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Course Design

Collaborative Course Design in Scientific Writing: Experimentation and Productive Failure

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Course Description

English 3820: Scientific Writing, a writing-intensive (WI) course offered by the Department of English at East Carolina University (ECU), serves primarily science majors. According to the course catalog, it provides students with “practice in assimilation and written presentation of scientific information.” The course asks students to consider the situated nature of scientific writing and also to produce scientific writing for various audiences. Throughout the course, students examine theories, methodologies, and ideologies that undergird scientific writing with an eye to perfecting both critique and imitation of scientific styles.

Institutional Context

East Carolina University, a doctoral/research institution with about 27,000 students, serves a largely rural population. Approximately 60% of enrolled students are female, 20% are minorities, and 12% are from outside North Carolina. The scientific writing course has been taught through the Department of English since at least 1967. As of 2014, it was listed as a 3000-level course option for students majoring in biology, chemistry, geography, and sociology and as an elective for students pursuing English majors and minors as well as the undergraduate certificate in business and technical communication, also offered through the Department of English. Further, all ECU students are required to take two writing foundations courses (one at the 1000 level and one at the 2000 level) and two WI courses (one of which must be within the major), which means that English 3820 primarily fulfills a WI requirement for students in the sciences. Anecdotally, the course is populated with mainly biology and chemistry students; among students graduating with biology and chemistry degrees, about half are male and the other half female and about one-third identify as minority. The Department of English has offered two to three sections of scientific writing each semester for at least the last 10 years. In that time, the course has been taught primarily by full-time teaching instructors and occasionally by tenure-track/tenured faculty in technical and professional communication (TPC).

The recent introduction of ECU's Quality Enhancement Plan (QEP), part of the university's reaccreditation process, has significantly altered the nature of composition instruction as well as WI courses (like scientific writing) across the university. The QEP is a "multi-faceted, multi-year project to integrate, align, and reinforce writing instruction for students from the day that they begin their first classes at ECU to the day that they complete their degrees and transition into the workplace or advanced study" (Academic Affairs).¹ Given this university-wide emphasis on writing, faculty from rhetoric, composition, and TPC have been central to formulating collaborative efforts with partners, especially with colleagues from biology, chemistry, and business.

One of the QEP initiatives includes the Writing Mentors program, first implemented in the 2013–14 academic year, which embeds mentors into individual WI courses to provide "additional, targeted writing support" (Ballard, Weismiller, and Sharer 42). Although the QEP provides most of the funding for this program, individual departments with graduate assistants may also support a writing mentor for a class in their department, with the Writing Center providing training and support. This was the case with this experiment in English 3820; the graduate program in the Department of English funded Shane Combs as a mentor in one of the two sections of English 3820 that we report on in this article. Graduate students often work for a semester in a writing center context before becoming a peer mentor, and they always have at least a four-hour professional development session to prepare them for the task; Shane had both experiences as a precursor to his work as a writing mentor in English 3820.²

Spring 2014 provided TPC faculty Erin and Michelle the opportunity to collaborate on this specialized WI course and to incorporate a writing mentor within one of the sections.³ Neither of us had taught the course before, and we were excited to incorporate our disciplinary knowledge related to health, medical, and science rhetorics in helping students communicate within their disciplines and to public or lay audiences.

In addition to specific student learning outcomes developed for the course, English 3820 incorporated the following QEP learning outcomes, which have been adopted by all WI courses:

1. Use writing to investigate complex, relevant topics and address significant questions through engagement with and effective use of credible sources.
2. Produce writing that reflects an awareness of context, purpose, and audience, particularly within the written genres (including genres that integrate writing with visuals, audio or other multi-modal components) of their major disciplines and/or career fields.

3. Demonstrate that they understand writing as a process that can be made more effective through drafting and revision.
4. Proofread and edit their own writing, avoiding grammatical and mechanical errors.
5. Assess and explain the major choices that they make in their writing. (Ballard, Weismiller, and Sharer 42)

The assignments developed for the course helped students meet these course outcomes, and both classes used peer review. Students in both sections contributed to the university writing portfolio pilot during the Spring 2014 semester by uploading a piece of writing from the course and answering a series of metacognitive questions related to it. We also asked students to assess each of their major projects and discuss the rhetorical choices they made.

Theoretical Rationale

A specialized course like scientific writing can help teachers of composition to expand our knowledge of pedagogical possibilities. More specifically, we speak to the value of a scientific writing course for primarily science majors taught out of an English department, and we demonstrate how this course design both reflects and builds upon the value of transdisciplinary writing courses. Further, we explore the value of some specific tactics—collaborative course design, the use of writing mentor programs, and cross-class collaboration—in this specific set of circumstances.

Our version of English 3820 asked students to “consider the situated nature of scientific writing and also to produce scientific writing for various purposes.” The design of this course focuses on moving students into a rhetorical space where they can explore the socially constructed nature of science, scientific rhetoric, and scientific traditions (Haraway; Harding; Wilson). Like Sarah Perrault, we wanted students “to see science as a sociocultural phenomenon, to see how it shapes and is shaped by the larger culture of which it is a part” and to “recognize the discursive nature of science-related texts, and to be able to identify and critique the rhetorical moves in those texts in terms of how those moves construct popular understandings of science” (116). To that end, we took a critical approach to the theories, methodologies, and ideologies that undergird scientific writing and asked students to work on both critique and imitation of scientific styles; critical pedagogies allowed for a productive combination of reflection on and immersion in these scientific styles. For example, Erin approached the class from an “apparent feminist” perspective (Frost), while Michelle took a critical gender studies approach (Butler; Halberstam; hooks). In both cases, students knew at the outset that we would be critiquing the notion of scientific objectivity and that their professors were

purposefully making their own biases explicit in an effort to facilitate intellectual discussion about scientific debate and communication. In short, we were—and are—seeking to develop “a pedagogical approach that is inclusive to all racial/ethnic and gender groups” without being “exclusive to other cultural traditions” (Perryman-Clark 116-17).

As part of our effort to achieve both inclusivity and student investment, we created a series of three assignments that allowed students to engage deeply with a particular scientific topic of their choosing. They began with a field research assignment in which they researched a broad area of interest (e.g., genetics, conservation, planetary geography) and became familiar with journals that publish work in that area. For their second major project, they chose a more focused topic and produced a complete scientific article for one of the journal venues they had previously identified. Finally, they turned that scientific article into an article suitable for publication on CNN.com, a major news site directed at a general audience.

Students approached this final paper from a place of deep investment in their scientific topic and, as such, the task of reducing complexity while maintaining relevance was extremely challenging. This assignment was intended to produce cognitive dissonance (Festinger). These student authors were deeply disciplined to believe that everything in the science articles they had produced was vital; further, their investment in time, energy, and revisions made it hard to let go of anything deemed important for a scientific audience. However, the lay article required them to prioritize: They had to let go of many pieces of information in order to communicate effectively to nonscientific audiences. Thus, this assignment required that students believe that their own scientific article was so relevant and important that reducing its complexity was unethical while also believing (or at least appearing to believe) that communicating scientific topics to the public and lay audiences can be done effectively and in responsible ways. For advanced undergraduate students already steeped in the disciplinary values of their chosen fields, this was a difficult challenge; however, this rhetorical work resulted in the learning necessary to communicate to multiple audiences and also increased students’ understandings of the relevance of their scientific work for various audiences.

Shane’s presence as writing mentor in Erin’s class undoubtedly influenced the writing of these articles, which we will discuss in more detail in the Critical Reflection. Our theoretical approach to incorporating a writing mentor into one of these classes followed much of the existing work on writing mentor programs. The benefits of writing mentor programs (also often called writing fellow programs) are well-established; at least thirty-five other universities have developed writing mentor or writing fellows programs (LaFrance). We were especially interested in promoting thinking about affect and critical self-reflection,

a skill that Jim Henry, Holly Huff Bruland, and Jennifer Sano-Franchini found was associated with course-embedded mentoring (9). Critical self-reflection proved an important part of the aforementioned series of assignments. The lay article assignment required students to participate in cross-class peer review; Michelle's class read projects written by students in Erin's class and vice versa. In offering feedback, students had to think about how to best communicate their own credibility as reviewers while also offering the sort of critique necessary to strengthen their peers' papers. In receiving feedback, they had to deal with the affective repercussions of receiving critique on a project in which they already had invested significant time and struggle; they also had to move through that affective response to make decisions about which feedback was valuable and how best to respond productively to it. This sort of distanced or disembodied peer review has a way of creating space for students to intervene in situations they feel are unjust in ways that in-class peer review sometimes does not (Frost 111). Students undertook numerous conversations about morality—which led to productive discussions of culture and science—during this project.

This course also required students to participate in scientific debate with others via class participation and a scripted oral debate completed in small groups near the end of the semester. This compelled them to think deeply about belief systems, diversity, and the value of multiple perspectives. It also encouraged them to navigate the tension between social justice and cultural relativism. In addition to these collaborative, outward-focused assignments, students kept a personal process journal throughout the semester in which they recorded their weekly reflections on the course. This work was intended to provide a space for students to draft projects, hone their writing processes, think through their biases in approaches to science, and reflect on class discussions. In this way, our assignment structure provided a variety of opportunities for students to speak back to class discussions and course materials, and they were able to choose their method of expression based on what they judged most rhetorically appropriate given their particular contexts.

James Wilson believes that students “need to be aware that ‘the discursive context is a political arena,’ in the words of [Linda] Alcoff. This is especially true of scientific and medical discourse, given the enormous power, authority, and resources of medical science” (160). We, too, ascribe to this notion. Our design of this scientific writing course purposefully led students into cognitive dissonance and required them to engage in intellectual discussions of scientific topics using critical theories of embodiment, including gender, sex, sexuality, ethnicity, and race. Our incorporation of a writing mentor in one section of the course allowed us to see how this additional audience affected students' writing, and our incorporation of cross-class peer review was a useful lesson in considering the effects of disembodied critique patterns. While we do not

consider these courses successful in every way, we think our findings—and failures—may prove helpful to other instructors of composition. In our Critical Reflection, we attempt to offer insights into how we will continue this experiment and how others might benefit from and build upon this work.

Critical Reflection

We have written the final section of this article in a way that allows for both joint discussion of and individual reflection on our experiences. This format reflects our belief in the value of embodied knowledges and our different positionalities and perspectives in working with students in these two sections. Because we were deeply invested in learning from each other and from the students in our classes, we want to represent that mutuality here. As we discussed what worked in the course and what we might revise moving forward, we concluded that *collaborative course design* along with *cross-class collaboration* through peer review and the *presence of a writing mentor* gives students powerful writing experiences, especially in a specialized writing course like this one.

Collaborative course design proved to be an important foundational step in this experiment. This was both Erin and Michelle's first time teaching this specific course, and Erin was also new to the institution. Working with another instructor helped us to be aware of students' learning styles and needs. For example, Michelle noted, "Erin reminded me that some students might not feel comfortable participating in a large class discussion, so I started having them discuss and work in small groups before coming together as a class." Likewise, Michelle helped Erin understand the backgrounds and aspirations of many students in this institutional context.

Further, Erin and Michelle were able to compare notes when class did not go as planned. For example, in reflecting on the *cross-class peer review*, Erin and Michelle determined that Erin's background as a journalist and Michelle's background as an Institutional Review Board member likely influenced the ways they talked about writing for the public during class discussions; it was very clear that students produced different sorts of writing for this project based on their instructor. Students in Michelle's class were at first resistant to thinking about communicating to audiences that may not have specialized scientific knowledge. This was evidenced in one of the first class meetings when a student announced that she would have to "dumb down" the topics so others could understand. Getting students to think about other audiences without thinking of them as "dumb" took some discussion about literacies (medical, health, legal, science, etc.). Conversely, students in Erin's class were so persistent about keeping complexity in their lay articles that they ultimately persuaded her to increase their maximum allowed length for the assignment—a change

she allowed at least in part because of her own investment in their work at that point in the semester.

Despite this commitment to complexity, students in Erin's class found the papers from Michelle's class to be too scientific, too full of jargon, too complex—basically, inaccessible to people without scientific educations. Students in Erin's class felt that Michelle's students did not try to simplify the language for another audience. This prevented them from giving students in Michelle's class the kind of feedback they expected. Students in Michelle's class, on the other hand, thought Erin's students had produced articles that were too simple. Students in Michelle's class were invested in keeping the specialized language and knowledge in their lay articles even after peer review. Further, they felt that students in Erin's class did not take the necessary time to work on their essay drafts. Thus, even though students were presented with the exact same assignment prompt, they received different messages about their intended audiences. For all three of us with instructor/mentor roles, it was telling—and, at times, frustrating—to see how each class approached the project differently despite receiving the exact same written project description. Michelle later wrote:

So why the difference in the lay science article? Yes, the teachers were different but even then, we thought we were emphasizing similar things, and that students would produce similar projects across classes. But there was one other difference that I neglected to account for. Erin's class had a writing mentor, Shane, so the students had a real public audience that could respond to their work. I think this helped them envision a public audience in more concrete ways.

While any seasoned instructor knows that the differences in class personalities can vary widely, we do think Shane's presence as a writing mentor was a significant factor for Erin's class. As Erin reflected later:

Students understood Shane as an audience, and they did their writing knowing (in the back of their minds or explicitly) the sort of feedback he'd give them. Some students worked with him directly on this project; others had worked with him on other projects; and still others knew him only from their time together in class. However, ALL students in this class could at least imagine Shane as an audience, and this helped to guide their writing for non-scientist readers.

The presence of a writing mentor in Erin's class undoubtedly influenced the way that multiple parts of the design of the course played out in practice. Students met with Shane in the first few weeks of class, and he explained his role as a writing mentor and asked them about what they perceived to be their

strengths and weaknesses as writers going into this course. Many, it seemed, could list a paragraph's worth of failures in writing, from grammar to clarity to the forming of an actual paragraph, yet most struggled to name one thing they considered a writing strength. Many of these juniors and seniors hadn't taken a WI course since their freshman year, and as Shane reflected later:

It was in their perceived lack of knowledge about writing that I revealed my lack of knowledge of scientific material. I now believe it was this space of sharing our perceived 'lacks' that made us strong as a community and made me a mentor for their writing but a learning audience for their content.

Ultimately, we believe the presence of a nonscientific outside reader—one with authority but who was not assessing their assignments—helped students to make determinations about the benefits for and effects on a non-scientific audience. His one-on-one conferences with students were essential to the success of many members of Erin's class. Shane writes:

One memory that will stay with me was in my second-to-final meeting with a student named Janet, who met regularly with me throughout the semester. She worked retail and came to me with limited time (often wearing her uniform so she could go straight to work). In the aforementioned meeting, I read the first sentence and she heard an obvious error—a word left out of a simple sentence—and she snatched the paper from me, saying she was going to do better. She said we both deserved better. I offered to keep the session going, but she insisted on leaving, saying we would meet again. She came back a week later with a completely reworked paper, and I am convinced had it not been for a semester of community building we would not have had that moment of awareness and courage on her part, where she lived up to her own developing expectations of herself as a writer through the vehicle of having a writing mentor embedded in that class.

In addition to his important role as a first reader/audience, Shane identified with students so deeply that he was able to create a productive feedback loop that allowed us to make revisions to course design. In fact, Shane's reflections will be one of the largest drivers in our decisions to make changes or keep portions of the course design in the upcoming semester. Consider the following example, written from Shane's perspective:

An insightful glimpse into the cross-collaboration peer review came in my work with a student named Staci. Staci e-mailed me with a draft

of her lay paper before the cross-class collaboration, but her message was different than most of the previous e-mails from students sending papers. Whereas most e-mails sought the quickest turnaround possible on what they considered finalized versions of their papers, Staci noted that her draft may “change a bit” because of the coming cross-class collaboration. When Staci turned in the post-collaboration draft, however, her statement of a “bit” of change turned to a warning that she had changed the draft “drastically.” She had been swayed by Michelle’s class, which was more scientifically directed even in their lay audience paper, and she had sought to make her paper more detailed. It worried me that Staci seemed more confident after her first draft than after the cross-class collaboration. Yet, in retrospect, what she would tell me (shared below) illustrates cognitive dissonance, a successful break from a single-form draft-writing and in-class peer review, and demonstrates critical thinking about what a lay audience is beyond the work of an assignment.

When I asked Staci about the differences between in-class peer review and cross-class collaboration, she said:

“I think [everyone in my class] had the same understanding of what the paper was supposed to be and then we got the [cross-class peer review] and it was different than all of ours, because we were all in a ‘general-public’ kind of [mindset] and when we got theirs, it was totally different.”

I asked if she was more or less confused after the cross-class collaboration and she said:

“It’s weird because I would say more, but I was happier after I got my [cross-class] peer review and after I finished my final paper. I was happier with my actual article. Maybe it wasn’t exactly a lay audience, but I did feel I explained things better and kind of made up for my scientific paper.”

It is helpful to see that a second peer review didn’t simply replace the first. Instead, students had the opportunity to not just write but be writers, to make difficult choices about content, style, word choice, and to realize there are often spaces in writing not filled by right-and-wrong choices, but by creating drafts, receiving feedback, and ultimately making the decision to go in a chosen direction. This is particularly useful, as students from this class spoke to me about their worries in making content-and-style-based decisions when it comes to seeking scholarships and writing graduate school statements of purpose.

Based in large part on this (and similar) feedback, we have elected to keep the cross-class peer review in our upcoming courses. Shane’s perspective helped Erin and Michelle to understand the wide variety of feedback we got from

students about this project in a different way. What felt like a failure to us at the time actually produced valuable learning for students. We are exploring options for organizing the cross-class review differently in order to ensure more uniformity in the quality and quantity of feedback. For example, students in Erin's class received so much feedback that they were forced to prioritize, which we believe was an effective activity for developing revision skills. Michelle's students received much less feedback because Erin had instructed reviewers in her class to compile their notes, and this was not as useful.

Erin's major frustration with the course centered on the scientific article. In short, this assignment was too much. We knew this and designed the course that way intentionally, but we were not fully prepared for the difficulty of assessing a project that had purposefully put students in over their heads. Likewise, Michelle was disappointed in the products of the lay science article. We did not account for the depth of students' investment in the content of their work. While this challenge was productive, we also want to ensure the course has time to achieve all its learning outcomes. Thus, we have discussed several possibilities for revisions of the course to emphasize both scientific writing within the disciplines and communicating science to public audiences.

In our upcoming courses, we plan to change the science article requirement to a white paper or research review article for a scientific audience. This allows us more control over the length and depth of the project; rather than ask students to produce work for a wide variety of journals, they will all be writing white papers of similar length and depth for a specialist audience. We also plan to have them repurpose a published science article for a general audience before we require them to do the same to their own writing. In so doing, students will develop the skills required for repurposing before they have to deal with the affective impact of repurposing their own writing. Finally, we plan to change the process journal assignment to a required social media account dedicated to science writing. This will ensure that students are having public conversations about the content of the class throughout the semester, and also will give them agency in determining how they represent themselves as scientists and writers.

Notes

1. Many writing mentor programs started in the early 1990s, and such programs tend to be small because of the expense associated with them. For example, even with significant financial support from the QEP, the Writing Mentor program at ECU reaches only a small percentage of courses; the program will place 15 mentors in 13 courses in Fall 2014, while approximately 500 courses listed as WI are scheduled to be offered across the university, according to Writing Center Director Nicole Caswell.

2. We extend our heartfelt thanks to ECU University Writing Center Director Dr. Nicole Caswell, who provided significant context about the workings of the QEP, the Writing Mentor Program, and the disciplinary and national contexts of such initiatives.

3. The research reported in this article was approved by the University and Medical Center Institutional Review Board #14-001165.

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Syllabus

ENGL 3820: Scientific Writing

Introduction to and Goals of the Course

This course asks students to consider the situated nature of particular contexts of scientific writing and also to produce scientific writing for various purposes. We will examine theories, methodologies, and ideologies that undergird scientific writing with an eye to perfecting both critique and imitation of scientific styles. In order to accomplish this work, you will be expected to do a substantial amount of reading, produce several different kinds of work, analyze the products you create, and be an active participant in our learning community. This means working in a variety of individual and group activities. Further, you are expected to come to class having thoroughly prepared the readings. Notice this does not say you must have read every word on every page. Rather, you should read for content and themes, taking main ideas and significant occurrences from the texts we cover and critically examining them. You should always be prepared to offer notes, questions, and ideas about the readings.

Materials

Cargill, M., & O'Connor, P. (2013). *Writing scientific research articles: Strategies and steps* (2nd ed.). New York: John Wiley & Sons. ISBN: 9781118570708

Penrose, A. M., & Katz, S. B. (2010). *Writing in the sciences: Exploring conventions of scientific discourse* (3rd ed.). New York: Pearson Longman. ISBN: 9780205616718

Internet access, including access to our course site on Blackboard.

Ability to read additional readings provided as PDF and Microsoft Word documents.

Word-processing and digital storage capabilities.

Assignments

The following components of the class will contribute to student grades:

- *Participation – 10 points*

This class uses discussion as a basis for collaborative learning, and engaged participation makes for a more enriching and productive learning environment for the entire class. Participation may mean speaking in class—and you

should plan to do so at least once each class period—but it is also evidenced by nonverbal engagement such as paying attention, nodding, making eye contact, and so on. In order to fully participate, it is essential that you adequately prepare readings and other homework assignments. Preparing readings and homework means coming to class with the work completed and with a list of relevant questions and/or notes. Preliminary participation grades will be released before the midpoint of the semester; in addition, students may request an informal evaluation of their participation at any time.

· *Process journal – 15 points*

Throughout this course, keep track of trending science and health topics as well as your reflections on our discussions in class. Include at least one detailed (though not necessarily polished) entry each week. (Detailed means in the 300-word range at a minimum.) In addition to your weekly entries, you should include an assessment entry for each of the three major assignments (field research, science article, lay science article) that discusses why you made the rhetorical choices you did in each assignment. You may do this work in a blog, notebook, or any other format that will allow you to turn the process journal in at various unannounced points during the semester. (Note that if you choose to do this work hardcopy, being able to turn it in at an unannounced time will mean you need to bring it with you every day.)

· *Field Research – 15 points*

Complete an investigation focusing on the communications and research practices of a field within the natural sciences. This assignment should be submitted as a formal report that must include (1) a brief summary of the field chosen, (2) a list of journals relevant to the field and detailed annotations of those journals, (3) a list of research topics relevant to the field chosen, and (4) a general analysis of communication in the chosen field. This assignment should be a minimum of 1500 words. Save your final document as Name_3820_FieldResearch and turn in by emailing to FrostE@ecu.edu.

This assignment is worth 15 points out of the total 100 points in the course. Those 15 points will be allocated approximately as follows, assuming that basic requirements like proper formatting and clear (meaning, in this case, understandable and situationally appropriate) writing are already met.

Part of Report	Requirements	Points Possible
Section 1	Student provides a summary of a sufficiently narrow field (for example, don't summarize <i>biology</i> ; summarize a particular area of biology). This summary should be appropriate for a lay audience (like an English instructor, for example!). (Suggested length: minimum 300 words)	3
Section 2	Student provides a list of at least five journals relevant to the field. List includes detailed annotations that discuss the area, audience, purpose, and types of articles typically published in these journals. It may also be helpful to list any affiliated organizations/publishers. (Suggested length: minimum 500 words)	5
Section 3	Student provides a list of at least three research topics relevant to the field chosen as well as reflections on how each topic might work out if chosen for future projects in this course (namely, the Science Article and Lay Science Article). Each topic should include a sentence that suggests which of the journals from Section 2 might be the most appropriate venue for an article on said topic. (Suggested length: minimum 300 words)	3
Section 4	Student provides a general analysis of communication in the chosen field. This analysis should answer questions about the style, purpose, and conventions of articles typical of this field and should draw on examples. (Suggested length: minimum 400 words)	4

· *Science Article – 20 points*

Choose one of the journals you listed in your Field Research assignment and write an article for that venue. The exact requirements of this assignment will vary depending on the journal you choose, so be aware of submission guidelines at the outset and make sure that you include those submission guidelines with your final document. Save your final document as Name_3820_ScienceArticle and turn in by emailing to FrostE@ecu.edu.

This assignment is worth 20 points out of the total 100 points in the course. Those 20 points will be allocated approximately as follows, assuming that basic requirements are already met.

Article	Requirements	Points possible
<p><i>Note that the goal of this project is to practice writing a paper for a scholarly publication. Since you will each be choosing your own publication/journal to target—and since different journals have different guidelines—the requirements for this project will vary to a significant degree. You should use the information below to guide your work, but you should also understand that some criteria might be more or less important to your work given the journal you choose.</i></p>		
	Submission includes a cover letter to the editor of the journal that synthesizes the article, explains its relevance to this venue, and confirms that you have fulfilled all requirements the journal requires.	2
	Paper articulates a narrowly defined research topic/question in the introduction. Paper also includes a concise abstract if required by the target journal.	3
	Paper demonstrates appropriate research/knowledge related to prior applicable research by synthesizing and citing important research.	5
	Paper follows submission guidelines as stated by target journal in terms of length and style. (Any exceptions should be noted in a submission memo.)	3
	Paper utilizes an appropriate organizational format based on the type of article written (research article or review article).	3
	Paper incorporates common scientific conventions as surmised through journal article analysis. For example, headings, voice, tables, etc.	4

• *Lay Science Article – 20 points*

Write a short article on the same topic as your Science Article, but this time appropriate for a nonscientific audience. This assignment should total 600-1200 words, plus a cover letter to the publication you've chosen explaining your work and its relevance. Save your final document as Name_3820_Lay-Article and turn in by emailing to FrostE@ecu.edu.

This assignment is worth 20 points out of the total 100 points in the course. Those 20 points will be allocated approximately as follows, assuming that basic requirements are already met.

Requirements	Points possible
Submission includes a cover letter to the editor of your chosen section of CNN.com that synthesizes the article and explains its relevance to this venue.	2
Submission utilizes an appropriate style / demonstrates an understanding of audience.	6
Submission appropriately explains the topic in understandable terms and cites prior research/knowledge	6
Student participated fully in cross-class peer review (including providing feedback in class on Wednesday, April 2)	6

· *Oral Debate – 20 points*

Working in groups, identify a specific popular scientific question that currently has two strong sides and prepare a debate to be presented to the class in which each side of the issue is presented. For example, in a group of four students, two group members will defend the affirmative side of the question, while two group members defend the negative side of the question. The rest of the class will be allowed to ask questions, so while most of the information can be planned out ahead, individuals will need to be prepared to answer questions. Rather than this being an actual debate in which the “yes” side would not know what the “no” side might say, both sides should work together prior to the presentation to lend the debate coherence. Students will prepare written notes for themselves for use during the debate, but only an annotated bibliography of sources will be turned in. This bibliography, which should be turned in on behalf of the entire group in hard-copy on the day of the debate, should include a minimum of ten sources.

This assignment is worth 20 points out of the total 100 points in the course. Those 20 points will be allocated approximately as follows, assuming that basic requirements are met.

Requirements	Points possible
Group submits an annotated bibliography with ten relevant sources by the end of class on Monday, May 5.	5
Group presents an approximately five-minute rhetorically aware and well-prepared debate in class on Monday, May 5.	5

Group is able to respond to questions posed by class members during the five-minute Q&A in class on Monday, May 5.	5
Individual student poses at least one question to another group of debaters during class on Monday, May 5.	3
Individual student turns in one short analysis (using stasis theory) of one of the debates given during class on Monday, May 5.	2

Course calendar

Week	Activities and Preparation
Week 1	Day One: Read the syllabus, procure the textbooks, and familiarize yourself with the course. Read: Bowdon. Day Two: Define scientific writing. Discuss Bowden. Read: Sidler.
Week 2	Discuss Sidler. Read Chapters 1 and 2 in Penrose and Katz.
Week 3	Day One: Discuss science as a social construct. Read Chapter 3 in Penrose and Katz. Day Two: Discuss ethics. Read Chapter 13 in Penrose and Katz.
Week 4	Day One: Homework is to bring at least three articles from different scientific journals on a topic you're interested in. Day Two: Read Sections 1 and 2 in Cargill and O'Connor.
Week 5	Day One: Read Chapter 4 in Penrose and Katz. Day Two: Read Chapter 5 in Penrose and Katz.
Week 6	Day One: Peer review of field research. Day Two: <i>Field Research due</i> Read Section 3 in Cargill and O'Connor.
Week 7	Day One: Read Section 4 in Cargill and O'Connor. Day Two: Reading TBA depending on class needs.
Week 8	This week devoted to analysis of articles, beginning with examples in Cargill and O'Connor together and moving to analysis of found articles individually.
Week 9	Happy Spring Break!
Week 10	Day One: Peer review of science article. Day Two: Science Article due. Read Chapter 8 in Penrose and Katz.
Week 11	Day One: Reading TBA depending on class needs. Day Two: Homework is to work on Lay Science Article.
Week 12	Day One: Drafts for class exchange due by end of class today. Day Two: Provide feedback to partner class for cross-class peer review.
Week 13	Day One: Provide feedback to partner class for cross-class peer review. Receive feedback from partner class. Day Two: Lay Science Article due.

Week 14	Day One: Assignment of groups and topics for oral debates. Day Two: Flex Day / Group work to prepare for oral debates.
Week 15	Day One: Group work to prepare for oral debates. Day Two: Group work to prepare for oral debates.
Week 16 / Final	Oral debates during Finals Period. Process journal due.

Contributors

Kati Fargo Ahern is Assistant Professor of English at Long Island University-Post and does all her work on soundscapes, auditory rhetoric, and composition theory. Some of her most recent work appears in *Convergence: The International Journal of Research into New Media Technologies* and *Computers and Composition*.

Kara Poe Alexander, Associate Professor of English, teaches writing courses in the Professional Writing Program at Baylor University. Her current research examines literacy narratives and social change writing. Her work has appeared in *CCC*, *Composition Forum*, *Computers and Composition Online*, *JBTC*, *Technical Communication Quarterly*, and several edited collections.

Erin Bradley graduated from Penn State Berks in May 2015 with a BA in professional writing.

Steph Ceraso received her PhD in English from the University of Pittsburgh, specializing in rhetoric and composition, pedagogy, sound and listening, and digital media. Steph is currently Assistant Professor at the University of Maryland, Baltimore County. You can find more about her research, projects, and teaching at www.stephceraso.com.

Aaron Clark is a recent graduate of the University of Utah, where he majored in writing and rhetoric studies and wrote regularly for the *Daily Utah Chronicle*. He is interested in journalism, particularly arts and culture, as well as travel writing.

Kirsti Cole is Associate Professor of Rhetoric, Composition, and Literature at Minnesota State University. She teaches in the Teaching Writing Graduate Certificate and Master's of Communication and Composition programs. She has published articles in *Feminist Media Studies*, *College English*, *Harlot*, and *thirdspace*, and her collection *Feminist Challenges or Feminist Rhetorics* was published in 2014.

D. Shane Combs PhD student at Illinois State University. His teaching philosophy, *the pedagogy of giving a shit*, is informed by liberatory, feminist, and social-expressivist pedagogies. He is currently researching affect and highly sensitive people in the academy.

Michelle Costello is a recent graduate of Marist College, where she was an English major with a concentration in writing as well as a journalism minor. This is her first published article.

Melissa Davis was a Penn State Berks senior when this collaboration was created. Davis uses writing to continue the tradition of storytelling within the black community in order to preserve the significant contributions of African Americans in American history and culture.

Harry Denny is Associate Professor of English at Purdue University, where he directs the Writing Lab. He is the author of *Facing the Center* and is at work on projects on writing center assessment, the politics of access, and the rhetoric of contemporary civil rights in the U.S.

Aaron Dial is a 2015 graduate of North Carolina Central University with a BA in English and a concentration in writing. He is currently pursuing an MA in English at his alma mater.

Michelle Dierlof graduated from Penn State Berks in May 2015 with a BA in professional writing.

Keith Dmochowski, a student at Penn State Berks, will graduate in fall 2015 with a BA in professional writing. His work has been featured in campus news and creative publications; he will continue pursuing professional and creative writing interests after graduation.

Michelle F. Eble is Associate Professor of technical and professional communication and serves as graduate director in the department of English at East Carolina University. Her research and teaching interests include technical writing theory and practice, especially as it relates to rhetorical intervention, gender studies, and technology in medical, scientific, and academic contexts.

Erin A. Frost is Assistant Professor of technical and professional communication at East Carolina University. She teaches scientific writing, writing for business and graduate courses in her research areas. Her research centers on feminisms in technical communication, most often as they relate to health-care policy and risk communication.

Collie Fulford is Assistant Professor of English rhetoric and composition at North Carolina Central University. Her research examines writing program and curriculum development from basic writing through graduate programs.

John Gangi is a professional writing major and is set to graduate in 2015. His passions include reading and hiking. He hopes to someday travel the world.

T J Geiger II is Assistant Professor of English at Lamar University. His research focuses on the writing major, writing studies pedagogy, and religious rhetoric. His work has appeared in *College English*, *Peitho*, and *CCTE Studies*.

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