AS.270.348 Communicating Climate Science

Fall Term 2020

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Office Hours: T 10:00-11:30a or by request
Class meetings: MW 3:00p online

Course Description: This course is a study of techniques used to effectively communicate scientific knowledge with a focus on climate science. This will be done with three overarching topics: reading and comprehending scientific papers, critically interpreting science news from the media, and communicate complex climate science to a general audience. Although this course does not have any explicit prerequisites, it is oriented towards science and engineering majors in its level of difficulty.

Required Texts: Students are expected to obtain a copy of the books, but the articles will be provided by the instructor

- *Houston, We Have a Narrative* by Randy Olson, 2015 (purchase new for $17.43)
- *Lies, Damned Lies, and Science* by Sherry Seethaler, 2009 (purchase new for $24.99)
- Select scientific journal articles (see course outline)

Learning Objectives: By completion of this course, the student will demonstrate the ability to

1. Comprehend technical content of scientific journal articles
2. Critically analyze scientific studies featured in news media
3. Evaluate media's portrayal of major scientific conclusions
4. Critique effectiveness of the scientific community to present conclusions
5. Effectively communicate a complex climate topic to a general audience

Assessments:

Student-led Discussions. Each week the class will participate in discussions of assigned scientific journal articles. Students will take turns leading these discussions, but their participation will be assessed continually.

Critical Thinking Exercise. In the sixth week of the course, students will complete an exercise in class that applies critical thinking to scientific studies highlighted in the news. More details on this exercise will be provided at a later date.

Media Sources Paper. Students will find a news report of a scientific study and perform research on the sources behind that report. In a short 1-2 page paper due in the fourth week, students will

assess the validity of the conclusions presented in the report by citing those primary sources. A rubric for this paper will be provided.

Detailed Critique. Students will critique and compare the effectiveness of scientists' communication to the public, detailing what techniques were effective and how it might have been improved. This will be written in a short 1-2 page paper due in the eighth week of the course, A rubric for this paper will be provided.

Culminating Communications Project (CCP). The major project, designed to utilize tools discussed through the semester, will be for students in assigned groups of 2-3 to choose a complex climate topic and develop a media of their choice (presentation, video, podcast, etc) to explain that topic and its implications to the general public. This project will be the focus of the last third of the course and will have a total of three progress deadlines, a rubric for each deadline will be provided.

Grading Policy: This course will implement *specifications grading*, a form of grading that is competency-based and evaluates students given their accomplishment of the specified learning objectives listed above. The standard for achieving each learning objective is high, but expectations to attain each achievement will be explicitly stated. The details of this specifications grading are:

All assignments are graded as either satisfactory or unsatisfactory. Rubrics will be provided to ensure clear expectations, specifying what is required to receive a satisfactory grade for each assignment. For discussion-based lessons, satisfactory grades are awarded to those who demonstrate enthusiastic participation and regular attendance.

Students are given three tokens that provide opportunities to revise an assignment that was unsatisfactory, or turn in an assignment late without penalty. The tokens may be applied to any of the assignments excluding the student-led discussions and the final deadline for the Culminating

<table>
<tr><th></th><th>A</th><th>B</th><th>C</th></tr>
<tr><td>Assignments (# total):
Learning Objective</td><td colspan="3">Outcomes Required for Grade Bundle</td></tr>
<tr><td>Student-led discussions (14)
Objective 1</td><td>Satisfactory:
as leader (2),
as participant (10),
no more than
2 absences</td><td>Satisfactory:
as leader (2),
as participant (9),
no more than
3 absences</td><td>Satisfactory:
as leader (2),
as participant (8),
no more than
4 absences</td></tr>
<tr><td>Critical thinking exercise (1)
Objective 2</td><td>Satisfactory</td><td rowspan="3">Two out of
three objectives
satisfactory</td><td rowspan="3">One out of
three objectives
satisfactory</td></tr>
<tr><td>Media Sources Paper (1)
Objective 3</td><td>Satisfactory</td></tr>
<tr><td>Detailed Critique (1)
Objective 4</td><td>Satisfactory</td></tr>
<tr><td>Communications Project (1)
Objective 5</td><td>Satisfies Standards</td><td>Satisfies Standards</td><td>Approaches Standards</td></tr>
</table>

Communications Project in which groups present their work.

Letter grades at the end of the semester are set by the number of assignments a student achieves at the satisfactory level, according to the grade bundles in the table above.

If a student's work falls between two grade bundles, plus or minus grades will be granted as follows:

- A+ All requirements for the A bundle *plus* the communications project was exceptional
- A- All requirements for the A bundle *except* attendance and/or participation in discussions is slightly lagging
- B+ All requirements for the B bundle *plus* exceptional attendance/participation in discussions
- B- All requirements for the B bundle *except* communications project was approaching standards
- C+ All requirements for the C bundle *plus* exceptional attendance/participation in discussions OR two of objectives 3-5 are satisfactory
- C- All requirements for the C bundle *except* attendance and/or participation in discussions is slightly lagging

As achievement of learning objectives are assessed on a satisfactory basis, a student who fails to meet the qualifications of a C grade will fail the course. Assigning grades of D or D+ will only be considered in extenuating circumstances.

Attendance: It is expected that students will be present at all virtual class sessions as it is crucial to their comprehension of topics and overall success in the course. If for any reason a student is unable to be present, they must notify the instructor of their excused absence in advance of that virtual class and are still responsible for any content they may have missed.

Zoom Recordings: Portions of zoom sessions dedicated to lecturing on technical content may be recorded locally and uploaded via a University video management service (e.g. Panopto). At such times, students will be reminded that the zoom session will be recorded and have the right to not participate in any way that reveals identifying information during these recorded zoom sessions. This means they may opt out of identification by muting their audio, not enabling video, and not typing in the chat window. The uploaded recordings of these zoom sessions will remain available for the entirety of the semester and then deleted once the course is over. Should any student have concerns about being a part of recorded zoom sessions, they are encouraged to talk to to the instructor, appropriate accommodations will be made.

Panopto Recordings: Portions of zoom sessions dedicated to lecturing on technical content may be recorded locally via Panopto, a University video management service. At such times, students will not be visible to the recording, the only possible identifying information in the recording would be their audio. Students will be reminded when Panopto will be recording and may opt out of identification by muting their audio. The uploaded Panopto recordings will remain available for the entirety of the semester and then deleted once the course is over. Should any student have concerns about the Panopto recording setup, they are encouraged to talk to to the instructor, appropriate accommodations will be made.

Academic Integrity: It is expected that all students at Johns Hopkins University uphold academic and personal integrity above reproach. Ethical violations, including cheating, plagiarism, lying, dishonesty, falsification, alteration, will not be tolerated in this course. Collaboration among students is encouraged, but all work submitted must be completed solely by the individual, excluding projects that are group based.

Disabilities: Students with disabilities may be granted appropriate accommodations after registering with the Student Disability Services. If you think you may require accommodations, please contact the Student Disability Services at (410) 516-4720, studentdisabilityservices@jhu.edu, or in-person at Shaffer Hall 103. More information is available at https://studentaffairs.jhu.edu/disabilities/.

Course Outline:

	Content Topic	**Journal Article**	**Background Reading**	**Assessment**
31-Aug-2020	Disagreement in Science	Emanuel [2013]	Seethaler [2009]: Chap. 1	Discussion
7-Sept-2020	Energy Balance	Hansen et al. [2005]	Seethaler [2009]: Chap. 7	Discussion
14-Sept-2020	Forcings and Feedbacks	Hansen et al. [1984]	Seethaler [2009]: Chap. 2	Discussion (CF)
21-Sept-2020	Cloud Radiative Effect	Manabe and Wetherald [1967]	Seethaler [2009]: Chap. 6	Discussion (MP) Due: media sources paper
28-Sept-2020	Climate Variability	Bjerknes [1969]	Seethaler [2009]: Chap. 4	Discussion (EW)
5-Oct-2020	Natural Climate Change	Mann et al. [1999]	Seethaler [2009]: Chap. 9	Discussion (MM) Critical thinking exercise
12-Oct-2020	Atmospheric Circulation	Gill [1980]	Olson [2015]: Intro	Discussion (RR)
19-Oct-2020	Ocean Circulation	Kostov et al. [2014]	Olson [2015]: Thesis	Discussion (JB) Due: detailed critique
26-Oct-2020	Meridional Heat Transport	Trenberth and Caron [2001]	Olson [2015]: Antithesis I	Discussion (CF)
2-Nov-2020	Equations of Motion	Phillips [1956], I	Olson [2015]: Antithesis II	Discussion (MP) CCP deadline 1: choose topic
9-Nov-2020	Midlatitude Weather	Phillips [1956], II	Olson [2015]: Synthesis	Discussion (EW) CCP deadline 2: submit outline
16-Nov-2020	Climate Modeling	Held [2005]		Discussion (MM)
23-Nov-2020		*Thanksgiving Break*		
30-Nov-2020	Science and Policy	IPCC Summary for Policy-Makers	Seethaler [2009]: Chap. 8	Discussion (RR)
7-Dec-2020	Demonstrating Narrative	Menzel et al. [2019]		Discussion (JB) CCP deadline 3: present

Zoom Invite: AS.270.348 Communicating Climate Science
Time: Aug 31, 2020 03:00 PM Eastern Time (US and Canada)
Every week on Mon, Wed, until Dec 9, 2020, 30 occurrence(s)
Weekly: https://JHUBlueJays.zoom.us/meeting/tJMpc-2vqTwjHdy6BM0xymIK2nsFHRBGGEJw/ics?icsToken=98tyKuCvqj8uHdOSuR6PRowEBo-gLO3wtmZEgqdEyj3IUzhKbyrdZOxRFJpNMv_3
Join Zoom Meeting
https://JHUBlueJays.zoom.us/j/97444777978?pwd=SXZ4RWM5SkZOTFpsTENqQk1TdHpyQT09
Meeting ID: 974 4477 7978
Passcode: 270348
One tap mobile
+13017158592,,97444777978,,,,,,0,,270348 US (Germantown)
+13126266799,,97444777978,,,,,,0,,270348 US (Chicago)
Dial by your location

- +1 301 715 8592 US (Germantown)
- +1 312 626 6799 US (Chicago)
- +1 929 205 6099 US (New York)
- +1 669 900 6833 US (San Jose)
- +1 253 215 8782 US (Tacoma)
- +1 346 248 7799 US (Houston)

Meeting ID: 974 4477 7978
Passcode: 270348
Find your local number: https://JHUBlueJays.zoom.us/u/aQvVreVDZ
Join by SIP
97444777978@zoomcrc.com
Join by H.323
162.255.37.11 (US West)
162.255.36.11 (US East)
221.122.88.195 (China)
115.114.131.7 (India Mumbai)
115.114.115.7 (India Hyderabad)
213.19.144.110 (Amsterdam Netherlands)
213.244.140.110 (Germany)
103.122.166.55 (Australia)
209.9.211.110 (Hong Kong SAR)
64.211.144.160 (Brazil)
69.174.57.160 (Canada)
207.226.132.110 (Japan)
Meeting ID: 974 4477 7978
Passcode: 270348

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