Brief Description: This is an interdisciplinary workshop for scientists, sustainability professionals, future NGO workers and journalists seeking skills in communicating 21st century global science to the public.

Scientists will be given journalism skills; journalists will learn how to use science as the basis of their story-telling. Students currently working in the business world or the public sector, will, by doing actual journalism, see what the news looks like from the other side of the desk.

Our standards and methods will, at all times, be those of mainstream journalism.

Course Objectives: The course is designed to give students exercises and real-world experiences in producing feature stories on global science topics.

While most scientists and sustainability professionals have been trained to write in the style of peer-reviewed journals or business publications, we will focus on science journalism, learning how to translate global science into accessible true stories that reach wide audiences.

Science is performed by passionate individuals who use their intelligence and determination to seek answers from nature. By telling their histories and uncovering the drama of discovery, we believe that there are ways for science to be successfully communicated to readers who might otherwise fear it.

This is a different style of writing than academic writing or business writing. It has its own rules and conventions. We ask that participants in this class come to it with a willingness to try something new and different.

Rationale: Currently, there are few comparable courses offered. Traditional science journalism classes have been mostly pegged to future science journalists; but we hope to turn non-journalists into published writers. Our target markets are mainstream media, Internet journals and community publications. Our approach blends science, policy, international affairs and journalism. We will discuss advocacy, too.

And now, with mass media more open than ever to freelance contributions, with new forms of media proliferating in cyberspace and with Internet journalism increasingly open to beginning journalists, we see new opportunities for the scientifically-interested to tell their stories, if they have the proper skills. With these new opportunities in mind, we will also be pitching our story-telling to the demands of new media and the Internet.

Ultimately, we hope to show a climatologist how to get their op-ed into the Washington Post and to help an aid worker from Southern Sudan place her first-hand report on desert environments into VOGUE.
We hope that when a sustainability student or manager sets up their own blog, that it will be so literate and interesting that it will draw a substantial readership.

The lesson of Steve Cohen’s Huffington Post blog is that it is entirely possible to develop a readership and strong following on these issues.

**Prerequisites:** The main prerequisites are a desire to write communicatively and a willingness to experiment with popular forms. Because both the TA and the Instructor do individual critiques of students’ writing, we ask that participants in this class be willing to follow the edited instructions offered and be open to our notes. This is the way one improves.

Students who feel uncomfortable with that style of instruction will probably not profit from it and should consider enrolling in a different type of course. Willingness to accept critiques and guidance will be part of the grade.

Truth in packaging: if a student feels personal discomfort with participating in workshop style criticism, this course may not be appropriate for you.

A fluid knowledge of written English is important, but students who've trained as journalists, scientists or NGO professionals in non-English speaking countries are very welcome.

Students in need of additional help should work with tutors at the Writing Center: writingcenter@columbia.edu and http://www.college.columbia.edu/core/uwp/writing-center.

However, this is a fairly advanced class. Students needing remedial work in written English, should obtain that before signing on.

Because we are looking to create interesting non-fiction literature with science at its heart, we seek students with enthusiasm for both science and mass communications.

Students registering for this course should be willing to try to write in a style different from what they may have been trained for; they should also be willing to find their stories through interviews, investigation, and observation. One gauge for your capacity to do this work: can you write as fast as you think?

**Criteria for Grading:** It’s not easy to quantify a creative endeavor and the instructor reserves the right to make subjective judgments on progress, effort and attitude in determining final grades.

What we look for is talent, skill, originality, resourcefulness, promptness in meeting deadlines, a collegial attitude in terms of class participation—and of course, improvement of skills over a semester. The student who writes well, but who doesn’t read and critiques classmates’ submissions, will be penalized.

Because we are talking about subjective matters, I prefer not to give a firm numeric weight to each assignment. Again, what I seek is improvement of skills—and a game attitude. The final term project is very important, but it’s not the whole package.

Violations of either journalistic or academic standards will obviate all other considerations. And of course, all assignments must be filed and filed on deadline. Anyone missing more than two classes, will be asked to drop the course. Your participation and interaction with your classmates is part of what happens and if you can’t be present, no matter how valid the reason, you have denied your colleagues part of what they need to succeed.

Trying hard, factors-in, too. Woody Allen says that half of success is showing up. We'll amend that: the other half involves trying harder than the next person.
Course Format and Requirements: We do a mixture of writing different types of popular science articles of varying lengths, researching them from top to bottom, and then reading some of the students' work aloud, in class. Students are asked to offer helpful criticism to each other and work together on solving reporting problems. We ask you to post your critiques both online, through Canvas, which is replacing the old CourseWorks, but also to bring them to class.

The Canvas website will be the medium of communication for all members of this workshop. Great writing skills and improvement of those skills is what we're looking for—but we also appreciate students who are willing to support their classmates, participate in constructive critiques and who are willing to go the extra mile to do creative research for their pieces.

Whenever it is realistic, students are asked to submit their classroom work for publication. That can mean anything from mass circulation magazines to the in-house publications at Columbia University and SIPA. Students are encouraged to find Internet publishers for their work.

Alumni of Professor Dreifus' classes have published in the Atlantic, State of the Planet, World Policy Journal, Consilience, the Washington Post, the New York Times, the Morningside Post and more.

The Earth Institute has a website—as does the Sustainability Management program and students are encouraged to submit appropriate class work there. This course also has a cooperative relationship with the Earth Institute's State of the Planet blog and the World Policy Journal of the World Policy Institute in New York City. Many class members have seen their work published on their influential website.

Though all work produced for class must be original, we believe in you "recycling" it into print. Why not have your friends and colleagues see the product of your hard work?

Writing is key to success in this class. We believe that writing is like gymnastics: the more you do, the better you get. So you will be doing a lot of writing. Plan on it. We're looking for enthusiastic writers and curious reporters, but also students who will improve their skills over the semester. An improved/dedicated writer can be assured of a fine grade. Handing in assignments on deadline is critical.

As mentioned previously, the Caitlin Shure and I will be spending as much as an hour reading and analyzing every submission to class. We will provide our experienced advice on how to improve the stories. Grades will be impacted by the willingness of students to use the information provided in these editorial notes and to follow them.

Your instructor is available during office hours for one-on-one coaching and will also mentor students through their larger projects. The grading and curriculum assistant will also have two hours available for that purpose on a different day.

Through a new initiative organized by the Earth Institute, your instructor will be available as an occasional coach for your writing in the years AFTER you finish up your degree. A special one day Saturday workshop will also take place in March for students and SUMA alumni who seek to polish their science journalism.

KEEP IN MIND: Be aware that this course is rigorous and involves a serious commitment from registrants. We don’t want to kid you about that.

On the plus side, registration is capped at about fifteen so that students can make the maximum of progress in a short period of time.

OVERVIEW: Students will be asked, depending on the class’ pace, to produce as many as five different types of feature articles and two short ungraded assignments during the semester. That probably means writing almost every week and filing promptly.

Final grades are based on attitude, writing skills, improvement of those skills, reporting enterprise, following of editorial advice, classroom participation, and the meeting of deadlines.
Publication of class work will win extra consideration at grading time and we will do much to encourage it. In this era of internet magazines, newcomers can find markets with comparative ease.

Because this class is formatted as a workshop, students will be asked to produce stories, but also to read and critique each other's writings. Both are key elements of this workshop.

Lateness in filing assignments impedes the entire class' progress, and unfortunately, must be penalized in grading—or if habitual, the student will be asked to leave the class.

Moreover, SUMA requirements are such that anyone missing more than two classes in the semester, even for valid reasons, cannot continue in the course.

**EMAIL:** Students are asked to e-mail their completed writing assignments to Prof. Dreifus at cd2106@columbia.edu as a "paste" communication on the Saturday before class. Please do not send stories in .docx format. Please also cc the teaching assistant, Caitlin Shure, ces2104@columbia.edu.

Completed pieces should also be posted on Canvas at that time so that classmates can have access to them for comparison and critique. Students are asked to read their colleagues postings and to offer constructive critiques and helpful pointers. This should be the regular protocol for all filings.

**A NOTE ON TIMELY FILING:** In order for students' writing to be graded and considered in time for Tuesday’s class, it is vital that assignments be filed on Canvas by Saturday night. Firm.

**ANOTHER NOTE ON FORM:** As in journalism, all filings must be clean, grammatical and as far as possible, in “ready to print” form. That means, of course, with a headline and a by-line.

**MIDWEEK E-MAIL INQUIRIES:** Though available in emergency situations, your instructor and grading assistant wish to stress that this is not an e-course. It is a lecture-based workshop. Therefor email enquiries about small matters are inappropriate.

We would prefer that you use office hour appointments for your questions about assignments and to take careful notes during lectures, where key pointers will be covered.

**A SEPARATE NOTE ON PACE:** We will move as quickly or as slowly as the class' progress requires. That, of course, means the schedule below is not set in stone. As that late 20th century philosopher John Lennon had it: "Life is what happens when you're making other plans."

Please consider this syllabus provisional. To some extent our pace will be determined by the levels of the skills of the members of the workshop; we will go as fast or slow as is necessary to be effective. The dates listed in the syllabus are not set in stone. We want to go at a pace that is reasonable, depending on what students’ needs are. That’s why it’s useful to always check with the syllabus for updates.

**SESSION ONE, Tuesday, January 16, 2016: Introduction**

The Difference: How science journalism contrasts with academic writing, everyday business writing or public relations and how it differs from standard feature writing.

In this introductory session, we will identify current scientific topics that lend themselves to features for newspapers, magazines and the Internet.

We'll discuss the story structure of the science feature. What are the elements of a compelling science feature? How does one transform numbers and findings into a literary narrative? How does one create a simple story without 'dumbing down' the content? Why does the work of successful science communicators, such as Brian Greene and the late Oliver Sacks, have wide appeal?

What are they actually doing?
Why does Rockefeller University Nobelist Gunter Blobel tell his post-docs, "If you can't explain it to your grandmother, don't bring it to me?"

**Before next session:** Please read the op-ed pieces provided in the course pack. Here are some additional op-eds you ought read to get a sense of how different writers bring their science and their opinions to print.


(5)

**SESSION TWO, January 23: The Science Based Op-Ed, Part One**

What exactly is an op-ed piece? Are science op-eds different from other sorts of opinion pieces? What markets will print a science-based op-ed?

What are the mechanics of submission? What are the differences between a short personal essay and an op-ed? Can one do a personal essay about a scientific topic—how?

**Assignment:** Write a 750 word science-based op-ed that is targeted to a market like, the *New York Times*, the *Washington Post*, or the blogs of an NGO like State of the Planet, the National Resources Defense Council or Carnegie Council on Ethics.

Short filing date: Please file by **Saturday, January 27th**. Please file on Canvas (in the dropbox section for your fellow classmates to read) and by sending a copy via email to Professor Dreifus and Ms. Shure.

**SESSION THREE, January 30: The Science Based Op-Ed piece or Short Personal Essay, Part Two**

We will be discussing selected op-eds in class, as well as everyone’s experience in writing them. Any student with a grade under A minus will be asked to produce a second draft.

**Assignment:** Those of you who received grades lower than an “A-minus” on their first draft of the op-ed will be asked to do a second draft. **Due date: Feb 4th**.

**Start thinking ahead for a subject to interview—it’s a good idea to start contacting them and picking an interview date as early as possible.**

**Reading for next week:**

(1) *Am I Making Myself Clear* by Cornelia Dean; chapters 1-6, & 11. A digital version of this book is available for free via Columbia libraries: [https://clio.columbia.edu/](https://clio.columbia.edu/)


**For those interested:** Prof. Dreifus will be hosting a talk with biologist and primatologist Frans de Waal at the 92nd Street Y on Feb 4th. Please see Prof. Dreifus for complimentary tickets. [https://www.92y.org/event/frans-de-waal-in-conversation](https://www.92y.org/event/frans-de-waal-in-conversation)

**SESSION FOUR, February 6th: Finishing Op-Eds and Interviews/Profiles**

First hour: We will discuss your experiences with op-ed re-writing.
Second hour: Class discussion: Profile or Interview? What's the difference?
Hand-out in class: Claudia Dreifus' tips for interviewing.

Assignment for next week: (can be started earlier) Interview an individual with a connection to the scientific enterprise. Don't interview anyone you know, work with or are subordinate to. Write either a 1200 word profile or a 1500 word Q and A about and with your subject. Due date: February 11th.
It is sometimes difficult for students to get sources to agree to an interview. So it's good to try to set one up right at the beginning of the semester.

You should also be reading interviews and profiles in the news. For example, see:

SESSION FIVE, February 13: Scientific Conversations
First hour: Reading in class of students' profiles/interviews.
Second hour: Class discussion--how does a writer shape the raw material of an interview into a successful article?
Two New York Times interviews by Claudia Dreifus, will be deconstructed from idea to publication:


What are the choices a writer makes? Could this have been written from other angles? How do writers use biography as a vehicle to bring lay readers to true stories about science, Compare the profile of E.O. Wilson to the interview with him. How does a reporter use a “moment” to tell a bigger, fuller story?

Assignment: Those students who need to rewrite their interviews, will be asked to do so—and to do it as a prose/profile. Due date—Feb. 18th. Any student receiving a grade of less than an “A minus” will be asked to do a rewrite, on this and any other assignment.

Read: Am I Making Myself Clear? Chapters 7-10.

SESSION SIX, February 20: Multi-tasking session.
We’ll be finishing up the rewrites of interviews/profiles and covering a science event.

Next writing assignment/start thinking about it now: cover an event related to some science or sustainability topic—e.g., a lecture sponsored by the Earth Institute or the American Museum of Natural History, a nature tour of Central Park, a wine tasting at a Long Island vineyard, bird-watching classes in Westchester. Bring back a picture—in words—of what went on. Who are the characters in this real life story?

What is happening? What kinds of dialogue do you hear? In many ways, this will be an exercise in observation and note-taking. What do you see that is important enough for you to want to transmit to your reader? Make it come alive. Due Date: March 11th (there will only be one draft of this assignment, unless we’ve specifically asked you for a 2nd draft)
What is the culture of journalism and how is it different from the culture of academic science? Several recent films give you a line-in.

See the following movies—which we will be discussing over the coming weeks:
‘Spotlight,’” which is centered on the Boston Globe’s Pulitzer Prize winning investigation into the sexual abuse of children by members of the Roman Catholic clergy.
“The Post,” the currently playing drama about the Nixon era publication of the Pentagon Papers and the government’s attempt to suppress it. Factual correction here: while this movie is centered on the personal story of Washington Post publisher Katherine Graham, the Pentagon Paper were initially published by the New York Times. The film, while excellent in all other respects, leaves an inaccurate impression.
Not required, but still interesting: “All the President’s Mean,” “A Year of Living Dangerously,”
On more science-y themes: “A Beautiful Mind,” “The Story of Marie Curie,”

**SESSION SEVEN—February 27th**
We will continue our discussion of covering an event and will talk about successful query letters, as well as prepare for Editor’s Night next week.

**Handout:** Claudia Dreifus’ tip sheet on writing effective query letters.

**Assignment for next week:** Write a query letter/pitch targeted to the appropriate editor on your projected term project. Due Saturday, **March 3**rd.

Listen to: Blind Art Lovers Make the Most of Museum Visits - This is a radio story, but it’s a great example of a descriptive event piece.  

Note: Your event piece will be due March 11th.

**For those who are interested:** On March 3rd, Professor Dreifus will be leading a Saturday workshop on Blogging and Writing Science-Based Op-Eds. The cram course will be open to SUMA students and alumni. Location: TBA.

**An Extra Bonus:** here’s the key to a free online course in science journalism. If you’re feeling excited about gaining additional skills, here’s an additional resource. The Alan Alda Center for Science Communication at StonyBrook University,, Scientific American magazine, and the Kavli Foundation have combined resources and talents to produce a MOOC designed to help members of the academic community write more successfully. The entire on-line course went live last Fall. You can supplement your classwork with this excellent tutorial. Here’s the link.  
[https://www.aldacenter.org/aklc/build-skills/webinars-past](https://www.aldacenter.org/aklc/build-skills/webinars-past)

**Session Eight, March 6th: EDITOR’S NIGHT**
Producers and editors from scientific media will be visiting with us, talking about what they do and how they do it. After, there will be a Dutch-treat informal supper with our guests at V&T restaurant with our speakers.  
Guests TBD.

**6:00-6:30-catch up on classwork**  
**6:30-8:00-guest speakers**  
**8:00-9:30-Dutch treat supper with guest speakers.**  
This session will be held in a room TBA. Class members are welcome to bring friends and colleagues to the lecture section of the evening.

**Event Piece due Saturday, March 10th.**

**MARCH 13th--SPRING BREAK**
Please use this solid block of time away from class to begin work on your term project assignments.
By now, you should have chosen the topic you are going to pick for your final class assignment. Use the holiday to begin researching it. It's the best opportunity you'll have to get this work done. Your query letters will be read over the holiday. But writing them will help you focus on what you want to do.
To prepare for your own long form piece, you should read some such pieces over the break. Here are some useful examples to pick from:

"The Siege of Miami" by Elizabeth Kolbert https://www.newyorker.com/magazine/2015/12/21/the-siege-of-miami


Another news report on cuts at the Federal EPA. Joint by-lines here, which lately has been the practice at the NYTimes. https://www.nytimes.com/2017/12/22/climate/epa-buyouts-pruitt.html?em_pos=medium&emc=edit_sc_20171226&nl=science-times&nl_art=7&nlid=74560720&ref=headline&te=1&_r=0


Killing Animals at the Zoo", by Ian Parker in the New Yorker: https://www.newyorker.com/magazine/2017/01/16/killing-animals-at-the-zoo

Please bring your copy of Writer’s Digest to the next class.

SESSION NINE MARCH 20 - Event piece

For the rest of the semester, we will be functioning, as many journalists do, on multiple tracks in each class.

First hour: Discuss event pieces.

Second Hour: Reading of selected query letters for term projects and discussion of them.

With the holiday over, we will begin work at this time on the culminating event of the semester—the long form narrative non-fiction science based story. Let’s begin by revisiting Anya Schiffrin’s excellent power point on story structure.

Everything you need to write a long form narrative story is right there. If you come to a roadblock in your writing, consult the PowerPoint; the answer to your problem is probably right there.

Practicum: How to Use Writer’s Digest to Sell Your Story.

Assignment for next week: Outline and lede for term project:

Begin work on a 2000 word feature article on a global science/international sustainability issue. Start off by outlining a plan of action—including sources to interview, events to cover, books to read, information to uncover. Write a lede for this piece.

Post both outline and lede on Canvas by Saturday, March 24th.
Caitlin Shure, will discuss how to translate an academic paper from a science journal into a narrative story. Ms. Shure will be bringing us some interesting examples. How would you reframe Article X (TBA) to a lay-person? Workshop Session on Term Project. We’ll discuss ideas, outlines, and ledes.

SESSION ELEVEN, April 3th: Double duty session—The long form story, social media
First hour: Round robin on term project progress.
Second hour: A discussion on how to do the term project in other forms of media and multi-platform story telling.

Assignment for next week: Write a 300-word blog post or listicle on a topic of interest, preferably one related to your term project (maybe about an aspect of it). Post it on an appropriate site, if you can. File by Saturday, April 7th.

SESSION TWELVE, April 10th: Communicating Science
First hour: Discussion of blog postings/listicles.
Second hour: Updates on term projects and any challenges.

Assignment: first draft of final project on April 14th—2000 words on some aspect of global science. Target your story to a specific market you hope to sell it to.
Think about mixed media and new media supplements to your written story—i.e. podcasts, videos, slideshows, blogs that you might create to enhance your story.
The story should not be longer or shorter than the word count. Part of the exercise involves learning to write for space requirements.

SESSION THIRTEEN, April 17th: Putting It All Together-
Updates on term projects and how to put together all your reporting and research into a draft.

SESSION FOURTEEN, APRIL 24th: Last Day of “Class” at 92Y
“Science Talks with Claudia Dreifus, Brian Greene and Dennis Overbye: Why Einstein Matters”
For this session, the class is invited to attend an exciting talk at the 92nd Street Y.
Professor Dreifus will arrange free admission for the event, which starts at 7:30pm. For more information, visit: https://www.92y.org/event/why-einstein-matters

DINNER: April 26th
This final session will be held at the home of Professor Dreifus. Every student is asked to bring a home cooked dish as part of a class communal supper.
Your final term project is due April 28th.

REQUIRED READING
On Mondays, please read Professor Steve Cohen's weekly blog on the Huffington Post. It is one of the most successful efforts of this kind on the Internet, a model really on how a professor can build his/her own mass readership and create the equivalent of a newspaper column on the web. What makes Prof. Cohen's column successful? Why does it work?

On Tuesdays, please read in the paper edition the Tuesday Science Times/New York Times. What is different about reading this type of news on paper--as opposed to electronically? What is different about the stories in Science Times--from science based stories that you might read on the Web?

ASSIGNED BOOKS

“The Writer's Market,” (Writer's Digest Books) Everything you need to know to navigate your way around the publishing world. Invaluable.
NOT REQUIRED, BUT HELPFUL RESOURCES:


“Explaining Research,” Dennis Meredith. (Available on Amazon.)

“A Survival Guide to the Misinformation Age, Scientific Habits of Mind” David J. Helfand

“Ignorance,” Stuart Firestein

“Letters to a Young Scientist,” Edward O, Wilson

POPULAR SCIENCE: EXHORTATIONS, MUCKRAKING AND BIOGRAPHIES.
"The Immortal Life of Henrietta Lacks," Rebecca Skloot

"The Best Science Writing of 2017"

“ Merchants of Doubt, Naomi Oreskes

“The Sixth Extinction: An Unnatural History: Elizabeth Kolbert

“The Sustainable City,” Steven Cohen, Columbia University Press

“Half-Earth: Our Planet’s Fight for Life,” Edward O’ Wilson

“Einstein in Love: A Scientific Romance,” Dennis Overbye

“Uncle Tungsten: Memories of a Chemical Boyhood” Oliver Sacks


LIBRARY RESERVES: Some feature writing source works used in my magazine writing class will be posted within the "library reserves" feature of Canvas. Though these are not science stories per se, they may be of use to you in looking at story structure and detail.

BIOGRAPHIC NOTES ON THE PROFESSOR: I am a contributing writer to the Science section of the New York Times, a contributor to Newsweek, Smithsonian, Scientific American, the Chronicle of Higher Education and Ms.

In a former life, I was the Playboy Interviewer. There, I helped pioneer the long form interview, doing Q and As with Gabriel Garcia-Marquez, Daniel Ortega, Susan Sarandon, William Safire, Donald Sutherland, Arthur Schlesinger, Jr., among others. But that was long ago and far away—the 1980s.

In 2010, Times Books/Henry Holt published "Higher Education?" my non-fiction polemic with Andrew Hacker, which was reviewed in the New York Times, the Washington Post, USA Today, the Economist, the Wall Street Journal, the American Prospect, Bloomberg Business Week and more. It was among the most reviewed non-fiction books of the year and continues to inform the national debate on the direction of American higher education.

The American Society of Journalists and Authors has honored me with a "career achievement award," and Sigma Xi, the national honorary society of research scientists has made me an honorary member for "transforming" how science is covered in my New York Times interview column
BIOGRAPHIC NOTES ON THE TEACHING ASSISTANT:
Caitlin Shure is a writer, science communicator, and doctoral candidate in Communications at Columbia. She holds a BA in Neuroscience and an MA in Science Journalism (both from Columbia).

Caitlin has written for popular publications, including Scientific American. Most recently, she developed stories about brain science for an exhibit in the lobby of Columbia’s new Mind Brain Behavior Institute. Caitlin’s doctoral research is a cultural history of “brain waves,” which (hopefully, eventually) will become a book.

COLUMBIA INTEGRITY
Please familiarize yourself with the proper methods of citation and attribution. The School provides some useful resources online; we strongly encourage you to familiarize yourself with these various styles before conducting your research and writing.

As stated in your Sustainability Management registration packet, Columbia University functions at the highest levels of integrity and demands the same from its students. It goes without saying that plagiarism, "recycling" of previously produced works, the employment of intellectual products created by others will not be tolerated. As you can see, we can promise you an exciting and busy semester. But we’re also going to have fun. Syllabus below (Work-In-Progress.).