Clear writing is clear thinking written down on paper. As a scientist (or researcher), you are expected to think clearly at every turn: to have clear questions and clear answers, to see your field clearly and to clearly identify its knowledge gaps and a clear plan to fill in those knowledge gaps. You need clear writing to do your science. As a scientist, you must also turn around and clearly tell the world about your findings, usually through speaking and writing. Clear writing is essential at every turn. Your readers will question the motivation—Why?—and significance—So, what?—of your work, they will ask you “What?” and “How?” To keep the reader reading and to satisfy them, your responses must be gripping, fluid, and clear. Crystal clear. As a scientist, you aren’t just a technician, a knob-turner, and a data collector, you are also a professional writer.

But, there’s a big problem with you being a professional writer. If you are like most scientists, then you have almost no formal training in writing or communicating science, or even in the process of pitching an idea, scientific or not. The ambition of Physics 410/510 Writing Science is to fill in the gap. In this class, we believe that good science emerges from good writing. Writing isn’t just the act that occurs after the experiments are finished and the data is analyzed, but instead good writing drives the science, good writing is part of the fabric of the scientific process. Good science writing is essential to do good science. Good writing identifies the questions and plans experiments that matter, and then it helps you figure out what your results mean and how these findings transform our understanding of nature. Fundamentally, good science writing tells a story about your research. Like all good stories, your science gets and holds the attention of the audience, from beginning to end, and leaves them with an impactful, lasting message—the moral of the story.

In Writing Science, you will learn to make your science come alive through vivid storytelling. The course will help you develop practical and structured writing skills useful for publishing in peer-reviewed journals, undergraduate and PhD theses, popular scientific reporting, scholarships and grants (e.g. NSF GRFP), and any situation where it is vital to communicate an idea. Furthermore, Writing Science will help you integrate science writing into well-motivated, inspired science. The techniques developed in Writing Science will also be applied to other areas of communication, like oral presentations, posters, and non-scientific writing. Although Writing Science is most appropriate for undergraduate and graduate students who are actively engaged in scientific research, all students are welcome and will benefit from the course.

The point is that you have to strip your writing down before you can build it back up. You must know what the essential tools are and what job they were designed to do. Extending the metaphor of carpentry, it’s first necessary to be able to saw wood neatly and to drive nails. Later you can bevel the edges or add elegant finials, if that’s your taste. But you can never forget that you are practicing a craft that’s based on certain principles. If the nails are weak, your house will collapse. If your verbs are weak and your syntax is rickety, your sentences will fall apart.

William Zinsser, On Writing Well

The goals of this course:

- Use writing and storytelling to make you a better scientist or researcher.
- To make your messages understandable, memorable, and useful.
Sessions: Tuesday and Thursday 2-4 p.m.  
147 Willamette Hall

Instructor: Asst. Prof. Benjamin J. Alemán  
Email: baleman@uoregon.edu  
Office: 178 Willamette Hall  
Phone: 541.346.3321  
Office Hours: Wednesday and Friday from 11-12 noon, by appointment, or stop by.

Teaching Assistant: Josh Ziegler  
TA Office Hours: Tuesday 4-5 Willamette 76, Friday 4-5 Physics Center, Science Library

Textbook and readings:

Most reading for this course will be provided to you in class or through Canvas. However, we do have two required books:

- Joseph M. Williams, Style: Toward Clarity and Grace (University of Chicago Press, 1990)

We will begin using these books around week 4 or 5, so obtain a copy of each before then. Used copies on-line go for about $5-10.

I’ll be using many different sources for this course. The most important sources are:

- Joshua Schimel, Writing Science (Oxford University Press, 2012)
- Anne Lamott, Bird by Bird: Some instructions on Writing and Life (Pantheon, 1994)
- Chip Heath, Dan Heath, Made to Stick (Random House, 2007)
- Jean-Luc Doumont, Trees, Maps, and Theorems: Effective communication for rational minds (Principiae, 2009)

Grading:

Ultimately, your science colleagues and the broader community will grade you. They will see you as an impactful scientist if you do good, motivated science, and then communicate the meaning of your findings in a clear, compelling, lasting way, in a way that always tells a story. If your writing is unclear, or if it lacks coherence and motivation, or if it fails to tell a story, then your science will not be understood or remembered, and it will not drive future science. Your work will fade away.

I want you to be an impactful scientist. To do this, you will need to focus on improving your writing and communication, and work hard at it. Students that worry about grades will lose some of this focus, so I am
removing the stress of grading judgement. However, the University requires that I give you a grade and that this grade reflects your work in the course, so you will get an A in this class if you:

- Show up to class
- Participate in class (ask questions, do in-class activities, stay engaged, etc.)
- Do the assignments

**Types of Assignments:**

- Analyze published and peer papers for story structure, stickiness, data-to-understanding flow, sentence structure, etc.
- Writing. Creative and technical writing, getting things down on paper, describing scenes, etc.
- Analyze ideas for SUCCESs “stickiness.”
- Presentations emphasizing SUCCESs “stickiness.”
- THE OUTLINE that structures the story to drive science and draft the manuscript. Graduate students make at least one of their scientific work. Undergrads write a proposal and a personal statement.

**Due Week 6 (Week of October 29)**

- In-class presentation to sell an idea, make a point, or communicate science. It cannot be about your own research.

**Due Week 8: Exact date/time TBD**

- Scientific paper or proposal draft 1.0. Submit on Canvas as a Word document. **MS Office free from UO at [https://office.uoregon.edu](https://office.uoregon.edu) using your usual UO login credentials (i.e DuckID (joe@uoregon.esdu) and password.)**

**Due by 12:30 p.m. Wednesday, December 5**

- A cheat-sheet for editing writing and for effective communication. **Throughout the term, we will learn about practical strategies for editing writing, so that your writing is more clear, concise, and coherent. Your task is to assemble these strategies into a personal cheat-sheet or reference. This cheat-sheet should also include the core ideas and tools for effective communication.**
- Scientific paper or proposal draft 2.0. Submit on Canvas as a Word document. **MS Office free from UO at [https://office.uoregon.edu](https://office.uoregon.edu) using your usual UO login credentials (i.e DuckID (joe@uoregon.esdu) and password.)**
- In-class presentation on the topic of your research paper. 5-10 minutes max.
## Approximate Course Schedule (subject to change)

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<th>Week</th>
<th>Topics</th>
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| 1 (September 24-28)         | **Writing Science** You are a professional writer (the importance of writing in science), re(writing), laws of communication and the golden rule(s)  
 |                             | **Stories:** Science writing as storytelling, making stories sticky using SUCCESs. |
| 2 (October 1-5)             | Simple, Unexpected, Concrete                                           |
| 3 (October 8-12) *Benjamin out Thursday* | Credible, Emotional, Stories  
 |                             | **Story Structure:** Designing the floorplan  
 |                             | OCAR, LDR, LD, ABDCE Opening, The Funnel                               |
| 4 (October 15-19) *Benjamin out Thursday* | Challenge, Action, Resolution                                        |
| 5 (October 22-26) *Benjamin out Thursday* | The OUTLINE: driving science with writing.  
 |                             | **In-class presentation**                                              |
| 6 (October 29-November 2)   | Toward a clearer story: Wood and Nails  
 |                             | **Style** Internal structure, paragraphs, sentences, words             |
| 7 (November 5-9) *Benjamin out Tuesday* | Clarity. Characters and Actions, Cohesion: A Sense of Flow, Coherence: Well-formed (focusing on a coherent set of characters) Emphasis |
| 8 (November 12-16)          | **Fine Structure:** Gardens and Finials  
 |                             | **Grace.** Energizing writing, Concision, Shape, Elegance.  
 |                             | Real editing.  
 |                             | **Ethics.** Your duties as a scientist and writer                      |
| 9 (November 19-23)          | Abstracts, figures, and tables.  
 |                             | **Other Communication** Talks, posters, etc.                           |
| 10 (November 26-30)         | Grants, loose ends, summary.                                           |
| 11 (December 3-7) *Finals Week* | Final documents and presentations:  
 |                             | **12:30 p.m. Wednesday, December 5**                                  |