

FOR 6934: Science Communication and Public Education

Instructor: Megan Ennes

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Office: 201 McGuire Hall

Classroom: Online

Meeting time: Asynchronous

Course Prerequisites: None

Course Credits: 3

Office Hours

Tuesdays 11-12 and Wednesdays 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 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. Icebreakers will be due by Wednesday at midnight eastern time. 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 Perusall. You will open the reading from Canvas 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. See the discussion rubric for the breakdown of points. You may opt out of the discussion post for one week with no penalties.

Larger Assignments:

- In weeks 8, 10, 14-15, 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. See the rubrics for point breakdown of each assignment. **You may not opt out of any of these activities.**

Coffee and Conversations:

- Each student is expected to attend Coffee and Conversations **at least twice** over the course of the semester. These virtual meetings will be held via Zoom Tuesdays 11-12 and Wednesdays 1-2 EST. Occasional evening sessions will be added over the course of the semester for students who cannot attend during the day. These meetings will offer you a chance to ask questions about any of the materials, gain clarification, and meet with the professor and other students. Attending is worth 13 points each time for a total of 26 points.

These assignments will be worth 400 points total.

Grading Scale

A 93-100%

A- 90-92%

B+ 87-89%

B 83-86%

B- 80-82%

C+ 77-79%

C 73-76%

C- 70-72%

D+ 67-69%

D 63-66%

D- 60-62%

F <60%

Weekly Schedule of Topics (subject to change)

Topic	Readings	Assignments and notes
<p><u>Week 1: (Jan 5-9)</u> Introduction to Science Communication and Public Education</p>	<ul style="list-style-type: none"> • Syllabus • Burns, T. W., O'Connor, D. J., & Stocklmayer, S. M. (2003). Science communication: a contemporary definition. <i>Public Understanding of Science</i>, 12(2), 183-202. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Read the syllabus and post at least 1 question you have using Perusall (5 points, due Friday) • Complete your introduction to the class and reply to at least two people you don't know (2 points, initial post due Friday replies due Sunday) • Read Burns et al in Perusall and annotate with questions and comments (5 points, due Friday) • Canvas Discussion Post (15 points, initial post due Friday replies due Sunday)
<p><u>Week 2: (Jan 10-16)</u> Introduction to Framing</p>	<ul style="list-style-type: none"> • 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. • The Swamp 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) • Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<p><u>Week 3: (Jan 17-23, Holiday Jan 17)</u> Values</p>	<ul style="list-style-type: none"> • Value of Explanations • Framing with Values • Examples of Universal Values 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) • Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<p><u>Week 4: (Jan 24-30)</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>, 34(7), 605-615. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and

Topic	Readings	Assignments and notes
		comments (5 points, due Wednesday) • Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<u>Week 5: (Jan 31-Feb 6)</u> Solutions	<ul style="list-style-type: none"> • Anderson, J. (2016). Angling toward solutions in climate change education. <i>Informal Learning Review</i>, 136(January/February), 3-8. • Expanding Our Repertoire: Why and How to Get Collective Climate Solutions in the Frame. • Framing with Solutions • Solutions examples: https://www.drawdown.org/solutions/table-of-solutions 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) • Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<u>Week 6: (Feb 7-13)</u> Public Speaking 101	<ul style="list-style-type: none"> • Raja, F. (2017). Anxiety Level in Students of Public Speaking: Causes and Remedies. <i>Journal of Education and Educational Development</i>, 4(1), 94-110. • 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 (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) • Canvas Discussion Post (15 points, initial post Thursday replies due Sunday)
<u>Week 7: (Feb 14-20)</u> Social and Emotional Work of Science Communication	<ul style="list-style-type: none"> • Carmi, N., Arnon, S., & Orion, N. (2015). Transforming environmental knowledge into behavior: The mediating role of environmental emotions. <i>The</i> 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and

Topic	Readings	Assignments and notes
	<p><i>Journal of Environmental Education</i>, 46(3), 183-201.</p> <ul style="list-style-type: none"> Optional: 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 	<p>comments (5 points, due Wednesday)</p> <ul style="list-style-type: none"> Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<p><u>Week 8: (Feb 21-27)</u> Framing Your Research for the Public</p>	<ul style="list-style-type: none"> Reading: Bonanno, A., Ennes, M., Hoey, J. A., Moberg, E., Nelson, S. M., Pletcher, N., & Tanner, R. L. (2021). Empowering hope-based climate change communication techniques for the Gulf of Maine. <i>Elementa</i>, 9(1), 00051. 	<ul style="list-style-type: none"> Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday) Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) 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 Thursday and you must reply to at least two of your peers by Sunday. (30 points)
<p><u>Week 9: (Feb 27-March 6)</u> Science Standards</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 (2 points, initial post due Wednesday replies due Sunday) Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) Canvas Discussion Post (15 points, initial post due Thursday replies due Friday before spring break)

Topic	Readings	Assignments and notes
<u>March 5-13</u>	Spring Break	
<u>Week 10: (Mar 14-20)</u> Presentation for the Scientist in Every Florida School's Science Segments	<ul style="list-style-type: none"> • Monroe, M. C., & Oxarart, A. (2019). Integrating Research and Education: Developing Instructional Materials to Convey Research Concepts. <i>BioScience</i>, 69(4), 282-291. 	<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? ○ 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 Thursday replies due Sunday. (30 points) • See attached rubric for grading
<u>Week 11: (Mar 21-27)</u> Introduction to Environmental Education	<ul style="list-style-type: none"> • Owoade, O. A., Abiola, A. O., & Oluremi, O. A. (2017). Reinvigorating Environmental Education for Actualisation of Sustainable Development Goals. <i>International Journal of Geography and Environmental Management</i>, 3(1), 1-12. • Tbilisi Declaration: https://naaee.org/eeepro/learning/eelearn/history-ee/lesson-3/tbilisi-declaration 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) • Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<u>Week 12: (Mar 28-Apr 3)</u> NAAEE Guidelines	<ul style="list-style-type: none"> • Guidelines for Excellence: K-12 Environmental Education • Two Hats: https://www.eenorthcarolina. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week's icebreaker (2 points, initial post due Wednesday replies due Sunday)

Topic	Readings	Assignments and notes
	<p>org/documents/files/two-hats/open</p>	<ul style="list-style-type: none"> • Read the article and annotate in Perusall 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) • Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<p><u>Week 13: (Apr 4-10)</u> Experiential Learning, Assessment, and Evaluation</p>	<ul style="list-style-type: none"> • Morris, T. H. (2020). Experiential learning—a systematic review and revision of Kolb’s model. <i>Interactive Learning Environments</i>, 28(8), 1064-1077. 	<ul style="list-style-type: none"> • Watch the weekly PowerPoint • Complete this week’s icebreaker (2 points, initial post due Wednesday replies due Sunday) • Read the article and annotate in Perusall with questions and comments (5 points, due Wednesday) • Canvas Discussion Post (15 points, initial post due Thursday replies due Sunday)
<p><u>Week 14: (Apr 11-17)</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 Thursday replies due Sunday. (30 points) • See attached rubric for grading
<p><u>Week 15: (Apr 18-24)</u> <u>Classes end April 20)</u> Final Exam</p>	<p>Review previous readings and PowerPoints</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.

Topic	Readings	Assignments and notes
		<ul style="list-style-type: none"> • 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 initial post is due by midnight on Wednesday replies due Sunday. (30 points)</p>

Course Textbook

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

Recommended resource:

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>).

Class Recording

All lectures will be recorded and available to students on Canvas. However, please refer to the publication portion of the University's recording policy below:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited.

Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Inclusive Learning Environment

This course embraces the University of Florida’s Non-Discrimination Policy, which reads, The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans’ Readjustment Assistance Act. If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: <http://multicultural.ufl.edu>.

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.

UF Honesty Code

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/>

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/>.

Technical Help

Coursework will require ongoing use of a computer and a broadband connection to the Internet. Please see the university’s student computing requirements here:

<https://it.ufl.edu/policies/student-computing-requirements/>

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFFGS Academic Hub <https://ufl.instructure.com/courses/303721>

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.

Academic Resources

E-learning technical support: Contact the [UF Computing Help Desk](http://ufcomputing.com/helpdesk) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601, or <https://career.ufl.edu/>. Career assistance and counseling services.

Library Support: <https://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010, to make an appointment 352- 392-6420, or <https://teachingcenter.ufl.edu>. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138, or <https://writing.ufl.edu/writing-studio/>. Help brainstorming, formatting, and writing papers.

Student Complaint Process

The School of Forest, Fisheries, & Geomatics Sciences cares about your experience and we will make every effort to address course concerns. We request that our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered. You can also submit feedback anytime at:

<https://ffgs.ifas.ufl.edu/contact>.

If you have a more urgent concern, your first point of contact should be the Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course.

You may also submit a complaint directly to UF administration:

- Students in online courses: <http://www.distance.ufl.edu/student-complaint-process>

- Students in face-to-face courses: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>