

CI651: Communication and Information in STEM

SPRING 2013

Th 11:10 am – 1:55 pm, COM 420

Instructor:

Dr. Suzie Allard

Office: 423 Communications Building

Phone: 865.974.1369

E-mail: sallard@utk.edu

Office Hours: Monday 10 AM-12 PM & 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.

ABOUT THIS COURSE

Science, technology, engineering and medicine (or mathematics), better known as STEM, are essential drivers in the US economy. This course explores the role of communication and information in 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 knowledgeably 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 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 60 hours, but I may get back to you even faster!

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Please contact the Office of Disability Services at 2227 Dunford Hall, or at 865.974.6087, or ods@utk.edu, if you need course adaptations or accommodations. They will work with you to arrive at the appropriate program and register you for services. Also contact me so we can talk about 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.

Being exposed 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.

***CCI DIVERSITY STATEMENT (CCI BYLAWS, SECTION II-C)**

The College of Communication and Information recognizes that a college diverse in its people, curricula, scholarship, research, and creative activities expands opportunities for intellectual inquiry and engagement, helps students develop critical thinking skills, and prepares students for social and civic responsibilities. All members of the College benefit from diversity and the quality of learning, research, scholarship and creative activities is enhanced by a climate of inclusion, understanding and appreciation of differences and the full range of human experience. As a result, the College is committed to diversity and equal opportunity and it recognizes that it must represent the diversity inherent in American society. The College is acutely aware that diversity and fairness are foundations that unite the College's faculty, staff, students, and the larger communication and information community (see <http://www.cci.utk.edu/diversity-statement> for CCI's full Diversity Statement).

TEXTBOOKS – REQUIRED

1. Gleick, J. (2012). *The Information: A history, a theory, a flood*. New York: Vintage Books.
2. Knight, D. (2011). *Public Understanding of Science: A history of communicating scientific ideas*. New York: Routledge.
3. Russel, N. (2009). *Communicating Science: Professional, popular, literary*. Cambridge University Press: Cambridge.

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 be some adjustments in these readings that as the course progresses and topics develop from student interests and discussions. Any adjustments will maintain a similar level of readings.

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 twice during the semester to assist you in developing the bibliography and a final will be turned in at the end of the semester. 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. It is also helpful to you to include how you might engage with this resource in the future.

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. You will write an academic style book review. Depending on your professional position and discipline, writing book reviews (not this book review) may be an opportunity for publication, although they do not count as much towards tenure as original research. For this assignment, choose a book that interests you and that will provide support to your final project in this class 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 750 words but no more than 1200 words. Your written review should include: (1) Complete bibliographic citation including pages, special features, ISBN # and price (not included in word count). (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.

You will record a presentation about the book that should be at least 5 minutes and no more than 10 minutes (we will discuss the technology for this in class). Close your presentation with 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. This will be posted to our class BB site. We will have a class discussion about a couple of your books each week later in the semester and you should be prepared to facilitate the class discussion based on your book report.

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 four pages (in some cases it may only be 2 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 11-15 minutes of prepared material and the presenter should be prepared to facilitate a discussion with the class of 10-15 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 2-4 pages), a literature review (approx 8-12 pages) and a methods section with details about participants, variables etc. A completed IRB form ready for submission (but not yet submitted or approved) 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. Or it may be appropriate to prepare materials to be used on social media. There are other possibilities as well. Please talk to me 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 BlackBoard. Your filename should include your last name and a reference to the assignment (for example, Allard_Biblio1). 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 s/he does 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	Topics	Assignment Due ***
		Readings Due **	
1	1/10	Introduction Historical Foundation of Science Communication	
		No assigned reading – Just come ready to talk!	
2	1/17	The scientific revolution to the 19th C	
		Gleick: Chapters 1, 2, 3	
3	1/24	STEM C& I - 20th C to today (via BB Collaborate: synchronous)	Elect Final Option (email)
		Gleick: Chaps 4, 5, 6 Knight: Chap 1	
4	1/31	Scientific knowledge & paradigm shifts (via BB Collaborate: asynchronous)	
		Gleick: Chaps 7, 10, 11, 1	
5	2/7	How STEM researchers communicate	Biblio Review 1
		<p>Allard, S., Levine, K.J., & Tenopir, C. (2009). Design engineers and technical professionals at work: Observing information usage in the workplace. <i>JASIST</i>, 60(3):443-459.</p> <p>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.</p> <p>Tenopir, C. & King, D.W. (2004). Communication patterns of engineers. IEEE. Chap2</p> <p>NOT REQUIRED BUT INTERESTING:</p> <p>Douglas, H. (2003). The moral responsibilities of scientists (Tensions between autonomy and responsibility). <i>American Philosophical Quarterly</i>, 40(1), 59-68.</p> <p>Kraut, R., Egidio, C. & Galegher, J. (1988). Patterns of contact and communication in scientific research collaboration. Association for Computing Machinery.</p> <p>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.</p> <p>Tenopir, C., King, D.W., Edwards, S. & Wu, L/ (2009). Electronic journals and changes in scholarly article seeking and reading patterns. <i>Aslib Proceedings</i>, 61(1).</p>	

6	2/14	Science, Media and the public	
		<p>Gleick: Chap 14, 15 Knight: Chap 2, 3, 13</p> <p>NOT REQUIRED BUT INTERESTING: 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.</p>	
7	2/21	Science, Media and the public II	Proposal for final project
		<p>Russell: Part III</p> <p>NOT REQUIRED BUT INTERESTING: 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.</p>	
8	2/28	The role of citizen scientists	Book review presentation (online)
		<p>Russell: Part II Other article(s) TBA</p>	
9	3/7	Network Analysis & Understanding science through citation analysis	Biblio Review 2
		<p>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>NOT REQUIRED BUT INTERESTING: 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>	
10	3/14	Scientific Data	
		TBA	
11	3/21	Individual Meetings	Book Review Due

12	3/28	SPRING BREAK	
13	4/4	Science Communication: The Future	
		Readings will be chosen based on student interests & our class discussions	
14	4/11	Final Presentations	
15	4/28	Final Presentations	Final Project Final Biblio
16	4/25	Final Presentations	
FIN AL	TU 5/7	NOTE: Based on the university schedule Class meets on TUESDAY MAY 7 10:15 AM – 12:15 PM	