

Research Methods (“Capstone 1”) Syllabus

Fall 2006; TLEN 5700

Time: Mondays, 10:00 to 10:50 a.m.

Instructor: J. Brad Bernthal

Credits: 1

Office hours:

Mondays 11:00 a.m.-12:00 p.m. (ECOT 351); Wednesdays 4:00-5:00 p.m. (Law 105R)

“To engage in any activity, and in particular any inquiry, we must inevitably be selective. We must bring some things into the foreground and distance others into the background. . . . ‘To grasp everything’ would be to do away with all perspective relations, it would mean to grasp nothing, to misapprehend the nature of knowledge. If we are ever to begin a practice or an inquiry we must, and must want to, leave unasked indefinitely many questions about the world.” Alexander Nehamas, *Nietzsche, Life As Literature*, Harvard University Press, 1985.

I. COURSE GOALS

This is a course about inquiry, research and writing. Capstone 1 develops the basic techniques of qualitative and quantitative research. It is required for students who intend to complete an individual thesis project. Additionally, it is a pre-requisite for Capstone 2, where students write a project as part of a Capstone team. **During this semester, you should try to acquire skills while pushing forward your Capstone project or individual thesis as much as possible.** Your work this semester will go a long way toward the success or failure of your Capstone project or individual thesis.

This course will develop four types of skills, as detailed below:

1. **Inquiry.** Develop a structured, scientific mode of intellectual organization. Identify a scientific policy arena and/or issue which matches the student’s skills. Conduct an inquiry about an issue that has not been fully answered. (“Move the frontiers of knowledge.” –Sharon Black)
2. **Research.** Understand and utilize the resources and databases available for conducting research at the intersection of technology, policy and business. Master the basic research skills required for the Capstone or thesis project.
3. **Writing.** Learn the patterns of organization and citation that are accepted within the relevant scientific community. Be able to quickly access resources concerning

basic grammatical rules. Effectively communicate ideas with clarity and persuasive force.

4. **Academic Integrity.** Abide by principles of academic integrity. If it is someone else's idea or phrase, give credit where credit is due. Plagiarism is a serious issue. In recent years, two Capstone groups and other individuals have been reported to the University's Honor Code Council.

II. THE VEHICLE

My belief is that the best way to learn about research and writing is to (i) read examples of what others have done well; (ii) collect effective research skills; and (iii) write. Accordingly, this course will have a decidedly practical bent to it. For example, during class periods we will allocate some time analyzing a sample article and/or paper. Additionally, during the fall semester you will be asked to complete three short written submissions and one extended research design project (*see* Section III, "Grades").

Please do not expect a strong correlation between workload and credit: the work required for this course will far exceed one hour of credit. The course is part of the requirements to obtain your Master of Science in Telecommunications. Your inquiry, research and writing skills will applied in full in your thesis or, alternatively, in Capstone 2 when you complete a Capstone project.¹ This fall's syllabus (and workload) is geared to prepare you to produce such work product.

III. GRADES

Grades will be based on a total of 100 points, allocated as follows:

Assignment #1: Resume + Relevant Information (ungraded). Please post to Web-CT ("Assignment #1") a submission (1) attaching your current resume; (2) stating if you intend to do a Capstone or a thesis; (3) stating if you are in in-class or CAETE distance student; (4) stating your areas of telecommunications expertise and interest; (5) if you have already started a Capstone with a partner, who the partner is and what direction you plan to take the project; and (6) confirming that you have read and understood the Honor Code's policy concerning plagiarism (<http://www.colorado.edu/academics/honorcode/>).

Assignment #2: Mini Paper (15 Points)

- Each student should examine a telecommunications initiative or regulatory proceeding (*see, e.g.,* FCC Web-Site, *Major Initiatives* (available at

¹ For students who have seen the movie *Caddyshack*, your instructor recognizes that this promise of delayed gratification is similar to Carl Spackler's (Bill Murray's) legendary line: "Oh, uh, there won't be any money, but when you die, on your deathbed, you will receive total consciousness.' So I got that goin' for me, which is nice."

< <http://www.fcc.gov/initiatives.html> >; CyberTelecom, *Regulatory Proceedings Index*, (available at < <http://www.cybertelecom.org/regulat.htm> >; or list of open proceedings available at < <http://gullfoss2.fcc.gov/ecfs/Upload/> >). Based on this, examine a telecommunications issue that is of interest to you (you might, for example, read the Notice of Proposed Rulemaking, Comments, or Report and Orders available on a proceeding at the FCC Web-site). You should feel free to conduct some additional research; however, please note that the purpose of this assignment concerns your writing development, not the extent of your research skills. Please draft and submit a brief paper on *one, narrow aspect* of a topic of interest that uses a basic organizational structure and citation forms. All students will complete this assignment individually. Expected length: 2-3 pages, double-spaced, Times New Roman 12 point font. Please do not exceed three pages.

Assignment #3: Formation of a Research Question (10 Points)

- Each Capstone team and thesis student will draft a testable research question. For Capstone students, this project will be completed with your team. For thesis students, it will be completed individually. Expected length: 1-3 paragraphs.

Assignment #4: Critique of Research Paper or Capstone Paper (15 Points)

- We will read several samples of research papers and/or prior Capstone presentations. You will be asked to individually analyze one paper or presentation and explain how it succeeds or fails in effectively communicating information to the reader. All students will complete this assignment individually. Please pay particular attention to use the basic writing organizational techniques discussed during the course. Expected length: 2-3 pages, double-spaced, Times New Roman 12 point font. Please do not exceed three pages.

Assignment #5: Research Design (50 Points)

- Choose a scientific issue of interest to you, develop a research design for the issue, and develop a plan for execution. For Capstone students, this project will be completed with your team. For thesis students, it will be completed individually. You will not carry out the research in this course, but your design will be used in the spring semester course, Capstone 2. The design should be 8-12 pages long, double-spaced, and fully referenced. Cover page, index (if included) and end-notes need not be included in the page count. It should include the following elements:
 - A. Formulation of a research question and discussion of its importance: An empirically testable question (or hypothesis) should be stated.
 - B. Current state of knowledge: What is currently known about the topic? Are there contradictions in that knowledge?

C. Scientific, Business and/or Policy Relevance: What is the relevance of the question you have formulated to science or policy? Does it add to scientific knowledge in a meaningful way? Can an existing policy of an existing organization be affected by findings from the research you propose? What is the business or industry upshot of your research?

D. Key concepts and operationalization of variables: Provide a definition for each of the terms central to the hypothesis and how these terms are related to each other. Then provide an operational definition of each term and a source for this definition.

E. Statement of methodology: Describe what steps you will follow during your thesis or in Capstone 2, where you will have the time and resources to carry out the proposed research.

Assignment #5: Research Design Presentation (10 Points)

- Research designs will be presented orally to the class as a whole, including a panel of student commentators. Each presentation will be limited to 10 minutes, with 5 minutes for questions and comments. Distance students will be expected to videotape their presentation and we will play it during class.

Grading scale

Numeric Score	Grade
90-100	A
87-89	A-
84-86	B+
80-83	B
77-79	B-
73-76	C+
70-72	C
65-69	C-
64 or Below	D+ to F

Guidelines for grade differentiation on papers (+/- grades are possible)

A : Overall, your work is professional, scholarly, and evinces creative thinking and/or unusually strong research.

The paper is well written and focused on making a contribution to area of study. A clear theme is presented that reflects incisive analysis. The analysis covers the obvious issues and, in addition, goes beyond the obvious and provides creative insight concerning the circumstances presented (either through novel thinking or unusually good research). The general analysis is supported by specific examples and illustrations that provide helpful specificity to the paper's overall thesis. The research is based on multiple sources

(where appropriate). The analysis is logically correct. Where appropriate, data is reduced to effective visual form (*e.g.*, tables or appropriate graphic presentation).

B : Overall, your work is informative and reflects a professional effort.

The paper has some merit but suffers from an easily identifiable flaw or flaws that materially affects its value, including one or more of the following problems: (i) the topic has already been well-covered elsewhere and/or its analysis somewhat obvious; (ii) the subject matter is treated in generalities that are not useful in any particular instance; (iii) the paper spends too much time covering material not central to the final analysis; (iv) the quality of writing is deficient; (v) the citations are weak; (vi) the research is based on too few or biased sources;; *or* (vii) the analysis has flaws or is based on data with little attempt to characterize the numerical accuracy or range of likely values.

C or Lower: Overall, your work is well short of ITP and professional standards.

This work is of little or no value in an academic or professional context. The paper simply repeats from sources with no clear analysis or integration of information. It is grammatically unsound and appears to have been thrown together at the last minute. It uses few if any reliable references or only web URL's. The approach is flawed and confusing to the reader. It plagiarizes.

IV. RULES OF THE GAME

Attendance is mandatory; class participation is encouraged. The instructor reserves the right to add up to five points at the end of the semester to the grade of students based on attendance and *constructive* class participation.

Submission of assignments; deadlines. All written assignments are due for in-class students by 11:59 p.m. Mountain time on the due date. Due to the group nature of many of the class' assignments, your instructor has already built in a one week lag time for submission of assignments. Accordingly, *all* students (in-class and CAETE) have the same deadlines which are listed below. No exceptions to deadlines will be made absent emergency. All assignments must be submitted using WebCT.

Use of the Web in Paper Citations.

In your papers, use citations that properly inform the reader of the actual source of information. A URL standing alone is almost never acceptable as a citation. Copied below is an excerpt from Professor Tim Brown (with a few edits by Brad Bernthal) that provides an excellent overview concerning the fundamental purpose of citations and why a naked URL is unacceptable. Prior to writing your papers, please read the following.

Web Sources and Citations

The Web is like a large library building. It stores information and is not the information itself. Imagine I would reference articles as “That library item on the first floor, tenth book case, third shelf, fourth from the right.” This raises a host of questions. What kind of item is it— a book, a refereed journal article, a company's annual report, or a training manual? Who wrote and published it? When was it published? If someone adds or removes library items, will I still be able to find it? If it is in the magazine section, when I look will it have the same articles and information as when you looked? A Web address is not a reference; the reference is the actual item stored in that location.

For example, an acceptable reference is:

"Cisco Introduces the Cisco 12008 Gigabit Switch Router", Cisco Corporate press release, January 12, 1998 (available at <http://www.cisco.com/warp/public/146/january98/6.html>).

and *not*:

"Cisco Introduces the Cisco 12008 Gigabit Switch Router", <http://www.cisco.com/warp/public/146/january98/6.html>

or even worse:

<http://www.cisco.com/warp/public/146/january98/6.html>

Thus, the Web address is just a courtesy to help the reader find information. The reference is the underlying source; the reference should be valid even if you omit the URL address.

...

The whole point of putting references in your paper is so that someone at a later time can look at them either to check your information or, more importantly, so that they can find sources of information for their research. Your results must be reproducible by others in order to be considered more than opinion. If others can not reasonably reproduce your arguments, it is not research.

In summary, the Web is not an information source. It is a way to find information sources. Know and reference the underlying source producing information.

Policy on Academic Honesty. Preparation for class discussions is advantageously performed in a group. All other assignments, with the exception of the Research Design and Presentation, are intended to be performed by an individual alone. **Under certain circumstances, consultation for writing assistance not related to the Research Question, Research Design and Presentation shall be permitted upon advance approval by your instructor, provided that the work submitted is primarily the student's work.** Individual assignments not performed solely by an individual

without advance approval from the instructor represent academic dishonesty and will result in at least a failing grade for the course and additional disciplinary action.

For students who will do a Capstone Project, the Research Question, Research Design and Presentation shall be performed solely by members of the team submitting the work. And for students who will do a thesis, the Research Design and Presentation shall be performed solely by an individual alone.

Your instructor takes plagiarism seriously and, if you plagiarize, such action is grounds for failure of the course and referral to the Honor Council. ***A simple rule: if language is not your own, you need to set it off in quotes and provide attribution.*** Other questions concerning academic integrity are less bright-line: any questions about whether or not an act constitutes academic dishonesty are welcome. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). See the University honor code at < <http://www.colorado.edu/academics/honorcode/> > and < <http://www.colorado.edu/policies/honor.html> >.

Religious Obligations. Your instructor will make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students with religious obligations that conflict with a test or other assignment should contact the instructor at least two weeks in advance to arrange an alternative time or assignment. See the University policy at < http://www.colorado.edu/policies/fac_relig.html >.

Classroom and Course-Related Behavior. Students who exhibit disruptive course-related behavior may be subject to disciplinary action. ***A quick word concerning an in-class pet peeve of your instructor: when you are in class, do not surf the Web, send e-mail or use Internet access in an abusive way.*** This applies irrespective of whether your instructors, a guest, or a student is speaking. Such actions are distracting to the instructor and to surrounding students. Violation of this policy will result in a lower class participation grade. Additionally, professional courtesy and sensitivity are important— particularly when relating to topics such as race, culture, religion, politics, sexual orientation, gender variance, and nationalities. For further information concerning classroom behavior, see the University policy at < http://www.colorado.edu/policies/class_behavior.html > and < http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code >.

Policy on Discrimination and Harassment. The University of Colorado at Boulder policy on Discrimination and Harassment (<http://www.colorado.edu/policies/discrimination.html>), the University of Colorado policy on Sexual Harassment, and the University of Colorado policy on Amorous Relationships applies to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of discrimination or harassment based upon race, color,

national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://www.colorado.edu/odh>.

Students with Disabilities. If you qualify for accommodations because of a disability, please submit a letter from Disability Services (DS) to the instructor early in the course so that your needs may be addressed. DS determines accommodations based on documented disabilities (303-492-8671, Willard 322, www.colorado.edu/sacs/disabilityservices) Disability Services' letters for students with disabilities indicate legally mandated reasonable accommodations. The syllabus statements and answers to Frequently Asked Questions can be found at < www.colorado.edu/disabilityservices >.

V. RESOURCES

Textbook. A single text, Wayne C. Booth, et al, *The Craft of Research*, University of Chicago Press, 2nd Ed., 2003 (ISBN: 0-226-06568-5), will be required (referred to in this syllabus as "Booth"). This is available in paper-back for \$10.20 at < <http://www.amazon.com/exec/obidos/tg/detail/-/0226065685/103-4975057-3457426?%5Fencoding=UTF8&v=glance> >.

Other Writing Tools. It is recommended that students also purchase William Strunk, Jr., et. al, *The Elements of Style*, 4th Ed., Needham Heights: Macmillan Publishing, 2000. This book's stylistic guidelines are useful for all written work. (A shortened version is available online at < <http://www.bartleby.com/141/> >.) Also helpful is the University of Colorado's style guide, available at < <http://www.colorado.edu/Publications/styleguide/> >. A thesaurus is also recommended for all students. (A helpful on-line version is available at < <http://dictionary.reference.com/> >.)

Library and Database (Re)orientation. Although you should already be familiar with the use of the library and computer research sources (e.g., the Web of Science and Lexis), in this course you will re-familiarize yourself with these sources. Two specialized lectures during the semester will focus on the topic of advanced research tools. Additionally, you should utilize the excellent "Subject Guide for *Interdisciplinary Telecommunications*" that the library has assembled, available at < <http://ucblibraries.colorado.edu/engineering/telecommunications.htm#portals> >.

In recent years, students have relied too heavily on common Internet resources (e.g., Google) in completing research. Although this form of research can help guide initial general inquiries, it is not an adequate substitute for research in respected scientific journals. Additionally, scholarly resources are often expensive and your tuition helps pay for these valuable materials. You should take advantage of them now.

ESL Students. Some students for whom English is a second language may face unique challenges in completing a Capstone paper or individual thesis. It is expected that students in Capstone I possess the requisite writing skills for a graduate program. If you believe that you may need additional assistance, then you *must* seek writing assistance during the fall semester rather than waiting until the spring when it may be too late. It is up to you to locate help (although your instructor will be pleased to provide some assistance in your in your search). There are some on-campus resources that can be used, including:

- **Student Academic Services Center:** main office (303) 492-1416 < <http://www.colorado.edu/SASC/esl.html> >; and
- **International English Center** < <http://www.colorado.edu/iec/programs.html> > and < <http://www.studyusa.com/factshts/ucboulder.asp> >.

VI. SEMESTER COURSE SCHEDULE

Because of the fluid nature of the course, the following is subject to change. Students should consult this syllabus each week to verify the assignments noted below. To the extent possible, course changes will be announced during lectures. **Particularly if you are forced to miss a class period, please check the syllabus for the next week's course to see if an assignment or topic has changed.** An updated version of this syllabus can be found on-line through WebCT.

Class Period No. 1, August 28

Instructor: Brad Bernthal

Topic: Research as communication; development of a research question.

In this first session we will discuss:

- Expectations for the course.
- Why this course matters.
- Information overload: the paradigm shifts in research and writing due to easy to the information firehose.
- The aesthetic aspect of writing criticism.
- A preview of the course's substantive content.
- The course's workload requirements.
- The textbook and other writing resources.
- Logistics of the course for in-class and CAETE students.
- How the Capstone or thesis project will frame the course.
- Discuss September 14 deadline for Assignment #1.

Assignment: Read class Syllabus carefully.

***Reminder:* no class on Monday September 4 (Labor Day).**

***Special Note:* September 7, 2006. Attend the ITP Modules (12:00-3:00 p.m.), SFTP Wireless Revolutions (as available), Keynote Address of Kathleen Abernathy (6:20-7:00 p.m.), and ITP awards presentation (7:00-8:00 p.m.).** Unless you have class conflicts, you should attend this event if you are an in-class student or a CAETE student in the Denver/Boulder area. It is particularly important to attend the ITP Modules (12:00-3:00 p.m.) and the ITP awards presentation (7:00-8:00 p.m.).

Class Period No. 2, September 11

Instructor: Brad Bernthal

Topic: Successes and Pitfalls of Past Capstones and Theses

During this lecture we will analyze:

- Aspects of successful past projects;
- Whether a Capstone or a thesis is appropriate for you;

- For thesis writers: how do I go at it alone?; and
- Review the common pitfalls that have made for problematic projects in the past.
- Discuss Assignment No. 2, the mini-paper (due September 25)

Assignment: read *Booth 1-39—an introduction to the broader idea of research and theories for completing research*; review and be familiar with (you do not need to read every word) two sample Capstones from last year available on WebCT: (1) Suh, Miyake, Kasim, Gaysam, and Karihaloo, *Analog Hole: Economic Effects and Business Feasibility Analysis* (Capstone 2006); and (2) Green, Sermvittayakul, Thomson, and Turner, *Municipal Fees on Wireline Telecommunications Providers* (Capstone 2006) (provided on WebCT).

SEPTEMBER 14 DEADLINE: Assignment #1 due September 14, 2005 (for both in-class and CAETE students). Please post to Web-CT (“Assignment #1”) a submission (1) attaching your current resume; (2) stating if you intend to do a Capstone or a thesis; (3) stating if you are in in-class or CAETE distance student; (4) stating your areas of telecommunications expertise and interest; (5) if you have already started a Capstone with a partner, who the partner is and what direction you plan to take the project; and (6) confirming that you have read and understood the Honor Code’s policy concerning plagiarism. <http://www.colorado.edu/academics/honorcode/>

Class Period No. 3, September 18

Instructor: Brad Bernthal

Topic: Uncommonly Good Common Sense Writing Strategies

- The three-levels deep theory.
- Redundantly repeat: Preview, guideposts, and headings.
- Reading your paper aloud; the importance of grammar and readability.
- Where non-native English speakers can get help.
- Weiser article: review of basic structure—the role of the introduction, body, and conclusion.
- An introduction is like a fresh coat of paint.
- Have a point: discuss the Pink article.

Assignment: read *Booth*, pages 222-237 (regarding introductions and conclusions). read Weiser, *The Ghost of Telecommunications Past*, pages 101-109, 123-128, available to download at < http://papers.ssrn.com/sol3/papers.cfm?abstract_id=694085 >; read *Why the World Is Flat*, by Daniel H. Pink, available at: < <http://www.wired.com/wired/archive/13.05/friedman.html?pg=1&topic=friedman&t> >.

Note: Assignment of Capstone Groups will be completed by Friday, September 22nd

Class Period No. 4, September 25

Instructor: Brad Bernthal

Topic: Research as Communication

In this class we will discuss threshold issues concerning research and techniques for making an effective written presentation.

- What is research?
- What is a research question/hypothesis?
- How do I formulate a sufficiently narrow research question?
- How to organize a research project
- How to develop a systematic and thorough research plan
- How to form a research question: how do I get started on a topic? (Interview Techniques and Classification of Sources)
 - Talking to experts in your research field is a great way to obtain clues on what is important, and where to look for information.
 - Using Google and other Internet sources is a good start, but sometimes misleading.
- How to track your research
- Setting deadlines;
- Let it go: deleting otherwise good—but irrelevant—text and research;
- Discuss Assignment No. 3, *Formulation of a Research Question*. (Due October 17)
- **DEADLINE: Assignment No. 2, Mini-Paper, is due today.**

Assignment: read *Booth* pages 40-74 (Chapter 3.1 through Chapter 4.4) , concerning the formation of a research question . This material is important for Assignment No. 3, “Formulation of a Research Question.” Also, review “Research Ideas” page, available at < [to be updated] >.

Class Period No. 5, October 2

Instructor: Jack Maness

Topic: Research Methods I

This class will discuss the mechanics of research.

- Jack Maness will cover various proprietary and non-proprietary database tools for scientific research.

Assignment: Review and browse the “Subject Guide for *Interdisciplinary Telecommunications*,” available at < <http://ucblibraries.colorado.edu/engineering/telecommunications.htm#portals> >; read *Booth*, 75-106 (From Problems to Sources and Using Sources, Chapter 5.1 through Chapter 6.4).

About the guest lecturers: Jack Maness is a librarian at the [Gemmill Engineering Library](#).

Class Period No. 6, October 9

Instructor: Brad Bernthal

Topic: Citation and Plagiarism

We will discuss different types of citation and the concept of plagiarism. Also, we will go over the TurnItIn.com product and inform students of how it works. We will discuss the process of turning in the Capstone and Thesis projects through TurnItIn.com.

- Review and discuss the acceptable forms of citation.
- Why choose one form over another?
- Gray areas: the line between attribution and plagiarism.
- What are the consequences of plagiarism?

Reading Assignment: Booth, pages 201 - 207 (Chapter 12.4-12.5 re plagiarism); read pp. 1-5, 9-12 and 23-27, Report of the Investigative Committee of the Standing Committee on Research Misconduct at the University of Colorado at Boulder concerning Allegations of Academic Misconduct against Professor Ward Churchill (available at <http://www.colorado.edu/news/reports/churchill/download/WardChurchillReport.pdf>).

Class Period No. 7, October 16

Instructor: Brad Bernthal

Guests: Kate Carney and Ninad Shringarpure

Topic: Preparing a Plan and Executing It

- Review Assignment #2
- Review Writing Strategies
- Planning Capstones and Group Dynamics
- **DEADLINE: Assignment No. 3, Formulation of a Research Question**

Read *Booth, pages 189-205* (regarding planning); be familiar with Carney, Fandre, Nambiath, and Shringarpure, *IPTV: Business Model Analysis from Porter's Five Forces Perspective* (Capstone 2006).

Class Period No. 8, October 23

Instructor: Peggy Jobe and/or Jack Maness

Topic: Research Methods II

- Guest lecturer Jack Maness will continue where he left off in the previous lecture.
- **DEADLINE: Assignment No. 4, Critique of Research Paper or Capstone Project, is due today.**

Assignment: N/A

Class Period No. 9, October 30

Instructor: Brad Bernthal

Topic: Qualitative Research and Writing

- Discuss Assignment No. 4, *Critique of Research Paper or Capstone Project* (Due November 7.)
- Introduce Assignment Nos. 5 and 6

- Discuss writing strategies utilized in *Property Rights In Spectrum* article
- Claims, reasons and evidence through the prism of the Coase Theorem
- *Optional: Movie, Shattered Glass, 2003: Students may earn extra credit by watching and providing a summary of this movie.*

Reading Assignment: Booth 109-135 (Making Good Arguments and Claims, Chapter 7.1 through Chapter 8.2); Weiser and Hatfield, Property Rights In Spectrum: Taking the Next Step (read pp. 1-6 and conclusion), available at < http://papers.ssrn.com/sol3/papers.cfm?abstract_id=818624 >

Class Period No. 10, November 6

** Guest Instructor: Scott Savage [*Tentative*]

Topic: Quantitative Research and Writing

Reading Assignment: Ackerberg, Riordan, Rosston and Wimmer, Low-Income Demand for Local Telephone Service: The Effects of Lifeline and Linkup (posted under "Readings" on WebCT); Booth 138-164 (Reasons and Evidence; Acknowledgments and Responses; Chapter 9.1 through Chapter 10.4).

About the guest lecturer (from ITP bio): Scott Savage, PhD, is an Assistant Professor who teaches microeconomics and telecom economics.

Class Period No. 11, November 13

Instructor: Brad Bernthal; Guest Instructor: Tim Brown

Topics: Graphic Presentation of Data

In the first part of this lecture we will elaborate on assignment Nos. 5-6 and the schedule for the Research Design; in the second portion, Tim Brown will discuss how graphical presentation of data can help your written work.

- Discuss feedback regarding Research Question submissions
- Research Design issues to address
- For Capstone writers: what if there are problems in my group?
- Tim Brown: discuss how graphical presentation of data can help your written work

Assignment: read Booth, pp. 241-263 (Communicating Evidence Visually, Chapter 15.1 through Chapter 15.6); be familiar with graphics in Carney, Fandre, Nambiath, and Shringarpure, IPTV: Business Model Analysis from Porter's Five Forces Perspective (Capstone 2006).

Reminder: no class on Monday, November 20 (Fall Break)

Class Period No. 12, November 27

Instructor: Brad Bernthal

Topic: Effective Presentations; Publishing

In this class we will discuss two topics: (1) some basic tips for effective presentations; and (2) the process of publishing your research work and the different types of publication, as well as the considerations that you will want to put into your work for each:

- Basic tips for effective presentations
- The writing loop: revising, re-writing, submitting, reviewing, rewriting, revising, . . . and hopefully publishing.
- Aligning research interests with professors' on-going research
- Scientific symposia
- Peer-reviewed journals
- Other journals
- Electronic publishing

Reading assignment: Sicker and Lookabaugh, *VoIP Security: Not an Afterthought*, available at

http://www.acmqueue.com/modules.php?name=Content&pa=printer_friendly&pid=209&page=1

NOTE: Depending on class size and how many individual theses we have, it is uncertain whether all teams/students will have an opportunity to do an in-class presentation. Capstone teams will get priority for in-class presentation times. If necessary, thesis students will meet with Brad separately to do a presentation.

Class Period No. 13, December 4

Instructor: Brad Bernthal

Topic: Presentations of Research Plans, Round 1.

- **DEADLINE: Assignment Nos. 5 and 6 (for groups/individuals who will present today).**

Class Period No. 14, December 11

Instructor: Brad Bernthal

Topic: Presentations of Research Plans, Round 2

- **DEADLINE: Assignment Nos. 5 and 6 (for groups/individuals who will present today).**