

CI651: Communication and Information in STEM

SPRING 2011

We 9:05 am – 12:05 pm, COM 420

Instructor:

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Office Hours: Monday 1-2 PM, Tuesday 9:30-11 AM & by appointment

CATALOG DESCRIPTION:

651: Contemporary Issues in Science, Technology, Engineering, and Medical Communication and Information. Integrative approach to the role of communication and information in the study of STEM topics.

PREREQUISITES

This course requires completion of CI610 and CI615 or consent of instructor.

ABOUT THIS COURSE

Science, technology, engineering and medicine, better known as STEM, are essential drivers in the US economy. This course explores the role of communication and information in each of these domains for facilitating discovery of ideas, collaborating between STEM researchers, and disseminating findings to those within the fields as well as to the public. We begin by reviewing the history of STEM communication then study how science is communicated between scientists in informal ways such as conversations and e-mail, then in more formal communication such as through journals and conferences, and then how it disseminates between research organizations, across disciplines and eventually to the public. Examples of STEM areas include, but are not limited to, environmental science, health, engineering, biodiversity, and nanotechnology.

COURSE GOALS/OBJECTIVES

Upon the completion of this course, students should be able to:

- review the history of communication and information in STEM
- understand the role of communication and information in STEM
- critically evaluate STEM related communication and information research
- identify appropriate theory and methods for the STEM environment
- identify a research area of personal interest in STEM communication and information
- write knowledgably about STEM communication and information

651 LEARNING COMMUNITY

This is a seminar course with a stimulating collaborative learning atmosphere. Our learning community includes graduate students, at both the masters and doctoral level, who are interested in a wide range of STEM domains, and who have a variety of professional goals. We will establish a general foundation for common knowledge together, however, this class will allow you to follow your own passion, and to learn about the areas that capture the interest of your colleagues. Our learning community also includes faculty throughout the college, who are willing to share their expertise and to provide guidance to students working within their areas of interest. Successful students in this class will (1) take advantage of the opportunity to pursue their own interests; and (2) actively engage in class readings, discussion, and activities.

CONTACTING THE PROF

I'm here to help – so always feel free to ask questions or share ideas! You are encouraged to drop in during office hours, or we can talk after class or we can set up an appointment at another time that is more convenient for you. E-mail is a sure-fire way to contact me. E-mail is an excellent communication tool, and I check mine on a very regular basis. The best things about e-mail is that it is 24/7; that means you can ask a question when it's fresh on your mind – 24 hours a day, 7 days a week. I'll usually answer within 48 hours, but I may get back to you even faster!

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Please contact the Office of Disability Services at 191 Hoskins Library at 865.974.6087 if you need course adaptations or accommodations. They will work with you to arrive at the appropriate program and register you for services. They will provide you with information to be presented to me so we can discuss your situation and identify solutions.

DIVERSITY

An essential component of your learning experience will come from the contributions of your fellow students and your instructors. In order for everyone to feel comfortable sharing their thoughts and opinions, and asking questions, we must speak and listen with respect and courtesy. In this classroom, we will not discriminate on the basis of gender, race, ethnicity, religion (or lack thereof), age, sexuality, physical ability, political or ideological beliefs, or any other difference.

The College of Communication and Information recognizes and values diversity. Exposing students to diverse people, ideas and cultures increases opportunities for intellectual inquiry, encourages critical thinking, and enhances communication and information competence. When all viewpoints are heard, thoughtfully considered, and respectfully responded to, everyone benefits. Diversity and fairness unite us with the wider professional and global community.

TEXTBOOKS – REQUIRED

1. Gregory, J. & Miller, S. (2000). Science in Public: Communication, Culture, and Credibility. Perseus Publishing. ISBN-10: 0738203572 ISBN-13: 978-0738203577
2. Vickery, B.C. (2000). Scientific Communication in History. Scarecrow Press. ISBN-10: 0810835983 ISBN-13: 978-0810835986

READINGS

There will be several additional readings for this class beyond the textbooks. Instructor assigned readings for this class are noted on the attached schedule, however there may also be additional readings that are assigned as the course progresses.

ASSIGNMENTS (DUE DATES ON CLASS SCHEDULE)

Below are the titles and percentage of each assignment so you can see how they fit into our curriculum. Descriptions of each assignment are listed underneath this list. Due dates are noted on the syllabus.

| | |
|---------------------------------------|-------------------|
| Annotated Bibliography | 25% |
| Book Review & Presentation | 20% |
| Class Participation | 20% |
| FINAL PROJECT | <u>35%</u> |
| TOTAL | 100% |

Annotated Bibliography

Over the course of the semester, each student will develop an annotated bibliography in the area of STEM communication and information that s/he designates as the prime area of interest. The bibliography should represent key readings in the area of interest and provide the student with a valuable resource for future reporting, research, or teaching in the chosen area. The annotated bibliography will be reviewed three times during the semester to assist you in developing the bibliography. At each review the student should have at least five new items, and by semester end, the bibliography should have at least 18 items. Grades will be assigned during the final two reviews of your bibliography (no grade assigned on first review, 10% of class grade for second review, 15% of class grade for final review). The grade for the final body of work is worth 15% of your class grade. The annotated bibliography will be graded based on thoroughness of each entry, appropriateness of selected items, analytical insight and completeness of the collection of entries. At each review the student should have at least five new items, and by semester end, the bibliography should have at least 18 items.

Each entry for the annotated bibliography should include a full citation in APA style and several descriptive paragraphs that (1) briefly reviews the content of the article, (2) notes how it is pertinent to the particular domain of interest, and (3) briefly evaluates the article.

Book Review & Presentation

Each student will select a book that addresses their prime area of interest either from the class list or another title may be chosen but it must be approved by the professor. The student will write an academic style book review. Depending on your discipline, writing book reviews (not this book review) may be an opportunity for publication, although they do not count as much as original research. For this assignment, choose a book that interests you and that will provide support your future studies (perhaps your thesis or dissertation) or your professional goals. Be an active reader as you read. Some suggestions include (1) summarizing the argument frequently as you read and making notes about your own analysis; (2) evaluating the content of the book including the basic argument, the accuracy, the currency, etc; (3) considering other aspects of the book -- even items such as the title, the table of contents, the preface (if it has one) and the index; and (4) developing your own analysis and evaluation as you read.

The written review will be at least 1000 words but no more than 2000 words. Your written review should include: (1) Complete bibliographic citation including pages, special features, ISBN # and price. (2) Paragraph identifying the thesis and noting if the stated purpose of the work is achieved. (3) Summary of the book. (4) Discussion of book's strengths. (5) Discussion of book's weaknesses. (6) Discussion of your overall assessment of the book. It is okay to praise or to be critical of the book. The key is to support your assessment with a good, logical argument. This written review will be shared with your colleagues via posting on our BlackBoard site so everyone can benefit from your review.

The presentation should have at least 8 minutes and no more than 12 minutes of prepared comments. You should be prepared to facilitate a class discussion based on your book report. Think of questions that will encourage discussion. For example, they may be directly about issues raised in the book, or they may extend the argument from the book.

Class Participation

This is a seminar and it is important to join the conversation! Students are expected to come to class prepared for discussion, and ready to participate. Everyone is encouraged to share their opinions, but it is important that each person also honor the opinions of others. If there is a topic or situation that makes you uncomfortable, please let me know privately so we can improve the situation.

Final Project

There are three options for the final project. Students must elect one of the three options and have the idea for their project approved by the professor by the third class meeting. The final project consists of three parts: (1) a proposal due by the sixth class meeting; (2) the final product as noted below; and (3) the class

presentation. The proposal should be no more than five pages outlining the option chosen, the topic, a general discussion of how the topic will be addressed, and examples of resources likely to be used. Descriptions of the final product are noted below. The presentation should be between 15-20 minutes of prepared material and the presenter should be prepared to facilitate a discussion with the class of 15-20 minutes. The proposal must be turned in and it will receive a provisional grade so you have an idea of how you are doing. The final grade on your final project will be based on the proposal, presentation and final deliverable. If there is no proposal, your final project grade will be lowered by one full grade.

OPTION ONE: Research Paper. You will identify and research an issue related to your selected area of interest. I am willing to help you develop a topic of interest to you or to suggest possible topics. It is expected that you will use all the resources available to you, including journals, books, websites, and interviews with relevant parties. If you are interested in conducting original research with human subjects (for example, surveying students about their knowledge of STEM issues), please talk to me as soon as possible so we can plan for human subjects approval. The paper should be written using APA style, and between 18-25 pages.

OPTION TWO: Research proposal. You will prepare a research proposal for a study related to your area of interest complete with a research statement or research question. An example of a quantitatively based proposal would include an introduction (approx 3-5 pages), a literature review (approx 10-15 pages) and a methods section with details about participants, variables etc. A completed IRB form is required.

OPTION THREE: Creative work. This class is open to students from different disciplines and each may offer different opportunities for creative work. For example, it may be appropriate for a scientist to apply communication theory to produce a document and presentation that presents his/her work to a non-technical audience. Or it may be appropriate to create a plan and materials for a specific campaign or public education project. There are other possibilities as well. Please talk to the professor about your ideas.

COURSE POLICIES

1. **ATTENDANCE:** This is a seminar course and attendance is important to participate in class discussions and activities. Excessive absences will negatively affect your grade.
2. **ASSIGNMENTS:** Please submit your work via the digital dropbox on BlackBoard. Your filename should include your last name and a reference to the assignment (for example, . Late assignments will not be accepted except unless the professor has been informed via email and has granted permission.
3. **PLAGIARISM:** (i.e., presenting someone else's work as your own or without proper acknowledgement) or any other type of academic dishonesty will be considered justification for failure in the course and possible dismissal from the University of Tennessee. Further information is available in Hill Topics, the UTK student handbook.
4. **FAILING THE COURSE:** A student may fail the course if they do not complete assignments or meet expectations for assignments as outlined in the syllabus. Also missing the final student presentations or failing to turn in the final project will result in course failure.

SCHEDULE OF TOPICS, READINGS AND ASSIGNMENTS:

SOME ADDITIONAL READINGS WILL BE ASSIGNED TO MATCH CLASS INTERESTS

****PLEASE NOTE FOR READINGS:** These items should be READ BEFORE our class meeting.

*****PLEASE NOTE FOR ASSIGNMENTS:** These items are DUE AT THE START of our class.

| Week | Class Date/ Day | Topics | Assignment Due *** |
|------|--------------------|---|-----------------------------------|
| | | Readings Due ** | |
| 1 | 1/12 | Introduction A Brief History of Authorship & Publishing Historical Foundation of Science Communication | |
| | | No assigned reading – Just come ready to talk! (we will be discussing the first three sections in Vickery, but you are not required to read before we meet) | |
| 2 | 1/19 | The scientific revolution to the 19th C | |
| | | Vickery: Sections 4-6 | |
| 3 | 1/26 | STEM C& I - 20th C to today Science and the Public | Elect Final Option |
| | | Vickery: Sections 7-8 Gregory & Miller: Chap 1 & 2 | |
| 4 | 2/2 | How do STEM researchers communicate? | |
| | | Tenopir, C. & King, D.W. (2004). Communication patterns of engineers. IEEE. Chaps 2, 5, 6, 11 (will be provided through e-reserves) | |
| 5 | 2/9 | Science, Media and the public | Biblio Review 1 |
| | | Gregory & Miller: Chaps 3, 4, & 5 Douglas, H. (2005). Inserting the public into science. In S. Maasen & P. Weingart (eds.), <i>Democratization of Expertise?: Exploring novel forms of scientific advice in political decision making</i> , (153-169). Dordrecht, Netherlands: Springer. Freimuth, V.S. (2006). Order out of chaos: The self-organization of communication following the anthrax attacks. <i>Health Communication</i> , 20(2), 141-148. Palenchar, M.J. (2008). Communication and community right to know: A public relations obligation to inform. <i>Public Relations Journal</i> , 3(1), 1-26. NOT REQUIRED BUT IMPORTANT: Douglas, H. (2003). The moral responsibilities of scientists (Tensions between autonomy and responsibility). <i>American Philosophical Quarterly</i> , 40(1), 59-68. | |
| 6 | 2/16 | Scientific Collaborations | |
| | | TBA | |
| 7 | 2/23 | Communicating across domains | Proposal for final project |
| | | Palmer, C.L. (2005). Information work at the boundaries of science: Linking library services to research practices. <i>Library Trends</i> , 45(2), 165-91. Powell, W.W., Koput, K.W., & Smith-Doerr, L. (1996). Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. <i>Administrative Science Quarterly</i> , 41 (1996):116-145. Kraut, R., Egidio, C. & Galegher, J. (1988). Patterns of contact and communication in scientific research collaboration. Association for Computing Machinery. | |

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| 8 | 3/2 | Book Review Presentations | Book review presentation |
| | | Kraut, R., Egidio, C. & Galegher, J. (1988). Patterns of contact and communication in scientific research collaboration. Association for Computing Machinery. | |
| 9 | 3/9 | Science data | Biblio Review 2 |
| | | TBA | |

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| 10 | 3/16 | SPRING BREAK | |
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| 11 | 3/23 | Disseminating information beyond STEM researchers & the role of citizen scientists | Book Review Due |
| | | TBA | |
| 12 | 3/30 | Disseminating information beyond STEM researchers & the role of citizen scientists Understanding science through citation analysis | |
| | | <p>TBA for citizen scientists Okuba, Y. (1997). Bibliometric indicators and analysis of research systems: Methods and examples. STI working papers 1997/1. Organisation for Economic co-operation and development. Paris.</p> <p>Additional reading (not required but of interest): Bollen, J., Van de Sompel, H., Hagberg, A., & Chute, R. (2009). A principal component analysis of 39 scientific and impact measures. <i>PLoS ONE</i>, 4(6), e6022, 1-11, available at www.plosone.org</p> | |
| 13 | 4/6 | RESEARCH DAY | |
| | | | |
| 14 | 4/13 | The Future Individual Meetings | |
| | | TBA | |
| 15 | 4/20 | Final Presentations | Final Project Final Biblio |
| | | | |
| 16 | 4/27 | Final Presentations | |
| FINAL | Th 5/5 | NOTE: Based on the university schedule Class meets on THURSDAY 5/5 8-10AM | |