): Pless, B. (2016). Risk compensation: Revisited and rebutted. *Safety*, 2(3), 16.

Lundgren & McMakin (2018). A Handbook for Communicating Environmental, Safety, and Health Risks. Chapter 14 – Visual Representations of Risks (pgs. 203 – 240).

View:

<https://www.visualcapitalist.com/visualizing-the-true-size-of-land-masses-from-largest-to-smallest/>

<https://www.visualcapitalist.com/america-land-use/>

May 5 **Final Presentations**

Student Presentations

Submit Final Papers