ZOO 5890-4: The Art of Science Communication

Autumn 2017 Wednesdays, 9AM-noon Conference room 227 (2nd floor lab, Berry Conservation Center) Office hours: Immediately after class and by appointment

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Welcome!

We are excited to embark on this journey of thinking and communication with you! This course is predicated upon a widely held (though not unanimous) interpretation of the social contract scientists have with society - that is, that we as scientists have an obligation to engage with (not just talk at) the public. This won't be your typical academic experience. While you will do research, present ideas, and think carefully about how an audience will respond, you won't write standard academic research papers, and you won't be writing just to your course instructors.

Instead, ZOO 5890-4 will give you first-hand experience communicating inside and outside your discipline. Collaboration and engagement through written, oral, and digital communication is how we learn about, connect with, and inform change in, the world. Whether or not your ultimate goals are to work in an academics, or even research, communicating your ideas to people inside and outside of your field, and listening to people inside and outside of your field, is critical to professional and civic success. And so, in ZOO 5890-4 you will continuously create, interpret, and share your writing, research, and thinking about how your science impacts what we think, what we do, and how we do it. Throughout the course, you will push the boundaries of your creativity and critical thinking; assets for any professional, any citizen.

At the end of the semester, you'll have several major products that will demonstrate your communication skills - audio recording, a radio piece, a series of blog and social media posts, and an interactive multi-media presentation. These will be powerful portfolio pieces you can use to demonstrate to potential employers, collaborators, and funders just how you're able to integrate traditional and 21st-century communication skills to make your research accessible and interesting to a non-specialist audiences.

What we're going to work on together won't make for the easiest class you've been in. But that's okay. We believe that authentic learning requires that we take risks, make mistakes, and learn from our experiences. Learning also requires flexibility, repetition, and exploration on our way to mastering skills and knowledge. For this class, we will all strive to contribute to a positive and comfortable learning environment for one another. This includes respecting and actively engaging with the people, ideas, topics, and issues in our course.

We really can't wait to get started! Thank for collaborating with us as we all together use Z00 5890-4 to innovative and empower each other to enhance our science communication and engagement skills!

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DISABILITY STATEMENT

If you have a physical, learning, sensory or psychological disability and require accommodations, please let us know as soon as possible. You will need to register with, and provide documentation of your disability to University Disability Support Services (UDSS) in SEO, room 330, Knight Hall.

WRITING SUPPORT

University of Wyoming data indicates students who seek additional support for their coursework tend to do better. As instructors, we are here to support your writing efforts. We will be actively engaged in your work throughout the course, in class and in response to assignments. We will meet with you several times during meetings dedicated to discussing your work as you progress throughout the semester. We are also available for additional meetings during office hours or by appointment. We will provide regular feedback on your work, and we will bring in resources, suggest additional readings, etc., as we think you may find them useful. Additionally, the UW Writing Center (in Coe Library room 302) helps writers at any stage of the writing process. With a focus on teaching and learning, the Writing Center is not a "fix-it shop," but they help writers identify, articulate, and implement improvements and corrections to their writing. We strongly encourage you to take advantage of this free topnotch writing support. You can drop in to see if a consultant is available and/or schedule an appointment online at http://www.uwyo.edu/ctl/writing-center/.

THE BASICS

Course Websites:

- WyoCourses (https://uwyo.instructure.com/courses/503506); internal, for submitting assignments, etc.
- Public-facing site for practicing public/popular writing, image curation, etc. (http://engagelaramiescience.weebly.com/); see syllabus pages 4 for details.

Course Objectives:

- Learn about and practice essential skills of effective science communication on a range of platforms (social media, professional websites, blogging, general public outreach, interacting with the media, etc.)
- Learn about and practice best practices for how to engage and interact a range of audiences so your research can inspire and educate.

Expected Outcomes:

- Acquire skills and gain confidence in communicating your research to media outlets, public audiences, and potential/existing funders.
- Produce text, audio, and visual portfolios you can use to communicate with diverse audiences.

Anticipated Skill Takeaways:

- Interview/microphone experience
- Radio production experience
- Refining science message/story for specific target audiences
- Relating science message/story to seemingly unrelated topics
- Image curation & ethics of using images for scicomm

- "Branding" yourself and your science
- Social media experience (posting, planning, useful apps, science of scicomm for social media)
- Blog/website management and writing experience

Email and Staying in Touch

We hope you will think of us as willing to help if you're having any difficulty, so please don't hesitate to schedule an extended meeting with either or both of us if you have questions, concerns, or difficulties. We check email regularly weekdays from 9AM-5PM, and we are usually pretty quick to respond. Still, there are times when it may take a day or more to reply to your messages, so plan accordingly. Please check your e-mail daily so you can stay abreast of any ZOO 5980-4 course updates. We will use WyoCourses as needed to revise our schedule of activities, as well as to archive supplemental readings and materials. To that end, be sure to check all your settings within WyoCourses, and adjust them to ensure you receive updates (via announcements, assignment postings, etc.) from within the course system. After the first week of classes, all announcements will be distributed via WyoCourses, *not* via emails.

REQUIRED MATERIALS

All course texts will be provided. Most material will be posted on WyoCourses. Make sure to bring a writing utensil and your readings (printed and/or on a device) to class every day, as well as something to take notes on. You are welcome to bring your computer/tablet for class-related work. Always bring a printed current draft of your work-in-progress to class. We will use YOUR work every day for full-class activities, small-group workshops, and individual revision. *Most importantly, bring your enthusiasm, curiosity, and good will to class every day.*

COURSEWORK

Coursework will often build upon previous work, so that you can create final projects and prepare for presentations and other public-facing work. Because thinking and communicating go hand-in-hand, and because revision is an essential aspect of the composition and design process, most assignments will involve a combination of drafts, peer reviews, and instructor feedback. Demonstrated engagement in this process will be a key component of how your work is graded. In this course, you will focus on three projects, one for each third of the semester. You will receive rubrics and explanations of specific expectations, along with numerous brainstorming, research, drafting, and revision assignments, at appropriate stages of each project.

On-going Assignment Expectations (see "Major Assignments for more details")

- **Readings:** Readings will be provided electronically. No required texts need be purchased, though we will make suggestions for books you may find valuable as future references. Assigned readings will include a mix of peer-reviewed and popular writings, as well as multimedia (videos, podcasts, etc.). The subject matter of the readings will range widely; readings may be op-eds, research articles, examples of exemplary or problematic science communication, theory, tips or techniques, and so on. Files will be posted with the following naming style: YYYYMMDD_Author_Year_Title. Files will be linked to in relevant assignment and project pages for your convenience. These files will be located in three folders on WyoCourses:
 - Assigned Readings: https://uwyo.instructure.com/courses/503506/files/folder/Assigned%20readings
 - Supplemental Materials:

https://uwyo.instructure.com/courses/503506/files/folder/Supplemental%20-%20resources%20(not%2 0assigned required).

- In-class Materials: https://uwyo.instructure.com/courses/503506/pages/in-class-materials
- **Summary/Responses** (complete/incomplete): For most readings, you will write some kind of response. For some, you will be posed questions to which you will respond. For others, you will be asked to write a 100-word summary and 100-word response.
- **Public-facing course website** (complete/incomplete): one student per week, on a rotating basis will work with Bethann Garramon Merkle to curate and post content from the previous week's assignments. We will establish the schedule the second week of class.
- **Social media or blog** (complete/incomplete): weekly posts, minimum one post per week; we will provide prompts.

Major Assignments

1. Participation and Informal Assignments (15% of final grade, divided between Midterm and Final by 10% each): Every day, you will be responsible for engaging in class discussion as an informed, thoughtful, and respectful classmate. In order to get the most out of class, and to be a valuable addition to your classmates' experiences, please arrive in class having read and engaged with the material assigned. Similarly, because much in-class work will depend upon the writing, revision, research, and other project development work you do outside of class, please come to class with assigned writing, revision, and research work completed and printed. Informal assignments may include, but are not limited to: drafts, emails, designs, reflections, analyses, proposals, peer-feedback, and practice presentations.

2. Course Website/Blog and Social Media/Personal Blog (15% of final grade):

These assignments are meant to provide you with real-world experience curating a science-focused social media account and making editorial decisions about the content of a science outreach blog. Both are key aspects of the work of many publicly engaged scientists and professional science communicators.

- **Public-facing course website/blog** http://engagelaramiescience.weebly.com/: This website is intended to host regular updates from course activities, including projects in progress, social media posts, reflections, plans, struggles, celebrations, etc. You will always have the option to indicate that you do not want your material (submitted homework) to be shared publicly/published on the blog. Each week, one student in the course will meet with Bethann to curate material for the course blog/website.
- Social media/personal blog: You will start and/or post to a social media account (select from Twitter, Facebook, and Instagram) or a personal blog at least once per week throughout the semester. Your posts will focus on your work as a scientist, but may certainly reveal other facets of your personality and lifestyle. See #scientistselfie on Instagram, Twitter, and Facebook, for examples of how some scientists approach this balance. You will be shown apps and strategies for planning, scheduling, and strategically using social media as a science engagement mechanism. You will be provided with weekly prompts to help you explore the potential of your chosen platform. All posts in response to prompts will be graded as complete/incomplete. The expectation is that you will produce original content for these posts, meaning writing and images that are your creation. To put it another way, retweets, shares, likes, etc., do not qualify as original content. Of course, we encourage you to be more active than a single post per week, and

certainly, sharing others' content is a standard part of how you may do that. But, you will be assessed on your original content.

3. Science+Public Art Audio Script and Report (20% of final grade): You will identify a public art piece in Laramie's downtown or campus areas that you can connect to your research. No "low-hanging fruit" - we ask that you push yourself to make a rich and meaningful connection, not merely an obvious one. If you have concerns about how feasible this is,listen to some of the audio pieces hosted on this website, which were created by UW freshmen, sophomores, and juniors in the School of Energy Resources during the Spring 2017 semester.

Following research into the artwork you've chosen, you will create a 1- to 1.5-minute audio piece telling the story of this connection. Your final audio will be shared with the Laramie Public Art Coalition, for inclusion in their audio tours app.

The overarching objectives of this project are: 1) to connect your research to an aspect of Laramie that is deeply meaningful to many locals and visitors; 2) to practice connecting your research to a seemingly-unrelated topic; 3) to ensure you have an authentic public audience for your science communication efforts.

Details: the Audio Script and Report is the first major project of the course. You will first develop a report on a public art piece of your choice (from campus or downtown Laramie). Your report will include a) the background of the piece and b) the way(s) that you have chosen to explore how your science intersects with the piece. To create this report, you will conduct research and work with relevant local artists. This report will then be distilled into a brief (max. 1.5-min.) publicly accessible audio guide which will be hosted by the Laramie Public Art Coalition The report and audio guide will prepare you to address in-person questions on your chosen art piece during a class visit from Laramie Public Art Coalition director Meg Thompson. This visit will occur before your final drafts are due, so that you can take her comments into account when finalizing your material.

4. WyoBio Minute Radio Recording (10% of final grade): For this assignment you will write and record a 50-second radio piece that will be aired to 48 stations across Wyoming. This piece will combine some aspect of your research with Wyoming natural history. You will record the final piece with a producer of the Wyoming Cowboy News Network, after you have practiced with your instructors. Brian Barber will then schedule your piece to be aired in the following weeks. Your WyoBio Minute will also be posted to the Biodiversity Institute's webpage. There you will add additional written, and related images, as well as content that introduces you, your research and why your work matters to Wyomingites.

The overarching objectives of this project are: 1) to connect your research to an aspect of Wyoming that can resonate with a "non-public radio" audience; 2) to gain experience and exposure to radio-based science communication and production; 3) to ensure you have an authentic public audience for your science communication efforts.

5. Public-facing Communication/Engagement Project + Proposal and Final Report (40% of final grade)

Overview: For the remainder of the semester, you will dedicate time outside of class to research and develop a project proposal, implement that project, and write a report that details your process and reflects on your goals versus outcomes. You should expect to invest significant time into all phases of this project.

Objectives: 1) to provide an opportunity for you to identify a science communication/engagement skill and/or product that you want to pursue and bring to some level of completion by the end of the semester; 2) to familiarize yourself with the research literature on efficacy and science of science communication related to the skill/product you want to develop; 3) to practice planning, executing, and evaluating a science communication effort you are invested in; 4) to practice developing a science communication product/effort for a specific non-specialist audience. The big idea here is for you to succeed in developing something personally and professionally meaningful for you. So, of course, we will support you as best we can. This will, at a minimum, include connecting you to relevant expertise on campus and beyond, sharing our own expertise when it is relevant, and meeting with you outside of class to discuss project progress, challenges, etc.

Details: This project is the culminating project for the semester. You will create this project by selecting a skill and/or product you'd like to develop to communicate about your research. For example, you might draw a set of comics, produce a short video, design a video game, develop an interactive website, or create artwork or music, write lesson plans, or who knows what else! To ensure your project meets course expectations, is feasible within the time allotted, and is based upon the best available science and techniques for the type of product you propose to develop, you will create a proposal first. There will be a few scheduled check-in/update sessions in class, but the majority of the work for your project will be self-directed and done outside of class. During the last week of classes, you will present your project to the class and invited viewers from within and beyond the department. Ideally, you will select a target audience for your project which exists in Laramie, so that you can invite people from that audience to your final presentation.

Project Proposal Expectations: The proposal should include sections detailing 1) your concept; 2) identification and characterization of your target audience, including relevant background research; 3) background research (a meaningful but not necessarily exhaustive lit review) you have done that informs both the type of product you have chosen to develop and your methods for developing it; 4) the research concept/message (max 1-3) you intend to convey; 5) a work plan; 6) explanation of motivation for focusing on the project you have chosen. We do understand that you may propose a project that lives beyond this semester - in the sense that its final version may not be possible to complete this semester. We applaud and will happily support projects that go beyond the semester. However, we do expect that you will identify a component of the proposed project that you can

complete this semester.

Final Report Expectations: The final report should include sections detailing 1) your methods (including documentation of the work-in-progress) and work plan and anything that may have had to change (from your proposal); 2) reflection on and additional characterization of your target audience, based on your efforts to develop your project; 3) a detailed lit review including material from your proposal and additional material you found as you worked on the project; 4) the research you communicated; 5) a reflection/self-assessment of the end results.

Final Presentation Expectations: While the project you propose may be longer, these final presentations must take no longer than 5 minutes to watch, listen to, or interact with to a meaningful level. Each presentation will be followed by a 5-minute Q&A discussion with your audience (class members, colleagues from your departments, and the people you invited who are "representative" of your intended target audience). Following the individual presentations, we will plan on a panel-type discussion based on the interests of the audience. We will try to arrange for refreshments, and will certainly arrange for a bigger space than our regular classroom.:)

GRADING

This is a pass/fail course. We understand that life happens, and we are happy to be flexible in consideration of that. However, regular failure to complete assignments (informal or formal) and/or low investment/participation in class will be considered when assigning final grades. You are expected to turn in drafts of assignments on the dates they are due. Failure to do so can result in a reduction in your grade on that assignment and/or in your final course grade. In in extreme circumstances, failure to turn in assignments and/or participate in class can result in failure of the course.

If you anticipate needing a deadline extension, please make such arrangements at least one week prior to the due date.

Grading Breakdown:

- Attendance, Participation and Informal Assignments (15%)
- Course Website/Blog and Social Media/Personal Blog (15% of final grade)
- Science+Public Art Audio Script and Report (20% of final grade)
- WyoBio Minute Radio Recording (10% of final grade)
- Public-facing Communication/Engagement Project + Proposal and Final Report (40% of final grade; however, failure to complete the required elements of this project will result in failure of the course.)

TECHNOLOGY REQUIREMENTS AND RESTRICTIONS

Some research suggests that writing notes on paper helps you learn and study better. But if you have a need or preference to use a laptop, that's fine. If you do use a device, you might be asked to sit in a particular location in the room that we think is most suitable for the learning environment for other students in the class. Audio or video recording in class is prohibited unless prior authorization is granted. No devices are allowed during assessments unless specified otherwise.

You need consistent access to a working computer and printer for this course. In the event your computer or printer is not functioning, plan ahead so you are prepared to arrange for your own access to university equipment. If you wish to use e-versions of course readings, you may use personal technology in class, but do not allow yourself to be distracted by email or the Web during class time. Students whose excessive in-class use of electronic devices distracts themselves, other students, or the instructors, will receive lower participation grades, be requested to leave the classroom (which will result in an absence), etc., as the situation warrants.

ATTENDANCE/PARTICIPATION POLICY

Your participation in class exercises and discussion is critical to the quality of your experience in the course and the success of your fellow students. You should attend each class session prepared to actively participate in class discussions. If you anticipate being absent, please make arrangements with your instructors prior to your absence, in order to turn in assignments due, in-class work which takes place the day you are absent, etc. Unexcused absences are counted against your participation in the class. Reasons for anticipated absences must be cleared with an instructor before the absence. The University of Wyoming does not accept doctor's notes. Excuses for emergency absences must be reported to an instructor as soon as possible, but not more than one week after returning to class. We will grant excused absences according to the university policy. University-sponsored absences are cleared through the Office of Student Life. See the University Student Absence Policy (6-713) at http://www.uwyo.edu/generalcounsel/info.asp?p=3077. We reserve the right to lower your course grade for poor attendance or routinely late work.

ACADEMIC INTEGRITY

We consider participating regularly in discussions and staying up to date on readings and assignments an important aspect of academic integrity. In addition you must also follow UW's Honesty Code (UW Regulation 6-802), which prohibits acts of plagiarism. For the purposes of this course, we define plagiarism as presenting the writing, images, or other intellectual property of others as one's own without appropriate permission, attribution and/or citation. Just as you cite written sources, you are expected to attribute images with the same diligence. If you have questions about how to credit and/or cite sources and images in your work, please do not hesitate to seek my assistance.

PRE-POST SURVEY FOR SCICOMM KNOWLEDGE AND ATTITUDES

Along with Dr. Kristin Landreville (Communication and Journalism Department) and Dr. Jamie Crait (Dir., Wyoming Research Scholars Program; Biology Department), in the graduate and undergraduate courses we are teaching this academic year, we are tracking students' initial and final attitudes, capabilities, and motivations associated with several modes of public communication about science. To measure prior knowledge and attitudes, and to assess the efficacy of course design and implementation, we are conducting anonymous pre- and post-course surveys. Taking these surveys will be optional and will not affect your grade.

COURSE SCHEDULE

Everything in this schedule is subject to change. \odot Please be flexible; we will provide as much notice as possible if anything changes.

Course readings, assignments, and contents will be adjusted to your needs as we move through this together. Such changes may include guest speakers as relevant and possible.

Week/Day	Homework due via WyoCourses on Mondays at midnight.	In-class
1- 30 Aug Intro & Welcome!		 In-class: Writing sample and survey. Interview a partner. Draft interview Syllabus, including course blog and social media expectations Introduce public art assignment & start planning Homework & prep for next week
2 - 6 Sept Making Connections: Science + Public Art Audio	 Due: Readings (read in the following order): National Academy of Sciences report re science communication (pages 11-49) Optional, will be discussed in class: Science communication as political communication (Scheufele 2014); Finding your place on the science – advocacy continuum (Donner 2014) Written response as detailed on assignment page (see WyoCourses) 2-3 questions you can bring up in discussion with Dr. Kristen Landreville 	In-class: • SciArt mini-lecture • Working with the Laramie Mural Project brochure • Homework & prep for next week
3 - 13 Sept Making Connections: Science +	 Due: Readings: "Public Art: Project vs. Process" Definitions of public art from Association for Public Art, 	 In-class: Peer reviews Discussion with Meg Thompson of Laramie Public Art Coalition Target audiences etc.

Public Art Audio	Forecast Public Art, and Americans for the Arts Laramie Public Art Coalition website Written response as outlined on WyoCourses re your thoughts on public art/public science Social media post Public Art piece selection: Select 2 public art pieces. For each, draft 1- to 3-page documents that includes background on the piece, background of the research you're connecting, and the connection you have in mind. Include a photo of the piece, and a photo/image from your research. Come to class prepared to discuss these ideas.	 Summarize your art-science connections Write a personal letter about your project Homework & prep for next week
4 - 20 Sept Science of SciComm	 Written and recorded first drafts of your audio Review reading assignments from first week for refresher in prep for discussion w/ Dr. Kristen Landreville 	 In-class: Science of scicomm with Dr. Kristen Landreville Discussion of how best to organize the rest of the course to maximize student gains in skills/tangible products
5 - 27 Sept Planning for Sharing Science on Social Media	 Readings on social media planning, how scientists use social media, what kind of audiences can be reached via social media, etc. Scientists on Social Media: Planning Worksheet Recorded second draft of your 	 In-class: Discussion re course plan for the rest of the semester. Social media experiences, ideas, and concerns + goals so far in this class. Planning social media Introduction to HootSuite Discussion of course website/blog Revise audio guides

	audio	Homework & prep for next week
6 - 4 Oct WyoBio Minute	 *Bring headphones to class today.* Record third (possibly final) draft of your audio. Submit draft of scicomm project proposal. See details in assignment page on WyoCourses. **Sometime before next class (i.e., between 10/4 and 10/11), you should schedule a meeting with Bethann and Brian to discuss/finalize your project proposal.** 	 In-class: Introduce your project and work plan Introduction to WyoBioMinute List ten aspects of Wyoming natural history that connects to your research Write and record first drafts Peer review References on "writing for the radio" - watch/read/listen, then report to the class Listen to WyoBio Minute Revise & re-record Homework & prep for next week
7 - 11 Oct WyoBio Minute & Visualizing SciComm: Image selection	 Due: WyoBio Minute Record on phone or computer and submit to WyoCourses along with copy transcript Submit three images and a caption for each that captures the point of your <i>Minute</i> Listen to all of your peer's <i>minutes</i> and critique each one using the peer evaluations on Wyo Courses Peers vote, via Wyo Courses on the best image for each <i>Minute</i> 2. Readings on ethical use of images for science communication and education Start with the link below, and read through the series. Come to class with notes re questions/ideas to discuss. 	 In-class: Project updates Revise Minutes based on peer feedback. Record in class. Write additional content for WyoBio Minute website (connects your recording to your research) Image selection discussion Discussion re use of images for science communication Homework & prep for next week

8 - 18 Oct Scientists and the Media	 Readings on scientists interacting with the media + response to questions Prep questions for panel; 1-3 questions for each panelist 	 In-class: Project updates Panel on interacting with the media. Will include 1) UWyo Press office (9:30-10:30), and 2) a grad student with media experience and a former journalist now doing scicomm at UW (10:30-11:30) Homework & prep for next week
9 - 25 Oct Scientists and the Media	 Readings on media interacting with scientists + response to questions Research local and regional reporters who might be interested in your research. Draft a pitch to one of these reporters. Come to class prepared to discuss pitches with media panel. 	 In-class: Project updates Panel of journalists which include Eve Newman from the <i>Laramie</i> <i>Boomerang</i>, Emilene Ostlind (Haub School, <i>Western Confluence</i> editor, experience writing for <i>High Country News</i>) AND MAYBE Wyoming Public Radio, and a local AM radio station Homework & prep for next week
10 - 1 Nov	 Substantive progress on your individual scicomm project Report on work-in-progress (use format for final report); likely 3+ pages. Readings on visual science communication Worksheet re "shot list" for communicating your research ** 	 In-class: Project updates 9-11 AM: Class led by Brandon Gellis (UWyo Visual Arts faculty; specialty is in graphic design and science visualization using art techniques), along with Sierra LAST NAME (BI graphic design intern) Homework & prep for next week
11 - 8 Nov	Due: ● Follow-up from Brandon and prep for BI interns & CAVE, details TBA	 In-class: Project updates Figure critique session with Brandon Gellis & BI interns "Field trip" to the CAVE

		Homework & prep for next week
12 -15 Nov	 Outreach/invitation plan for final presentations Additional TBA if needed/relevant 	 In-class: TBA - possible guest speaker (neuroscience who does science museum exhibit design) Homework & prep for next week
13 -22 Nov	 Prototype of your individual scicomm project Report on work-in-progress (use format for final report); likely 3+ pages. 	Thanksgiving Break - no class Use this time to work on your individual projects.
14 - 29 Nov	Due: • Presentation draft	In-class: • Practice presentations • Homework & prep for next week
15 - 6 Dec Wrap-up	 Due: Final presentation Final report	 In-class: Final presentations on individual projects (Presentations will be open to the public.) Post-course survey Please provide your contact info for the 6-month survey. It's shorter, promise! :)
16 - 13 Dec	May or may not have class during finals week. Depends on how schedule, and your work, develops over the course of the semester.	