

FOR 6934: Science Communication and Public Education

Instructor: Megan Ennes

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Office: 201 McGuire Hall

Classroom: Online

Meeting time: Asynchronous

Office Hours

Mondays 11-12 and Tuesdays 1-2.

Course Description

This course will provide an introduction to science communication, environmental education, and public outreach. The course will focus on strategic message framing and how to convey scientific research to the public. The public outreach portion will focus on general audiences as well as K-12 specific outreach.

Course Objectives

By the end of this class, students will be able to

- Describe the process of strategic message framing
- Frame their research for communication with the public
- Describe different types of public outreach
- Discuss the unique challenges of K-12 outreach
- Utilize NAAEE Guidelines for Excellence for K-12 Environmental Education, Professional Development of Environmental Educators, and Nonformal Environmental Education Programs
- Translate their research into a public outreach experience for the general public or K-12 audiences

Students will demonstrate their mastery by creating framed discussion of their research, a public outreach component related to their research, and a short video using the skills learned in this class for the Scientist in Every Florida School's Science Segments.

Grading and Attendance Policies

Students will be graded based on participation, weekly assignments, and a final reflection. Participation will be worth 30 points and assignments/presentations are worth 345 points as described below.

Attendance:

While this course is asynchronous, science communication and public education are skills that improve with time and experience. Therefore it is my expectation that you participate in our discussions and activities.

Grading:

This class will include a wide range of activities over the course of the semester.

- Icebreakers:

- To build community, we will have an online icebreaker activity each week. This activity will allow you to receive 2 points for participation for each week for a total of 30 points over the semester. You may opt out of the icebreaker one time with no penalties except in week 1.
- Readings:
 - Readings will be posted each week. At least one article will be hosted online in SharePoint. You will open the reading and use Perusall to annotate the article as you read it. Annotations can include questions, comments, related resources, etc. This will be done collaboratively so you can see your classmates' questions and comments. Please see the Perusall section on Canvas to help you get started. Each week's reading is worth 5 points and due by Wednesday at midnight eastern time. You may opt out of the readings for one week with no penalties.
- Discussion Posts:
 - Most weekly readings will have an associated Canvas Discussion worth 15 points. You earn five points from posting, five points for a quality peer reply, and an additional five points for a second quality peer reply. You may opt out of the discussion post for one week with no penalties.
- Larger Assignments:
 - In weeks 7, 13-15, you will have larger assignments that pull together the skills you have learned over the semester. Each of these will be detailed on Canvas. These assignments are worth 30 points each. You can earn twenty points from posting, five points for a quality peer reply, and an additional five points for a second quality peer reply. You may **not** opt out of any of these activities.
- Office Hours:
 - Each student is expected to attend my office hours at least twice over the course of the semester. Office hours will be held Mondays 11-12 and Tuesdays 1-2 EST. This will offer you a chance to ask questions about any of the materials, gain clarification, and meet with the professor and other students. Attending office hours is worth 10 points each time for a total of 20 points.

These assignments will be worth 400 points total.

Grading Scale

A 93-100%	C 73-76%
A- 90-92%	C- 70-72%
B+ 87-89%	D+ 67-69%
B 83-86%	D 63-66%
B- 80-82%	D- 60-62%
C+ 77-79%	F <60%

Weekly Schedule of Topics (subject to change)

Topic	Readings	Assignments and notes
Week 1: January 11-17 Introduction to Science Communication and Public Education	<ul style="list-style-type: none"> ● Syllabus ● Kappel, K., & Holmen, S. J. (2019). Why science communication, and does it 	<ul style="list-style-type: none"> ● Read the syllabus and post at least 1 question you have using Persuall (5 points, Tuesday, Jan 12) ● Watch the weekly PowerPoint

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	<p>work? A taxonomy of science communication aims and a survey of the empirical evidence. <i>Frontiers in Communication</i>, 4, 55.</p>	<ul style="list-style-type: none"> • Complete your introduction to the class and reply to at least two people you don't know (10 points, initial post due Wednesday, Jan 13, replies due Sunday, Jan 16) • Canvas Discussion Post (15 points, initial post due Wednesday, Jan 13, replies due Sunday, Jan 16)
<p><u>Week 2: January 18-24</u> Holiday Monday Introduction to Framing</p>	<ul style="list-style-type: none"> • Cacciatore, M. A., Scheufele, D. A., & Iyengar, S. (2016). The end of framing as we know it... and the future of media effects. <i>Mass Communication and Society</i>, 19(1), 7-23. • The Swamp 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Jan 20) • Canvas Discussion Post (15 points, initial post due Wednesday, Jan 20, replies due Sunday, Jan 24)
<p><u>Week 3: January 25-31</u> Values</p>	<ul style="list-style-type: none"> • Value of Explanations • Framing with Values • Examples of Universal Values • Druckman, J. N., & Lupia, A. (2017). Using frames to make scientific communication more effective. <i>The Oxford handbook of the science of science communication</i>, 243-252. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Jan 27) • Canvas Discussion Post (15 points, initial post due Wednesday, Jan 27, replies due Sunday, Jan 31)
<p><u>Week 4: February 1-7</u> Metaphors and Explanatory Chains</p>	<ul style="list-style-type: none"> • Olson, M. E., Arroyo-Santos, A., & Vergara-Silva, F. (2019). A user's guide to metaphors in ecology and evolution. <i>Trends in Ecology & Evolution</i>. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Feb 3) • Canvas Discussion Post (15 points, initial post due Wednesday, Feb 3, replies due Sunday, Feb 7)
<p><u>Week 5: February 8-14</u> Solutions</p>	<ul style="list-style-type: none"> • Angling Toward Solutions in Climate Change Education • Expanding Our Repertoire: Why and How to Get Collective Climate Solutions in the Frame. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Feb 10)

Topic	Readings	Assignments and notes
	<ul style="list-style-type: none"> • Framing with Solutions • Solutions examples: https://www.drawdown.org/solutions/table-of-solutions 	<ul style="list-style-type: none"> • Canvas Discussion Post (15 points, initial post due Wednesday, Feb 10, replies due Sunday, Feb 14)
<p><u>Week 6: February 15-19</u> Public Speaking 101</p>	<ul style="list-style-type: none"> • Buxner, S. R., Sharma, M., Hsu, B., Peticolas, L., Nova, M. A. M., & CoBabe-Ammann, E. (2012, August). Barriers, lessons learned, and best practices in engaging scientists in education and public outreach. In <i>Connecting People to Science: A National Conference on Science Education and Public Outreach</i> (Vol. 457, p. 81). • 9 Tips for becoming a great public speaker: https://collegeinfo geek.com/public-speaking-tips/ • Virtual Speaking: https://www.forbes.com/sites/maryabbajay/2020/04/20/best-practices-for-virtual-presentations-15-expert-tips-that-work-for-everyone • Optional article: https://www.fearlesspresentations.com/101-public-speaking-tips/ 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Feb 17) • Canvas Discussion Post (15 points, initial post due Wednesday, Feb 17, replies due Sunday, Feb 19)
<p><u>Week 7: February 20-28</u> Framing Your Research for the Public</p>	<ul style="list-style-type: none"> • Review previous PowerPoints and previous readings 	<ul style="list-style-type: none"> • Complete this week's icebreaker • Review your previous discussion posts framing your research. Read the feedback from the instructor and your peers. Finalize edits to your talk then record yourself giving your framing talk. Post your video and the written transcript in the discussion. Watch and respond to at least two other presentations. You will evaluate one another and offer constructive feedback using the attached rubric. Your initial post is due by midnight EST on

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		<p>Wednesday, February 24 and you must reply to at least two of your peers by Sunday, February 28 at midnight EST. (30 points)</p>
<p><u>Week 8: March 1-7</u> Social and Emotional Work of Science Communication</p>	<ul style="list-style-type: none"> • Buijs, A., & Lawrence, A. (2013). Emotional conflicts in rational forestry: towards a research agenda for understanding emotions in environmental conflicts. <i>Forest Policy and Economics</i>, 33, 104-111 • Carmi, N., Arnon, S., & Orion, N. (2015). Transforming environmental knowledge into behavior: The mediating role of environmental emotions. <i>The Journal of Environmental Education</i>, 46(3), 183-201. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Mar 3) • Canvas Discussion Post (15 points, initial post due Wednesday, Mar 3, replies due Sunday, Mar 7)
<p><u>Week 9: March 8-14</u> Introduction to Environmental Education</p>	<ul style="list-style-type: none"> • Andrews, E., Weaver, A., Hanley, D., Shamatha, J., & Melton, G. (2005). Scientists and public outreach: Participation, motivations, and impediments. <i>Journal of Geoscience Education</i>, 53(3), 281-293. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Mar 10) • Canvas Discussion Post (15 points, initial post due Wednesday, Mar 10, replies due Sunday, Mar 14)
<p><u>Week 10: March 15-21</u> NAAEE Guidelines</p>	<ul style="list-style-type: none"> • Tbilisi Declaration: https://naaee.org/eeepro/learning/eelearn/history-ee/lesson-3/tbilisi-declaration • Two Hats: https://www.eenorthcarolina.org/documents/files/two-hats/open • Guidelines for Excellence: K-12 Environmental Education 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker • Read the article and annotate in Persuall with questions and comments. You do not have to read the full guidelines. Find the sections that match your research area and audience. (5 points, due Wednesday, Mar 17) • Canvas Discussion Post (15 points, initial post due Wednesday, Mar 17, replies due Sunday, Mar 21)
<p><u>Week 11: March 22-28</u> Science Standards</p>	<ul style="list-style-type: none"> • Monroe, M. C., & Oxarart, A. (2019). Integrating Research and Education: Developing Instructional 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker

Topic	Readings	Assignments and notes
	<p>Materials to Convey Research Concepts. BioScience, 69(4), 282-291.</p>	<ul style="list-style-type: none"> • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Mar 24) • Canvas Discussion Post (15 points, initial post due Wednesday, Mar 24, replies due Sunday, Mar 28)
<p><u>Week 12: March 29-April 2</u> Experiential Learning, Assessment, and Evaluation</p>	<ul style="list-style-type: none"> • Laursen, S., Liston, C., Thiry, H., & Graf, J. (2007). What good is a scientist in the classroom? Participant outcomes and program design features for a short-duration science outreach intervention in K–12 classrooms. CBE—Life Sciences Education, 6(1), 49-64. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week’s icebreaker • Read the article and annotate in Persuall with questions and comments (5 points, due Wednesday, Mar 31) • Canvas Discussion Post (15 points, initial post due Wednesday, Mar 31, replies due Sunday, Apr 2)
<p><u>Week 13: April 5-11</u> Developing Your Presentation</p>	<p>Review previous readings and PowerPoints</p>	<ul style="list-style-type: none"> • Complete this week’s icebreaker • Canvas Discussion Post: This week you will record yourself teaching your lesson. Feel free to “teach” it virtually to someone and record yourself via Zoom. Post your video to the discussion. Please watch at least two others’ lesson and give constructive feedback using the attached rubric. Your initial post is due by midnight on Wednesday, April 7 and you must reply to at least two of your peers by Sunday, April 11 at midnight. (30 points)
<p><u>Week 14: April 12-18</u> Presentation for the Scientist in Every Florida School’s Science Segments</p>		<ul style="list-style-type: none"> • You will create a video for the Scientist in Every Florida School’s SEFS Segments Program. Watch an example here: https://tinyurl.com/SEFSsegments. In this short (3-5 minute) video you should answer the following questions: <ul style="list-style-type: none"> ○ Who are you and what is your title? ○ What do you research and why is it important?

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		<ul style="list-style-type: none"> ○ Can you please explain [the Florida Sunshine learning standard related to your research]? ● You can film this in any format you'd like. Feel free to be creative and use any video software such as PowToon, Loom, Moovly, Animaker, iMovie, Zoom, etc. Your initial post is due by midnight on Wednesday, Apr 14 and you must reply to at least two of your peers by Sunday, Apr 18 at midnight. (30 Points).
<p><u>Week 15: April 19-25</u> Final Exam</p>		<p>Please create a final reflection for this course. You can answer the following in any format (Mural, Jamboard, Prezi, PowToon, Essay, etc)</p> <ul style="list-style-type: none"> ● If you were to explain to someone the importance of science communication public education, what information would you share? Cite at least three articles from this course. ● Thinking back to your first day of class, what concerns did you have about science communication and public education? ● What skills did you learn this semester to help you address those concerns? ● What skills do you wish you had learned that would have helped you address these concerns? ● How do you envisioning using the skills you learned in this class in your future career? <p>b. Your response will be graded using this rubric. Your initial post is due by midnight on Wednesday, Apr 21 and you must reply to at least two of your peers by Sunday, Apr 25 at midnight. (30 points)</p>

Course Textbook

There will be no required textbook. Weekly reading assignments will be available on Canvas.

Recommended resources:

Ham, S. (2016). Interpretation: Making a difference on purpose. Fulcrum publishing.
National Research Council. 2009. Learning Science in Informal Environments: People, Places, and Pursuits. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/12190>.

Links and Policies

Class Demeanor

Students are expected to behave in a manner that is respectful to the instructor and to fellow students. Opinions held by other students should be respected in discussions. Please review the discussion etiquette document on Canvas prior to engaging in the discussion forum. Additionally, **emails sent to the instructor must follow professional etiquette** (e.g. <https://www.indeed.com/career-advice/career-development/how-to-write-a-professional-email>).

Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting disability.ufl.edu/students/get-started. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester. Faculty can expect to receive a student's accommodation letter within the first 3 weeks of classes; however, if a student registers with the DRC later in the semester faculty are still obligated to facilitate accommodations. Neither faculty nor administrators may independently deny a request for accommodation that is approved by the Disability Resource Center.

Plagiarism will not be tolerated in this class, as it constitutes intellectual theft and academic dishonesty. I will use TurnItIn to check all materials for plagiarism.

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

All students must conform to UF's Honesty Code regarding cheating, plagiarism, and the use of copyrighted materials, which you can find at: [https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/](http://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/)

Plagiarism includes but is not limited to:

1. Stealing, misquoting, insufficiently paraphrasing, or patch-writing.
2. Self-plagiarism, which is the reuse of the Student's own submitted work, or the simultaneous submission of the Student's own work, without the full and clear acknowledgment and permission of the Faculty to whom it is submitted.
3. Submitting materials from any source without proper attribution.
4. Submitting a document, assignment, or material that, in whole or in part, is identical or substantially identical to a document or assignment the Student did not author.

Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit umatter.ufl.edu/ to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit counseling.ufl.edu or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit shcc.ufl.edu/.

University Police Department: Visit police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; ufhealth.org/emergency-room-trauma-center.