



Creative Approaches to Writing About Science

"Talent is insignificant. I know a lot of talented ruins. Beyond talent lie all the usual words: discipline, love, luck, but most of all, endurance." – James Baldwin

ECOL 5620-01 | Tues., 9-noon | Berry 217
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Office hours: 1-2 pm Mondays & 10-11 am Thursdays (Bethann's office)
Co-Writing: 10-11 am, Fridays (ENZI STEM atrium)

Welcome!

I am excited to embark on this journey of writing, thinking, and communication with you! This won't be your typical academic experience. While you will do research, present arguments, and think carefully about how an audience will respond, you won't write standard academic research papers, and you won't be writing just to your course instructor.

This course is predicated upon a widely held (though not unanimous) interpretation of the social contract scientists have with society – that is, that we as scientists have an obligation to engage with (not just talk at) those beyond our discipline. Regardless of your ultimate career ambitions or career paths, engaging with and listening to people inside and beyond your field is critical to professional and civic success. Collaboration and engagement through visual, written, and oral communication is how we learn about, connect with, inform, and affect change in the world.

This semester, you will continuously create, interpret, and share your writing, research, and thinking about how science impacts what we think, what we do, and how we do it. Throughout this course, you will push the boundaries of your creativity and critical thinking; assets for any professional, any citizen. My hope for you is that this course gives you permission to experiment in new ways of writing, and to indulge in approaches to writing that may feel off-limits in standard scientific training and writing. And, I hope that I will learn at least as much from you as you learn from this course. I will be writing, reading, and learning alongside you.

What we're going to work on together won't make for the easiest class you've been in. But that's okay. Authentic learning requires that we take risks, make mistakes, and learn from our experiences. Learning also requires flexibility, repetition, and exploration on our way to mastering skills and knowledge. For this class, we will all strive to contribute to a positive and comfortable learning environment for one another. This includes respecting and actively engaging with the people, ideas, topics, and issues in our course.

I really can't wait to get started! Thank for collaborating as, together, we use this course to enhance our science-related communication skills!

~ Bethann

INCLUSIVE LEARNING COMMUNITY

In order to support your efforts, this course, including affiliated online spaces, supports an inclusive environment that respects the dignity of every person regardless of faith, heritage, sexual orientation or other expression of human identity and difference. In this learning community, we will welcome discourse and intellectual critique but reject harassment in all of its forms. *If you have questions about how this works, how to contribute as a student to this approach to a learning community, etc., do feel free to reach out to me. I am happy to share what resources, etc.*

OVERVIEW

Open to students in all science disciplines, this graduate-level course taps into best practices in Creative Writing, Journalism, the Science of Science Communication, Literature, and Rhetoric and Composition. Creative Approaches is a writing workshop, in which students submit, review, and discuss each other's work on a weekly basis.

In Creative Approaches, students study and produce writing in several genres (e.g., science shorts, fiction, journalism for young readers, and more). Coursework centers around 1) in-class critiques, 2) writing and revision exercises, and 3) discussion of readings drawn from literature in several genres, award-winning science writing, and writing resources. Students also meet individually with the course instructor to discuss individual goals, relevant resources, etc.

While this course is not exclusively focused on scientific/academic writing, students will develop and practice broadly transferable skills which may be valuable in grant writing, interacting with the media, and enhancing writing for popular and academic audiences.

Course is a 3-credit workload; variable credit is offered for students' credit load flexibility.

Course themes will include:

- Understanding your audience and tailoring your language;
- The role of voice, jargon, and plain language in science writing;
- Writing compelling sentences and paragraphs;
- Effective use of metaphors;
- Giving and using effective feedback on writing and strengthening your own writing through editing someone else's;
- Identifying and using models of the type of writing you aim to produce;

COURSE OBJECTIVES

- Learn about and practice essential skills of creating effective written science communication
- Learn about and practice best practices for how to develop science writing for a range of audiences so your research can inspire, educate, raise money, and get published.

Anticipated Outcomes

Skills

- Developing and implementing writing efficiency and accountability plans
- Foundational writing efficiency and efficacy skills, including purposefully using and understanding the composing process and appreciating the importance of revision.

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- Refining science message/story for specific target audiences
- Curating sources and ethics of using others' ideas, writing, etc., for SciComm
- Blog writing
- Peer editing best practices
- Familiarity with writing and reading about science in multiple genres

Knowledge & Experience

- Awareness of how public-facing science writing can enhance scientific communication (e.g., publications, talks, and presentations)
- Awareness of best practices and resources for science writing in multiple genres
- Science writing products which will serve both communication/publication purposes and as portfolio pieces to show potential employers, collaborators, and funders;
- Conduct a lit review by researching and identifying science writing that inspires and informs your own.
- Regular (daily) writing, revision and peer editing experiences

COURSE COMPONENTS

Grading

Grading will be on a linear scale: A: $\geq 90\%$ B: 80-89.9% C: 70-79.9% D: 60-69.9% F: $< 60\%$
See pages 14-17 for Characteristics of ABCD/F writing. See following pages 6-10 for major assignment details.

Course outcomes will be assessed through the following mechanisms:

- Participation (35%)
- Genre drafts (15%)
- Workshop Submissions (15%)
- Writing Project (20%)
- End-of-Course Reflection (15%)

Course Format

This course will operate like an art studio/writing workshop, in that most of our time in class will be spent creating and/or discussing our work and relevant texts (including multimedia texts such as artworks, podcasts, videos, music, and more). There will be workshops based on core skills, but few, if any, standard, one-way lectures. Further, you will have opportunities to learn from (and possibly collaborate) with local writers and artists, consultants, and faculty from several units on campus within and beyond the sciences.

You are expected to come to class ready to discuss and work to communicate key concepts or results from your discipline and/or your own research, as well as your own personal thoughts and experiences in science. Through hands-on, project-based coursework, you will create images that convey these concepts to specific, non-specialist audiences. See separate Resources handout for a list of types of science writing you and your peers may produce.

Risk-Taking & Safe Learning Environment

Authentic learning requires that we take risks, make mistakes, and learn from our experiences. Learning also requires flexibility, repetition, and exploration on our way to mastering skills and knowledge. In this class, we will all strive to contribute to a positive, productive, and safe learning environment for one another. This includes respecting and actively engaging with the people, ideas, topics, and issues in our course. See Inclusive Learning Community statement (page 2) for details.

Course Websites

1. WyoCourses (uwyo.instructure.com/courses/535361)

I will use WyoCourses to post announcements, assignments, resources, and other course materials. To that end, be sure to check all your settings within WyoCourses, and adjust them to ensure you receive updates (via announcements, assignment postings, etc.) from within the course system. After the first week of classes, all announcements and assignments will be distributed via WyoCourses, not via emails.

2. Engage Laramie Science (engagelaramie.science.blog)

This public-facing site is for sharing your work and practicing public/popular science writing, etc. See syllabus pages 9 for details. As the course progresses, I may invite you to share some of your work here. You will also have one assignment specifically designed to create a blog post for this website. You will always have the option to indicate that you do not want your material (submitted homework) to be shared publicly/published on the blog or used as an example in class. *Please indicate this in the file or in a message accompanying your submission to WyoCourses. That will ensure that note stays with the material through and beyond the semester.*

COURSE SCHEDULE

Everything in this schedule is subject to change. I will provide as much notice as possible if anything changes. Course readings, assignments, and contents will be adjusted to your needs as we move through this course together. Such changes may include guest speakers as relevant and possible.

Course Calendar in Brief

A detailed course calendar, with assignment specifics, will be available via the assignments function on WyoCourses.

Weeks 1-7	Themes: <ul style="list-style-type: none">• Overview & Introductory Exercises• Science Writing Genre Survey• Writing Efficiency and Efficacy Toolkit	Product: <ul style="list-style-type: none">• Several short science writing drafts in distinct genres• A detailed work plan for independent projects
Weeks 9-12	Science Writing Project 1 Product: a refined piece of science writing (developed from one of the drafts from course phase 1)	
Weeks 13-16	Science Writing Project 2 Product: a refined piece of science writing (developed from one of the drafts from course phase 1); can be a lengthier version of Project 1, if appropriate	
Throughout the course	Project Reflections Product: written reflection: self-assess one of your two major writing projects or a collection of the genre explorations; public-facing and will be published online.	

Course Calendar

Week/Date	Assignments Due Mon. 8:00AM	Activities	Workshop	Notes
Week 1 28 January		Writing About Science: SciComm Self-Reflection Survey; in-class writing; goals; course overview.	--	
Week 2 4 February	Course goals; 3 SciWri models; readings; weekly writing log	Visualizing Science Writing through Art: in-class writing; project ideas discussion.	--	Meet at UWyo Art Museum
Week 3 11 February	SciArt draft 1; readings; weekly writing log; proj. ideas	Writing Advice: Discuss readings & project ideas; in-class writing.	--	
Week 4 18 February	Proj. plan draft 1; SciArt draft 2; readings; weekly log	Science of Science Communication: Discussion: readings & workshop submissions. In-class writing.		
Week 5 25 February	readings; weekly log; reader responses	Poetry & Science: Discuss readings & project ideas; in-class writing.		
Week 6 3 March	Readings; weekly log; reader responses	Fiction & Science: Discuss readings & project ideas; in-class writing.		
Week 7 10 March	Readings; weekly log; reader responses	Comics & Science: Discuss readings & project ideas; in-class writing.		
Week 8 17 March -	Readings; weekly log; reader responses; proj. plan final	Essays & Science: Readings TBD.	Spring Break – keep reading & writing; no class	
Week 9 24 March	Readings; weekly log; reader responses	Science Journalism: Discuss readings & project ideas; in-class writing.		Submit 1 piece (inspiration, reference, comparison) with your own.
Week 10 31 March	Readings; weekly log; reader responses	Discussion: readings & workshop submissions. In-class writing.		
Week 11 7 April	Readings; weekly log; reader responses	Discussion: readings & workshop submissions. In-class writing.		
Week 12 14 April	Readings; weekly log; reader responses	Discussion: readings & workshop submissions. In-class writing.		
Week 13 21 April	Reflection outline	Discussion: readings & workshop submissions. In-class writing.		Readings based on class-decided theme(s).
Week 14 28 April	Reflection 1 st draft	Discussion: readings & workshop submissions. In-class writing.		
Week 15 5 April	Reflection 2 nd draft	Discussion: readings & workshop submissions. In-class writing.		
Week 16 12 April	Reflection final	Discussion: readings & workshop submissions. SciComm Self-Rflx Survey.		

REQUIRED MATERIALS

You!

Every day, you will be responsible for engaging in class discussion as an informed, thoughtful, and respectful classmate. In order to get the most out of class, and to be a valuable addition to your classmates' experiences, please arrive in class having engaged with the material assigned. Most importantly, strive to bring your enthusiasm, curiosity, and good will to class every day. But, I get it – life happens. We'll work together to mitigate.

Course Texts

All course texts will be provided via WyoCourses. If you wish to use e-versions of course readings, you may use personal technology in class. Assigned "texts" will include a mix of

peer-reviewed and popular writings, as well as multimedia (videos, podcasts, etc.). Brief written or visual reflections on the texts will often be integrated into assignments, to stimulate your own metacognitive thinking about how you are applying the material.

Note-Taking/Drafting

Some research suggests that writing notes on paper helps you learn and study better. But if you have a need or preference to use a digital device, that's fine. Out of respect for everyone's privacy, audio or video recording in class is prohibited unless prior authorization is granted. A sketchbook or notebook with blank pages or gridded pages (vs lined pages) would be a great idea but is not required for notes and drafting (see next section for more on materials).

Technology

You will need consistent access to a working computer and printer for this course. Contact me well in advance if you need to trouble-shoot this. You will submit digital versions of your work for assignments. You are welcome to bring your laptop/tablet to do and display class-related work.

Assignments

In-class work will depend upon the design, drafting, writing, revision, research, and other project development work you do outside of class. Please come to class with assigned work completed. We will use YOUR work every day for full-class workshops, small-group discussions, peer review, and individual revision. Always bring a current draft of your work-in-progress to class in a format you will be able to share with a partner or in a small group. For peer editing sessions, two copies of written work should be printed and brought to class.

COURSEWORK

Thinking and communicating go hand-in-hand, and thus revision is an essential aspect of the composition and design process. Most assignments will involve a combination of drafts, peer reviews, and instructor feedback. Demonstrated engagement in this process will be a key component of how your work is graded. You will receive rubrics and explanations of specific expectations, along with brainstorming, research, drafting, and revision assignments, at appropriate stages of each assignment.

Your References & Inspiration

For each assignment, you will submit 3+ citations of science writing serving as inspiration or resources, along with commentary or captions about how they are informing your work. Consider these as references, even if they are popular or literary. Cite/treat them as you would text references from your discipline's literature. Doing this research and thinking about how other science writing works and was created, will enhance your fluency in science writing and inform your own approach to it. Learning from others to many SciComm traditions, just as learning from prior research is a key part of science.

Deadlines & Submitting Assignments

I understand that life happens, and I am happy to be flexible in consideration of that. However, regular failure to complete assignments (informal or formal) and/or low

investment/participation in class will be considered when assigning final grades. You are expected to turn in drafts of assignments on the dates they are due. Failure to submit assignments on time can result in: 1) limited or no feedback, and 2) a reduction in your grade on that assignment and/or in your final course grade. In extreme circumstances, failure to turn in assignments and/or participate in class can result in failure of the course. If you anticipate needing a deadline extension, please make such arrangements at least one week prior to the due date.

Deadlines will typically be Mondays at 8:00 a.m. This time/date provides time for me to review your submission before our next class. It also respects that you have other things to do with your time in the evenings/weekends.

Submit files to WyoCourses as .doc, .docx, or .PDF files using the following naming style: YYYYMMDD_FirstLast_Assignment_1.

Diagram illustrating the naming convention: YYYYMMDD_FirstLast_Assignment_1. Brackets indicate the following components: YYYYMMDD (Date submitted), FirstLast (Your name), Assignment (Identify assignment), and 1 (#s if submission has 2+ parts).

MAJOR ASSIGNMENTS

Coursework will be assessed through the following:

- Participation (35%)
- Genre drafts (15%)
- Workshop Submissions (15%)
- Writing Project (20%)
- End-of-Course Reflection (15%)

Additional, detailed assignment prompts will be provided, via WyoCourses, for individual assignments that scaffold up to completing these major assignments.

1. Participation (35% of final grade)

Every Wednesday, and when you participate in office hours and co-working sessions, you will be responsible for engaging in discussion as an informed, thoughtful, and respectful classmate. In order to get the most out of class, and to be a valuable addition to your classmates' experiences, please arrive in class having engaged with the material assigned. Much of your in-class work will depend upon the design, drafting, writing, revision, research, assigned readings and supplemental readings, and other project development work you do outside of class. Thus, please come to class with completed assignments.

Participation

Your participation in class exercises and discussion is critical to the quality of your experience in the course and the success of your fellow students. Make every effort to attend and actively participate in each class meeting.

However, you are free to choose not to attend a class meeting if the circumstances warrant. You are responsible for classes you miss. If you are not in class, you will, of course, not be able to be assessed for participation that day.

If low attendance becomes a persistent issue, a more restrictive policy may be put in place. If you anticipate being absent, please plan ahead to turn in assignments, etc. I reserve the right to lower your course grade for poor attendance or routinely late work.

Key components of course participation include:

- **Reader Notes/Response:** Submission of reader notes for each classmate being workshopped on a given week. Submit via WyoCourses *and* print a copy for each classmate. Should be roughly one single-spaced page (more if you like). Can also provide a print-out or digital version of the writing you are responding to, with comments written in the margin. You will provide each writer feedback on: what they are doing well, what could benefit from revision (try to be specific), what kinds of questions or reactions you are having to the work. You may also discuss subject, form, technique, syntax, angle of approach, context, etc. I will not directly respond to your responses, but I will learn from them about what you see and are drawn to, and that can help me support *your* writing.
- **Daily Writing:** Reported through weekly submission of a writing log. At a minimum, each day's entry should account for: minutes & words/day, brief description of content, stage of development, next steps, support needed, successes, etc.
- **Suggesting Course Readings:** First series of workshops, one piece to accompany your own submission. This piece may be inspiration, reference, warning/counter-example, etc.
- **In-class Participation:** Active participation in discussions and activities in-class, per the rubric below.

Participation Rubric

Assignments = in-class and out-of-class assignments and activities

element	exceeds (A)	satisfactory (B)	needs work (C)	unsatisfactory (D/F)
frequency	actively balances self and peers' participation	actively participates at appropriate times	sometimes participates, sometimes disengaged	seldom participates; generally not engaged
impact on class	expands conversation in novel, mutually productive ways	frequently helps advance conversation	sometimes advances conversation	does not advance or actively harmful to conversation
listening	holds space so peers are fully included, heard, and engaged	actively and respectfully listens to peers and instructor; does not interrupt	sometimes displays lack of interest or interrupts	projects lack of interest or disrespect for others
preparation	engages beyond what is assigned	fully prepared	sometimes unprepared or superficial prep	little evidence of thought about assigned material
quality	brings in new, relevant material and/or invests in self & peer growth	relevant; reflects understanding of assigned texts & peers' remarks	sometimes irrelevant or betrays lack of prep or lack of attention to peers' remarks	little understanding of, or engagement with, the assignment or peers' remarks

2. Genre Drafts (15% of final grade)

In Unit 1, weeks 1-7, you will draft science writing in several genres. Through assignments and in-class work, you will establish a foundational toolkit of drafting, revision, peer editing, writing-project planning, etc.

3. Workshop Submissions (15% of final grade)

Submission of two pieces of writing, per schedule to be finalized on first day of class. For the *second* round of submissions, you will submit one short piece (max 500 words) for us to read along with your own. You may submit an author's note with clarifications, questions, requests for certain focus from the readers. This note should be *at the end* of your piece, so it does not influence the first reading of your work.

4. Writing Project/Final Workshop Submission (20% of final grade)

Throughout the class (ideally) or at a minimum during Unit 3, weeks 13-16, you will research and develop a writing project that meets your own objectives. You will create this project by selecting a skill and/or product you'd like to develop to communicate about your research and a specific target audience. E.g., you might write a piece for *Ranger Rick* or *Cricket*, write a series of poems or short stories for submission to a literary or popular science/nature magazine (e.g. *Orion*, *EcoTone*, *Natural History*), draft a grant proposal (with particular emphasis on the broader impacts component), or work on an essay/memoir piece.

You should expect to invest significant time to all phases of this project. There will be scheduled check-in/update sessions in class, and there will be time to work on your project in class. However, your project will be self-directed, and you should plan to work on it outside of class, as well. To that end, an early requirement of the project will be submission of a work plan and updates about how you are doing with the plan.

5. Project Reflection/Blog Post (15% of final grade)

By the end of the semester, you will write a reflection/meta-analysis of one of your three workshop submissions. It will be a reflection/self-assessment that is *at least 250* words about: 1) what you intended to make (and how you did on that goal), 2) target audience, 3) narrative considerations you incorporated, 4) 3+ references that inspired or otherwise informed your writing, and 5) what you would change if you were to revise or continue working on the project.

Component of Complete Blog Post	Complete
Image & image credit/attribution	√
Alt text for image	√
Text to accompany image 250-500 words	√
Social media post sharing blog post	√
Byline (author attribution)	√
3+ references, accounting for <i>both</i> inspiration/role models <i>and</i> substantiating content you present.	√

Outlet: This reflection will be published on the public-facing course website/blog: engagelaramie.science.blog. This website hosts public-facing, regular updates from course activities, including projects in-progress, social media posts, reflections, plans, struggles, celebrations, etc. If you want to learn about the back end of using a website, let me know! We can arrange for you to do that part, too.

Submission/Assessment: Submit your reflection via the established assignment page on WyoCourses when you have it completed, which should be no later than the due date, but can certainly be earlier. Depending on the stage of the writing process your reflection is in when you submit it, 1) it may be directly posted to the course website or 2) I will

collaborate with you to edit and refine it into a single-authored, polished piece which you can include in the Popular Publications section of your CV.

ACADEMIC INTEGRITY

Participating regularly in discussions and staying up to date on coursework is an important aspect of academic integrity. In addition, you must also follow UW's Academic Honesty Code (UW Regulation 2-114; bit.ly/uwyoreg-2-114), which prohibits acts of plagiarism. For the purposes of this course, plagiarism is presenting the writing, images, or other intellectual property of others as one's own without appropriate permission, attribution and/or citation. Just as you cite written sources, you are expected to attribute images with the same diligence. If you have questions about how to credit and/or cite sources and images in your work, please do not hesitate to seek my assistance.

SUPPORT

Disability Statement

If you have a physical, learning, sensory or psychological disability and require accommodations, please let us know as soon as possible. You will need to register with, and provide documentation of your disability to, University Disability Support Services (UDSS) in SEO, room 330, Knight Hall.

Email, Staying in Touch, and Instructor Support

University of Wyoming data indicates students who seek additional support for their coursework tend to do better. I will be actively engaged in your work throughout the course, in class and in response to assignments. We will meet throughout the semester during one-on-one meetings dedicated to discussing your work as you progress through the course. I will provide regular feedback on your work, and I will bring in resources, suggest additional readings, etc., as I think you may find them useful. Please check your e-mail daily so you can stay informed of any course updates.

Office Hours for Students

The time that I have listed as office hours is time for you, and I will be available for whatever you need. This is not mean that I will sit waiting for students to come. :) I will be doing other work if you do not come by. However, if you stop by during office hours, my other work will be paused, because this time is yours. We can talk about the course, the department, science and SciComm topics, nuances and challenges of grad school, career possibilities, and more.

Additionally, if my door is open at other times, feel free to stop in. If I am unable to meet with you right then, I'll let you know, and we can schedule a time to meet that works for both of us. I am also available for additional meetings by appointment, which can be arranged by emailing me or using this meeting request link: calendly.com/bgmerkler.

To help you get the most out of office hours and other meetings with me, please come prepared. The chart below may be helpful for getting your thoughts in order prior to meeting. Please let me know (in advance if possible) what kind of meeting you'd like.

Meeting Type:	We Greet	We Meet	We Work
Structure	5-min. micro meeting	Traditional; 15 minutes	Co-working in group
Location	BioSci 408	BioSci 408	ENZI STEM atrium

When	Start of semester; office hours	Throughout semester; office hours	10-11 AM, Fridays
Best For	Quick chat or question	Help with material; talking about school, life, future plans, etc.	Productivity partners; unfacilitated peer feedback, regular writing/revision time

Note: this detailed description of what office hour are and how students can use them is inspired by research and widespread faculty experience that many students do not come to office hours and/or do not realize that these are hours dedicated to students (vs. being hours students should explicitly not interrupt the professor). See more on this topic from Dr. Amy Nusbaum (@amy_nusbaum) and Dr. Viji Sathy (@vijisathy) in this thread on Twitter (bit.ly/OfficeHoursInsights) and this blog post from Dr. Meghan Duffy: dynamicecology.wordpress.com/2019/05/22/making-office-hours-more-accessible-should-we-be-calling-them-student-hours-and-recording-them-what-else-can-we-do/. Feel free to adapt this material for your own current and future syllabi.

Support Beyond This Course

I am willing to help if you're having any difficulty within or beyond the course, so please don't hesitate to schedule an extended meeting if you have questions, concerns, or difficulties with the class or beyond. I check email daily on weekdays (excluding UW/yo holidays or when traveling for work or on leave). Still, there are times when it may take a day or more to reply to your messages, so plan accordingly.

Duty to Report

I am committed to supporting students and upholding the University's non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, harassment, or assault, assistance and resources are available. You are not required to make a formal complaint or participate in an investigation to access them. You do not have to go through the experience alone.

If such an incident occurs, you may choose to report it. Whether or not you report, you may choose to talk about your situation with a trusted faculty member, teaching assistant, or other university employee. You are welcome to do so.

It is important that you understand that as a "Responsible Employee" of the University, all university employees **MUST** report information you share about such incidents to the university's Title IX Coordinator. You may choose whether you or anyone involved is identified by name.

If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are people who can meet with you. Faculty can help direct you or you may find info about UW policy and resources at uwyo.edu/ReportIt.

RESOURCES

On-Campus Resources

- the EcolInfo Working Group drop-in (contact Shannon Albeke at WyGISc for details)
- UW Writing Center:
- UW Oral Communication Center:
- Wellness Center, see links for spring schedule:
<http://www.uwyo.edu/rec/wellness-center/> and

http://www.uwyo.edu/rec/wellness-center/_files/docs/current-wellness-programs.pdf

Writing Resources

This is not an exhaustive list. Please contribute to the on-going development of it by adding resources to the course website discussion thread about resources:

bit.ly/SciWriResourceThread.

BOOKS

- Baron, Nancy. 2010. *Escape from the Ivory Tower: A Guide to Making Your Science Matter*.
- Bean, John, C. 2011. *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom*.
- Blum, Deborah, Mary Knudson, and Robin Marantz Henig (eds). 2006. *A Field Guide for Science Writers*.
- Carpenter, Siri (ed). 2020. *The Craft of Science Writing: Selections from The Open Notebook*.
- Chilson, Peter and Joanne B. Mulcahy. 2017. *Writing Abroad: A Guide for Travelers*.
- Dillard, Annie. 1990. *The Writing Life*.
- Goldberd, Natalie. 1986. *Writing Down the Bones: Freeing the Writer Within*.
- Gray, Tara. 2015. *Publish and Flourish: Become a Prolific Scholar*, 2nd ed.
- Gutkind, Lee. 1997. *The Art of Creative Nonfiction: Writing and Selling the Literature of Reality*.
- Heard, Stephen B. 2016. *The Scientist's Guide to Writing: How to Write More Easily and Effectively Throughout Your Scientific Career*.
- Jacob, Dianne. 2010. *Will Write for Food*, 2nd ed.
- Jackson, Brian. 2017. *Mindful Writing*, 2nd ed.
- Klinkenborg, Verlyn. 2012. *Several Short Sentences About Writing*.
- Lamott, Anne. 1995. *Bird by Bird: Some Instructions on Writing and Life*.
- LaPlante, Alice. 2007. *The Making of a Story: The Norton Guide to Creative Writing*.
- Mills, Harry. 2000. *Artful Persuasion: How to Command Attention, Change Minds, and Influence People*.
- Nijhuis, Michelle. 2016. *The Science Writers' Essay Handbook: How to Craft Compelling True Stories in Any Medium*.
- Olson, Randy. 2009. *Don't Be Such a Scientist: Talking Substance in an Age of Style*.
- Pinker, Steven. 2014. *The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century*.
- Silvia, Paul J. 2007. *How to Write a Lot: A Practical Guide to Productive Academic Writing*.
- Zinsser, William. 2013. *On Writing Well*. (Several prior editions exist, as well.)
- Wagner, Tony. 2101. *Creating Innovators: The Making of Young People Who Will Change the World*.
- Wood, James. 2008. *How Fiction Works*.

WEBSITES

Some of these are websites for excellent publications featuring top-notch science writing. Others are science writing resources.

- *EcoTone* magazine/literary journal: ecotonemagazine.org
- *High Country News* magazine: hcn.org
- *High Desert Journal* magazine/literary journal: highdesertjournal.com
- National Association of Science Writers: nasw.org/writer-resources
- *Orion* magazine/literary journal: orionmagazine.org
- The Last Word on Nothing: lastwordonnothing.com
- The Open Notebook: theopennotebook.com
- *Western Confluence* magazine (published by the Ruckelshaus Institute at UWyo; offers student internships!): westernconfluence.org

Your Instructor as Resource

To provide a bit of context for the kinds of support I can provide you, I am including a brief bio. Feel free to engage with me further if you'd like to hear more about my career background (widely varied, mostly outside academia), etc. You can also learn more about me by following these links:

- uwyo.edu/zoology/people/merkle-b.html
- commnatural.com
- ecologicallytruestory.org
- Online via @CommNatural

Bio: Bethann Garramon Merkle, MFA is an award-winning science communicator and scicomm researcher. She has written over 300 articles, and she has bylines and illustrations in several books and publications including *Nature*, *American Scientist*, *BioScience*, *Ecology and Society*, *Western Confluence* and more. She is an associate editor of *Natural Sciences Education*, the founding editor of the Communicating Science section of *The Bulletin of the Ecological Society of America*, co-founder of the Communication and Engagement section of ESA, and director and co-founder of the University of Wyoming Science Communication Initiative. Specializing in art-science integration and inclusive science communication, she has trained nearly 600 scientists on how to enhance their efforts to share their science with diverse, public audiences and raise funding to do so.

Current Writing Projects: I have manuscripts in various stages of development for the research described below. I am also working on three book-length projects: 1) An Ecologically True Story: Reinterpreting the Fable of the Tortoise and the Hare; 2) Naming the Bones: Ecological Oblivion and Self-Discovery in the Heart of the Rockies; 3)

Research Interests: I am interested in the integration of the arts and humanities into science education, research, and communication efforts. I am particularly fascinated by the role stories play in shaping public perspectives of science and ecology topics. I am currently conducting research on: 1) efficacy of drawing as a science learning and teaching tool, 2) mechanisms of effective training to enhance scientists' communications skills, and

3) assessment and evaluation of broader impacts and outreach programs within the Biodiversity Institute and WY EPSCoR. This work is conducted with an express goal of enhancing public engagement with science and expanding access to and participation in science through the application of best practices in the science of science communication and in the field of diversity, equity, inclusion and justice.

Characteristics of ABCD Writing

Characteristics of “A” Writing

Audience and Content

- The material challenges the intelligence and sophistication of the target audience *in a productive fashion* and is clear to readers beyond the writer's classroom.
- A single focus is emphasized through the entire text, and is developed with significant and interesting details, examples, and discussion. If more than one focus is incorporated, it is done so in a manner that is effortless for the reader to follow, and connections between the two foci are meaningful.
- Outside sources are relevant, credible, and are clearly introduced and integrated into the discussion presented by the writer.
- The writing artfully fulfills the assignment criteria.

Organization and Format

- The argument or focus of the text is clearly emphasized.
- The overall pattern is artfully conceived.
- The focus is developed through a sequence of related paragraphs.
- Paragraphs are purposefully organized and substantially developed with supporting evidence or detailed examples.
- The opening and closing are inviting, challenging, and appropriate.
- Transitions between and within paragraphs are explicit, clear, and purposeful.
- As applicable, elements of digital design reflect careful attention to conventions and detail.
- References to sources are cited and documented using consistent guidelines from the writer's discipline (ex: MLA, APA, etc.).

Style and Mechanics

- Sentence structure varies according to the content and purpose of the assignment.
- Sentences are clear, logical, and enjoyable to read.
- Word choice is precise, interesting, and appropriate to the writing task and target audience.
- The language is mature and idiomatic.
- The tone complements the writer's purpose and suits the audience.
- Deviations from standards in grammar, spelling, punctuation, or usage do not interfere with communication; rather, they appear to be deliberate on the author's part.

Characteristics of “B” Writing

Audience and Content

- The material is thoughtful and engaging to the intended audience and is clear to readers beyond the writer's classroom.
- A single focus runs through the entire text. If more than one focus is incorporated, it is done so in a manner that is not overly challenging for the reader to follow, and connections between the two foci are apparent.
- The focus is developed with appropriate details, examples, and discussion.
- Outside sources are relevant and are clearly introduced and integrated into discussion.
- The writing clearly fulfills the assignment criteria.

Organization and Format

- The argument or focus is clearly identifiable.
- The overall flow/sequencing of the text is clear and sensible.
- The focus is developed through a sequence of related paragraphs.
- Paragraphs are clearly organized, but some may lack richness of detail or evidence.
- The opening and closing are appropriate to the focus.
- Transitions between and within paragraphs advance the writer's ideas.
- As applicable, elements of digital design reflect attention to conventions and detail.
- References to sources are generally cited and documented using consistent guidelines from the writer's discipline (ex: MLA, APA, etc.).

Style and Mechanics

- Sentences are varied in structure, only occasionally choppy or repetitive.
- Sentences are generally clear, logical, and readable.
- Word choice and vocabulary are appropriate to the writing task.
- The language is idiomatic.
- The tone is appropriate to the writer's purpose and audience.
- Deviations from standards of grammar, spelling, punctuation, or usage rarely interfere with communication, and the reader may think they are intentional.

Characteristics of “C” Writing

Audience and Content

- The material is reasonable, but it may not fully engage the intended audience; sections may be unclear to those outside the writer's classroom.
- A single focus runs through the text, although parts may wander from the central idea. If more than one focus is incorporated, it may occasionally be challenging for the reader to follow, and connections between the two foci may not always be apparent.
- The focus is generally developed with details, examples, and discussions.
- Outside sources are generally relevant, although not always clearly introduced or integrated into the discussion.
- The writing reasonably fulfills most assignment criteria, though minor aspects of the assignment may be missing, unclear, or underdeveloped.

Organization and Format

- The argument or focus is identifiable.
- The writer establishes an overall pattern for the text to follow.
- The focus is generally developed throughout the text, although some paragraphs may appear out of sequence or slightly off-track.
- Paragraphs tend to lack richness of evidence or detailed examples.
- The opening and closing generally support the topic and focus.
- Transitions are evident, but may be abrupt or mechanical.
- As applicable, elements of digital design reflect some attention to conventions, though details are sometimes inconsistent.
- References to sources are generally cited and documented, but not always according to consistent guidelines from the writer's discipline (ex: MLA, APA, etc.).

Style and Mechanics

- Sentences tend to be basic, choppy, or structurally repetitive.
- Sentences are generally readable, but ideas may be hard to follow from one part of the text to the next.
- Although most words appear to be well-chosen, some may not be as precise or apt as they could be.
- Occasional lapses from comprehensible writing occur.
- The tone, though generally consistent, at times appears inappropriate to the writer's purpose and audience.
- Deviations from standards of in grammar, spelling, punctuation, or usage interfere with communication and impair the writer's credibility.

Characteristics of "D" Writing

Audience and Content

- The material does not fully engage the abilities of the intended audience or is unclear to those outside the writer's classroom.
- No coherent focus runs through the entire text.
- Ideas are stated, but not developed with details, examples, discussions.
- Outside sources may be irrelevant or misinterpreted and/or are often not clearly introduced or integrated.
- The writing fails to fulfill several assignment criteria.

Organization and Format

- The argument or focus is overly general, missing, or unclear.
- The writer hasn't established a clear pattern for the text to follow.
- Attempt at focus development is evident but unsuccessful; paragraphs frequently seem unrelated or repetitive.
- Paragraphs are poorly constructed and contain little supporting detail.
- The opening and closing are overly general, missing, or misleading.
- Transitions are weak, ineffective, or missing.

- As applicable, elements of digital design reflect little attention to conventions or detail.
- References to sources are not clearly cited; documentation consistently ignore consistent guidelines from the writer's discipline (ex: MLA, APA, etc.).

Style and Mechanics

- Sentences are frequently basic, choppy, or repetitive.
- Sentence problems impede effective communication.
- The reader must reread many sentences in order to comprehend them.
- The writer displays inadequate control of diction; word-choice problems are frequent, as are problems with idiom.
- The tone frequently appears inappropriate to the purpose and audience.
- Many errors in spelling, grammar, punctuation, and usage impede communication and damage the writer's credibility.

Characteristics of "F" Writing

In addition to many "D" characteristics, the writing does not fulfill basic assignment criteria, including word count expectations, source integration requirements, submission of early drafts, and the like.