

COMM 4240

Science Communication

Spring 2025



THE OHIO STATE
UNIVERSITY

General information

Instructor

Dominik Stecula, PhD

Meeting times

M & W – 9.35-10.55am

Office location

3105 Derby Hall

Classroom

Journalism Bldg 274

Email

stecula.3@osu.edu

Office hours

Wednesdays 2-4
or by appointment

Description

This course is a seminar focusing on the theory and practice of science communication to public audiences, designed for both communication majors and non-majors. Topics include how audiences understand and process science information, expert communication by scientists and policy-makers to public audiences, informal communication about science in museums and science centers, science journalism, the role of the mass media in shaping understanding and beliefs about science, edutainment and documentaries. We will spend time understanding misinformation, pseudoscience, and conspiracy theories, as well as strategies of fighting the pernicious effects of these phenomena. We will also focus heavily on the role that communication processes play in publicly controversial scientific issues such as Covid-19, global climate change, evolution/intelligent design, autism & vaccines, etc.

Class schedule

Week 1.

Day	Date	Topic	Readings and Assignments
Monday	January 6	Introductions	<ul style="list-style-type: none">- How to read an academic article- Re-reading is inefficient. Here are 8 tips for studying smarter.
Wednesday	January 8	Introduction to science communication	<ul style="list-style-type: none">- Maktoufi, R. (2021). From Sputnik To Twitter, The History Of Science Communication. <i>Science Friday</i>.

- [Ramdeholl, R. \(2023\). *Breaking Down Science Communication: What It Is and Why It Matters - The Average Scientist*.](#)
- Watch: [“Making Science Accessible and Engaging” from PBS](#)

Week 2.

Day	Date	Topic	Readings and Assignments
Monday	January 13	Process of communicating science	- Jamieson, K. H. (2017). <i>The Need for a Science of Science Communication: Communicating Science’s Values and Norms</i>. In K. H. Jamieson, D. M. Kahan, & D. A. Scheufele (Eds.), <i>The Oxford Handbook of the Science of Science Communication</i>. Oxford University Pre
Wednesday	January 15	Public understanding of science	- “What Americans know about science” from Pew Research Center

Week 3.

Day	Date	Topic	Readings and Assignments
Monday	January 20	NO CLASS MLK DAY	- No assigned content, but I recommend this video about MLK Day
Wednesday	January 22	Public understanding of science	- “How politics makes us stupid” from Vox - “There may be an antidote to politically motivated reasoning. And it’s wonderfully simple” from Vox

Week 4.

Day	Date	Topic	Readings and Assignments
Monday	January 27	Trust in science	<ul style="list-style-type: none">- “Public Trust in Scientists and Views on Their Role in Policymaking” from Pew Research Center- “The Business-School Scandal That Just Keeps Getting Bigger” from The Atlantic (you can also listen to it)
Wednesday	January 29	Anti-intellectualism	<ul style="list-style-type: none">- Motta, M. (2018). The Dynamics and Political Implications of Anti-Intellectualism in the United States. <i>American Politics Research</i>, 46(3), 465–498.- Watch: “The Dangerous Rise of Anti-Intellectualism” on YouTube- Test #1 due by the end of the day on Friday, Jan 31, 2025 on CarmenCanvas

Week 5.

Day	Date	Topic	Readings and Assignments
Monday	February 3	Politicization of science	<ul style="list-style-type: none">- Gauchat, G. (2012). Politicization of Science in the Public Sphere: A Study of Public Trust in the United States, 1974 to 2010. <i>American Sociological Review</i>, 77(2), 167–187.- Listen: “A brief history of politics and science” from Nature
Wednesday	February 5	Framing science	<ul style="list-style-type: none">- Nisbet, M. C., & Mooney, C. (2007). Framing Science. <i>Science</i>, 316(5821), 56–56.- Steciula, D. A., & Merkley, E. (2019). Framing Climate Change: Economics,

[Ideology, and Uncertainty in American News Media Content From 1988 to 2014. *Frontiers in Communication*, 4.](#)

Week 6.

Day	Date	Topic	Readings and Assignments
Monday	February 10	Science in the news	<ul style="list-style-type: none"> - <u>Schäfer, M. S. (2017). How Changing Media Structures Are Affecting Science News Coverage. In K. H. Jamieson, D. M. Kahan, & D. A. Scheufele (Eds.), <i>The Oxford Handbook of the Science of Science Communication</i>. Oxford University Press.</u> - Watch: “Scientific studies” from Last Week Tonight (segment starts at 9:50)
Wednesday	February 12	Science in the news	<ul style="list-style-type: none"> - <u>Merkley, E., & Stecula, D. A. (2018). Party Elites or Manufactured Doubt? The Informational Context of Climate Change Polarization. <i>Science Communication</i>, 40(2), 258–274.</u> - Research proposals due in class

Week 7.

Day	Date	Topic	Readings and Assignments
Monday	February 17	Science in entertainment media	<ul style="list-style-type: none"> - <u>Kirby, D. (2011). Scientific Expertise in Hollywood. In <i>Lab Coats in Hollywood: Science, Scientists, and Cinema</i>. MIT Press.</u> - Listen: “The Science Behind ‘Breaking Bad’” from NPR
Wednesday	February 19	Science journalism	<ul style="list-style-type: none"> - <u>Anderson, J., & Dudo, A. (2023). A View From the Trenches: Interviews With Journalists About Reporting</u>

[Science News. *Science Communication*, 45\(1\), 39–64.](#)

Week 8.

Day	Date	Topic	Readings and Assignments
Monday	February 24	Communicating risk and uncertainty	<ul style="list-style-type: none">- Krause, N. M., Freiling, I., & Scheufele, D. A. (2022). The “Infodemic” Infodemic: Toward a More Nuanced Understanding of Truth-Claims and the Need for (Not) Combatting Misinformation. <i>The ANNALS of the American Academy of Political and Social Science</i>, 70- “Every Decision Is A Risk. Every Risk Is A Decision” from FiveThirtyEight
Wednesday	February 26	Communicating risk and uncertainty	<ul style="list-style-type: none">- Watch: “Motorbikes, Terrorism, Heart Attacks, Sausages” TEDx talk by Professor David Spiegelhalter- Test #2 due by the end of the day on Friday, Feb 28, 2025 on CarmenCanvas

Week 9.

Day	Date	Topic	Readings and Assignments
Monday	March 3	Storytelling in science communication	<ul style="list-style-type: none">- Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. <i>Proceedings of the National Academy of Sciences</i>, 111(supplement 4), 13614–13620.
Wednesday	March 5	Storytelling in science communication	<ul style="list-style-type: none">- Martinez-Conde, S., & Macknik, S. L. (2017). Finding the plot in science storytelling in hopes of

[enhancing science communication.](#)
[Proceedings of the National Academy of Sciences, 114\(31\), 8127–8129.](#)

- [Listen: “Stochasticity” from RadioLab](#)
- Op-Ed due by the end of the day on Friday, Mar 7, 2025 on CarmenCanvas

Week 10. Spring break

Day	Date	Topic	Readings and Assignments
Monday	March 10	Spring break, no class	
Wednesday	March 12	Spring break, no class	

Week 11.

Day	Date	Topic	Readings and Assignments
Monday	March 17	Informal science education	- Cain, V., & Rader, K. A. (2017). Science Communication and Museums’ Changing Roles. In K. H. Jamieson, D. M. Kahan, & D. A. Scheufele (Eds.), The Oxford Handbook of the Science of Science Communication. Oxford University Press.
Wednesday	March 19	Informal science education	- COSI

Week 12.

Day	Date	Topic	Readings and Assignments
Monday	March 24	Pseudoscience	- Hecht, D. K. (2018). Pseudoscience and the Pursuit of Truth. In A. B. Kaufman & J. C. Kaufman (Eds.), Pseudoscience: The Conspiracy Against Science. The MIT Press.

Wednesday	March 26	Pseudoscience	<ul style="list-style-type: none"> - “The key to fighting pseudoscience isn’t mockery—it’s empathy” from ArsTechnica - Watch/Listen: “Pseudoscience, Conspiracy Theories, and Philosophy” from Robinson’s Podcast - Test #3 and Literature review due by the end of the day on Friday, Mar 28, 2025 on CarmenCanvas
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Week 13.

Day	Date	Topic	Readings and Assignments
Monday	March 31	Social media and influencers	<ul style="list-style-type: none"> - Stecula, D. A., Motta, M., Kuru, O., & Jamieson, K. H. (2022). The Great and Powerful Dr. Oz? Alternative Health Media Consumption and Vaccine Views in the United States. <i>Journal of Communication</i>, 72(3), 374–400. - BBC article “How food influencers affect what we eat” - The Atlantic article “The Wellness Women Are on the March”
Wednesday	April 2	Social media and influencers	<ul style="list-style-type: none"> - Hunter, P. (2020). The growth of social media in science. <i>EMBO Reports</i>, 21(5), e50550. - “Scientists become a source of hope and information on TikTok, Instagram” from Phys - COSI reflection due by the end of the day on Friday, Apr 4, 2025 on CarmenCanvas

Week 14.

Day	Date	Topic	Readings and Assignments
Monday	April 7	Misinformation and conspiracy theories	<ul style="list-style-type: none">- Scheufele, D. A., & Krause, N. M. (2019). Science audiences, misinformation, and fake news. <i>Proceedings of the National Academy of Sciences</i>, 116(16), 7662–7669.- Listen: “The Psychology of Conspiracy Theories” from Plain English with Derek Thompson
Wednesday	April 9	Misinformation and conspiracy theories	<ul style="list-style-type: none">- Pickup, M., Stecuta, D., & Linden, C. van der. (2022). Who Shares Conspiracy Theories and Other Misinformation about Covid-19 Online: Survey Evidence from Five Countries. <i>Journal of Quantitative Description: Digital Media</i>, 2.- Listen: “Is misinformation to blame for vaccine hesitancy?” from The News Literacy Project

Week 15.

Day	Date	Topic	Readings and Assignments
Monday	April 14	Misinformation correction	<ul style="list-style-type: none">- Roozenbeek, J., van der Linden, S., Goldberg, B., Rathje, S., & Lewandowsky, S. (2022). Psychological inoculation improves resilience against misinformation on social media. <i>Science Advances</i>, 8(34), eabo6254
Wednesday	April 16	Misinformation correction	<ul style="list-style-type: none">- “The Debunking Handbook 2020”- Test #4 due by the end of the day on Friday, Apr 18, 2025 on CarmenCanvas

Week 16.

Day	Date	Topic	Readings and Assignments
Monday	April 21	Research project discussion	- Research design due

Class schedule

Important dates

Day	Date	Time	Assignment or Exam
Friday	January 31	Due by 11.59pm	Test #1 due on CarmenCanvas
Wednesday	February 12	Due in class	Research proposal due
Friday	February 28	Due by 11.59pm	Test #2 due on CarmenCanvas
Friday	March 7	Due by 11.59pm	Op-Ed due on CarmenCanvas
Friday	March 28	Due by 11.59pm	Test #3 due on CarmenCanvas
Friday	March 28	Due by 11.59pm	Research literature review due on CarmenCanvas
Friday	April 4	Due by 11.59pm	COSI reflection due on CarmenCanvas
Friday	April 18	Due by 11.59pm	Test #4 due on CarmenCanvas
Monday	April 21	Due in class	Research methodological design due

Course policies

Participation

Because of the size of this class, attendance and participation are crucial. This will be mostly a seminar, so I expect you to show up prepared and ready for class. I will take attendance and foster some class discussion using [Top Hat](#). You can join this class on Top Hat using the following code **309656**.

LockDown Browser Requirement

This course requires the use of LockDown Browser for online exams. Watch this video to get a basic understanding of LockDown Browser: <https://www.respondus.com/products/lockdown-browser/student-movie.shtml>

Download Instructions:

- Select a test from the course

- If you have not already installed LockDown Browser, select the link to download the application and follow the installation instructions
- Return to the test page in a standard browser
- LockDown Browser will launch and the test will begin

Note: LockDown Browser only needs to be installed once per computer or device. It will start automatically from that point forward when a test requires it.

When taking an online exam follow these guidelines:

- Select a location where you won't be interrupted
- Before starting the test, know how much time is available for it, and also that you've allotted sufficient time to complete it
- Turn off all mobile devices, phones, etc. and don't have them within reach
- LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

Class decorum

Remember that this is an academic environment. Therefore, I ask that you minimize unnecessary disruptions (this includes, but it is not limited to, side conversations, web surfing, email and social media use, shopping, texting, and similar disruptive activities). Students are expected to always be respectful of their classmates. Debate about the ideas and theories presented in this class is encouraged. However, please remember to challenge the idea and not the person.

Course materials

There is **no textbook** in this course. Textbooks are expensive and I would rather have you spend your money on other stuff. Instead, you will be asked to read a combination of peer reviewed academic articles, magazine and newspaper articles, as well as watch videos and listen to podcasts. Hopefully, the variety of assigned types of content will make learning a more enjoyable experience.

Late submissions

Deadlines are meant to keep you on track. Deadlines make the world go round. Without deadlines, there would be chaos. Please submit your work on time. All the deadlines are in the syllabus on Day 1 of class. There are no late submissions on the group project. Any individual work, including the tests, submitted up to 48 hours past the due date will receive maximum of half credit. Any late submissions beyond 48 hours will result in a 0.

Plagiarism

All work in this course is to be individually developed. Plagiarism includes using another person's writing without giving them credit, using large verbatim sections of the work of another person or online source (even a public source) or submitting something you have written for another class. If you are unsure, please give credit to your source or talk to me about it. Students who plagiarize will be penalized and reported to university officials. You will also receive a grade of zero for the assignment where plagiarism occurred.

Academic integrity

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the

Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute Academic Misconduct.

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: Any activity that tends to compromise the academic integrity of the University or subvert the educational process. Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

AI

All students have important obligations under the [Code of Student Conduct](#) to complete all academic and scholarly activities with fairness and honesty. Large Language Model tools like ChatGPT exist and will continue to exist. Banning it now is like banning the internet in 2002 or the printing press in 1450s as far as I'm concerned. But blindly using these tools without attribution constitutes plagiarism. If you put in a question or a prompt, and then just copy and paste the generated response, that is cheating. If you use these technologies in this class, I expect you to harness these tools in a way that makes your work better, I expect you to double check things to ensure the content you submit is accurate (ChatGPT makes stuff up! A LOT!) and that you cite the exact tool you have used and provide a statement on how you used it. Using these tools appropriately takes time and effort, and it needs to be double checked and edited. If you want to use these tools, I expect you to do all these things.

In sum, if you use LLMs like ChatGPT to assist you with any assignment in the class, you have to submit an **AI statement**, outlining what tool you used, and how you used it. You will not be penalized simply for using ChatGPT, though, so please be honest.

Assignments and Assessment

There are a total of **500 points** to earn in this class.

Attendance and Participation (100 pts)

You can't participate if you don't attend the class. And if you don't participate, the class will simply not be as good, especially in a class this small. Since this will essentially be run like a seminar, I need everyone to participate, a lot. I need all of you to come prepared and ask questions and engage with me and your

fellow students. Learning is a social endeavor, after all. I will take attendance on most days using Top Hat. You can have **one unexcused absence** that won't count against your attendance. Anything beyond that will hurt your grade.

80 points will be allocated based purely on attendance. For example, if you only come to 75% of the classes, you will get 75% of 80 points, or 60 points when the grading is compiled at the end of the semester.

20 points will be allocated based on the quantity and quality of your individual participation in class. If you show up, engage in discussion, ask questions, and show that you have completed the readings, you have nothing to worry about.

Tests (100 pts)

We won't have a midterm and a final in this class. Instead, throughout the semester, we will have four (4) brief tests, each worth 25 points. These will be based on assigned course content as well as lectures. They will be mostly multiple choice, true or false, and short answer questions. Nothing revolutionary. They will be posted on Wednesday, and you will have until the end of the day that Friday to complete them on your computer using the LockDown Browser. You can have paper notes in front of you while you do the tests, I just don't want you to use the internet while you take it.

COSI Reflection (50 pts)

This is a small class, which should allow us to take a field trip to COSI. You will then produce a brief reflection after our visit, no more than 500 words. The exact prompt for this assignment will be provided later in the semester.

Op-ed (50 pts)

You will pick an empirical, peer-reviewed scholarly article on a science communication topic of your choice. The article cannot be one that we have read in class. You will then translate its findings into a public facing article, like an article one can find in [The Conversation](#).

Research group project (200 pts)

Because this is a small class, it will allow us to do something unique. Here, you and I will work together on actual science communication research. You will work as a group to move the project along and ultimately design a paper which we could turn into an academic publication. If the project garners sufficient buy in from the class, I will ensure we are able to collect the data necessary to carry it through. I will provide you with a detailed description of the assignment later in the semester, but it will include several elements:

1. Individual proposal (25 points)
2. Literature review (75 points)
3. Methodological design (100 points)

Grading scale

Letter grade	%	Description
A	93-100	The student met the learning objectives of the course in an excellent manner.
A-	90-92	The student met the learning objectives of the course in an excellent manner.

B+	87-89	The student met the learning objectives of the course in an above-average manner.
B	83-86	The student met the learning objectives of the course in an above-average manner.
B-	80-82	The student met the learning objectives of the course in an above-average manner.
C+	77-79	The student met the learning objectives of the course in an average manner.
C	73-76	The student met the learning objectives of the course in an average manner.
C-	70-72	The student met the learning objectives of the course in an average manner.
D+	67-69	The student met the learning objectives of the course in a low but acceptable manner.
D	60-66	The student met the learning objectives of the course in a low but acceptable manner.
F	Below 60	The student failed to meet the learning objectives of the course.

Other relevant information

Mental Health Statement

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing.

If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th floor of the Younkin Success Center and 10th floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766 and 24-hour emergency help is also available through the 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its

activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

Online reporting form at equity.osu.edu,

Call 614-247-5838 or TTY 614-688-8605,

Or Email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Disability statement

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

If you are ill and need to miss class, including if you are staying home and away from others while experiencing symptoms of viral infection or fever, please let me know immediately. In cases where illness interacts with an underlying medical condition, please consult with Student Life Disability Services to request reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

Food Security

The Ohio State University is committed to ensuring that all students have access to adequate and healthy food. Any undergraduate or graduate student with a BuckID may confidentially use the Buckeye Food Alliance food pantries. No proof of need is required. The pantry is located in Lincoln Tower, Suite 150 (1800 Cannon Dr., Columbus, OH 43210). Check the website or call for current hours. <https://www.buckeyefoodalliance.org>, 614-688-2508.

Religious Accommodations

Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication

with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.

A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement **and** the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the [Office of Institutional Equity](#). Policy: [Religious Holidays, Holy Days and Observances](#)

Sexual misconduct and relationship violence

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu.