

**Syllabus**  
**Design Issues in Instructional and Information Systems (LIS 287B)**

**Dr. Leah A. Lievrouw**  
**Spring 1995 / Wed 1-4 p.m.**  
**Department of Library and Information Science**  
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**Office Hours: T 1-3 p.m. or by appointment**

**Course Description**

Robert Glaser (1976:6) has said, "The essence of design is to devise courses of action aimed at changing existing situations into preferred ones."

In practice, designers of information systems and designers of instruction are both engaged in "changing existing situations into preferred ones." Both invoke design "rules" which guide their conceptualizing, they formulate and prescribe certain design "solutions" instead of others, and they apply particular criteria of effectiveness to evaluate whether a design "works" as intended.

In this course the idea and practice of design are considered broadly, as they relate to both instructional and information systems. Drawing from research in instructional design, information systems design, software engineering, and industrial design, this course explores a number of issues related to design (and to the process of designing) from an interdisciplinary perspective.

The course is a seminar, and students will be expected to contribute substantively to class discussions. In addition, students will be assigned exercises and will write a conference-quality research paper based on topics presented in this course.

**Goals and Objectives**

The main goal of the course is to familiarize students with the principles and research related to the design of information and instructional systems. In addition, the course has several objectives. As a result of their participation, all students in the seminar should be able to:

1. Identify the major concepts and finding of the current literature on design as it applies to instructional and information systems, including important research contributions and the questions, theories, and researchers associated with each;
2. Articulate their own particular interests in terms of these main research contributions;
3. Critique the major subfields of research on systems design, including a description of their strengths and weaknesses; and
4. Propose simple hypotheses or research questions in their particular areas of interest, and propose tentative research projects/plans that might answer those hypotheses/questions.

## Course Requirements

**Readings/Discussions.** Because the course will be taught in seminar form, students will be expected to make cogent and prepared contributions to class discussions. Readings are listed below under “Weekly Topics and Readings.” All required readings will be put on reserve, unless otherwise noted; books are available at the URL Graduate Reserve desk, and journal articles are available in reserve folders in the DLIS Lab/Resource Center. There are two required texts for the class, which are available at the ASUCLA Bookstore:

Gagné, R.M., Briggs, L.J., and Wager, W.W. (1992). Principles of instructional design (4th edition). Fort Worth, TX: Holt Rinehart & Winston.

Norman, D.A. (1990). The design of everyday things. New York, NY: Doubleday Currency.

**Assignments.** Students will write one conference-quality research paper in which they identify a research question or hypothesis relevant to information seeking behavior based on a comprehensive literature review and critique, and formulate a research design that would adequately address that question. Draft versions of the term papers will be due at approximately midterm, with final manuscripts due the last day of class. More detailed information about the paper assignment will be discussed in class.

**Grading Formula.** Grading for the course will be based on the following formula: Class discussion, 40%; exercises, 30%; research paper, 30%.

## Weekly Topics and Readings

The topics for each week of the course are listed below, along with required and suggested readings for each topic. STUDENTS ARE REQUIRED TO COME TO CLASS HAVING READ MATERIALS ASSIGNED FOR THAT DAY.

### Week 1 / April 5 Introduction to the Course

REQUIRED:

Brendendieck, H. (1973; 1958). How do we see the world today? In: R. Banham (Ed.), The Aspen papers: Twenty years of design theory from the International Design Conference in Aspen (pp. 73-77). New York, NY: Praeger Publishers.

Cage, J. (1973; 1966). Design diary: How to improve the world (you will only make matters worse). In: R. Banham (Ed.), The Aspen papers: Twenty years of design theory from the International Design Conference in Aspen (pp. 162-169). New York, NY: Praeger Publishers.

Gagné, R.M., Briggs, L.J., and Wager, W.W. (1994). Principles of instructional design (4th ed.). Orlando, FL: Holt Rinehart Winston.  
Chapter 1, “Introduction,” pp. 3-19.  
Chapter 2, “Designing Instructional Systems,” pp. 20-36.

Glaser, R. (1976). Components of a psychology of instruction: Toward a science of design. Review of Educational Research, 46, 1-24.

**Week 2 / April 12**      Definitions of Design / Design "Rules"

REQUIRED:

- Murphy, D. (1992). Is ID truly a design activity? Educational & Training Technology International, November, 29(4), 279-282.
- Norman, D.A. (1990). The design of everyday things. New York, NY: Doubleday Currency. Chapter 1, "The psychopathology of everyday things," pp. 1-33.
- Reigeluth, C.M., Bunderson, C.V., and Merrill, M.D. (1994). Is there a design science of instruction? In: M.D. Merrill (D.G. Twitchell, Ed.), Instructional design theory. Englewood Cliffs, NJ: Educational Technology Publications, pp. 5-16.
- Rowland, G. (1993). Designing and instructional design. Educational Technology Research & Development, 41(1), 79-91.
- Winn, W. (1993). Perception principles. In: Fleming, M. and Levie, W.H. (Eds.). Instructional message design: Principles from the behavioral and cognitive sciences. Englewood Cliffs, NJ: Educational Technology Publications, pp. 55-126.

**Week 3 / April 19**      Theories of Design

REQUIRED:

- Duffy, T.M. and Jonassen, D.H. (Eds.) (1992). Constructivism and the technology of instruction. Hillsdale, NJ: Lawrence Erlbaum Associates: Bednar, Cunningham, Duffy, and Perry, "Theory into practice: How do we link?" Chapter 2, pp. 17-34.  
Merrill, M.D., "Constructivism and instructional design," Chapter 8, pp. 99-114.
- Jonassen, D.H. (1991). Objectivism vs. constructivism: Do we need a new philosophical paradigm? Educational Technology Research & Development, 39(3), 5-14.
- Lebow, D. (1993). Constructivist values for ID design -- five principles toward a new mindset. Educational Technology Research & Development, 41(3), 4-16.
- Norman, D.A. (1990). The design of everyday things. New York, NY: Doubleday Currency. Chapter 2, "The psychology of everyday actions," pp. 34-53.
- Rudolph, P. (1973; 1956). The six determinants of architectural form. In: R. Banham (Ed.), The Aspen papers: Twenty years of design theory from the International Design Conference in Aspen (pp. 53-58). New York, NY: Praeger Publishers.

RECOMMENDED:

- Moore, P. and Fitz, C. (1993). Gestalt theory and instructional design. Journal of Technical Writing and Communication, 23(2), 137-157.
- Reigeluth, C.M. (1983). Instructional design: What is it and why is it? (pp. 3-36). In: C.M. Reigeluth (Ed.), Instructional-design theories and models: An overview of their current status. Hillsdale, NJ: Lawrence Erlbaum Associates.



You, Y.M. (1993). What can we learn from chaos theory -- an alternative approach to instructional systems design. Educational Technology Research & Development, 41(3), 17-32.

#### **Week 4 / April 26**      Design Style

REQUIRED:

Banham, R. (1960). Introduction. In: Theory and design in the first machine age (pp. 9-12). London: The Architectural Press.

Dormer, P. (1990). The meanings of modern design. London: Thames & Hudson.

Chapter 1, "Designing style: The relationship between style and engineering," pp. 13-32.

Chapter 2, "Ninety years on: Style in design since 1900," pp. 33-61.

Norman, D.A. (1990). The design of everyday things. New York, NY: Doubleday Currency.

Chapter 3, "Knowledge in the head and in the world," pp. 54-80.

Pawley, M. (1990). Introduction. In: Theory and design in the second machine age (pp. 1-12). London: Basil Blackwell.

#### **Week 5 / May 3**      Diagnostic and Prescriptive Functions of Design

REQUIRED:

Gagné, R.M., Briggs, L.J., and Wager, W.W. (1993). Principles of instructional design (4th edition). Fort Worth, TX: Holt Rinehart & Winston.

Chapter 3, "The outcomes of instruction," pp. 39-52.

Chapter 8, "Analysis of the learning task," pp. 145-164.

Norman, D.A. (1990). The design of everyday things. New York, NY: Doubleday Currency.

Chapter 4, "Knowing what to do," pp. 81-104.

Chapter 5, "To err is human," pp. 105-140.

#### **Week 6 / May 10**      Evolution of Design: Time and Situational Factors

REQUIRED:

Dubos, R. (1974; 1969). The spirit of design -- period. In: R. Banham (Ed.), The Aspen papers: Twenty years of design theory from the International Design Conference in Aspen (pp. 197-205). New York, NY: Praeger Publishers.

Hine, C. (1995). Representations of information technology in disciplinary development: Disappearing plants and invisible networks. Science, Technology & Human Values, 20(1), Winter, 65-85.

Kaplan, B. (1995). The computer prescription: Medical computing, public policy, and views of history. Science, Technology & Human Values, 20(1), Winter, 5-38.

Kling, R. (1987). Computerization as an ongoing social and political process. In G. Bjerknes, P. Ehn, and M. Kyng (Eds.), Computers and democracy: A Scandinavian challenge (pp. 117-136). Brookfield, VT: Gower Publishing Company.

Norman, D.A. (1990). The design of everyday things. New York, NY: Doubleday Currency.  
Chapter 6, "The design challenge," pp. 141-186.

## **Week 7 / May 17**

### Evaluation Criteria: Is There a "Best" Design?

#### REQUIRED:

Andersen, P.B. and Mathiassen, L. (1987). Systems development and use: A science of truth or a theory of lies. In G. Bjerknes, P. Ehn, and M. Kyng (Eds.), Computers and democracy: A Scandinavian challenge (pp. 395-415). Brookfield, VT: Gower Publishing Company.

Gagné, R.M., Briggs, L.J., and Wager, W.W. (1993). Principles of instructional design (4th edition). Fort Worth, TX: Holt Rinehart & Winston.  
Chapter 7, "Defining performance objectives," pp. 125-144.  
Chapter 13, "Assessing student performance," pp. 254-277.  
Chapter 16, "Evaluating instruction," pp. 331-356.

Neuman, D. (1993). Designing databases as tools for higher-level learning: Insights from instructional systems design. Educational Technology Research & Development, 41(4), 25-46.

## **Week 8 / May 24**

### Design Participants and Their Roles

#### REQUIRED:

Black, M. (1974; 1956). The designer and the client. In: R. Banham (Ed.), The Aspen papers: Twenty years of design theory from the International Design Conference in Aspen (pp. 62-71). New York, NY: Praeger Publishers.

Ehn, P. and Kyng, M. (1987). The collective resource approach to systems design. In G. Bjerknes, P. Ehn, and M. Kyng (Eds.), Computers and democracy: A Scandinavian challenge (pp. 17-58). Brookfield, VT: Gower Publishing Company.

Klein, H.K. and Alvarez, R. (1987). Information systems in the hotel industry: Part of a problem or part of a solution? In G. Bjerknes, P. Ehn, and M. Kyng (Eds.), Computers and democracy: A Scandinavian challenge (pp. 97-116). Brookfield, VT: Gower Publishing Company.

Sonnenwald, D.H., and Lievrouw, L.A. (1991). Communication in participatory systems design. In: J. Griffiths (Ed.), ASIS '91: Proceedings of the 54th American Society for Information Science Annual Meeting. vol. 28, pp. 235-245. Medford, NJ: Learned Information, Inc.

**Week 9 / May 31**

**“User-Centered” Design**

REQUIRED:

- Gagné, R.M., Briggs, L.J., and Wager, W.W. (1993). Principles of instructional design (4th edition). Fort Worth, TX: Holt Rinehart & Winston.  
Chapter 6, “The learner,” pp.99-121.
- Merrill, M.D. (1994). What is learner control? In: M.D. Merrill (D.G. Twitchell, Ed.). Instructional design theory. Englewood Cliffs, NJ: Educational Technology Publications, pp. 241-262.
- Norman, D.A. (1990). The design of everyday things. New York, NY: Doubleday Currency.  
Chapter 7, “User-centered design,” pp. 187-218.
- Woolgar, S. (1991). Configuring the user: The case of usability trials. In: J. Law (Ed.), A sociology of monsters: Essays on power, technology and domination. Sociological Review Monograph no. 38.  
London: Routledge, pp. 58-99.

**Week 10 / June 7**

**Collaborative/Group Design**

REQUIRED:

- Mumford, E. (1987). Sociotechnical systems design: Evolving theory and practice. In G. Bjerknes, P. Ehn, and M. Kyng (Eds.), Computers and democracy: A Scandinavian challenge (pp. 59-76). Brookfield, VT: Gower Publishing Company.
- Oz, E. (1994). When professional standards are lax: The CONFIRM failure and its lessons. Communications of the ACM, 37(10), October, 29-36.
- Sonnenwald, D.H. (1992). Intergroup communication in design: A pilot study. In: D. Shaw (Ed.), ASIS '92: Proceedings of the 55th American Society for Information Science Annual Meeting. vol. 29, pp. 86-92. Medford, NJ: Learned Information, Inc.