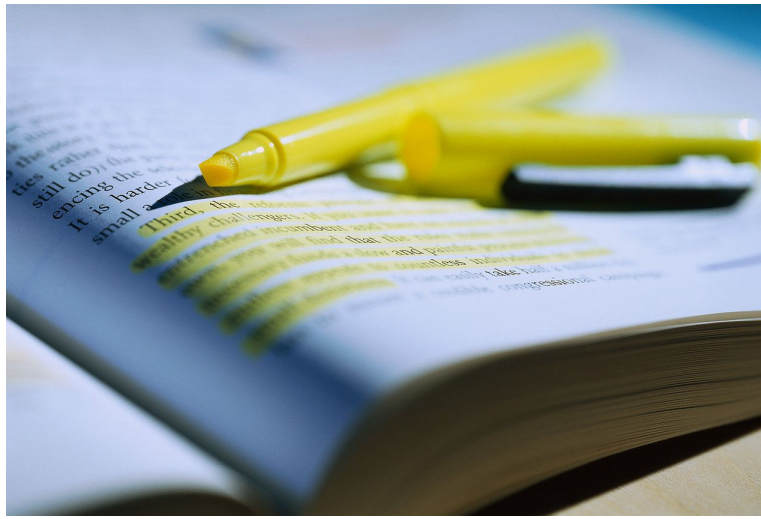
ENG 425
Analysis of Scientific and Technical Writing: Rhetoric and Information design



Your Instructor: Nupoor Ranade
Email: nupoor.ranade@ncsu.edu

Time: TBD
Office Hours: TBD

Semester:TBA
Location: TBD
Credit Hours: 3
Prerequisites: TBD

ENG 425: Analysis of Scientific and Technical Writing: Rhetoric and Information design

Course description

Science and technical communication is the public communication of complex topics in scientific and technical fields communicated to non-experts. The object of the course is to study the design and rhetorical elements used in the construction and circulation of scientific and technical knowledge. The course begins with definitions of science and technology that highlight the role of discourse. The second section provides a brief introduction to rhetorical elements occurring in these fields. Next, we will look at the information structures of different genres of scientific and technical texts. A rhetorical analysis of these texts will help in constructing effective texts in these genres.

Learning outcomes

By the time you have finished the course, you will have learned to:

- Explain uses of written and visual discourse in the production of scientific and technical knowledge.
- Situate audience and purpose of the genre of communication
- Develop an understanding of rhetorical factors that lead to effective communication practices
- Examine the conventions of written communication in a variety of scientific, engineering contexts in academic, industrial and popular contexts
- Explore communication design principles that shape scientific arguments
- Use rhetorical principles and scientific design principles as critical frameworks for developing a (digital) text

It is my responsibility to provide instruction that equips you to meet these objectives and your responsibility to practice and seek help where needed.

Evaluation of learning outcomes

- **Participation (10%)**
  This course requires active participation, including in-class discussions, reading, responses, exercises, and group work. I collect in- class and take- home assignments and count them toward your participation grade.
- **Rhetorical Concept Presentation (10%)**
  Deliver a brief oral presentation with a visual aid that defines, explains, and applies one rhetorical concept based
  on the foundations of rhetorical theory that we are studying in this class. Your presentation will help the class remember and better understand the concept, apply it to understand a scientific or technological rhetorical situation, and raise questions to help us achieve a deeper understanding.
- **Rhetorical analysis (25%)**
  Choose a short scientific article or a technical document that attempts to present research to a popular reading audience (you can select a scientific article from The Best American Science and Nature Writing from any year – 2019 and 2020 on reserve at DH Hill OR a technical article from the samples that I provide). The objective of this assignment is to analyze the rhetorical work in the article. Make an argument about what kind of rhetorical work that article is attempting to do to accommodate science/technology to a general readership and back up your analysis with quotes from the text.
- **Proposal writing (25%)**
  Identify an exigence in your scientific or technological research. In the sciences, grant funding can be crucial to the success of your research. For this assignment, you will be writing a mini-grant proposal (approximately three pages) for the University's Undergraduate Research Grant program. Information on the program can be found here: https://undergradresearch.dasa.ncsu.edu/our-grants/
- **Conference poster and proposal (30%)**
  In both technical and scientific fields, presentations and conferences are common – especially within academia and graduate school. For this assignment, you will work in teams of three to pick one published article that reports on a study leading to paradigm shift(s) in your field, and to produce a conference proposal (250-word) and a scientific poster that presents the study to experts in your field.

Course requirements

- **Grade distribution**
  The following scale will be used to issue grades at the end of the semester:
  A+ = 100-97, A = 96-93, A- = 92-90; B+ = 89-87, B = 86-83, B- = 82-80; C+ = 79-77, C = 76-73, C- = 72-70; D+ = 69-67, D = 66-63, D- = 62-60; F = 59-below.
- **Participation in class**
  Participate in all class sessions. Finish reading all materials for classes and come to the class with relevant questions, comments and ideas that can enhance class discussions.

Required course materials

- BYOD: Bring your own device
  - All the reading materials will be made available as PDFs or website links. BYOD to go through and understand the materials.
  - BYOD is also required for workshop sessions in class. You can borrow technology from the libraries in case you have trouble getting your own.

Course policies

Academic Integrity 	The Departments of English and Communication are committed to upholding the University's honor code. To read the University policy on academic integrity please see the Code of Student Conduct. The University and the Depts. of English and Communication assume all students are familiar with these standards and procedures. If you have any questions about academic dishonor or doubts about what constitutes a violation please contact me.
Communication Guidelines 	Email is the best way to contact me. You can email me at nsjalind@ncsu.edu. I do not respond to students at any other address. I will try to answer student email within 24 hours on weekdays and within 48 hours on weekends and holidays. You can connect through Twitter @nupoorwriting. I may not respond to other social media requests until the end of semester. I will be available to meet during my office hours and by appointment outside of those. **Group work** Make sure to not email addresses of your group members at the beginning of project work. Schedule weekly milestone reviews. Report right away if you notice that someone on the group has been unresponsive for over 72 hours.
Late Policy 	Late assignments will ONLY be accepted in the case of verified/documented emergencies in accordance with the excused absence policy or this course. See the University Attendance Policy. If, in the case of an emergency you cannot present during your scheduled time, or cannot finish your final paper, you should let me know as soon as possible. If you have reasons for an excused absence, you can still turn in the paper or re-schedule your presentation after the due date upon presentation of appropriate documentation according to the University policies.

Course policies

Backups 	Most of our work will use technologies that let you save data on the cloud. However, save backups of your notes and all your work for this class. Recommended storage places are Google Docs and Google Drive. Printed backups can also be useful. Do not discard any files, notes, or other work until the semester is over and you have received your final grade. Be sure that you maintain backups so that you can continue your work when you encounter computer problems.
Other resources 	Other Important Resources ➢ Keep Learning: Keep Learning ➢ Protect the Pack FAQs: Frequently Asked Questions | Protect the Pack ➢ NC State Protect the Pack Resources for Students: Resources for Students | Protect the Pack ➢ NC State Keep Learning, tips for students opting to take courses remotely: Keep Learning Tips for Remote Learning ➢ Introduction to Zoom for students: https://youtu.be/5LbPzzPbYEw ➢ Learning with Moodle, a student's guide to using Moodle: https://moodle-projects.wolfware.ncsu.edu/course/view.php?id=226 ➢ NC State Libraries Technology Lending Program

Course plan

Week	Topic
Introduction	
Week 1	What is science • *Kuhn, Thomas S. (1970). The structure of scientific revolutions. Chicago :University of Chicago Press*
Week 2	Language history in sciences & Methods (Inductive, Deductive) • *Lipson, C. S. (1985). Francis Bacon and Plain Scientific Prose: A Reexamination. Journal of Technical Writing and Communication, 15(2), 143–155.* • *Video* • *van Loon, A. J. (1999). A revolution in paleontological taxonomy. Earth Science Reviews, 48, 121–126.*
Week 3	What is technology • *Arthur, W. B. (2009). The nature of technology: What it is and how it evolves. New York: Free Press.*
Week 4	Language history in technology (Vocabulary) & Implications • *Heidegger, M. (1977). The question concerning technology, and other essays. New York: Harper & Row.* • *Condit, C. M. (2007). How geneticists can help reporters to get their story right. Nature Reviews. Genetics, 8(10), 815–820.*

Week	Topic
Looking through the texts (Rhetorical analysis)	
Week 5	What is rhetoric? Rhetorical situation Who are the audience/publics? ● *Hauser, G. A. (2002). Introduction to rhetorical theory. Prospect Heights, Ill: Waveland Press. Chapters 1, 2 and 3*
Week 6	Topics (Deliberative, Forensic, Epideictic) ● *Concepts from Jasinski, "Sourcebook on Rhetoric"* ● *Thacker, B., & Stratman, J. F. (1995). Transmuting Common Substances: The Cold Fusion Controversy and the Rhetoric of Science. Journal of Business and Technical Communication, 9(4), 389–424.* ● *Keith, W. M., & Lundberg, C. O. (2008). The essential guide to rhetoric. Boston :Bedford/St. Martin's. Chapters 1, 2 and 3*
Week 7	Appeals (Ethos, Pathos, Logos) ● *Keith, W. M., & Lundberg, C. O. (2008). The essential guide to rhetoric. Boston :Bedford/St. Martin's. Chapters 4 and 5*
Week 8	Canons (Invention, Arrangement, Memory, Style, Delivery) ● *Concepts from Jasinski, "Sourcebook on Rhetoric"*
Week 9	Language choices ● *Barker, T. T. (1992). Using Tasks for Analysis and Design in Writing Manuals: A Review. IEEE.* ● *Keith, W. M., & Lundberg, C. O. (2008). The essential guide to rhetoric. Boston :Bedford/St. Martin's. Chapters 6 and 7*
Week 10	Graphic features (Visual rhetoric I) ● *Buehl, J. (2014). Toward an Ethical Rhetoric of the Digital Scientific Image: Learning From the Era When Science Met Photoshop. Technical Communication Quarterly, 23(3), 184–206.* ● *Hill, Charles A.; Helmers, Marguerite. (2012). Defining Visual Rhetorics. Abingdon, Oxon: Routledge. Chapters 9 & 14*

Week	Topic
Text structure (Information design)	
Week 11	Structure of scientific article (IMRAD) • *Karapetjana, I., & Rozina, G. (2016). Rhetorical Structure Of The Research Article In Dentistry. Russian Linguistic Bulletin, (№3 (7) 2016), 10–14.* • *Dube, "IMRAD In Science The Importance a Format Can Have"* • *Selections from Swales, J.M. & Feak, C.B. (1996; 2004). Academic writing for graduate students. Ann Arbor: University of Michigan Press.* • *Selections from Latour, Bruno. (1986). Laboratory life : the construction of scientific facts. Princeton, N.J. :Princeton University Press,*
Week 12	Structure of technical information: Concept, Task and Reference (DITA) • *Price, J. (2001). A Rhetoric of Objects. In Proceedings of the 19th Annual International Conference on Computer Documentation (pp. 147–151). New York, NY, USA: ACM.* • *Selections from Bellamy, L., Carey, M., & Schlotfeldt, J. (2011). DITA Best Practices: A Roadmap for Writing, Editing, and Architecting in DITA (1st ed.). IBM Press.*
Week 13	Structure of a popular article • *Hayden, T. & Nijhuis, M. (2013). "The science writers' handbook",. Da Capo Lifelong Books. Chapter 7* Structure of graphics (Visual rhetoric II) • *Kostelnick, "Shaping Information: The Rhetoric of Visual Conventions", Chapter 3 & 4* • *Hill, Charles A.; Helmers, Marguerite. (2012). Defining Visual Rhetorics. Abingdon, Oxon: Routledge. Chapters 11*
Week 14	Proposal writing • *Selections from Morville, "Information Architecture on the World Wide Web"* • *Markel, M. (1997). Ethics and technical communication: A case for foundational approaches. Professional Communication, IEEE Transactions on, 40(4), 284–298.*
Week 15	Poster design
Week 16	Final Presentations