ENR 7400 Communicating Environmental Risk

Spring 2022
Kottman Hall 333C, Tuesday/Thursday 12:45-2:05

Course Instructor: Dr. Robyn Wilson, 316D Kottman Hall
Phone: 614.247.6169    Email: Wilson.1376@osu.edu

Office hours Monday and Friday 1 to 2 on zoom (below) or by appointment

Office Hour Link: https://osu.zoom.us/j/7548526117?pwd=R1JdUxVYm11elJJaVRVU1hQdTFZZz09
Meeting ID: 754 852 6117
Password: TBf5ZU

Course Description: Introduction to the design and implementation of public-focused risk communication as it relates to environmental, agricultural and public health contexts.

Prerequisites: Graduate standing or permission of instructor

Course Objectives: This course is designed to help students...

1. Understand the psychological and socio-cultural factors that influence the success of risk communication messaging.
2. Know how to design, implement, and evaluate a successful, public-focused risk communication effort.

Course Format: Class time will largely be based on discussion and small group activities. An interactive approach such as this makes your attendance and participation a crucial component of achieving success in this course. We are meeting in-person but will have a dedicated zoom link for any who need to quarantine but want to participate remotely.

ENR 7400 Class Link: https://osu.zoom.us/j/96642977102?pwd=YWZNdVk1LzhyS281VjYFJRNDhlUT09
Meeting ID: 966 4297 7102
Password: 245056

The course syllabus, schedule, and assigned readings are subject to change. The syllabus can be made available in alternative formats upon request; students in need of accommodations are responsible for making their needs known to the instructor and for seeking available assistance in a timely manner.
Assignments and Exams:

1. **Risk Assessment Paper** – 5-8 pages, double-spaced, where you assess the calculated risk associated with a specific hazard. You should pick a risk that is of interest to you – e.g., health hazards for health communication, environmental hazards for environmental communication. Use any available outside research/resources about your hazard (including personal interviews). Be sure to include at least 5 sources from outside of class. Specifically, your paper should examine the following aspects:
   a. **Hazard**: What is the hazard? How does it come to be in the world around us? What is the mechanism by which the hazard does its supposed harm?
   b. **Exposure**: How are humans exposed to the risk? Where? When? What are the key risk factors? Specifically, how do exposures vary over time, by location, or by subpopulations? How much exposure does it take to experience a negative consequence?
   c. **Consequences**: What negative consequences occur as a result of exposure to the hazard? How does the hazard pose harm? To what people? To how many people? Who is most at risk/vulnerable? Is the harm short-term or long-term, fatal or not, etc.? Are the consequences health-based? Economic? Environmental?
   d. **Probability**: What is the probability of harm? What is the likelihood of the negative consequences identified above to the general population? To specific sub-groups or populations?
   e. **Risk meter**: Wrap up with a risk meter (below) to help tie everything together. For example, the risk meter below would summarize a risk where the likelihood of exposure to the general public is low, but if exposed, the consequences are high.

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<thead>
<tr>
<th>Risk Meter</th>
<th>Low</th>
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<tbody>
<tr>
<td>Likelihood</td>
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<tr>
<td>Of exposure to hazardous levels</td>
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<td>Consequences</td>
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<td>Severity, number of victims</td>
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<td>Population-wide, individual levels will vary</td>
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   f. **Risk mitigation and management**: What can people do to reduce their risk?

2. **Risk Perception Paper** – 5-8 pages, double-spaced, where you assess the perceived risk associated with the hazard you focused on for the assessment paper (i.e., identify the “mental model” for the particular audience you will target in your risk communication paper). Use any available outside research/resources about public perception and your target audience (related to this hazard and otherwise, and including personal interviews). Be sure to incorporate at least 5 sources from outside of class. Specifically, your paper should examine the following aspects:
   a. Briefly recap your risk assessment paper by summarizing what the calculated risk is for your hazard. Perhaps by including your risk meter summarizing the state of your/the knowledge on this topic.
   a. **Risk perceptions**: What is the perception of risk/level of outrage toward this hazard? How do people perceive the risk in terms of its critical characteristics (e.g., voluntary nature, level of control, catastrophic nature of consequences)? How does this perception vary by
different sub-groups or populations at risk? Why do the different groups perceive the risk this way? Does the public perception of risk differ from the expert assessment of the risk? If so, how? Is the risk deemed “acceptable”? Why or why not? Whose perceptions and behavior are most critical to managing the risk or minimizing the harm posed by the hazard?

b. Target audience: What audience do you plan to target with your communication effort? What is critical to know about this audience? What is their level of knowledge about the hazard/risk? What are their relevant beliefs and misperceptions? What are the critical barriers preventing appropriate action? If you have covered much of this in the earlier section for this audience, you do not have to repeat it here, but you can elaborate where appropriate. Here is where you can insert a second risk meter illustrating how your target audience perceives the risk, contrasting how it varies from expert assessments. For example, the risk meter below illustrates that this target audience perceives the likelihood of exposure correctly, but underestimates the potential consequences. If the calculated risk varies greatly for your target audience, you could illustrate that here as well (how the calculated risk may be different from the general population estimate presented earlier).

<table>
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<td>Perceived Likelihood</td>
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<td>Perceived Consequences</td>
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<td>(severity, number of victims, etc)</td>
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c. Recommendations for risk communication content: How might one increase the alignment between expert assessments and the perceptions of this particular audience? What key beliefs/perceptions need to change to promote appropriate action? Are there any communication or behavioral theories that lend some insight into what is necessary? What other factors might you need to take into consideration in designing your risk communication effort? Identify at least 3 key lessons learned about this audience and the risk that you will use to build your risk communication effort.

3. Risk Communication Paper – 5-8 pages, double-spaced, where you take your analysis of the risk and your target audience, and develop a risk communication campaign. Be sure to address not just what you would say and do, but how you would present information and engage your audience. Address how your approach addresses relevant socio-psychological processes and incorporates the specific knowledge you gained about your audience. Specifically, make sure to explain why you chose this approach or strategy based on the best available science. While the project is theoretical, your proposal for the campaign should be realistic and implementable. In other words, if you want to run television advertisements about your hazard, you should be able to supply me with a storyboard for the advertising campaign. If you want to use brochures, you will need to turn in sample brochure ideas. You will need to use at least 5 references from the course, additional outside references and resources are encouraged. Specifically, your paper should examine the following aspects:

a. Background: Briefly recap the first two papers - how does expert versus public perception differ (revisit your risk meters)? Who is the target audience of the effort? What are the
critical beliefs and other audience characteristics that you will address?

b. Goals: What are the objectives and goals of your risk communication effort? To inform? To change behavior? Etc.

c. Approach: What is your approach or method? Will you use a social media campaign? Create brochures? Develop a public service announcement? One-on-one interactions? How will you carry it out? Why is this approach appropriate based on knowledge gained from the class?

d. Ethics and Constraints: Are there ethical issues or other potential constraints that need to be addressed? If so, how are you addressing them?

e. Messaging: What is your message? Provide an example to be used in the campaign. How are you framing the information? Why? How are you presenting any relevant data about the hazard/risk? Why? How does this message account for relevant psychological processes and motivations? What are they?

f. Evaluation: Why do you expect your approach and specific messaging to be successful? How will you evaluate your effort?

4. Paper Presentations – During our final exam slot, you will present on your final paper. Your presentation should highlight the hazard context, the similarity or differences between the calculated risk and the perceived risk of your target audience, and your strategy for improved risk communication in this context. Specifically, answer the five key questions – what is the risk? Who is your target audience? Do they perceive the risk “accurately”? Why or why not? How would you engage them in future risk communication? Why do you expect this to increase the accuracy of their risk perception? You can be building this presentation throughout the semester as you complete your papers, this will make it easier to meet end of term deadlines.

This will be a “modified” Pecha Kucha presentation. You may choose to have 15 slides/20 seconds each, or 20 slides/15 seconds each. Either way, this is 5 minutes total, but you pick if you want less slides and more time on each, or more slides with less time on each. Your slides must be timed to advance automatically, so this will need to be well thought-out and concise. You are welcome to use a script if you prefer to keep on time. Use simple visuals appropriately to support your key points, this is meant to be a learning opportunity for your classmates, and a chance for you to share your hard work from throughout the semester (while not boring us all to death). You will be graded on the organization of your presentation, your understanding of the material, and your presentation style, in addition to the content (understanding of concepts from class, connections drawn between theory and application, etc.). A full rubric is posted on Carmen. Powerpoints must be loaded to Carmen before the final exam to ensure that we can manage smooth and efficient transitions between speakers in class.

5. Attendance and Participation – This grade will be partially based on attendance, and partially based on your preparation for class and in-class participation.

a. I will take attendance every day and you will receive a grade based on the proportion of classes attended (out of 28). Planned absences that you tell me about the first week of class will be excused (e.g., work commitments, traveling for a wedding, doctor’s appointments). Beyond that, there will be no excused absences, you can miss class up to 2 times and still get an A- for the attendance portion of this grade. If you think you will miss more than 2 days in a row due to an unexpected and extended illness, please let me
know. I will plan to have a Zoom link live each day to accommodate anyone who must quarantine due to COVID.

b. Your participation grade will be based on posting 2 discussion questions or topics by 8 PM the night before each class and facilitating discussion with a partner during to two pre-assigned class meetings. Each day I will also task one student with being the recorder to take notes and capture the takeaways from the discussion. You will receive a daily “quality” grade out of 5 points for your role in that day’s discussion (as recorder, facilitator or regular participant (see rubric). I will lead the first two sessions and model the facilitation approach, see the guidelines below for each role.

Guidelines for Student-Facilitated Discussions:¹

1. **Expectations of everyone prior to the discussion period.** All students should do the following:
   a. Thoroughly read the articles (most likely more than once), and have a solid understanding of the big-picture of the article as well as the details.
   b. Because no one should know substantially more than others about the topic, each individual should do any supplemental reading/searching for background on the reading that they do not understand to share with the group.
   c. Each student should write down at least 2 topics or questions that they would like to discuss and post them to the discussion board by 8 PM the night before class. Some ideas for types of topics to discuss include: exploring the evidence the authors provide for any their conclusions, expanding on an implication of a study, exploring the implications of this particular study for understanding of different disciplinary areas or for how the research could be applied in a variety of different capacities, etc.

2. **Expectations for discussion participants during class.** All participants should do the following:
   a. Provide insights, questions, answers to posed questions from the facilitator or recorder.
   b. Actively listen to fellow group participants and respond to each other’s comments rather than just bringing their own comments to the table.

3. **Expectations for the student facilitators during class.** The facilitator is a “servant to the group” (Rees, 1998). Facilitation is about seeing what the group needs to move forward and providing guidance and empowering the group; to do so, the facilitator can use any of the following strategies to facilitate the discussion (modified from Rees, 1998):
   a. Ask questions: To inspire a response is perhaps the most important strategy of the facilitator. Questions should be open-ended questions, such as “what, how, who, why” type questions that encourages brainstorming and creativity.
   b. Probe in-depth into a comment/idea: Encourages more in-depth analysis, such as: “Why did you say that?” or “Could you be more specific?”
   c. Paraphrase: Only for clarification of a comment made by a student, not to evaluate or improve it.
   d. Refer back to earlier comments: Which ties the discussion to previous student’s

contributions.

e. Be comfortable with silence: The facilitator must be willing to wait once a question is posed as people need time to think and frame a response. Thus, a facilitator should not step in and answer one’s own question.
f. Give positive reinforcement: This is a way to encourage participation, especially to students who are quieter.
g. Include quieter members: Some ways to draw people out are to ask students directly for their opinion on something that has been brought up, to refer back to comments that quieter people make to draw them out further, or to break the class into smaller groups or pairs that then report to the larger group.
h. Shift perspective of the discussion: If all students seem to agree, it may be less likely that a single or few students who feel differently would speak up. To get these students to speak up, the facilitator can ask if there “might be another viewpoint that could be missing from the discussion.” In addition, the facilitator can ask for the implications of the topic or a big-picture question; or the facilitator can ask for a specific example or for details to enrich the discussion that may be at too broad of a level.
i. Summarize: Occasional summary is helpful to keep the group focused. The facilitator can briefly summarize what has been said before moving on. Or, better yet, the facilitator can ask for someone else to summarize, but it is important that enough time is provided for students to think before answering.
j. With approximately 5 to 10 minutes remaining in class, the facilitator should ask the participants to summarize the discussion so that the recorder can capture the key takeaways.

4. **Expectations for the student recorder during class.** The recorder is a “servant to the group” and is responsible for being the memory of the discussion group and record participants contributions (Rees, 1998). The recorder should do the following:

   a. Keep notes during the discussion for distribution to the group via the discussion board within 48 hours of the class discussion.

   b. Although anyone can suggest that a summary of the discussion or a synthesis of ideas is needed, the recorder can propose such a summary for the group.

   c. At the end of the discussion, the recorder will compile/share a list of “take home messages” that the group participants create.

   d. The recorder is encouraged to participate as a participant as well; however, they have the added job of keeping some record of the discussion. In addition, because the reporter often has a good overview of the discussion, he/she should also feel like they can help the facilitator move the discussion along.

**Grading:**

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<thead>
<tr>
<th>Paper Title</th>
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<tr>
<td>Risk Assessment Paper</td>
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<tr>
<td>Risk Perception Paper</td>
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<tr>
<td>Risk Communication Paper</td>
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<tr>
<td>Paper Presentations</td>
<td>15%</td>
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<tr>
<td><strong>Attendance (10) and Participation (15)</strong></td>
<td><strong>25%</strong></td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
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Class Readings: All required readings will be available through CARMEN. We will draw heavily on three particular sources:


Make-up and Late Assignments: In-class assignments or points cannot be made up. Late papers will be accepted, but will be docked 5 points for each day that they are late.

Academic Misconduct: It is expected that all students have read and understand the University’s *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University’s *Code of Student Conduct* and this syllabus may constitute “Academic Misconduct.” The Ohio State University’s *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University’s *Code of Student Conduct* is never considered an “excuse” for academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University’s *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages
  - [http://oaa.osu.edu/coam.html](http://oaa.osu.edu/coam.html)
- *Ten Suggestions for Preserving Academic Integrity*
  - [http://oaa.osu.edu/coamtensuggestions.html](http://oaa.osu.edu/coamtensuggestions.html)
- *Eight Cardinal Rules of Academic Integrity:*
  - [http://www.northwestern.edu/provost/students/integrity/rules.html](http://www.northwestern.edu/provost/students/integrity/rules.html)
Class Schedule and Readings

SECTION I: Understanding Risk Perception

- Session 1 (1/11) - Introduction to Course Concepts
  - Lundgren and McMakin – Ch. 1 (Intro) pp. 1-7 & Ch. 5 (Ethics), pp. 57-70

- Session 2 (1/13) – Calculated Risk
  - Ropeik and Gray – Ch. 1 (Intro) pp. 1-20 (and skim Ch.19/20 (Air Pollution) pp. 151-180 for a detailed example of risk assessment)

- Session 3 (1/18) – Perceived Risk
  - Cox – Ch. 6 (Environmental Dangers and the Public), pp. 189-222

- Session 4 (1/20) – Affect and Emotion
  - FDA Guide – Ch. 10 (Affect and Emotion)

- Session 5 (1/25) – Risk Communication in the Wild (Guest Speaker)
  - Bradley Dean, Communications and Partnership Specialist with FEMA’s Risk Management Directorate (RMD). His diverse background in coastal zone management, coastal ecology, flood risk, and geospatial analysis allow him to provide interdisciplinary planning and resilience guidance to communities. He leads the Resilient Nation Partnership Network while also supporting the Mitigation Framework Leadership Group and the National Mitigation Investment Strategy Implementation Team.

- Session 6 (1/27) - Psychological Distance and Construal Level Theory

RISK ASSESSMENT PAPER DUE – Midnight, Sunday January 30th
- Session 7 (2/1) – Social Amplification of Risk

SECTION II: Understanding Information Processing and Determinants of Mitigation Behavior

- Session 8 (2/3) – Information Processing and Persuasion (Theories: HSM, ELM)

- Session 9 (2/8) – Risk, Efficacy and Promoting Protective Behavior (Theories: PMT, EPPM)

- Session 10 (2/10) – Risk, Decision Cues, and Environmental Hazards (Theories: PADM)

- Session 11 (2/15) – Tornado and Avalanche Risk Communication (Guest Speaker)
  o Dr. Hugh Walpole, Postdoctoral Researcher, National Center for Atmospheric Research, Mesoscale and Microscale Meteorology Lab, Prediction Assimilation and Risk Communication Division – His research focuses on the psychology of risk and decision making, with a focus on risk perception, hazard response and psychological measurement.
  o Reading TBD
- Session 12 (2/17) - Risk Information Seeking and Processing Behaviors (Theories: RISP)

- Session 13 (2/22) – Cultural Cognition and Motivated Reasoning

- Session 14 (2/24) – Social Trust and Confidence

- Session 15 (3/1) – Public Participation and Perceived Fairness

- Session 16 (3/3) – Vaccine Risk Communication (Guest Speaker)
  o No reading
  o Dr. Graham Dixon, Assistant Professor, OSU School of Communication - His research centers on science and risk communication with a specific focus on persuasion, information processing, and motivated reasoning. Recent work explores how diverse audiences process and react to messages on polarizing and controversial science and risk topics, including genetically modified foods, self-driving cars, climate change, nuclear power, and vaccination.

**RISK PERCEPTION PAPER DUE – Midnight, Sunday March 6th**
SECTION III: Planning Your Risk Communication Effort

- Session 17 (3/8) – Setting Goals and Making a Plan
  o FDA Guide Ch 2-4 (Goals and Evaluation), Lundgren and McMakin Ch. 7 (Purpose)

- Session 18 (3/10) - Principles of Risk Communication
  o Lundgren and McMakin Ch. 6 (Principles of Risk Comm)

SPRING BREAK – 3/14-3/18

- Session 19 (3/22) – Emergency and Crisis Communication (Guest Speaker)
  o Familiarize yourself with NIST’s disaster investigation programs through this website
  o Read the executive summary and recommendation from this report on the Joplin Tornado (pp 45-62)
  o Dr. Emily Walpole, Research Social Scientist, National Institute of Standards and Technology, Community Resilience Group – Her research focuses on emergency communication, risk perception, and protection motivation related to natural hazards such as hurricanes and wildfires. She works on large-scale Federal investigations into natural and engineering related disasters, including Hurricane Maria and the Chimney Tops 2 Fire in Tennessee, to set new standards and guidance for emergency communication.

- Session 20 (3/24) - Know your Audience
  o Lundgren and McMakin Ch. 8 (Analyze your Audience); FDA Ch. 12 (Across the Life Span)

- Session 21 (3/29) - Choosing your Channel
  o Lundgren and McMakin - Ch. 9 (Develop your Message), Ch 10 (Determine the Appropriate Methods), Ch 13 (Information Materials)
- **Session 22 (3/31) – Science Communication in the Wild (Guest Speaker)**
  - Dr. Maggie Beetstra, NOAA Office of Education and the Smithsonian Natural History Museum – Her work focuses on science communication for audiences ranging from policy makers to children and the general public. She has expertise using diverse channels from activity books and museum exhibits, to communicating with policy makers on the Hill, to writing scientific reports.
  - Lundgren and McMakin - Ch. 15 (Face to Face Communication), Ch. 16 (News Media), Ch. 17 (Stakeholder Participation), Ch. 18 (Technology Assisted Communication), Ch. 19 (Social Media)

- **Session 23 (4/5) - Communicating Qualitative Information & Framing**
  - FDA Guide Ch. 8 (Qualitative Information)

- **Session 24 (4/7) - Communicating Quantitative Information & Numeracy**
  - FDA Guide Ch. 7 (Quantitative Information)

- **Session 25 (4/12) – Visual Representations of Risk**
  - Lundgren and McMakin Ch. 14 (Visual Representations of Risk)
  - FDA Guide Ch. 6 (Definitions)

- **Session 26 (4/14) – Hurricane Risk Communication (Guest Speaker)**
  - Reading TBD
  - Dr. Gina Eosco, Social Science and FACETs (Forecasting A Continuum of Environmental Threats) Program Manager for NOAA’s Weather Program Office. She focuses on prioritizing social and behavioral science (SBS) research needs within the weather community, determining ways to translate social science research into application, and learning from practitioners to understand the next research challenge. She is working to innovate the next generation watch and warning framework combining probabilistic hazard information with decision contexts to create meaningful information to enhance NOAA’s service to the public.
- Session 27 (4/19) – Communicating Uncertainty

- Session 28 (4/21) – Avoiding Unintended Consequences in Risk Messages

RISK COMMUNICATION PAPER DUE – Midnight, Tuesday, April 26th

Final Exam Slot – April 28th 2 to 3:45 – Paper Presentations