

9/4/2003

*New Jersey Institute of Technology
Department of Industrial and Manufacturing Engineering*

IE 662 Cognitive Engineering, Fall 2003
Class Schedule: Thursday 6:00 - 9:05 pm
Location: GITC 1202

Instructor: Harry E. Blanchard, PhD
Adjunct Instructor, NJIT, &
Principal Technical Staff Member,
AT&T Shannon Labs, Florham Park, NJ

Phone: (973) 360-8095 Fax: (888) 866-4891
Email: hblanchard@research.att.com <http://www.hblanchard.com/>
Office Hours: By appointment only

Week	Date	Topic	Readings
1	9/4	Introduction to Cognitive Ergonomics <i>User Experience, Cost Justification</i>	Preece ch. 1,2
2	9/11	Cognitive Psychology Overview I <i>Applying Psychology to Design, Human Memory</i>	Preece ch. 3-7
3	9/18	Cognitive Psychology Overview II <i>Perception, Attention, Mental Models</i>	Preece ch. 17, 18, Nielsen, Molich
4	9/25	Usability Methods I <i>Design Process, Requirements, Task Analysis</i>	Preece ch. 19, 20, Day § 4.5 pp. 353-370
5	10/2	Usability Methods II <i>Heuristic Analysis, Standards & Guidelines</i>	Preece ch. 22, 27
6	10/9	Usability Methods III <i>Usability Testing, Prototyping, Experiments</i>	Preece ch. 29, 30, 31
7	10/16	Midterm Examination	
8	10/23	Human-Computer Interaction	Preece ch. 11, 12
9	10/30	Internet and World Wide Web Applications and Design Project Outlines Due	Preece ch. 13, 14, 15
10	11/6	Groupware and Computer Supported Cooperative Work <i>Intelligent Agents and Intelligent Systems</i>	Preece ch. 9, 10, 16 Blanchard, Milewski
11	11/13	Telecommunications Applications	Bond, Blanchard
12	11/20	Speech Technology Applications	Boyce, Nass, Sheeder
13	11/25 (Tues)	Handheld Devices & Internet Appliances	Mohageg, Bergman
	11/27-11/30	<i>Thanksgiving Recess - no classes</i>	
14	12/4	Term Project Presentations	
15	12/12-12/18	Final Exam Period	

Course Goal

The purpose of this course is to introduce the application of human factors and cognitive psychology principles to the user interface design of Information Technology, including computer systems, groupware and communications, handheld devices and Internet applications, and automatic speech recognition interfaces. The course will provide grounding in the engineering design processes used to enhance the usability of products and services, and usability testing methods used by user interface designers. Secondly, major areas and design problems in human-computer interaction and Information Technology will be covered, with real world examples. Its scope is not limited to computers and web design, but will touch on all devices and systems which fall into communications and information technology, both hardware and software. The course would be appropriate for advanced undergraduates in engineering, computer science, and psychology, and an introductory course in ergonomics/human factors would be highly recommended.

Text

Preece et al. (1994). *Human-computer interaction*. Addison-Wesley. Selected chapter readings.

Readings -- Available on-line at <http://www.hblanchard.com/ie662/>

Nielsen, J. (1993). *Usability engineering*. Chapter 1: Executive summary. Boston: Academic. (pp. 1-21).

Molich, R., & Nielsen, J. (1990). Improving a human-computer dialogue. *Communications of the ACM*, **33**, 3 (March), 338-348.

Day, M. C. and S. J. Boyce (1993). Human factors in human-computer system design. In M. Yovitz (ed.), *Advances in Computers*. New York, Academic Press. (selected sections)

Marshall, C., Nelson, C., & Gardiner, M. M. (1987). Chapter 8: Design guidelines. In M. M. Gardiner & B. Christie (eds.), *Applying cognitive psychology to user-interface design*. Chichester: Wiley. (pp. 221-278)

Blanchard, H. E. and J. S. Angiolillo (1994). Visual displays in communications: A review of effects on human performance and preference. In *SID International Symposium Digest of Technical Papers*, **25**, 375-378.

Milewski, A. E. and S. H. Lewis (1997). Delegating to software agents. *International Journal of Human-Computer Studies*, **46**, 485-500.

Bond, C. and M. Camack (1999). Your call is important to us ... Please hold. *Ergonomics in Design*, **7**(4): 9-15.

Blanchard, H. E., & S. H. Lewis (1999) Voice messaging user interface. In D. Gardner-Bonneau (ed.) *Human factors and voice interactive systems*. Boston: Kluwer. (pp. 257-284).

Boyce (2000). Natural spoken dialog systems for telephony applications. *Communications of the ACM*, **43**(9), 29-34.

Nass, C. & K. M. Lee (2000). Does computer-generated speech manifest personality? An experimental test of similarity-attraction. *Proceedings of the CHI 2000 Conference*, pp. 329 - 336.

Sheeder, T. & Balogh, J. (2003). Say it like you mean it: Priming for structure in caller responses to a spoken dialog system. *International Journal of Speech Technology*, **6**, 103-111.

Mohageg, M. F., and A. Wagner (2000). Design considerations for information appliances. In E. Bergman (ed.) *Information appliances and beyond*. San Francisco: Morgan Kaufman. (pp. 28-51)

Bergman, E., and Haitani, R. (2000). Designing the PalmPilot: A conversation with Rob Haitani. . In E. Bergman (ed.) *Information appliances and beyond*. San Francisco: Morgan Kaufman. (pp. 82-102)

Grading (tentative)

Midterm exam: 30%

Final exam: 30%

Project: 30%

Assignment: 10%