

FOR 6934 – Communicating Natural Resources Science with the Public

1 Overview

Introduces the principles behind effective science communication with natural resource users and the public. We cover the basics of identifying audiences and making your message accessible and engaging, but concentrate on the science and theories underlying how people receive and interpret information and their application in communication around contentious issues.

Detailed Description

There is an increasingly strong push for natural resource scientists and professionals to communicate with members of the public. However, few professionals receive formal communication training. Communication can be particularly important and difficult in natural resource fields, where professionals are faced with conflicts over resource access and management among different stakeholder groups, and with extremely complex and uncertain issues.

This course is designed to introduce natural resource professionals to the principles behind effective science communication. We will first cover the basics of identifying audiences, simplifying language, and using storytelling and other methods to pique interest, but will concentrate on the science and theories underlying how people receive and interpret information. Often natural resource professionals are faced with communication in conflict-ridden or contentious situations, and an understanding of what informs people's attitudes toward information can help in designing effective communication strategies. We'll briefly introduce a few common methods people and agencies use to communicate with the public, but the focus will be on using them in the context of the theories and methods discussed and on evaluating their ability to aid in conflict navigation. Though the principles underlying this course are universal, the focus will be on use and application in the context of natural resource science and management.

Course Details:

- 3 Credits
- Semester: Summer C
- This course is 100% online
- <http://elearning.ufl.edu/>

Course Prerequisites: none

Instructor: Chelsey Crandall

- Please use the Canvas message/Inbox feature for fastest response.
- Office hours: available to schedule by email (kicksea@ufl.edu); office visits available by request.

Textbook(s) and/or readings:

There are a number of reading materials for this course. It is imperative that you read the materials and use them in your applications and discussions online. The readings are available on electronic reserve at

<https://ares.uflib.ufl.edu/ares/> and there is a link to them in the Canvas course at <https://elearning.ufl.edu>. Access from off campus is through the UF VPN client. For more information on downloading, installing and using the VPN client, please go to <http://www.uflib.ufl.edu/login/vpn.html>. For general information on course reserves, please contact the Course Reserves Unit at 352-273-2520, or email at eres@uflib.ufl.edu.

To find readings, please use the tags within the course reserves. The tag Week 3, for example will have the readings for this course in Week 3.

2 Learning Outcomes

At the end of this course, each student will be able to:

- Define various communication theories
- Identify the communication theories at play in a communication success or failure
- Compare the strengths and weaknesses of various communication methods and platforms
- Evaluate communication needs
- Assess the efficacy of a given communication effort or strategy
- Design a communication plan to address a contentious natural resource issue

3 Course Logistics

This course is entirely web-based and students may access lectures, readings, and supporting materials as they become available each week.

Learning modules consisting of a lecture and/or video, readings, and other supporting materials are provided online for each topic. Learning modules build on previous modules so you should complete the learning modules in the order presented.

Each learning module has required readings beyond the lecture or video. These files will all be made available for you to view on your computer, save, or print. There may be references to additional (optional) readings and resources if you desire further investigation of a topic.

Technology Requirements:

- A computer or mobile device with high-speed internet connection.
- A headset and/or microphone and speakers.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. [What browser am I using?](#)
- Voicethread: <http://ufl.voicethread.com> (more instructions will be provided)

3.1 Assignments & Deliverables

Participation

Every week you will be first introduced to the concept or theory (for example through a lecture or reading) and engage with applications linked through Canvas, and then discuss and apply what we have learned through assignments and the discussion board. 5 points will count toward participation each week based on your engagement with the discussion, for a total of 60 points. Note that your discussion grade is based on participation, and not on evaluating the accuracy of your contributions (you will get feedback, but it won't count against your grade). The goal of the discussion board is to have a place for you to connect with your classmates and think about what we learn.

Additional assignments are explained here and in Canvas:

Projects/Writing Assignments

1. Weekly Assignment

Each week you will be asked to do a short application assignment. Each will be worth 5 points, for a total of 60 points.

2. Review Quizzes

You will have a total of 4 short quizzes throughout the semester to help you review information. Quizzes will be through Canvas, and each will be worth 10 points. The purpose of these quizzes is to give you a chance to review what we have learned and to evaluate how well you understand it. The quizzes will be open book. Quizzes will be posted on week 3, week 6, week 9, and week 11, and will be due by the end of the following week.

3. Semester Project

For this assignment, you will be asked to propose a communication plan to navigate a contentious natural resources issue. This could be one you are facing as part of your own work and professional life, or one outside of your field. Identify at least one communication goal: for example, it could be about correcting a misconception in your audience, about building acceptance of a message or regulation, changing an attitude, or another communication goal. First, describe the situation, including a review of any communication efforts that have been used to date and how successful they have/haven't been. Use what we know about the psychology behind communication and information reception to evaluate the current situation and any past communication efforts. Identify which communication theories might be useful to understand and navigate the situation. Then propose in detail a communication strategy using at least one method we have discussed (you could also propose ones we haven't covered), and include how you will apply the theories we have learned to improve the efficacy of your strategy. Finally, include a plan to evaluate your efforts. A draft of the first portion (situation description and assessment, theories at play and identification of theories that could help) will be due by the end of Week 7, with a draft of the second portion (strategy proposal) due by the end of Week 10. Your Final Submission incorporating feedback and with the added evaluation component is due by the end of Week 12. This assignment will be worth a total of 40 points.

3.2 Grades & Grading Scale

30% Participation in Discussions

30% Weekly Application Assignments

20% Quizzes

20% Final Assignment

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Grading Scale (%)

A 90-100

B+ 85-89.99

B 80-84.99

C+ 75-79.99

C 70-74.99

D+ 65-69.99

D 60-64.99

E < 60

4 Course Content

Course Schedule

<u>Week</u>	<u>Topic</u>
<u>Part I: Making it Accessible, Engaging, and Impactful</u>	
<u>1</u>	<u>Introduction</u>
<u>2</u>	<u>Language and Story</u>
<u>3</u>	<u>Communication Theories: Knowledge-Deficit and Mental Models</u>
<u>4</u>	<u>Identity and Cultural Cognition</u>
<u>5</u>	<u>Trust and Homophily</u>
<u>6</u>	<u>Values, Morals, and Framing</u>
<u>Part II: Applications of What We Know</u>	
<u>7</u>	<u>Blogs and Films/Video</u>
<u>8</u>	<u>The Social Internet</u>
<u>9</u>	<u>Face to Face</u>
<u>Part III: Social Science Methods: Needs and Outcomes</u>	
<u>10</u>	<u>Identifying Communication Needs</u>
<u>11</u>	<u>Evaluating Communication Efforts</u>
<u>Part IV: Putting it all together</u>	
<u>12</u>	<u>Synthesis and Reflection</u>

Readings associated with each module are detailed here, along with major project deadlines:

Part I: Making it accessible, engaging, and impactful

This section will introduce science communication, discuss some of the difficulties particular to communication within the natural resources context, and discuss the different objectives of science communication. We will cover ways to make science more accessible and highlight key communication theories that can help make communication efforts more impactful.

Week 1: Introduction

- Read through your syllabus
- Priest, S.H. Audiences for Science. Encyclopedia of Science and Technology Communication.

Week 2: Language and Story

Jargon

- Shulman, H.C., G.N. Dixon, O.M. Bullock, and D.C. Amill. 2020. The effects of jargon on processing fluency, self-perceptions, and scientific engagement. Journal of Language and Social Psychology
- Tools:
 - UpGoer 5 Challenge: explain your research or work using the 1000 most common words in the English language <https://splasho.com/upgoer5/>. <https://splasho.com/upgoer6/>
 - DeJargonizer: <http://scienceandpublic.com/Home/About?whatIsIt>

Story

- The Science of Storytelling: what listening to a story does to our brains (<https://buffer.com/resources/science-of-storytelling-why-telling-a-story-is-the-most-powerful-way-to-activate-our-brains>)
- Moore, M.J. and D.J. Orth. 2018. Stories worth sharing. Fisheries 43(12): 575-576.

Week 3: Introduction to communication theories: knowledge deficit model and mental models

Knowledge-Deficit

- Nisbet, M. C. and D.A. Scheufele. 2009. What's next for science communication? Promising directions and lingering distractions.

Mental Models

- Monroe, M.C. Addressing misconceptions about Wildland-Urban interface issues. EDIS publication FOR 108: 4 pp.
- Crandall, C., M. Monroe, and K. Lorenzen. Why won't they listen to use? Communicating science in contentious situations.

Final Assignment Part I: Propose what you think you want to do your final project on now. Write a brief "situation description" for feedback.

Week 4. Identity and Cultural Cognition

Identity

- Oyserman, Daphna, Neil A. Lewis, Veronica X. Yan, Oliver Fisher, S. Casey O'Donnell, & Eric Horowitz. 2017. An identity-based motivation framework for self-regulation. *Psychological Inquiry*, 28(2-3):139-147.

Cultural Cognition

- Kahan, Dan M. 2015. What is the "science of science communication"? *Journal of Science Communication*, 14(3): 1-10.
- Kahan, D. What you "believe" about climate change doesn't reflect what you know; it expresses *who you are*.
- Overdest, C. and L. Christiansen. 2011. Using "cultural cognition" to predict environmental risk perceptions in a Florida Water-Supply planning process. *Society and Natural Resources* 26(9).

Week 5. Trust and Homophily

Homophily

- McPherson, M., L. Smith-Lovin, and J.M. Cook. 2001. Birds of a feather: homophily in social networks. *Annual Reviews in Sociology* 27: 415-444.

Trust

- Runnebaum, J.M., E.A. Maxwell, J.S. Stoll, K.E. Pianka, and N.G. Oppenheim. 2019. Communication, relationships, and relatability influence stakeholder perceptions of credible science. *Fisheries* 44(4): 164-171.
- MacKeracher, T., A. Diedrich, G.G. Gurney, and N. Marshall. 2018. Who trusts whom in the Great Barrier Reef? Exploring trust and communication in natural resource management. *Environmental Science and Policy* 88: 24-31.
- Saffran et al. 2020. Constructing and influencing perceived authenticity in science communication: Experimenting with narrative.

Week 6. Values, Morals, and Framing for natural resource issues

Morals and Values

- Haidt, J. 2007. The new synthesis in moral psychology. *Science*. 316: 998-1001.
- Ignatius, S., A. Delaney, and P. Haapasaari. 2019. Socio-cultural values as a dimension of fisheries governance: the cases of Baltic salmon and herring. *Environmental Science and Policy* 94: 1-8.
- What are the implicit values we are using in fisheries management?

Framing

- Druckman, J.N. and A. Lupia. 2017. Using frames to make science communication more effective. *Oxford Handbook of the Science of Science Communication*.
- Priest, S.H. Framing and Priming in Science Communication. *Encyclopedia of Science and Technology Communication*
- Krantz, S. and M. Monroe. 2015. Message framing matters: communicating climate change with forest landowners. *Journal of Forestry* 114(2): 108-115.

Part II: Applications of what we know.

There are many avenues to connect with members of the public and to get our science out there. This section will discuss some of these that are easily accessible and commonly used by scientists at all levels, while thinking about them in the context of the theories we have learned in section I.

Week 7. One way communication-blogs and film/video

Film/Video

- Danylchuk et al. 2018. So you want to make a film: an introduction to creating videos for broader impacts in fisheries and aquatic sciences. *Fisheries* 43(3): 144-151.
- Janpol, H.J. and R. Dilts. 2016. Does viewing documentary films affect environmental perceptions and behaviors? *Applied Environmental Education and Communication* 15(1): 90-98.
- Jacobsen, G.D. 2011. The Al Gore effect: an inconvenient truth and voluntary carbon offsets. *Journal of Environmental Economics and Management* 61(1): 67-78.
- Morcille, J.M., K. Czurda, and C.Y.R. Trotha. 2016. Typologies of the popular science web video. *Journal of Science Communication* 15(4): 1-32.

Science Blogs

- Jarreau, P.B. 2018. Who reads science blogs?

Final Assignment Draft I: Submit a draft of the first portion (situation description and assessment, theories at play and identification of theories that could help) for feedback

Week 8. The Social Internet

- Shiffman, D. 2018. Social media for fisheries science and management professionals: how to use it and why you should. *Fisheries* 43(3): 123-129.
- Shukla, P. and S. Ul-Hasan. 2019. Scientists, meet Twitter! Access: <https://www.thexylom.com/scientists-meet-twitter>
- Taylor and Sammons. 2018. Bridging the gap between scientists and anglers: the black bass conservation committee's social media outreach efforts. *Fisheries* 44(1): 37-41.
- Jarreau, P.B., I.A. Cancellare, B.J. Carmichael, L. Porter, D. Toker, and S.Z. Yammine. 2019. Using selfies to challenge public stereotypes of scientists. *PlosOne* 14(5): e0216625.
- Heemstra, J.M. 2020. A scientist's guide to social media. <https://pubs.acs.org/doi/10.1021/acscentsci.9b01273>

Week 9. Face-to-Face

- Killgrove, K. How the 'Skype a Scientist' program combats fake news through public education. *Forbes*: <https://www.forbes.com/sites/kristinakilgrove/2019/02/27/how-the-skype-a-scientist-program-combats-fake-news-through-public-education/#25b8563725d7>
- Lundgren, L., K. A. Stofer, B.A. Dunckel, J. Krieger, M. Lange, and V. James. 2019. Panel-based exhibit using participatory design elements may motivate behavior change. *Journal of Science Communication* 18(2): 1-18.

- Toman, E., B. Shindler, and M. Brunson. 2006. Fire and fire management communication strategies: citizen evaluation of agency outreach activities. *Society and Natural Resources* 19:321-336.
- McComas, K.A. 2001. Public meetings about local waste management problems: comparing participants to nonparticipants. *Environmental Management* 27(1): 135-147.

Part III: Social Science Methods: Needs and Outcomes

Now that we know the many things that can affect how people interpret information, how do we assess what is going on in our own situations? And how do we evaluate the outcomes of our efforts? In this section, we will highlight some examples of quantitative and qualitative methods to assess and evaluate, and discuss approaches one could use to evaluate your own communication efforts.

Week 10. Identifying communication needs

- De Bruin, W.B. and A. Bostrom. 2013. Assessing what to assess in science communication. *PNAS* 110: 14062-14068.
- Audience analysis: <https://www.comm.pitt.edu/oral-comm-lab/audience-analysis>

Final Assignment Draft II: Submit a draft of your strategy proposal for feedback

Week 11. Evaluation

- Spicer, S. 2017. The nuts and bolts of evaluating science communication activities. *Seminars in Cell and Developmental Biology*.
- Priest, S.H. Evaluation of Science Communication. *Encyclopedia of Science Communication*.
- Karlin, B. 2011. The importance of evaluation for documentary film campaigns. *M/C Journal* 14(6).
- Levesque, V.R., A.J.K. Calhoun, K.P. Bell, and T.R. Johnson. 2017. Turning contention into collaboration: engaging power, trust, and learning in collaborative networks. *Society and Natural Resources* 30(2): 245-260.

Part IV: Putting it all together

The final project will allow you to have a go at putting all we have learned together in a planned application. We will close with a synthesis discussion, and talk a bit about what everything means together and how you will use what you have learned in your own work.

Week 12. Synthesis and reflection

Readings:

- Sopinka. 2016. How does creativity fit into science communication? *Fisheries* 41(2): 68-69.
- Birch, H. 2010. Podologues: conversations created by science podcasts. *New Media and Society* 12(6): 889-909.
- Longnecker, N. 2016. An integrated model for science communication. *Journal of Science Communication* 15(5): 1-13.

Submit your final project

5 Policies and Requirements

This syllabus represents current plans and objectives for this course. As the semester progresses, changes may need to be made to accommodate timing, logistics, or to enhance learning. Such changes, communicated clearly, are not unusual and should be expected.

5.1 Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course.

[add more if desired]

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues **MUST** be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You **MUST** e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

5.2 Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required, but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide UF with feedback on the quality of instruction in this course using a standard set of university and college criteria (UF Faculty Evaluations). These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

5.3 Netiquette: Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Failure to do so may result in loss of participation points and/or referral to the Dean of Students' Office. <http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

5.4 Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated.

Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see:

<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

5.5 University Policy on Accommodating Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams.

Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

5.6 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>.

5.7 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.

6 Getting Help

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>
- SFRC Academic Hub <https://ufl.instructure.com/courses/303721>

6.1 Student Life, Wellness, and Counseling Help

- Counseling and Wellness resources <http://www.counseling.ufl.edu/cwc/>
- U Matter, We Care serves as UF's umbrella program for UF's caring culture and provides students in distress with support and coordination of the wide variety of appropriate resources. Visit <http://www.umatter.ufl.edu/> or contact umatter@ufl.edu seven days a week for assistance for students in distress.
- Career Resource Center <http://www.crc.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students.

6.2 Student Complaint Process

The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of 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.

If you have a more urgent concern, your first point of contact should be the SFRC 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://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf