

## **Science in the Public Eye**

### **BIO 380 – Spring 2020**

**Instructor:** Prof. Dan Vahaba, PhD  
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**Meeting time:** 1:20 – 4:00 pm  
 Fridays  
 Sabin-Reed 224

**Office:** Sabin-Reed 434



**Student hours:** Tuesdays 4:00 – 5:00; Sabin-Reed 434  
 Thursdays 12:10 – 1:10; Sabin-Reed 331

I love talking with students and encourage you all to come early and often to student hours. ***I would be happy to see each one of you at least once during the semester***, so drop by even if you don't have a particular question. If you cannot attend student hours, let me know and we'll schedule a time outside of student hours:

- Make an appointment automatically by [clicking here](#), or
- Email: [dvahaba@smith.edu](mailto:dvahaba@smith.edu)

**Course Site:** [Moodle course site](#)

**Required texts:** All readings for this course will be made available on the course site.

### **What is *Science in the Public Eye*?**

This course introduces students to the fundamentals of science writing and communication for a range of public audiences through written, oral, and visual media. Students will become effective science communicators and learn the skills needed to translate complex information and articulate the relevance and need for science in general, and a research topic of their choice in particular. Additionally, students will attend local and digital science talks (technical and public-facing) to experience authentic public discourse experiences and assess elements of effective science communication.

### **What should you be able to do by the end of the semester?**

- Appreciate the value of science communication and your responsibility as a scientist (broadly defined) to be an articulate communicator.
- Describe and recognize elements of effective science communication.
- Apply these elements when to communicating about your research to diverse public audiences using varied communication forms.
- Iteratively assess and improve your science communication endeavors.

## What are the course policies & mechanics?

**Workload and time commitment expectations:** For every 4-credit class, [Smith expects students to spend 9 hours per week outside of class](#) on readings, research, and other assignments. I have been careful to develop assignments with these guidelines in mind (e.g., there is real work to be done this semester, but not too much, and not all at once).

**Participation:** Your active participation is necessary for effective learning in the class, as well as for the success of the course as a whole. In addition to attending all classes, you are expected to be engaged with class discussions and activities throughout the semester. We will decide as a class how student participation should be evaluated, and collaboratively design a grading rubric that considers the quality and effort of your engagement.

**Late work:** I understand that life happens: we all get sick; there are religious events; unfortunate things transpire (e.g. loss of a loved one). As long as you keep in contact with me, we can work out an arrangement and extensions can be granted on a case-by-case basis. However, in all other circumstances (i.e. just forgetting to turn something in), late papers, assignments, etc. will be marked down **5% per day**, including weekends. If you foresee needing an extension because of an emergency, come see me in person during my office hours or contact me by email as soon as possible.

**Accommodations:** I invite all students to come speak with me one-on-one to discuss how, together, we can best meet your learning needs. Any student requiring accommodations in order to complete assignments during and outside of class must be registered with the Office of Disability Services and provide documentation of the requested accommodations in advance of any deadline. Please contact Laura Rauscher, Disability Services Director or visit <https://www.smith.edu/about-smith/disability-services>.

**Academic Honesty:** During all portions of this course, students are expected to follow the Smith College Honor Code explicitly. In addition, some assignments will involve collaboration with other students, whereas others will be independent. You must always turn in your own work when instructed to do so. Any significant similarity between two students' assignments will be investigated as a possible breach of the Honor Code. Ask your professor if you are uncertain about the expectations for any assignment. For further details, please refer to the [Student Handbook](#).

## How will you and I evaluate your progress?

Assignment	Pts	%
Literature review	15	15%
3MT pitch	15	15%
Flipped science fair project	25	25%
Pop science article	15	15%
Student-led discussion	15	15%
Reading reflections	10	10%
Class participation	5	5%
<b>Total points available</b>	<b>100</b>	<b>100%</b>

### Grading scheme

93 – 100	A	80 – 82	B-	67 – 69	D+
90 – 92	A-	77 – 79	C+	63 – 66	D
87 – 89	B+	73 – 76	C	60 – 62	D-
83 – 86	B	70 – 72	C-	< 60	F

## What are the major assessments in this course?

Check the course site regularly for more detailed information for each assignment and resources.

**Literature review** (1000 – 1250 words): Students will write a thesis driven essay based on a literature review of their chosen topic.

**3 Minute Thesis pitch** (~300 – 450 words): Students will present a 3-minute pitch about their research topic, its importance, a potential approach or experiment, and why it deserves funding. The pitch should be targeted for convincing a general public audience in funding your research (think *Shark Tank* meets a NIH grant panel), similar in style to a [3-Minute Thesis](#). The pitch should emphasize the relevance, problem (what we know, what we don't, why it matters), and one area or approach to tackle this problem.

**Flipped science fair** (TBD): Students will develop a science presentation based on their semester topic for middle schoolers who will be visiting Smith's campus in April. The presentation will focus on communicating an interesting concept or finding within your research area with a young audience (11 – 14 years old). The "presentation" is broadly defined: it may be a poster, something interactive (e.g. a game), a science demonstration, or something else! The goal is that a middle schooler would be interested in your topic and learn something within their ~10 minute visit to your station.

**Pop science article** (600 – 800 words): Students will find a recent primary research article related to their research topic and translate it in the style of pop science article that might be found in a newspaper (e.g. *New York Times* Science section or an Ed Yong story in the *The Atlantic*)

**Student-led discussion:** A major component of this course will involve reading and evaluating articles on science communication, ranging from primary literature to popular press pieces. These readings will form the basis for our discussion of different science communication theories, concepts, and practices. Once during the semester, you and a partner (or a group of 3, if there are an odd number of students) will work as a team to lead a class discussion. More information will be provided, but the general procedure is:

- 1) Form a group of 2 (1 group of 3 possibly), and choose a topic and date.
- 2) Identify an article and get approval from Prof. Vahaba at least **1 week before** you're scheduled to present. Prof. Vahaba is more than happy to suggest articles too, just ask!
  - a. In addition to your article, students will meet in-person with Prof. Vahaba (or over email or Zoom), and briefly outline their planned class discussion.
- 3) Produce a product that will engage your classmates in the science communication topic and article you've chosen. The product may take the form of a Powerpoint presentation, a video, a group activity, or more than one thing – be creative!
- 4) Lead a class discussion (~1 hour of class time).

**Reflection notebook** (250 words, max.): If you are not presenting an article to the class, you will briefly respond to a set of questions about the readings that are being presented on. The goal of this assignment is to 1) help you improve your critical analysis of scientific research, and 2) practice writing on a regular basis, especially techniques and ideas we'll focus on in class.

Week	Day	Date	Discussion leader	Topic	Guest speaker(s)	Readings	RNs	Due
1	d1	1/31	Prof. Vahaba	<ul style="list-style-type: none"> <li>• Introductions to each other + the course</li> <li>• Semester topic</li> <li>• What is "science communication"?</li> </ul>		☑ Syllabus		<a href="#">First day survey</a>
2	d2	2/7	Prof. Vahaba	<ul style="list-style-type: none"> <li>• Elements of effective science communication</li> <li>• Literature review: how to find and read research articles</li> <li>• <b>**Bring your laptop to class or borrow one from the library**</b></li> <li>• Science fair assignment - ideas, brainstorming, and discussion</li> </ul>	<b>Deb Day</b> , STEM Outreach Coordinator (Smith College)  <b>Laura Lilienkamp '18</b> , Design Thinking (Smith College)	☑ Beery "Love Bites" ( <i>Darwin Awards</i> ) ☑ Yong "The Stump That Didn't Die" ( <i>The Atlantic</i> ) ☑ Sapolsky "Bugs in the Brain" ( <i>Sci Am</i> ) ☑ Bender "The U.S. West Coast Is Now So Acidic..." ( <i>VICE</i> )		<ul style="list-style-type: none"> <li>• Effective elements of sci comm from readings</li> <li>• <b>Literature review</b>: topic + outline</li> <li>• <b>Student-led discussion</b>: group + topic/dates preference survey filled out</li> <li>• <b>Flipped science fair</b>: bring a few ideas (topics, approaches, etc) you might pursue</li> </ul>
3	d3	2/14	Prof. Vahaba	<ul style="list-style-type: none"> <li>• Value of science communication</li> <li>• Communicating relevance + translation</li> <li>• Importance of basic + "oddball" science</li> </ul>		☑ Brennan, et al. "Time to step up..." ( <i>Anim Beh</i> ) ☑ Spector, et al. "Fundamental science..." ( <i>Sci Translational</i> ) ☑ Sen. Jeff Flake "Wastebook" (2017): read pg. 1-4, and <b>skim</b> some of the example "wasteful" studies	RN	<b>Literature review</b> : 500 words written
4	d4	2/21	Prof. Vahaba	Science as story: science storytelling	<b>Amy Ellis Nutt '77</b> , author, science journalist, and Lakes Writer-in-Residence (Smith College)	<b>Class discussion articles</b> : ☑ Katz "Against storytelling of scientific results" ( <i>Nature Methods</i> ) ☑ Martinez-Conde et al. "The Storytelling Brain" ( <i>J Neurosci</i> ) ☑ "Your Brain On Storytelling" ( <i>NPR</i> )	RN	<ul style="list-style-type: none"> <li>• <b>Literature review</b>: full write-up</li> <li>• Try to find or come up with <b>one</b> example of a "basic science" finding within your topic that's led to important tech, medicine, etc. (<i>optional</i>)</li> </ul>
5	d5	2/28	<b>Bri &amp; Esme</b>	Communicating with K-12 audiences	<b>Fred Venne</b> , Museum Educator (Beneski Natural History Museum, Amherst College)	☑ Amy Ellis Nutt "The Seekers - pt.4" ( <i>Star Ledger</i> ) ☑ <b>Class discussion article: TBD</b> ☑ <b>Article to read for guest speaker</b> : R. Bell "Teaching the Nature of Science"	RN	<ul style="list-style-type: none"> <li>• <b>3MT pitch</b>: rehearsal talk/script</li> <li>• <b>Flipped science fair</b>: proposal due</li> </ul>
6	d6	3/6	Jen Christiansen	Visual sci comm (infographics; illustrations; etc.)	<b>Jen Christiansen '95</b> , senior graphics editor ( <i>Scientific American</i> )	☑ <b>Class discussion article</b> : J. Christiansen "Visualizing Science: Illustration and Beyond" ( <i>Sci Am</i> )	RN	<b>Flipped science fair</b> : rough draft
7	d7	3/13	<b>Hannah &amp; Yacine</b>	Representation, inclusivity, and diversity in sci comm		<b>Discussion article: TBD</b>	RN	<b>3MT pitch</b> : final version of talk/script
8		3/20		<b>Spring recess - no class</b>				
9	d8	3/27	<b>Kady &amp; Kelley</b>	Communicating with politicians & policymakers	<b>Laura Hancock &amp; Adaeze Egwuatu</b> , 2019 AAAS CASE fellow & PhD candidates (UMass Amherst)	<b>Discussion article: TBD</b>	RN	<b>Flipped science fair</b> : revised version for in-class practice presentation (joined by Deborah Day)
10	d9	4/3	<b>Dana &amp; Eli</b>	Science engagement; engaging w/ communities; public trust in science		<b>Discussion article: TBD</b>	RN	<b>Flipped science fair</b> : final version
		4/4		Western Massachusetts Middle School Science & Engineering Fair				

Week	Day	Date	Discussion leader	Topic	Guest speaker(s)	Readings	RNs	Due
11	d10	4/10	<b>Kate &amp; Eseza</b>	Sci comm and social media (esp. Twitter)	<b>David Schiffman</b> , marine conservation biologist & science communication extraordinaire (Simon Fraser University)	Discussion article: <b>TBD</b>	<b>RN</b>	<b>Pop sci article:</b> identify article to write about
12	d11	4/17	<b>Courtney &amp; Lony</b>	Resistance to science; science denialism; "fake news" in science	<b>Jordan Taylor</b> , history (Smith College)	Discussion article: <b>TBD</b>	<b>RN</b>	
13	d12	4/24	Prof. Vahaba	Science communication as a career: career panel with sci comm professionals	<b>Diane Kelly, PhD; Laurie Sanders '88;</b> and <b>Katie Palmer</b>	Read career panelists' bios and explore their personal websites to learn more about them	<b>RN</b>	<b>Pop sci article:</b> draft
14	d13	5/1	Prof. Vahaba	Buffer day				<b>Pop sci article:</b> final version