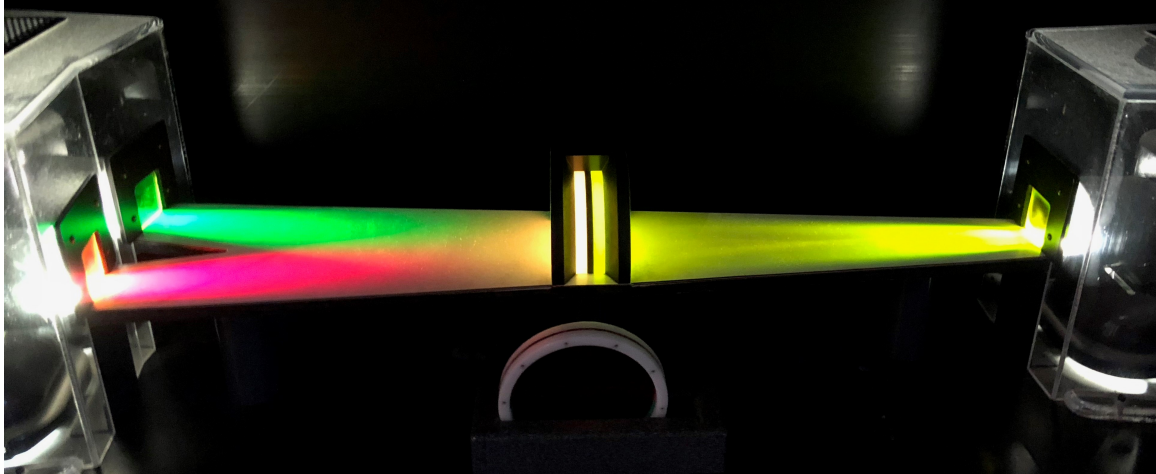


FYS 117 - Demonstrating Science  
(aka Cool Science Demos!)  
Lafayette College, Fall 2018



## Professor

Professor: Dr. Zoe Boekelheide  
Office: Hugel Science Center 026  
Office hours: MW 2-4pm  
email: [boekelhz@lafayette.edu](mailto:boekelhz@lafayette.edu)

## Course information

Course meeting time: MWF 1:10pm-2pm in HSC 117  
Writing Associate: Jacquelyn Cobb '19, [cobbja@lafayette.edu](mailto:cobbja@lafayette.edu)  
Pardner: Amelia Williams '19, [williaab@lafayette.edu](mailto:williaab@lafayette.edu)

## About this course

Science demonstrations are a fixture in classroom science lessons from elementary school through college. Demonstrations move scientific concepts from the abstract to the concrete, and can help students develop physical intuition. Demonstrations are also commonly utilized in science museums or outreach programs as marketing tools to convince young people to pursue STEM (science, technology, engineering and mathematics) fields, because they are fun! The availability of fast internet and video now means that many complex or expensive science demonstrations are accessible virtually by almost anyone with a computer and internet connection. Yet studies show

that simply viewing a scientific demonstration does not mean that viewers understand the intended scientific concept. In fact, viewers often come away with incorrect interpretations of the phenomena they have witnessed, or even “remember” seeing something that did not occur. In addition, many demonstrations include much more complicated science than advertised. This course will include a number of scientific demonstrations and students will consider multiple explanations for the demonstrated phenomena. Students will find resources to support or eliminate these explanations. Class discussions will cover scientific concepts, the goals of scientific demonstrations, and the success or failure of demonstrations at meeting those goals.

## **First-Year Seminar Program**

From the College Catalog, “The First-Year Seminar, which is required of all students, is designed to introduce students to intellectual inquiry through engaging them as thinkers, speakers, and writers. Each seminar focuses intensively on a special topic that is articulated with related cocurricular activities. Limited to approximately 16 students per section, the First-Year Seminar includes significant reading, writing, discussion, and presentation and is affiliated with the College Writing Program. Students are also introduced to use of the library for research.”

First-year seminars are officially designated Writing (W) courses and typically include a significant amount of process writing - e.g. writing of drafts, editing, and rewriting. We will also have a class presentation project. Our class will have a Writing Associate (WA); each student will meet with the WA at least four times during the semester for feedback on editing papers and practicing the presentation project. We will also have two meetings with a librarian as an introduction to library research.

## **Communication with Prof. Boekelheide**

In person: Office hours are set times when I make sure I am available in my office to meet with students on a drop-in basis. You may stop by any time during these hours and talk with me or ask a question. I expect to see every student in my office hours at some point during the semester! You can try stopping by my office at times outside my office hours, but I may not be available to meet with you. You can also e-mail me to set up another meeting time if my office hours don’t work for you.

By e-mail: I check e-mail regularly. If you e-mail me, you should expect to hear back from me within 24 hours Mon-Fri (barring travel or other circumstances). Likewise, I will use e-mail to notify the class of reminders, weather cancellations, assignment clarifications, etc. You should check your e-mail every day, or if you suspect weather cancellations, to ensure you receive these communications.

## **Course Website**

We will use moodle, <http://moodle.lafayette.edu>. When I send email to the class, I typically use moodle, so make sure to check the e-mail address associated with moodle. I will also post readings and important class documents on moodle.

## Learning Outcomes

After completing this course, you will be able to....

- Discuss scientific phenomena covered.
- Recognize what aspects of a particular phenomenon you understand or don't understand.
- Find resources to improve your understanding.
- Write about scientific phenomena.
- Present a scientific demonstration.

In addition to the outcomes listed above, as a first-year seminar, this course will accomplish the following outcomes associated with FYS in the Common Course of Study:

- FYS1. Demonstrate critical thinking strategies related to interpretation and evaluation of texts (verbal, visual, or performative) in the context of course materials.
- FYS2. Identify and consider ones assumptions, thereby building informed perspectives.
- FYS3. Information literacy:
  - FYS3a. Identify and use information relevant to a specific purpose or goal.
  - FYS3b. Employ effective search strategies to locate useful information.
  - FYS3c. Access and use information ethically and legally.

## Readings

For this course, you are required to obtain the following:

- **Book:** K. C. Cole, Something Incredibly Wonderful Happens: Frank Oppenheimer and His Astonishing Exploratorium, University of Chicago Press (2012).
- **Book:** Andrea A. Lunsford, The St. Martin's Handbook, Bedford/St. Martin's (2017).  
The College Writing Program asks that you purchase this book and keep it for your entire college career. You will take at least 3 more writing courses at Lafayette, and this book is a helpful resource.  
Skillman Library keeps a copy of this book available as reference material.
- Additional readings will be posted on the course Moodle site and distributed in class.

## Grades

Grades on various assignments serve multiple purposes:

- To provide feedback on your performance on given assessments (e.g. papers, presentations). Ideally, your performance on such assessments reflects your understanding of the material, i.e. the degree to which you have met learning outcomes.
- To provide more immediate incentives for certain behaviors which are beneficial to your learning (e.g. attending class, completing assignments on time) or to the class as a whole (e.g. participating in class).

Your final course grade will be determined as follows:

Class participation and preparedness	20%
Co-curricular activities	5%
Paper 1 (3-4 pages)	10%
Paper 2 (6-7 pages)	20%
Presentation proposal (5 pages)	15%
Presentation reflection (5 pages)	15%
Presentation	15%

## Detailed description of course components

### Class attendance and participation

This is a seminar course. You are expected to complete required readings before each class meeting so you are prepared for in-class discussions every class meeting. Active participation is required. Brief assignments (in or out of class, announced or unannounced) may be used to gauge preparedness and will be incorporated into this grade. Class attendance is required. If you must miss a class because of athletic commitments or illness, please contact me.

There will be two special sessions of our class taking place in the library, with a librarian. The dates are **Friday Sept 14** and **Monday Oct 1**. On these days, please report to **Skillman 003** at our regular class time.

### Co-curricular activities

Learning does not just take place within the classroom or in prescribed coursework. One of the benefits of being a college student is the wealth of opportunities for co-curricular learning on campus and in the local community. Many lectures, events, and student groups are available to you, and you are expected and encouraged to stretch yourself and experience these opportunities. Some events may be particularly relevant to our course, so I may require attendance at specific events (e.g. Margot Lee Shetterly's talk on Nov 28, 2018). Otherwise, you may choose events that interest you. You will be expected to provide a brief paragraph summarizing **three** co-curricular events you have attended.

### Papers 1 and 2

Papers 1 has an expected length of 3-4 pages double-spaced (~750-1000 words). Paper 2 has an expected length of 6-7 pages (~1500-1750 words). Each of these papers will analyze a science

demonstration of your choosing and may include figures. A figure may count towards the page count (fully or partially), but **ONLY** if you generate the figure yourself and it contains important information which adds to the paper and is not redundant to the text. (Making good figures is an important component of scientific writing and communication, and it can easily take more time and effort than writing text).

Each paper will undergo the draft and revision process. A draft of each paper will be due at least one week before the final due date. The draft must be full length and complete enough to receive valuable feedback for your revision. You will have a conference with our WA about each of these drafts. You **MUST** attend your conference with the WA. I will not grade the final paper if you have not met with the WA. You will also each help a classmate by reading and providing feedback on their paper (peer review).

Timeline for Paper 1 & 2 submission:

Paper 1:

Draft due	Mon Sept 10
Peer review due	Weds Sept 12
Final draft due	Weds Sept 19

Paper 2:

Draft due	Fri Oct 12
Peer review due	Mon Oct 15
Final draft due	Mon Oct 22

## Presentation

You (FYS class) will design and present an 80-min long workshop on science topics for a local fifth-grade class on **Friday, November 16, 2018 from 12:30-1:50pm** (note, it begins earlier than our typical class time). You **MUST** be here for this presentation! This presentation will include scientific demonstrations and hands-on activities. You (FYS students) will design the workshop with input from Prof. Boekelheide and our fifth-grade class's teacher. One meeting with the WA will be reserved for practice.

This will be a group project and the class will determine each student's individual roles. Two individual papers will be associated with this presentation project: a planning/proposal paper before the presentation, and a reflection paper afterwards. The timeline is below:

Presentation proposal:

Draft due	Fri Nov 2
Peer review due	Mon Nov 5
Final draft due	Fri Nov 9

Presentation:

Practice presentation	? Nov 12-14 ?
Actual presentation	Fri Nov 16

Presentation reflection:

Draft due            Fri Nov 30  
Peer review due    Mon Dec 3  
Final draft due    Fri Dec 7

## Intellectual honesty

You are expected to abide by the principles of intellectual honesty outlined in the Lafayette Student Handbook (available from <http://studentlife.lafayette.edu>).

Any writing you submit for this course must be your own, with the exception of quotations used with appropriate references. Any drawings, photos, or figures used in submitted writing must be your own or be credited appropriately.

## Accommodation

It is important to me that nothing impedes your ability to do well in this course. If you have any disabilities which you feel may interfere with your ability to succeed and prosper in this class, please contact me to discuss ways of accommodating them.

*Mandatory statement for any Lafayette course with a disability policy.* In compliance with Lafayette College policy and equal access laws, I am available to discuss appropriate academic accommodations that you may require as a student with a disability. Requests for academic accommodations need to be made during the first two weeks of the semester, except for unusual circumstances, so arrangements can be made. Students must register with the Office of the Dean of the College for disability verification and for determination of reasonable academic accommodations.

## Mandatory Moodle privacy statement

Moodle contains student information that is protected by the Family Educational Right to Privacy Act (FERPA). Disclosure to unauthorized parties violates federal privacy laws. Courses using Moodle will make student information visible to other students in this class. Please remember that this information is protected by these federal privacy laws and must not be shared with anyone outside the class. Questions can be referred to the Registrar's Office.

## Mandatory credit hour statement

The student work in this course is in full compliance with the federal definition of a four credit hour course. **The federal course credit rule requires a total of 180 hours (12 hours/week) of student work over an approximately 15-week semester for a full unit (four credit hour) course.** See the Registrar's Office web site for the full policy and practice statement (<http://registrar.lafayette.edu/additional-resources/cep-course-proposal/>).