

IS/COMM 6310
Behavior and Information Technology
Fall 2015

[As of 8/17/15. Updated versions available on Blackboard site]

Tuesday, 1:25-4:00

Room: Gates 114

Instructor: Susan Fussell

Office: 484 Mann Library; cell: 280-0634 (emergencies only, otherwise use email/IM)

Office hours: by appointment but you can contact me any time by email/IM/Skype text (evenings are best)

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Course Description and Objectives

This course, one of the IS core graduate courses, explores the behavioral foundations of communication technology and the information sciences. It focuses on the ways in which theories and methods from the behavioral sciences play a role in understanding people's use of, access to and interactions with information and communication technologies. The course will examine multiple levels of analysis -- individual, small group, and larger collectives -- and present multiple disciplinary perspectives. The course has three primary goals:

- It will provide an introduction to behavioral science theories and approaches to understanding the use of current information technologies, to identify needs that are not currently being met, and to inform the design of future IT.
- It will introduce students to common research methods and statistical techniques used in the behavioral sciences, with a focus on being able to understand research reports using these methods and statistics.
- It will provide practice in conducting and reporting behavioral science research.

As an introductory course, much examination of the substantive areas of study will necessarily be cursory, and students are expected to acquire greater depth of understanding of specific areas through additional course work, independent reading and research.

The course is structured into three segments, corresponding to three different levels of analysis: individual, group, and community.

- I. Cognitive science approaches to attention, perception, reasoning and persuasion (Weeks 2-5)
- II. Social psychological approaches to language, emotion, coordination and awareness in groups and teams (Weeks 6-10)
- III. Behavioral approaches to large scale social systems including social networks online communities, and crowd-sourcing (Weeks 11-13)

Required texts:

Readings will be available on Blackboard. There will be 3-6 readings each week. Complete reading of each piece is required prior to class.

Student Responsibilities and Grading

1. Participation and Attendance (10%): Students are expected to prepare for each class; they should read and note the specified texts, and participate actively in class discussions and exercises. Students may be called on to summarize the major arguments, strengths, weaknesses, or problems, in any assigned reading. *Regular attendance is expected.* Failure to attend regularly and be prepared will be grounds for a grade reduction at the instructor's discretion.

2. Blackboard Discussion (10%) Each week, students are expected to post comments on *two or more of the assigned readings* on the blackboard forum set up for that week. Posts can include reactions to ideas in the readings, reflections on the readings based on your own experiences, or ideas or questions for future research. You can post separately for each of your two readings or write a longer post that ties two or more readings together, e.g. by discussing how the readings build on each other, are inconsistent with each other, etc. Students can start their own discussion threads or add to those started by other students. Across all posts for a given week, students should expect to contribute *at least 250 words*. Posts must be completed by **11 AM on Tuesday** of the week of the readings to receive credit.

3. Short Papers (4 x 10%): Students are expected to write four short papers on over the course of the semester, each worth **10%** of the final grade. Each paper will require analysis and synthesis of a subset of course readings and/or small-scale data collection and analysis. Paper assignments will be given out 1-2 weeks in advance of the deadline.

3. Research Project (30%): Each student will conduct a research project using behavioral science approaches and methods, analyze the results, and write a report of the project using standard report-writing style (e.g., introduction, hypotheses, method, results, discussion). Students will have the option of working alone or in a team of up to four students. Reports can be submitted in the format of the team's target conference or journal. The report should be no longer than 15-20 pages (double spaced) or 8-10 pages (ACM SIGCHI format). To earn full credit for the research project, students must also submit interim materials at the indicated points in the syllabus, including: topic, outline of methods, IRB materials, and first draft. ***Please note the intermediate deadlines for the term paper (topic description, research method section, etc.).***

4. Class Presentation (10%): In the last week of class, research project team will present its research and results to the class via a short oral presentation and a poster. Further details will be provided later in the semester.

Academic Integrity

Academic integrity is crucial to your personal scholarly identity. Your rights and responsibilities in this area are outlined in the Cornell University Code of Academic Integrity <http://cuinfo.cornell.edu/aic.cfm>. Violations of the code include but are not limited to:

- Submitting work in this class that has also been submitted for a grade in another course without prior permission of both instructors.
- Using, obtaining, or providing unauthorized assistance on examinations, papers, or any other academic work.
- Misrepresenting another person's work as your own. You are responsible for obeying the Code of Academic Integrity. Ignorance of the code is not an excuse.

The most common problem for many students is plagiarism, which will not be tolerated and will be sanctioned by failure of the course. Students from other cultures should be aware that American standards of acknowledgement and use of material prepared by others can be different than those in other cultures. **All students MUST complete the tutorial at <http://plagiarism.arts.cornell.edu/tutorial/index.cfm>.**

Misrepresenting another's work as your own means presenting somebody else's words or ideas without proper attribution. Proper attribution includes quotation marks and page numbers for *any* words taken directly from any piece of another author's work, and/or a citation when you have paraphrased or summarized somebody else's work. Sources need not be published to be cited; any document that you use as a source that you are not the sole author of must be cited or attributed in this way. If you have any questions about how to attribute or whether a source must be cited, ask for clarification. Academic integrity is a serious matter and will be treated as such.

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

Note: Course materials posted on Blackboard or distributed in class are intellectual property belonging to the author(s). Students are not permitted to buy or sell any course materials, including but not limited to syllabi, PowerPoint presentations, teaching materials, or class exercises without the express permission of the instructor. Such unauthorized behavior constitutes academic misconduct.

Accommodations

It is Cornell policy to provide reasonable accommodations to students who have a documented disability (e.g., physical, learning, psychiatric, vision, hearing, or systemic) that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact Student Disability Services and their instructors for a confidential discussion of their individual need for academic accommodations. Student Disability Services is located in 420 CCC. Staff can be reached by calling 607-254-4545. **Students are advised to meet with me early in the semester to make arrangements for accommodations.**

Week 1 – Aug. 25: Behavioral Science Approaches to Information Science; Overview of Behavioral Science Methods.

Cognitive Science Approaches to Attention, Perception, Reasoning and Persuasion

Week 2 – Sept. 1: Perception and Attention; Behavioral Science Methods, cont'd

****Research project ideas posted to Blackboard by Sept. 6.**

Pan, B., Hembrooke, H. A., Gay, G. K., Granka, L. A., Feusner, M. K., & Newman, J. K. (2004). The determinants of web page viewing behavior: an eye-tracking study. In *Proceedings of the 2004 symposium on Eye tracking research & applications (ETRA '04)*. ACM, New York, NY, USA, 147-154.

Tan, D. S., Gergle, D., Scupelli, P., & Pausch. R. (2003). With similar visual angles, larger displays improve spatial performance. In *Proceedings of the SIGCHI conference on Human factors in computing systems (CHI '03)*. ACM, New York, NY, USA, 217-224.

Davies, T. & Beeharee, A. (2012). The case of the missed icon: change blindness on mobile devices. In *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems (CHI '12)*. ACM, New York, NY, USA, 1451-1460.

Week 3 – Sept. 8: Cognition & Cognitive Modeling; Team selection

****Team selection**

****Short paper 1 distributed**

Anderson, J. (2013) About Act-R. <http://act-r.psy.cmu.edu/about/>

Anderson, J. R., Bothell, D., Byrne, M. D., Douglass, S., Lebiere, C., and Qin, Y. (2004). An integrated theory of the mind. *Psychological Review*, *111*, 1036-1060. (read to page 1045; skim the rest)

Pirolli, P. & Card, S. (1995). Information foraging in information access environments. In *Proceedings of the SIGCHI conference on Human factors in computing systems (CHI '95)*. ACM Press/Addison-Wesley Publishing Co., New York, NY, USA, 51-58.

Teo, L.-H., John, B. & Blackmon, M. (2012). CogTool-Explorer: a model of goal-directed user exploration that considers information layout. *Proceedings of SIGCHI conference on Human factors in computing systems (CHI '12)*. New York, NY, USA, 2479-2488.

Week 4 – Sept. 15: Cognitive load; Interruptions and Multi-tasking

****Short paper 1 due by start of class**

Czerwinski, M., Horvitz, E. & Wilhite, S. (2004). A diary study of task switching and interruptions. In *Proceedings of the SIGCHI conference on Human factors in*

- computing systems (CHI '04)*. ACM, New York, NY, USA, 175-182.
- Bailey, B. P., & Iqbal, S. T. (2008). Understanding changes in mental workload during execution of goal-directed tasks and its application for interruption management. *ACM Transactions on Computer-Human Interaction*, 14, 4, 28 pages
- Salvucci, D. D. (2001). Predicting the effects of in-car interfaces on driver behavior using a cognitive architecture. *Proceedings of CHI 2001*. New York, NY, USA, 120-127.
- Jensen, B. S., Skov, M. B., & Thiruravichandran, N. (2010). Studying driver attention and behaviour for three configurations of GPS navigation in real traffic driving. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*. ACM, New York, NY, USA, 1271-1280.

Week 5 – Sept. 22: Affect, Cognition and Creativity; Brief updates from project teams

- **Teams provide brief updates on their research ideas**
**** IRB materials due by Friday Sept. 25 by midnight**

- Lewis, S., Dontcheva, M., & Gerber, E. (2011). Affective computational priming and creativity. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 735-744). ACM.
- Harrison, L., Skau, D., Franconeri, S., Lu, A., & Chang, R. (2013). Influencing visual judgment through affective priming. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. ACM, New York, NY, USA, 2949-2958.

Communication, Coordination and Awareness in Groups and Teams

Week 6 – Sept. 29: Conversational Grounding in Computer-Mediated Communication

- **Short paper 2 distributed**

- Clark, H.H., & Brennan, S.E. (1991). Grounding in communication. In L.B. Resnick, J.M. Levine & S.D. Teasley (Eds.) *Perspectives on socially shared cognition* (pp. 127-149). Washington, DC: American Psychological Association.
- Fussell, S. R., Setlock, L. D., Yang, J., Ou, J., Mauer, E. M., & Kramer, A. (2004). Gestures over video streams to support remote collaboration on physical tasks. *Human-Computer Interaction*, 19, 273-309.
- Jones, B., Witcraft, A., Bateman, S., Neustaedter, C., & Tang, A. (2015). Mechanics of camera work in mobile video collaboration. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 957-966.

Week 7 – Oct 6: Emotion, Affect and Trust in Computer-Mediated Communication

- **Short paper 2 due by Friday Oct 10**

- Tausczik, Y., & Pennebaker, J.W. (2010). The psychological meaning of words: LIWC and

- computerized text analysis methods. *Journal of Language and Social Psychology*, 29, 24-54.
- Hancock, J. T., Landrigan, C. & Silver, C. (2007). Expressing emotion in text-based communication. In *Proceedings of the SIGCHI conference on Human factors in computing systems (CHI '07)*. ACM, New York, NY, USA, 929-932.
- Hancock, J. T., Gee, K., Ciaccio, K. & Lin, J. M-H. (2008). I'm sad you're sad: emotional contagion in CMC. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work (CSCW '08)*. ACM, New York, NY, USA, 295-298.
- Scissors, L. E., Gill, A. J. & Gergle, D. (2008). Linguistic mimicry and trust in text-based CMC. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work (CSCW '08)*. ACM, New York, NY, USA, 277-280.

Oct. 13: Fall Break, no class

Week 8 – Oct. 20: Coordination and Teamwork; Brief updates from project teams

****Teams provide brief updates on their research ideas**

****Short paper 3 distributed**

- Olson, G. M. & Olson, J. S. (2000). Distance matters. *Human-Computer Interaction*, 15, 139-178.
- Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N. & Malone, T. W. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science*, 330, 686-688.
- Jung, M., Chong, J., & Leifert, L. J. (2012). Group hedonic balance and pair programming performance: Affective interaction dynamics as indicators of performance. *Proceedings of CHI 2011*, 829-838.

Week 9 – Oct. 27: Awareness, Availability and Interruptions

- Gutwin, C., & Greenberg, S. (2002). A descriptive framework of workspace awareness for real-time groupware. *Computer Supported Cooperative Work*, 11, 411-446.
- Birnholtz, J., Reynolds, L., Luxenberg, E., Gutwin, C., & Mustafa, M. (2010). Awareness beyond the desktop: exploring attention and distraction with a projected peripheral-vision display. In *Proceedings of Graphics Interface 2010 (GI '10)*. Canadian Information Processing Society, Toronto, Ont., Canada, 55-62.
- Mark, G., Iqbal, S., Czerwinski, C., & Johns, P. (2015). Focused, Aroused, but so Distractible: Temporal Perspectives on Multitasking and Communications. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*. ACM, New York, NY, USA, 903-916.
- Reynolds, L., Smith, M. E., Birnholtz, J. P., & Hancock, J. T. (2013). Butler lies from both sides: actions and perceptions of unavailability management in texting. In *Proceedings of the 2013 conference on Computer supported cooperative work (CSCW '13)*. ACM, New York, NY, USA, 769-778.

Week 10 – Nov. 3: Interacting with and Through Agents and Robots

****Short paper 3 due by start of class**

- Hyde, J., Carter, E. J., Kiesler, S., & Hodgins, J. K. (2015). Using an interactive avatar's facial expressiveness to increase persuasiveness and socialness. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 1719-1728
- Sauppé, A. & Mutlu, B. (2015). The social impact of a robot co-worker in industrial settings. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 3613-3622.
- Jung, M. F., Martelaro, N., & Hinds, P. J. (2015). Using robots to moderate team conflict: The case of repairing violations. In *Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI '15)*. ACM, New York, NY, USA, 229-236
- Johnson, S., Rae, I., Mutlu, B., & Takayama, L. (2015). Can you see me now?: How field of view affects collaboration in robotic telepresence. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 2397-2406

Social Ties and Relationships; Online Communities

Week 11 – Nov. 10: Social networks and Social capital; Brief updates from project teams

****Short paper 4 distributed**

****Teams provide brief updates on their research ideas**

- Garton, L., Haythornthwaite, C. & Wellman, B. (1997). Studying online social networks. *Journal of Computer Mediated Communication*, 3(1), np.
<http://jcmc.indiana.edu/vol3/issue1/garton.html>
- Gilbert, E. & Karahalios, K. (2009). Predicting tie strength with social media. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '09)*. ACM, New York, NY, USA, 211-220.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2011). Connection strategies: Social capital implications of Facebook-enabled communication practices. *New Media & Society*, 13, 873-892.

Week 12 – Nov. 17: Online Communities

- Lampe, C., Wash, R., Velasquez, A., & Ozkaya, E. (2010). Motivations to participate in online communities. In *Proceedings of the 28th international conference on Human factors in computing systems (CHI '10)*. ACM, New York, NY, USA, 1927-1936.
- Farzan, R., Dabbish, L. A., Kraut, R. E., & Postmes, T. (2011). Increasing commitment to online communities by designing for social presence. In *Proceedings of the ACM 2011 conference on Computer supported cooperative work (CSCW '11)*. ACM, New

York, NY, USA, 321-330.

Matthews, T., Mahmud, J. U., Chen, J., Muller, M., Haber, E., & Badenes, H. (2015). They Said What?: Exploring the relationship between language use and member satisfaction in communities. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*. ACM, New York, NY, USA, 819-825.

Zhu, H., Chen, J., Matthews, T., Pal, A., Badenes, H., & E. Kraut, R. (2014). Selecting an effective niche: An ecological view of the success of online communities. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14)*. ACM, New York, NY, USA, 301-310

Week 13 – Nov. 24: Recommender Systems; Crowdsourcing

****Short paper 4 due by start of class**

Cosley, D., Lam, S. K., Albert, I., Konstan, J. A. & Riedl, J. (2003). Is seeing believing?: how recommender system interfaces affect users' opinions. In *Proceedings of the SIGCHI conference on Human factors in computing systems (CHI '03)*. ACM, New York, NY, USA, 585-592.

Nowak, M. & Nass. C. (2012). Effects of behavior monitoring and perceived system benefit in online recommender systems. In *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems (CHI '12)*. ACM, New York, NY, USA, 2243-2246.

Dow, S., Kulkarni, A., Klemmer, S. & Hartmann, B. (2012). Shepherding the crowd yields better work. In *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work (CSCW '12)*. ACM, New York, NY, USA, 1013-1022.

Kinnaird, P., Dabbish, L., Kiesler, S. & Faste, H. (2013). Co-worker transparency in a microtask marketplace. In *Proceedings of the 2013 conference on Computer supported cooperative work (CSCW '13)*. ACM, New York, NY, USA

Week 14 – Dec. 1: Class Presentations (Poster Session)

****Final Project Papers Due Mon. Dec. 14 at midnight*****