



Appledore Island, Isle of Shoals, Kittery, Maine

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Shoals Marine Laboratory
Applied Science Communication in Coastal and Marine Environments: Digital Platforms & Public Engagement
(BIOSM 3500/MEFB 350)
July 31 – August 14, 2023

Course Syllabus and Schedule

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Course Description:

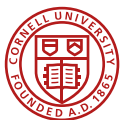
Set sail on a science communication skill-building voyage in a beautiful and inspirational setting. Against a backdrop of rocky shores, intertidal environments, and unique terrestrial habitats, you'll be immersed in the introduction and application of digital and public engagement platforms to communicate your experience and the research being conducted on the Island. You will also learn about and prepare for public engagement events and or planning for personal interactions that can range from explaining your research interests to your family, applying for grants, to communicating policy concerns to an elected official.

In this course, you will “learn the ropes” as we provide you with a solid foundation of the communication tools available to you both online and offline. Then we will work on a well-developed communication strategy so that you can hoist your sails and navigate the public waters with confidence.

Hop on board and get your Captain’s License in science communication. Sharing scientific discoveries with the public is no longer solely the job of professional communicators, but rather a skill that all scholars should have.

In this course, students develop the capacity to solve increasingly challenging problems with greater independence. Students fill their science communication “toolbox,” learning how to engage a non-scientist audience. Students will learn to write concisely and accurately, translating dense scientific language into simpler concepts for the public. Students will complete writing assignments using a wide variety of platforms, including concise social media posts, letters to policy makers, press releases, blog posts, op-eds, and Wikipedia articles. They will produce a written communication strategy plan and reflect on their public engagement experience. Students will discuss good writing examples as part of successful science communication strategies and will constantly receive feedback from their peers and their instructors. Students will also demonstrate proficiency in oral communication platforms, as they will be introduced to video and radio podcast production.

After gaining basic skills with these communication platforms and tools, students will apply their skills to a topic of their own research interest on the island.



Cornell University



University of
New Hampshire

Students will actively participate in a local public science event (Rock talks) and learn how to start a science cafe on their own. By the end of this course, they will become more effective science communicators, and skills gained in this unique environment can be applied to any research field and are essential for every scientist.

Credit Hours: 3 (Cornell credits) and 4 (UNH credits)

Learning Goals and Objectives:

By the end of this course, students should be able to...

1. Evaluate potential media information sources using critical thinking skills and gain a deeper appreciation for how information is produced and consumed.
2. Use digital communication platforms and prepare information suitable for those platforms about scientific discoveries affecting the ocean and marine environments.
3. Collect information in the field by interviewing marine biologists, government regulatory agencies, and fishermen, and produce written articles, video, and voice podcasts.
4. Translate dense scientific information, including journal articles, into easily consumable content for the public and policymakers using oral and written communication skills.
5. Engage the public and policymakers in a scientific dialogue, and assess and organize public science events, similar to the Rock talks at Shoals.
6. Design a science communication strategy plan based on the research conducted at Shoals Marine Laboratory on marine ecology, fisheries management, and sustainable use of marine resources.
7. Fill their science communication “toolbox” and develop skills necessary for today’s education and tomorrow’s employment.

Course Materials:

1. Selected readings will be distributed before and during the class. These readings will include book chapters, peer-reviewed scientific papers, and secondary information, such as blog posts, journal articles, videos, and press releases.
2. You are expected to regularly peruse science news sites. Read what your colleagues post and be prepared to discuss in class, including scanning and responding to the class hashtag.
3. Most information will be collected by students who visit research projects on the island and consume and produce information.
4. While some recording tools will be available, all students should have a smartphone or standalone device capable of recording quality audio and video. Students are encouraged to bring their own tablets, laptops, cameras, and microphones to the island.

Assignments & Grading:

You will complete hands-on assignments throughout the course to gain applied science communication skills. You need to attend Rock talk presentations to observe how scientists engage with the audience. To complete the social media assignment, you need to use social media tools to communicate about your science café experience, other science events and research on the island. Make sure to use #ShoalsStories in your posts. You will choose from a broad range of communication platforms to engage with the public. You will complete a variety of written assignments, translating scientific information for the public. By the end of the course, you will be able to create a science communication strategy plan and implement it for your own research project, using the tools in your SciComm toolbox.

Digital assignments (25%): Students will learn about the modern digital platforms used in science communication. Students will give a short presentation on the platform of their choice and

use a variety of digital and social media platforms. Each student will also produce a radio and video podcast.

Scientific writing (55%): Students will learn how to write for non-scientists and translate scientific information for a lay audience. A broad variety of written assignments, including social media posts, press release, op-ed piece, a blog post, letter to policy makers, and a Wikipedia article will be written and a final science communication plan will be produced. A reflection on the public engagement experience will also be written. Students will discuss good writing examples for each item, and receive feedback.

Participation and public engagement (20%): Learning how to engage the public is an important skill for every scientist. Rock talks are science café style presentations about research on the island. Students will learn how to train scientists to become effective public speakers and will produce interactive TED talks. Success at Shoals requires a positive attitude and a willingness to accept changes in the schedule with grace. Island living demands respect for your fellow classmates, and residents on Appledore. Students are expected to actively participate in all facets of this course, and to display good citizenship while at Shoals. A 10% of your grade will be based on the faculty's subjective evaluation of your personal involvement in course activities.

| <u>Component</u> | <u>Percent of Grade</u> |
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| Presentation on digital communication platform | 5 |
| Press Release, blog post, Wikipedia, letter to policy makers | 35 |
| Video project | 10 |
| Radio podcast | 10 |
| Rock talk (science café) assignment | 10 |
| Written social media assignment | 10 |
| Written science communication strategy plan | 10 |
| Attendance and participation | 10 |
| Total: | 100% |

Expectations and Conduct:

Students are responsible for fully understanding all of the information presented in this syllabus. If there are any questions regarding this information, it is the student's responsibility to bring it to the instructor's attention. In addition, students are responsible for attending all activities associated with this course and completing all assignments. Students are responsible for asking questions anytime they need clarification (remember, there is no such thing as a bad question).

Every student is responsible for their own behavior – specifically in being respectful and collegial to other students and with instructors. Students are responsible for fully understanding and adhering all of the information presented in the *Appledore Island Handbook* (<https://www.shoalsmarinelaboratory.org/about/facilities-campus>)

1. *Personal Technology.* Use of digital devices will be essential in this class. Bring your laptop, tablet, smartphone or any other device that can record or edit audio and video.
2. *Computer Facilities.* The lab has a few desktop computers in the Loughton Library; please treat this shared facility with respect. Printers are available, but please limit printing to your FINAL document (if required).
3. *Transmission of Course Materials.* Students are not authorized to replicate, reproduce, copy or transmit lectures and course materials presented, or derivative materials including class notes, for sale or free distribution to others without written

- consent of the instructors who are the original source of the materials.
4. *Academic Integrity.* Any work submitted must be your own. Uncredited use of another person's words, data or images is considered plagiarism, a serious violation of the Code, whether the material comes from another student, a web site, or a published paper. Students must adhere to Cornell's and UNH's Policies for Academic Integrity, Honesty, and Plagiarism:
 - i. Cornell's policy: <http://cuinfo.cornell.edu/aic.cfm>
 - ii. UNH's policy: <https://catalog.unh.edu/srrr/academic-policies/academic-honesty/>
 5. *Disabilities & ADA Accommodation:* As Appledore Island is a remote location and any special arrangements need time and planning to be enacted, Shoals Marine Laboratory appreciates early notification for accommodation requests. Students with disabilities requesting accommodations must contact the appropriate disabilities services office:
 - i. Cornell and high school students: <https://sds.cornell.edu/forms>
 - ii. UNH and all other college students: <https://www.unh.edu/studentaccessibility/students-0>
 6. *Mental Health:* Shoals Marine Laboratory cares about you and your well-being. If you experience unusual personal or academic stress during the course or need to talk with someone about a personal problem, seek support from your instructors as soon as possible. In addition, any SML staff is available for consultation 24/7 and are committed to making students feel safe, comfortable, welcome, and included at all times on Appledore Island. Find staff in the office on the second floor of Hamilton Hall between 8am-7pm or knock on the door of Bartels House after hours.

Help us promote an inclusive environment:

BioSM 3500 is committed to encouraging diversity, inclusivity, and equity, and we urge our students to practice the same habits. Since this course is a collaborative learning environment featuring a diverse group of people, we encourage all of you to engage thoughtfully and professionally, be generous in listening to each other, and cherish the diversity of thoughts and ideas. We hope to create an online learning environment where all feel welcomed, respected, supported, valued, and therefore, able to participate fully. Please feel free to let course instructor know if any circumstances arise that affect your ability to participate.

Course journey:

Get on board:

- Understand the scientific process
- Discuss the importance of science communication
- Get familiar with successful science communication strategies
- Inclusive science communication

Learn the ropes:

- Storytelling and interviewing skills
- Public engagement
- How to assess your audience and scientific evidence
- Social media and digital platforms in communication
- Video production and radio podcasts
- Communicate scientific information: how to write press release, blog post, Wikipedia entries

Hoist the sails and catch the wind:

- Make a science café presentation (interactive TED talk) about research on the island
- Create a video and a radio podcast about research on the island

- Edit the Wikipedia pages related to Shoals and marine research

Get your captain's license in Science communication

- Create your science communication strategy

Daily Schedule:

Note: Daily Schedule is subject to change based on weather, boat availability, tides, instructor's discretion, etc.

Week 1:

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| Class 1. | July 31 (M) |
| <i>Topic</i> | <i>In class activity</i> |
| <p><i>Get on board!</i></p> <p>Course Introduction; Why is science communication important?</p> | <p>Afternoon: Arrive to the island. Evening: Course requirements, introductions. What do you want to get out of the class? Discussion: Why is science communication important?</p> |
| <p><i>Assignments/Reading due by the beginning of this class:</i></p> <p>Introduce yourself in 60 seconds using Flipgrid. Join the Flipgrid group and click on the Introduction activity: https://flip.com/26e5b9af</p> <p>Complete this pre-course survey: https://cornell.ca1.qualtrics.com/jfe/form/SV_0w6XmmvZ1vv5mlM</p> <p>Bring something to class that inspired you to become a scientist/science communicator. It can be a rock, book, story, pet fish, etc.</p> | |

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| Class 2. | Aug 1 (Tu) |
| <i>Topic</i> | <i>In class activity</i> |
| <p><i>Get on board!</i></p> <p>Communication theory. Storytelling and messaging. Turn a science paper into a story. Engaging the public with scientific storytelling. Why do we need to communicate strategically?</p> | <p>Morning: What is the scientific process? How to talk about science to the public? The skills of scientific storytelling. Successful SciComm strategies. Afternoon: <i>Discovery walk:</i> Find a topic on the island to communicate about. Find information about the Rock talk speaker online. Prepare questions for the speaker. Evening: Attend Rock talk. Engage with the presenter and the audience.</p> |
| <p><i>Assignments/Reading due by the beginning of this class:</i></p> <p>Please read/listen to:</p> <ul style="list-style-type: none"> o https://aeon.co/essays/once-upon-a-time-how-stories-change-hearts-and-brains o https://www.npr.org/2020/01/13/795977814/your-brain-on-storytelling o https://www.discovermagazine.com/the-sciences/deconstructing-gawande-why-narrative-and-structure-are-important o https://www.frameworksinstitute.org/wp-content/uploads/2020/06/FRAJ8175-Communicating-Climate-Change-During-COVID19-Handout-200520-WEB.pdf <p>Optional reading and great resources on framing:</p> <ul style="list-style-type: none"> o https://www.frameworksinstitute.org/wp-content/uploads/2020/03/Change_Complete.pdf o https://www.theopennotebook.com/2019/10/08/storygram-ed-yongs-north-atlantic-right-whales-are-dying-in-horrific-ways/ | |

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| Class 3. | Aug 2 (W) |
| <i>Topic</i> | <i>In class activity</i> |
| <p><i>Get on board!</i></p> <p>Assess your audience. Expert blind spot. Diversity of audiences. Learn about your audience: PEW Research Center. Inclusive science communication.</p> | <p>Morning: Discussing last night's Rock talk. Audience assessment. Readings and discussion about inclusive science communication. Afternoon: <i>Discovery walk:</i> Collect information on the island. How does inclusive scicomm work at Shoals? Evening: Read this article written by the book editors: https://theconversation.com/science-communication-is-more-important-than-ever-here-are-3-lessons-from-around-the-world-on-</p> |

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| | <p>what-makes-it-work-147670, and after that access the book (the online version is free): https://press.anu.edu.au/publications/communicating-science .</p> <p>Choose ONE chapter of your liking (from chapters 3-40, any country in the book) and write a 400-500 word reflection using what you learned from that chapter.</p> <p>Answer the prompt: -What does inclusive science communication mean to you and what is unique about science communication in the country you just read about? How does it relate to what you see at Shoals?</p> |
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Assignments/Reading due by the beginning of this class:

Please read:

- Science Communication Demands a Critical Approach That Centers Inclusion, Equity, and Intersectionality <https://www.frontiersin.org/articles/10.3389/fcomm.2020.00002/full>
- What it means to 'know your audience': <https://theconversation.com/what-it-means-to-know-your-audience-when-communicating-about-science-111147>
- PEW research: where parents are: <https://www.pewresearch.org/internet/2015/07/16/parents-and-social-media/>
- The Language of Science: <https://medium.com/stem-and-culture-chronicle/the-languages-of-science-d5ca7cc832c9>

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| Class 4. | Aug 3 (Th) |
| <i>Topic</i> | <i>In class activity</i> |
| <p><i>Get on board!</i></p> <p>The importance of evidence and how to locate it. Media literacy: Evaluating evidence.</p> | <p>Morning: Information and scientific literacy training. Search engines. Primary and secondary information. Models of scicomm. How information is produced and consumed. Trust: should you be trusted? What is your digital footprint?</p> <p>Afternoon: <i>Discovery walk:</i> Collect information on the island. Conduct interviews.</p> <p>Evening: Collect and evaluate background information about your stories. Catch up on the readings.</p> |

Assignments/Reading due by the beginning of this class:

Please read/listen to:

- KJS Chapter 1: <https://ksjhandbook.org/how-science-works/>
- https://libguides.cmich.edu/web_research/home
- <https://www.npr.org/2021/05/13/996570855/disinformation-dozen-test-facebooks-twitters-ability-to-curb-vaccine-hoaxes>

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| Class 5. | Aug 4 (F) |
| <i>Topic</i> | <i>In class activity</i> |
| <p><i>Learn the ropes!</i></p> <p>From lab to public I.: Radio podcast; YouTube video</p> | <p>Morning: Learn about how radio podcasts & videos can tell a story concisely while keeping it entertaining. Listen to and analyze podcasts.</p> <p>Afternoon: Whale watching. Record a story.</p> <p>Evening: Watch <i>Chasing Coral</i> on Netflix. Analyze the storytelling.</p> |

Assignments/Reading due by the beginning of this class:

Please read/listen to:

- <https://assets.techsmith.com/Docs/ultimate-guide-to-easily-make-instructional-videos.pdf>
- <https://www.npr.org/2018/11/15/662070097/starting-your-podcast-a-guide-for-students>
- <https://www.wikihow.com/Create-a-Good-Animated-Film>

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| Class 6. | Aug 5 (Sat.) |
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| <i>Topic</i> | <i>In class activity</i> |
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| <i>Learn the ropes!</i> From lab to public II.: the decision-making process of using social media in science communication | Morning: Strategies to use social media to communicate science. Learn to manage social media. Choose a platform from the conversation prism to present on. Prepare your presentation. Afternoon: <i>Discovery walk:</i> Explore the islands. Use the selected social media platform to communicate about island activities. Evening: Work on your social media presentation. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |
| Please read: <ul style="list-style-type: none"> ○ KJS Chapter 12: https://ksjhandbook.org/social-media-reader-engagement/ ○ Social Media Fact Sheet: http://www.pewinternet.org/fact-sheet/social-media/ | |

| Class 7. | Aug 6 (Sun.) |
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| <i>Topic</i> | <i>In class activity</i> |
| <i>Learn the ropes!</i> From lab to public III.: Writing for the public. Turn a journal article into a press release and blog post. Pitch it to a journalist. Sciart: using art for scicomm. | Morning: Social media platform presentations. Learn how to write a press release and a blog post. How to get your research picked up by news outlets. Science visualization: infographics. Afternoon: <i>Discovery walk:</i> Explore research on the island. Collect materials for SciArt. Create SciArt project. Evening: Explore the work of the AIR: Artist in Residence: painting science to reach the audience. Talk to the artist. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |
| Please read/listen to: <ul style="list-style-type: none"> ○ The potential of comics in science communication: https://jcom.sissa.it/archive/17/01/JCOM_1701_2018_Y01 ○ Create your own digital comics: https://www.nytimes.com/2020/04/29/technology/personaltech/create-your-own-digital-comics-whether-you-can-draw-or-not.html | |

Week 2:

| Class 8. | Aug 7 (M) |
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| <i>Topic</i> | <i>In class activity</i> |
| <i>Learn the ropes!</i> From lab to public IV.: Writing for the public. Editing Wikipedia | Morning: Complete Wikipedia tutorial. Discussing the importance of Wikipedia as a social media platform in science communication. Afternoon: <i>Discovery walk:</i> Collecting information on the island for Wikipedia entries. Evening: Work on blog post, press release, Wikipedia project. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |

| Class 9. | Aug 8 (Tu) |
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| <i>Topic</i> | <i>In class activity</i> |
| <i>Hoist the sails!</i> Public engagement. Who is your audience? | Morning / Afternoon: How can you communicate your project to the public? Work on a Science Café style presentation (interactive TED talk). Research tonight's speaker. Prepare questions. Evening: Attend Rock talk. Engage with the presenter and the audience. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |

| Class 10. | Aug 9 (Wed) |
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| <i>Topic</i> | <i>In class activity</i> |
| <i>Hoist the sails!</i> | Morning: Discuss the Rock talk. Work on your press release, blog post, Wikipedia article. |

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| Public engagement. How can you improve it? | Afternoon: <i>Discover walk:</i> Collect information for your own science café presentation. Evening: Create an interactive TED talk style science café presentation of a research topic on the island. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |

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| Class 11. | Aug 10 (Th) |
| <i>Topic</i> | <i>In class activity</i> |
| <i>Catch the wind!</i> Tell your story! | Morning: Tell your story: Science Café with our coffee! Afternoon: Complete missing written, audio and video assignments. Evening: Work on the communication strategy. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |

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| Class 12. | Aug 11 (F) |
| <i>Topic</i> | <i>In class activity</i> |
| <i>Catch the wind!</i> Science Communication needs a strategy: putting it all together for your OWN research project. | Morning: Work on the communication strategy. Afternoon: Whale watching. Evening: Work on the communication strategy. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |

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| Class 13. | Aug 12 (Sat) |
| <i>Topic</i> | <i>In class activity</i> |
| <i>Catch the wind!</i> Science Communication needs a strategy: putting it all together for your OWN research project. | Morning/Afternoon: Finalize your communication strategy. Submit it in the afternoon. Evening: Read the following two articles on Canvas: " Academic Urban Legends " & " The Doctor behind the disputed COVID data ". Write a 400-500 word reflection using what you learned from the two articles, and based on your own experience. In the reflection answer the question: -Do these stories strengthen or weaken the public trust in the scientific method and in scientists? Upload the document to Canvas under Assignments. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |

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| Class 14. | Aug 13 (Sun) |
| <i>Topic</i> | <i>In class activity</i> |
| <i>Aye, aye Captain!</i> Did you learn how to tell your story effectively? Reflection on the science communication experience. | Morning: Discussion of student SciComm strategies. Afternoon: Roundtable discussion about successful science communication strategies. How will you use the knowledge you gained in this course? Evening: Post-course evaluations. |
| <i>Assignments/Reading due by the beginning of this class:</i> | |

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| Class 15. | Aug 14 (Mon) |
| <i>Topic</i> | <i>In class activity</i> |
| Class review and goodbye | Morning: official course evaluation, saying goodbye. Leaving island. |