

Special Topics in Psychology: Human Factors in Design

PSY 710 - 005, Fall Term 2012

Led by: Mike Wogalter
Tuesdays 4:30 - 7:15 pm
Room: POE 218
3 Credit Hours

Instructor Information

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Course Objectives

Human Factors and Ergonomics (HFE) is intimately tied to design. A fundamental goal of HFE is to produce a good fit of products, equipment, environments, and tasks with people. Design should consider people's abilities and limitations in the development and evolution of things. This course will explore ways that HFE can contribute to design particularly in development and testing. A specific emphasis will be on information design, particularly on ways to convey information quickly, accurately, and meaningfully—including graphic displays of quantitative information, symbols to convey concepts, and emergent features. Secondary emphases will include consumer-product and environmental design. This is a seminar course in which class time will be spent discussing the readings assigned for that week. Students will lead certain classes. Students will bring in questions and comments concerning the readings to prompt class discussion. A manuscript on new data collected during the semester related to design completes the course.

Readings

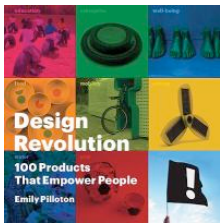
The 3 books we will be using are:



Woods, D. D., Decker, S., Cook, R., Johannesen, L., & Sarter, N. (2010). *Behind human error*, 2nd Ed. Burlington, VT: Ashgate. Paperback ISBN: 978-0-7546-7834-2; Hardback ISBN: 978-0-7546-7833-5.



Martin, B., & Hanington, B. (2012). *Universal methods of design*. Rockport/Quayside. ISBN-10: 1592537561 ISBN-13: 9781592537563.



Pilloton, E. (2009). *Design revolution: 100 products that empower people*. Metropolis Books. ISBN 9781933045955.

An additional list of assigned readings (articles and chapters) is listed at the end of this syllabus.

Prerequisites

Graduate student status in a masters or Ph.D. program at NC State: This course is mainly geared to Human Factors and Ergonomics graduate students, but graduate students in design, education, technical communication, industrial engineering, and computer science are welcomed to enroll. Persons outside these areas wishing to enroll should ask the instructor.

Class participation

Being that this course is a seminar, oral participation through discussion is encouraged and essential. You should be prepared to speak up (some of the time, at least) and add to each meeting's discussion. Class participation will be worth

20% of the final course grade. This also relates to attendance. See “Attendance policy” below.

You are strongly encouraged to critically read the assigned readings twice: Once before making up questions (discussed below) and again before coming to class. It is recommended that you take handwritten notes (and comments) about the articles as you go through them. Review them before coming to class. Remember to bring the readings for that week to class.

Leader assignments

Students will be responsible for leading discussion for about 3 sessions depending on class size. Initial assignments will be made during the first class. Later assignments will be finalized subsequently. Two of the 3 sessions will concern the books and one will concern the empirical articles. Leaders will summarize the readings and use the questions/comments from class members to drive discussion of the material. The questions/comments should enhance the likelihood of high quality discussion. Leaders should become “experts” regarding the text readings and articles to their assigned sections. Leaders might want to use visual aids (e.g., overheads and hand-outs, using the classroom's computer display) to assist in presentation or to search for *other* source materials to develop better, more informative discussions. The quality of the presentations and discussion leadership will account for 40% of the final course grade. Leaders are responsible in making sure that the discussion is fruitful and well paced (e.g., that it doesn't get bogged down, gives opportunity for discussion about other aspects of the material). There will be a break at some point in each class meeting.

Discussion questions

Each person is required to send by email in questions and substantial discussion comments about the readings to the leader of that week. It is your chance to find out answers and impressions about ideas and concepts from peer classmates and the instructor. The questions/comments should deal with aspects of the texts and articles that you do not understand and need clarification, reasonable criticism, or ideas related to the material that could stimulate intelligent discussion, etc. The quality and regularity of stimulating relevant discussion will be counted in as part of the class participation percentage. Failure to ask questions or make comments will result in a penalty that will depend on such things as the frequency of the problem, etc. One question/comment for each reading per week is required. Send questions to the assigned leader for the upcoming week by 3 PM Eastern Time on the Monday before the class.

Written research project

Students are required to complete a written research project on a topic that has the instructor's approval. The project can be focused on any area of scientific merit with respect to the human factors in design. Students should use newly-collected data in their paper. Papers should be word processed in the format directed by HFES or the *Publication Manual of the American Psychological Association*. The written report should contain a title page, abstract, review of relevant literature (related to the problem being addressed, purpose of the research (and the reasoning behind it), method (description of the materials and procedure), results (expected or found), discussion/implications of the research, and references, i.e., comparable in form to the papers read in the class). The report should be no longer than 10-12 double-spaced pages of text (excluding supporting figures and tables). Other kinds of projects may be acceptable and will require approval of the instructor. A brief written proposal of about a half page should be submitted by **Sept 18**. Please talk to the instructor before submitting a proposal. Clearance to do the project is required. Please do not suggest work you have already done or doing for another class or research project. The final written portion of the assignment will be worth 40% and the written portion of the completed project is due at **5 PM on December 11**.

Attendance Policy

Students will be expected to attend every class meeting. Missing a single class is like missing a week's worth of classes. Student attendance is important because seminar discussions are only as good as the people who attend and participate. Therefore, students should note that 20% of the course grade is allocated to class participation. Obviously, it is difficult to participate when you are not present. In particular if you miss class when you are supposed to lead one of the discussions that day incurs some level of hardship by others who may have to substitute. After three unexcused absences there will be an automatic penalty of 10% subtracted from ending total of the course grade. Each additional missed meeting from that point will result in further reductions of 5% from your final grade. Take the necessary precautions to avoid being in the position to miss one or more classes without a really good and valid excuse.

Grading

All students are expected to do and turn in their own work. Academic integrity is expected. Dishonorable behavior will not be tolerated and when necessary will be pursued through the University's judicial channels.

The grading scale is shown below:

98-100	A+	80-81.9	B-
92-97.9	A	78-79.9	C+
90-91.9	A-	72-77.9	C
88-89.9	B+	70-71.9	C-
82-87.9	B	Less than 70%	F

A summary of the percentage worth of each of the course components follows:

Discussion Leadership	40%
Class participation (including weekly questions/comments)	20%
<u>Written research project</u>	<u>40%</u>
TOTAL	100%

Calendar for Human Factors in Design

<i>Date</i>	<i>Woods et al. pages</i>	<i>Section or Pages</i>	<i>Articles/Chap</i>
August 21	[Course Introduction]		
August 28	Woods pp. v-17	Martin sec 1-11	Quinn
September 4	Woods pp. 19-34	Martin sec 12-23	Strawhun
September 11	Woods pp. 35-59	Martin sec 24-35	McCall/Hesse
September 18	Woods pp. 62-82	Martin sec 36-47	Smallman
September 25	Woods pp. 83-95	Martin sec 48-59	Day
October 2	Woods pp. 97-121	Martin sec 60-71	Hurwitz
October 9	Woods pp. 123-140	Martin sec 72-83	Hoffman/Rouse
October 16	Woods pp. 141-153	Martin sec 84-100	Mohamed-Ameen
October 30	Woods pp. 155-170	Pilloton pp. 6-69	Tufte
November 6	Woods pp. 171-190	Pilloton pp. 70-127	Lewis 105-123
November 13	Woods pp. 191-214	Pilloton pp. 128-183	Lewis 124-140
November 20	Woods pp. 215-234	Pilloton pp. 184-242	Boehm-Davis 219-234
November 27	Woods pp. 235-249	Pilloton pp. 244-299	Boehm-Davis-234-249
December 11	Written Research Paper Due		

Articles & Chapters

- Aug 28 Quinn, A., Bojko, A. Gaddy C., & Edmond Israelski, E. (2006). Better drug labeling for pharmacists. *Ergonomics in Design: The Quarterly of Human Factors Applications*, 14, 18-23. <http://erg.sagepub.com/content/14/1/18>
- Sep 4 Strawhun T., & Murray , S. (2010). Automated external defibrillators: How HF/E helps win the race against time. *Ergonomics in Design: The Quarterly of Human Factors Applications*, 18, 14-19. <http://erg.sagepub.com/content/18/3/14>
- Sep 11 McCall, R., & Schieber. F. (2010). Validating the effectiveness of recursive blur enhancement of symbol signs using static and dynamic protocols. *Proceedings of the Human Factors and Ergonomics Society*, 54, 2106-2109. <http://pro.sagepub.com/content/54/24/2106>
- Sep 11 Hesse, R., Steele, N. H., Kalsher, M. J., & Mont'Alvao, C. (2010). Evaluating hazard symbols for the Globally Harmonized System (GHS) for hazard communication. *Proceedings of the Human Factors and Ergonomics Society*, 54, 1832-1836. <http://pro.sagepub.com/content/54/21/1832.full.pdf>
- Sep 18 Smallman, H. S., & St. John, M. (2005). *Naive Realism: Misplaced Faith in Realistic Displays*. *Ergonomics in Design: The Quarterly of Human Factors Applications, Summer*, 6-13. <http://erg.sagepub.com/content/13/3/6>
- Sep 25 Day, M. C., & Young, C. (2012). This is your heart speaking. Call 911. *Ergonomics in Design, April*, 4-12. <http://erg.sagepub.com/content/20/2/4.full.pdf>
- Oct 2 Hurwitz, J. B. (2011). The influence of trust and privacy risk-taking on user acceptance of electronic services that collect personal information. *Proceedings of the Human Factors and Ergonomics Society*, 55, 1110-1114. <http://pro.sagepub.com/content/55/1/1110.full.pdf>
- Oct 9 Hoffman, R. R., & Elliott, L. R. (2012). Using scenario-based envisioning to explore wearable flexible displays. *Ergonomics in Design, Fall*, 4-8. <http://erg.sagepub.com/content/15/4/6.full.pdf>
- Oct 9 Rouse, R. B., & Boff, K. (1998). Packaging human factors for designers. *Ergonomics in Design: The Quarterly of Human Factors Applications*, 6, 11-17. <http://erg.sagepub.com/content/6/1/11>
- Oct 16 Mohamed-Ameen, A., Oglesby, J. M., Lakhmani, S., Sims, V. (2011). Waving at faucets: Primed action selection with fictional technologies. *Proceedings of the Human Factors and Ergonomics Society*, 55,1681-1685. <http://pro.sagepub.com/content/55/1/1681>
- Oct 30 Tufte, E., R. (2011). *The cognitive style of PowerPoint: Pitching out corrupts within*. 2nd Ed. Cheshire CT: Graphics Press. <http://www.tufte.com>
- Nov 6 & 13 Lewis, J. R. Commarford, P. M., Kennedy, P. J. Wallace J. & Sadowski, W. J. (2008). Handheld electronic devices. *Reviews of Human Factors and Ergonomics* (Vol. 4, Chap. 4), pp. 105-148. Santa Monica, CA: Human Factors and Ergonomics Society. <http://rev.sagepub.com/content/4/1/105>
- Nov 20 & 27 Boehm-Davis, D. A., (2005). Improving product safety and effectiveness in the home. *Reviews of Human Factors and Ergonomics* (Chap. 5), pp. 219-253. Santa Monica, CA: Human Factors and Ergonomics Society. <http://rev.sagepub.com/content/1/1/219>