This course combines intensive classroom learning with hands on lab sessions. All sessions will be in Room 2024 in the Samuel Trask Dana Building, School for Environment and Sustainability. Based on results from a pilot seminar in winter 2017, and an experimental course in curricular co-creation in Fall 2018, it blends theory and practice regarding digital media, science, and environmental practice.

**Course overview:** The last U.S. presidential election drove home wider acceptance among scientific communities that “media and social media matter” to outcomes in formal political, technical and policy arenas. Further, many scientists and social scientists were already and have since felt frustrated that their work finds such narrow audiences, while popular media shapes public debates and opinions around global health, environmental systems, and social change.

This course will provide students with an overview of the complex interactions between media and science. We will survey a range of digital media sources, methods and applications as well as hands-on experience producing media to complement the articles and research reports that summarize our academic work. We will focus less on social media and more on actual in depth digital media renderings of scientific processes and findings. We will consider alternative narrative approaches and best practices with respect to story arc, visual appeal and nonverbal messaging, and tracking of uptake and impact. We will also consider social theories of digital media consumption, production, and circulation, and write/think about the relationships between the complexity of scientific practice, the simplicity of compelling stories, and the social inequality embedded in expert in knowledge (often glorified in filmed and televised content, on the one hand, but increasingly also vilified in some media sources). Finally, we will master basic production processes and skills that will constitute useful knowledge for careers in a wide range of organizations, public or private.

Class meetings will involve lectures by the instructor, guest speakers, group activities and screenings. During lab sessions, students will work with one another, the instructor, and a working journalist to make either a short film, podcast, or other final deliverable.

**Course Objectives:** we seek to make SEAS a community of engaged experts with powerful digital communication and media analysis skills that can shape our research design and data analysis, as well as extending the reach of scientific results.

1) Reading, discussion and writing about critical science communication theories from sociology, the history of science, and media studies.

2) Review of recent cases that illustrate why scientists NEED to be able to master various forms of media about their work, and how such mastery can be most effective

3) Practicing skills and tools for making better media products, but also for making better use of media outlets, both individually and collaboratively.

**Specific Skills:** note that student re-enrolling from the previous semester’s course “Frontiers in Environmental Justice” who have been through pitch and treatment processes will be peer coaches to students unfamiliar with the process.
Framing and Storyboarding for a strong arc or alternative structure that captures audience attention.

Writing a Treatment relating the framing to evidence and audience

Pitching projects to leverage resources and/or obtain feedback

Rehearsing tips for smooth and natural speaking on camera or mic

Interview methods; on Being interviewed

Writing online: dos and do nots

Working communities; dialogue, building real collaboration

Multimedia Production tools...how to shoot/record, edit content, and/or augment text with video, 3D images, storymapping, or other options

Dissemination...how to use social media to ensure your work gets an audience or audiences; your own image in the media

Assessment and Grades:
1. Three written pieces (10 percent each for 30 percent): two written responses to readings (the first two) and a third that leverages readings in a short “letter to the editor” of a news outlet like “The Conversation” that critically analyzes and outlines the importance of digital media for an issue of scientific concern.

2. A short verbal pitch toward support for your media product

3. A short (under five pages for 20 percent) treatment for an individual or collaborative media project (short or feature film, podcast, web based resources on a given scientific topic). Group feedback will shape later iterations in lab.

4. Participation by leading lab at least one week, opening your project to review. Projects can range from early stage “rough cut” screenings and critiques to “final cut” stage.

5. A final project (30 percent, with a fraction for participation) standalone or for Masters Project, Thesis, or future SEAS course module.

Further Resources:
All students are encouraged to make use of the UM Sweetland Writing Center to improve their writing capabilities during this and other courses, https://lsa.umich.edu/sweetland

Askwith Media Library Curation offer rich lists of available media content by field, and can help students to find and screen relevant media on a given topic (organic agriculture, animal rights, etc.) We may hold some labs in their classroom on the 4th floor of Shapiro library, so as to be near editing and production equipment in the library.

It’s Hot in Here, a student run digital media platform in existence since 2008, hosts new content shows on WCBN FM Ann Arbor every Friday at noon. Students in this class are encouraged to attend in studio, and can earn extra credit by being involved in either the live broadcast (engineering booth or production A studio), editing of the audio files, writing/editing the blogcast that is posted with the MP3, subsequently, or promoting the show on social media, linking it to other relevant resources/stories.

Duderstadt Center on North Campus, contains many workstations with software required for production; some lab days will be work sessions at “The Dude” with peer educators from the IH/lH radio team and/or the Michigan Sustainability Cases team, whose Media Director, Ed Waisanen, is a SEAS alumni who has designed great learning tools for beginning media producers.
Leana Hosea, a former Knight Wallace Fellow here at UM< will be the instructional specialist associated with this course. She has extensive audio, print, and visual media experience as a professional journalist at BBC London. She built a great deal of rapport with many of our students, through her generous consulting on Michigan Sustainability Cases and her own film, Water Protectors, which connects activists from Flint, Michigan and Navaho sites for water quality monitoring, information exchange and education.

**Expectations:** This is a graduate level course geared toward students in the natural and social sciences who are interested in professional or research careers in environmental sustainability. However, advanced undergraduates can join with instructor permission. The course will entail considerable reading, writing, and hands-on work with audio and video editing programs. Each student is expected to complete reading and lab assignments involving the analysis and interpretation of media sources, write three short papers and complete a final project. Some students (notably those from last semester’s class) will be attending lab only, and registering for a directed research course with Professor Hardin.

**Learning outcomes:** Upon completion of this course, students will be able to:
1. Explain the importance of digital media and communication to environmental outcomes, using specific examples
2. Describe how digital media can be part of a scientific project either upstream (for instance, for data collection or research designs?) or downstream (should the findings from research be disseminated through digital media? If so, what kind and why?)
3. Use software programs to create high quality digital media deliverables such as shorts or podcasts (at least one of: Audacity, Adobe’s Audition, Imovie, Finalcut pro)
4. Ensure that media outputs feature key attributes for accessibility by a wide range of users (such as transcripts for the hard of hearing; font sizes accessible to the vision impaired, and more)
4. Interpret the results of listener/viewer analysis to identify digital media that are more and less compelling to different audiences.

**Assessment Summary:** Progress toward learning outcomes will be assessed through evaluation of the following.

30% Writing assignments (3 @ 10 points each; iterative toward finished op ed)
20% Pitch for final project (elevator speech; how to find resources)
30% Treatment for final project (plan for handling material and making arguments)
30% Final project (either audio or visual)

*One point will be deducted on an assignment each day an assignment is submitted late without approval from instructor, when assignments do not confirm to instructions, and when assignments contain major spelling or grammatical errors or are otherwise poorly written.

**Class participation:** Students are expected to participate actively in class discussions of readings and with guest speakers. Students are expected to attend every class unless arranged ahead of time. In previous courses participation has not been a problem given the “workshop” dynamic of feedback and collaboration on one another’s work.

**Grading scheme:** Grading scheme: A=90-100, B=80-89, C=70-79, D=60-69, F=<60

**Accommodations for students with disabilities:** Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for
contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately.

**Academic Honesty:** Students are expected to be honest and ethical in their academic work. In this course that also means respecting fair use practices, copyright and other digital media restrictions. Further, students working on Its Hot in Here will find themselves attaining knowledge of FCC broadcasting regulations. For more information about academic integrity and the University’s procedures in this area please refer to the Student Conduct web site.

**Schedule of Readings and Assignments:**

**Week 1 January 3 Digital Media Equity Issues—who is your audience? Who might it become? Who is excluded?**

Weds Jan 3: Introduction to the course and readings to prepare for lab on Friday, where we will consider Equity, Access and Social Difference in Digital Media production and consumption.

Generational: [https://www.newyorker.com/magazine/2017/12/04/where-millennials-come-from](https://www.newyorker.com/magazine/2017/12/04/where-millennials-come-from)

Geographical: [https://www.brookings.edu/blog/techtank/2016/07/18/rural-and-urban-america-divided-by-broadband-access/](https://www.brookings.edu/blog/techtank/2016/07/18/rural-and-urban-america-divided-by-broadband-access/)


Lab January 5th: The Starting Gate. Come to class prepared to frame your individual and professional experiences with media, screen a short audio or video clip of your personal favorite environmental media product of all time, and write out a rough draft of a target project goal for the class.

**Week 2 Fundaments of Effective Communication—of Stats, Stories and Social Causes**

Monday Jan 8: Listen to this [podcast with scholar Paul Slovic](http://www.paulslovic.com/podcasts/), read his article, below.


Friday Jan 12: Lab—Mastering the Interview. PLEASE BRING a cell phone and headset with Mic if you have one, to class. A few extras will be provided. We will review best practices methods and tech for recording interviews as both data collection and science communication. We will review planning for field interviews, but also for produced
interviews, including sound quality, backdrop, consultation with guests, etc. We will talk about these modes, and how to manage when the two converge in a “breaking news” moment for a given topic or site. We will listen to three different interview styles then conduct audio recording exercises in teams of two, working with cell phones, earbuds w/mics as recording devices and uploading short interviews. We will focus Improvisation and Scientific Translation skills.

**Week 3: Media in Field Science: From Colonial Collections to Behavioral Ecology**

**Monday Jan 15:** Lecture and discussion on the emergence of photographic and film technology; impacts on ecological field science, biological anthropology, cultures of scientific expeditions. Using the New Yorker article on cultures of marine expeditions in 1940s.

Read: Donna Haraway, “Teddy Bear Patriarchy” and chapter on Clarence Ray Carpenter from Primate Visions, Gregg Mitman’s Reel Nature (Chapters 1 and 3) and a short extract from Tim Mitchell’s “Colonizing Egypt” about the dominating gaze.

**Weds. Jan 17:** Clips from lecture will include images from from “Champagne Safari” a documentary about Henry Bedaux, and from “The Extraordinary Passage of the Great White Hunter” and “Donna Haraway Reads National Geographic.” Discussions of the impact of recording and management of images and sound on the study of and participation in field systems, as that has changed over time.

**Lab Jan 19:** from Collection (Taxonomies) to Capture (Complex Interactions) with possible guests from Museum Studies. Each student will offer “specimens” of objects related to their interests, and discuss these with the class. This kind of freeze frame approach to isolating objects, or moments, is an important exercise for powerful communication, but also helps us understand the complex relationship between film and scientific observation, as well as science communication. How might you then set those objects or interactions in motion, and convey their relationships over time?

**Week 4: The paradox of story arc amidst dismantled master narratives**

**Monday Jan 22:** Reading and videos from Stuart Hall, Screening and discussion of clips from Donna Haraway’s “Reading National Geographic” Review the “Honey Badger” youtube phenomenon and read **Weds Jan 24:** Shobita Paraswani work on Indian Science Communication and Policy legacies in the wake of British Colonialism we will read Chapters 1, 2, and the last chapter.

**Weds Jan 24:** [http://transom.org/2013/my-kingdom-for-some-structure/](http://transom.org/2013/my-kingdom-for-some-structure/)

The latter link considers and sketches distinct story arcs or formulas for some of the most popular podcasts (radiolab, this American life, 99% invisible, criminal) what do we need to consider about narrative or underlying cognitive structure of our science communication? What are the down sides of developing too totalizing a “master narrative” as voice over or narration? What is the difference between tone (honey badger) and structure (transom) in addressing these concerns?

**Lab Jan 26:** Story Arc exercise. Building from your Pitch, what are basic concerns in any media production process about story arc, key themes, “message,” suspense, forces of good and evil, existing consensus or conventional wisdom; positioning yourself in relation to that? Each student will work up a “cocktail napkin” version of their media production
project (following the transom reading) as an underlying structure from which to move through the development of a treatment. In so doing they will also map existing dominant narratives and concerns.

**Week 5: Privacy, Reputation and Identity Online**

*Monday Jan 29:* All students should register for the UM Teach Out on “Privacy, Reputation and Identity online” Available at the UM Teach Out site which will point you to Coursera where you will register for Free without a Certificate.

*Weds: Jan 31:* Continue Online course but we will also have classroom discussion “From Teach In to Teach out: Public Education tools for Social Change.”

**Lab Friday Feb 2: Student Pitches** Students will do “lightening talk” pitches to one another and to selected guests including alumnae from our school currently working in media locally. Audience members and students will use a simple rubric to evaluate one another and offer insights toward a final project (preferably one that will relate to/enrich an ongoing masters project, thesis, practicum or sustainability case). Emphasis will be both on developing presentational skills, and fundamental ideas.

**Note:** Treatment drafts will be due on the following week for peer review and instructor comment.

**Week 6: Effective Campaigns and the Politics of Evidence**

*Monday Feb 5:* Discussion will focus on how and when environmental advocacy simplifies complex situations. We will be guided by Tania Li’s article “Engaging Simplifications” and Paul Richards and Jane Guyer’s article on “Crisis Narratives” in environmentalist discourse about biodiversity in Africa. We will consider situations when media directly influences what counts as “evidence” or even what counts as a standing judicial outcome.

**Wednesday Feb 7:** Homework: If you have not done so already, listen to two hours of the following: [https://serialpodcast.org/season-one](https://serialpodcast.org/season-one).

**Lab Friday Feb 9:** Screening and discussion of effective campaign shorts, such as the Greenpeace short “Everything is Not Awesome” video, targeting Lego for its use of Petrochemical Products in its Toys, and obtaining overnight after YouTube. Each student will be encouraged to post on slack one other example of successful shorts that empirically impacted supply chains, strategy, consumer behavior, or other factors, with a short discussion of the short from the vantage point of tone, story arc, audience, production values, etc.

**Week 7: Developing your Treatment**

*Monday Feb 12:* [https://gideonsway.wordpress.com/2010/03/09/treatments-vs-scriptments/](https://gideonsway.wordpress.com/2010/03/09/treatments-vs-scriptments/) what are the differences between a treatment and a script for audio or visual production? What are the advantages of developing a treatment? How does collaboration figure? Post Treatments by the end of the day of class for review and discussion before lab.

*Weds Feb 14:* Happy Valentine’s Day. We will revisit the question of environmental media we LOVE given our new knowledge, and also review programs of peer institutions that interweave media production skills with concerns for sustainable development and environment. Example: [www.doklab.com](http://www.doklab.com) with whom I am collaborating in Ethiopia.
Lab: Getting From Pitch to Treatment draft treatment feedback in small groups with instructor meeting one on one with each student meantime.

Week 8: From the Science of Communication to Science Communication


Lab Feb 23: Divide into small groups to review and assess the organizational approaches to “science communication.”

1) AAS approaches to incorporating journalists in scientific meetings.
2) Doctoral Residency in Science Communication fellowship sponsored by the United States Geological Survey Northwest Climate Science Center (USGS NW CSC) and the McCall Outdoor Science School (MOSS), a program of the University of Idaho’s College of Natural Resources (UI-CNR).
3) [http://comscicon.com/](http://comscicon.com/) Annual conference on Science Communication at Harvard, highly competitive for graduate students only
4) [http://altmetrics.org/manifesto/](http://altmetrics.org/manifesto/)
5) [http://sciencecommunication.info/](http://sciencecommunication.info/)
6) [http://scicom.ucsc.edu/](http://scicom.ucsc.edu/)
7) [http://www.imperial.ac.uk/science-communication-unit](http://www.imperial.ac.uk/science-communication-unit)

HAPPY SPRING BREAK!

Week 9: Beyond the Deficit Model of science “outreach”

Monday March 5 and Weds March 7: What is meant by dialogic media influence, and moves beyond unidirectional models? Fundamental work by sociologist Brian Wynne.

[http://pus.sagepub.com/content/2/4/321.abstract](http://pus.sagepub.com/content/2/4/321.abstract)

[http://pus.sagepub.com/content/1/3/281.short?rss=1&ssource=mfc](http://pus.sagepub.com/content/1/3/281.short?rss=1&ssource=mfc)

Lab Friday March 9: Audience ID exercises; Audience interaction brainstorming; small group feedback on trailers, rough cuts, beta sites, etc. and/or time in Duderstadt suites for editing work

Week 10: Challenges in communicating uncertainty and complexity.

Monday March 12 and Weds March 14: Naomi Oreskes 2014 TED talk: "Why We Should Trust Scientists" Film screening *Merchants of Doubt* and media coverage of her:


Lab Friday March 16 Heading Science Skeptics off at the Pass: Workshop on communication skills for dealing with science skeptics (special Guests from Michigan Radio, UM communications, others)
Week 11: From “capture” to “conversations” in Scientific Media
Monday March 19: Guest session with Leana Hosea and some her partners from Flint MI for a screening of a Rough cut of “Water Protectors” to foreground how to our production processes relate to an effort to avoid extractive “capture” dynamics and instead allow people to tell their stories and/or define what questions are relevant on a given issue?

Wednesday March 21: Incorporating Conversation into your treatment/production. Workshp with Todd Ziegler, Justin Schott, and others involved in environmental advocacy in Detroit and beyond.

Lab Weds. March 23: small group feedback on rough project cuts, drafts, files, sites, etc. Visit day for client/community partners to come and discuss production processes.

Week 12: Editing Your Treatment; Moving into Production
Work week with tutorials from MSC, IHIH and Michigan Radio media staff

Weeks 13: Medias of the Future--Promoting your media product
Class Monday April 2: intro to Analytics...which of your products or outputs has impact? How do you know? Guest instructor from UM media, as well as student and staff social media leaders like MSC staff, Hot in Here Radio staff, and the Science Writers Campus Group
   1. “Going Viral”: Social Media tips and pitfalls (“trolling,” managing comments)
   2. Accountability issues in the era of “fake news.”
   3. Accessibility issues; how to manage your portfolio?
   4. Analytics: knowing your impact (readings on ResearchGate, Academia.edu, and other science related platforms)

Class Weds April 4: Listen to the podcast “Television is the Oak Tree” from Gimlet media; discussion of print, television, and radio content transformations in recent decades, and forecasting of likely future media trends. Invited guest lecture by Mark Lindquist on spatial analytics, 3D and immersive medias.

Lab Friday April 6: Final presentation trouble shooting sessions, time for experimenting with new approaches across the SEAS media and spatial analysis labs.

Week 14: Final Project Presentations, possibly with guest audience members from SEAS community, policy, screen arts, school of information, and relevant local organizations, possibly at the Techarb project space or another downtown venue.