I561

HCI/d Design II
Cross-listed as I590 section 27417

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Summary

At the end of this class, you will know if you like being a designer or not.

Objectives

- To provide awareness of design theory, practice, and reflection
- To ground work in history and theory of HCI and design
- To provide a framework for capstone projects and professional portfolios
- To create a local culture of "early and often" public critique
- To extend the design space into the local community
- To learn how to create strategic design plans

Weekly Format

This course meets once each week from 7:00 to 9:45 pm. Each class will feature three distinct sessions: **Lecture**; **Public Critique**; and **Enrichment** (see schedule below). Although the duration of each session may vary from week to week, roughly one hour will be devoted to each area.

Supported by the assigned readings, lectures will highlight core ideas concerning design with the material of information technologies. Each week, students will open their work to public critique, providing opportunity to give and receive constructive feedback. Videos, guest speakers, and design exercises will be included as well to provide enriching examples of how design impacts the world.

Three-hour classes offer several advantages but require great individual discipline as well. Students will be expected to come to class prepared to share their project work as it progresses, participate in both team and individual assignments, and keep pace with the course readings.

Wikis

Wikis are multi-author tools that facilitate collaboration on shared content. More and more, IT departments are utilizing wiki technology to build knowledge bases, iterate designs, and communicate ideas.

This class will make use of two wiki web sites to post contributions:

1. *Design Exchange* – post reviews of design theory resources for others to read and critique. This wiki is a shared, co-constructed annotated bibliography and reference list.
2. *Group Project wikis* – protected areas for use by team members to share research, assemble insights, describe concepts and collaborate on project documentation.

Kevin Makice will help you set up the wikis and act as a systems administrator for the wikis.

Importance of this Class

Note that if you are a graduate student in the HCI/d program, this is a core required class, and furthermore it should be the main focus of your efforts this semester. You are expected to devote no less than 10 hours per week to your work for this class in order to pass. Students who receive higher grades will likely work substantially more than this.

Individual Assignments

Weekly assignments will include responsibilities for furthering team projects as well as submitting individual work. Individual assignments must be submitted by 5:00 pm on Thursdays, **prior** to class.

Professional Portfolio

Essential to career placement after graduation is the professional portfolio. This web publication is a way to effectively convey the range of skills, experiences and interests one can bring to an employer. Each student will be asked to develop a professional portfolio and publish that material on the web. Even if you plan to continue on to the Ph.D. level, the portfolio will greatly improve your chances of being accepted into a good, design-oriented program.

The first iteration – which will incorporate any past work, including projects from the previous semester at the School of Informatics – will be due on January 19. Selected portfolios will be critiqued in class that evening. The final iteration of the portfolio will be due on April 13 and must show maturation. The critique of the portfolios includes not only content and html coding aspects, but also production values—that is issues of visual literacy. Josh Evnin will announce a time to provide help with the logistics of setting up a site.

HCI and Design Literature Reviews

Part of the responsibility of a designer is to keep current with influential work advancing human-computer interaction and design. The assigned reading list (see below) is viewed as a starting point for both class discussions and the search for relevant publications to share with peers. In addition to the core readings, published references or independent searches should be used to complete the assignments.

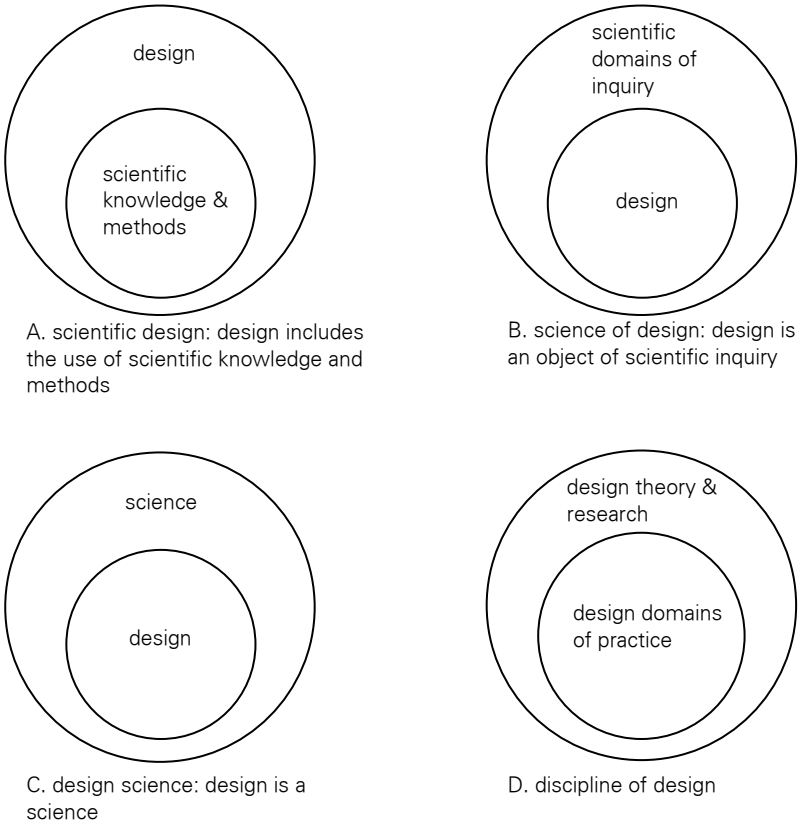

Figure 1. Prof. Blevis' diagram of Nigel Cross' account of notions of science and design.

Each student will be responsible for the contribution of **five** (5) quality reviews of design or design-oriented HCI articles, chapters, or events. Exemplary reviews include both a comprehensive, concise summary of the work and thoughtful analysis of how the findings contribute to the design community. Articles must be published on the Design Exchange wiki for peer review and class critique. This should occur no less frequently than one article every two weeks, according to the schedule below.

In keeping with the design focus of this class and in order to combine your work on reviewing the literature with our goal of building a portfolio, you are highly encouraged to create meaningful diagrams as reviews of the literature you read. These diagrams are part of the art of being designerly. For example, when Prof. Blevis read the Cross article in the reference list, he made the diagram of **Figure 1** in order to illustrate his understanding of that work. This diagram is suitable for inclusion in your portfolios and moreover the construction of such diagrams is a *designerly* way of doing things.

NOTE: There are ample resources available to avoid duplication. Steps should be taken to notify classmates when a work is in the process of being reviewed. However, more than one student may review the same article provided the second author contributes substantially and meaningfully to a revision of the original submission.

Critiques

An important part of this course, and of design in general, is the willingness to subject one's work to public critique. Every assignment is a candidate to be presented in a class critiquing session. Participation in this process is expected from everyone. Critiques can take the form of meaningful contributions to class discussion and commentary published in the Design Exchange wiki. Design culture is a culture of public critique, early and often—you must get used to this style of learning even if it is uncomfortable to you at first.

Peer Evaluations

Every two weeks, students will be asked to formally review the work of team members working on the group design project. This evaluation consists of both ratings across several criteria and constructive comments. Ideally, each individual score should reflect only the work since the last evaluation. Evaluations will be aggregated and made anonymous when returned to students the following week. We will make peer evaluation forms available on the wiki.

Reflection Journal

Throughout the semester, students will be expected to maintain a private journal about their experiences inside and outside of class. The purpose of a design journal is to provide an outlet for creative, analytical and emotional thoughts that accompany the design process. At the conclusion of the course, a short (1-2 pages) summary of that journal will be submitted. Reflection papers will not be shared with other students.

While there is no *wrong* experience, outstanding papers will include honest consideration of both successes and failures. Reflection might also include recognition of any changes undergone by the author and how those insights could impact the future.

Individual Assignment Deadlines

All materials must be submitted by 5:00 pm Thursdays.

January 19	Individual Portfolio (first iteration)
January 26	HCI/d Literature Review #1
February 2	Peer Evaluations
February 9	HCI/d Literature Review #2
February 16	Peer Evaluations
February 23	HCI/d Literature Review #3
March 2	Peer Evaluations
March 9	HCI/d Literature Review #4
March 23	Peer Evaluations
March 30	HCI/d Literature Review #5
April 6	Peer Evaluations
April 13	Individual Portfolio (second iteration)
April 20	Peer Evaluations
May 2	Reflections Journal

Group Project

In addition to individual assignments, students will be working toward the completion of a strategic design plan and presentation. Groups will be formed after the second class and will conclude with a 20-minute presentation on April 20th. Each team assignment must be submitted to the group wiki or to the Oncourse drop box, as appropriate, no later than 8:00 pm the evening **before** class (Wednesdays).

Community Partners

Several local organizations from Monroe County have been recruited to serve as partners in our course projects. They will serve as both a design resource and potential user group.

As with any partnership, the success of this relationship depends on mutual benefit. As students, you will be providing your partner organization with quality research, a strategic plan for a design which makes appropriate use of the materials of technology, and a token amount of labor serving their mission. In return, you will be granted access to their human resources and relevant data, expediting much of the research process. Whenever possible, a university liaison (ACE) will be assigned to your community partner to help negotiate the relationship.

In certain cases, it may be possible for a particular group to not participate in the service learning requirements. In this case, the group will be expected to construct prototypes in lieu of the service learning requirements.

Team Selection

During the second week (January 19), each community partner will be asked to give a 10-minute presentation to the class. This will likely cover the mission, history and client base of the organization, as well as identifying perceived needs and possible solutions. Students will be given up to 5 minutes to ask questions, as well.

At the end of that class, every student will rank the presenting partners in order of preference. This information will be used to create design teams for the semester. Every effort will be made to match students with their top choices, but the resulting teams will need to be balanced. Some students may not get their preferred partner.

Literature Review

After initial assignment to a group, students will be asked to collaborate on an initial review of literature relevant to their community partner. A project wiki will be provided to each team to help facilitate this collaboration. Reviews should include a substantial list of references and a brief summary of this collection of articles.

Mission-Critical Labor

Team members will be required to spend a combined minimum of 40 hours working for the community partner in some capacity. **While this work may be regarded as a kind of eXtreme design ethnography, you are expected to make a tangible contribution to the community partner's work**. The design effort will undoubtedly gain further understanding and insight from the service-learning experience. The specific duties and tasks will be determined by the organization, through negotiation with a university liaison (course instructor or assigned ACE).

Normally, the hours of service should be spread equally among the team members, In the event that team members wish to accommodate special individual circumstances or to best focus individual strengths in terms of contributions to the group, hours may be distributed in any fashion among team members, but ideally every member would spend at minimum one hour working for the organization. All hours must be logged by the partner and completed no later than March 31.

PRInCiPleS

Although there are many possible frameworks, processes and methodologies available to designers, this course will focus on the PRInCiPleS framework for design. The details of this framework – consisting of predispositions, research items, insights, concepts, prototypes and strategies – will be explained in class and through assigned readings.

The basic idea of the PRInCiPleS framework is that your design is chunked into components, each component falling within a particular framework element. A complete design effort might wind up with a several hundred components assembled in any order, but only those most relevant to the eventual solution will be used when presenting the design plan. Each team will be required to routinely submit **fifteen** (15) representative components of this design framework for peer review. (*NOTE:* That translates to a *minimum* of 60 components, although a reasonable project will be able to generate at least twice that.) Select only the ten best components each week to submit. Figure 2 shows an example of a design component from the 2005 class.

Given the short time-frame of this project, teams are not expected to deeply explore prototyping and strategy. Submissions of these components are voluntary, but extra consideration may be awarded to teams who take the time to generate multiple prototypes and strategy groups.

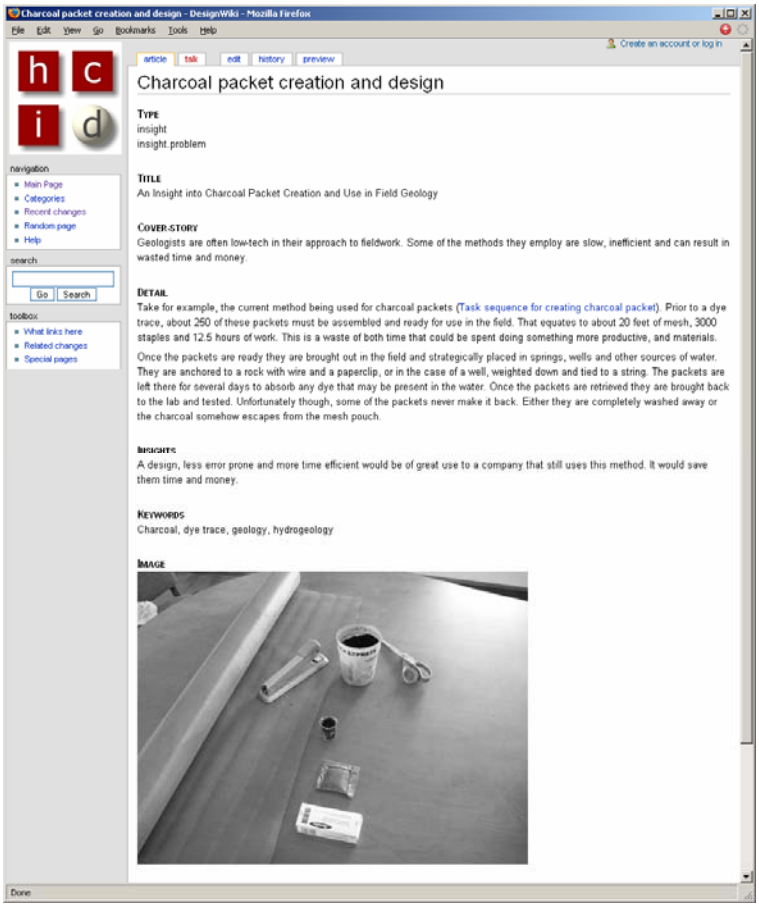

Figure 2: Insight component example from the Design Exchange Wiki (contents courtesy of Nicholas A. Gentile, used with permission)

Strategic Design Plan

The primary deliverable in this project is a comprehensive strategic design plan which makes use of information technologies as a material of the design. This document – which will undergo two formal iterations prior to the final submission – should reflect the PRInCiPleS framework for building a cohesive design explanation. Most importantly, it should be a quality plan that addresses a present, real-world need of the community partner.

This document must be submitted in final form (as a PDF) on April 12. All strategic design plans will be distributed to the class, community partners and judges for review prior to the presentations on April 20.

Presentation

The design will be presented to classmates, community partners and a selected panel of judges on April 20. Each group presentation will be 20 minutes with 5-10 minutes available for questions. All members of the design team must participate in the presentation, which will explain the final design argument in a cohesive manner.

The panel of judges will rank the presentations based on several criteria. The top three teams will receive bonus points toward the final grades of each individual member of the group.

Poster & Brochure

Accompanying each presentation will be two additional documents, a poster and a design brochure. These materials should be printed in sufficient quality and quantity to use as props for the final presentation on April 20. An initial iteration of both the poster and the brochure will be due on March 8.

The poster will include compelling visual imagery and descriptive text. The brochure will be a simple 4-panel (one fold) design. Either document should be able to effectively convey the design to an audience without further explanation.

Reflection Groups

Reflection is a vital part of both service-learning and design. On the date of the scheduled final exams (Tuesday, May 2, 12:30p-2:30p), all students will be required to attend one of several discussion groups to discuss the completed design process with peers and community partners. All groups will be assigned with the intention of distributing team members to interact with others outside of their own groups. Community partners will also bring in an evaluation of their assigned design team. That score will factor into the final grade.

After the discussions have concluded, a brief awards ceremony will be held to announce the top three teams in the design competition. Pizza will be served.

Team Assignment Deadlines

All materials must be submitted by 8p Wednesday.

January 25	Initial Literature Review for Community Partner
February 1	Predispositions/Research/Insights/Concepts (15)
February 8	Design Plan (first iteration)
February 15	Predispositions/Research/Insights/Concepts (15)
February 22	Predispositions/Research/Insights/Concepts (15)
March 1	Predispositions/Research/Insights/Concepts (15)
March 8	Poster & Brochure (first iteration)
March 22	Design Plan (second iteration)
March 29	Prototypes (optional)
March 31	Last day to complete service hours
April 5	Strategies (optional)
April 12	Design Plan (final)
April 19	Poster, Brochure, Presentation (final)
May 2	Focus Groups

Grading

This course demands both individual effort and effective team collaboration. Students who fail to exhibit skills in both areas will **not** succeed.

Individual Assessment (50% of final grade)

- Literature Reviews published in design exchange wiki (20%)
- Individual professional portfolio (20%)
- Critiques – Participation and Journal (5%)
- Peer Evaluations (5%)

Group Assessment (50% of final grade)

- Strategic design plan document (20%)
- Communication of design concept (20%)
- Community Partner evaluation (10%)

Design Competition

The group design projects will culminate in a 20-minute presentation to explain the final design concept and strategic plan. Based on input from both peers and a panel of external judges, each team will be scored on the quality of their presentation, the originality of their design, and the strength of their argument. Also included in the score will be the printed materials (poster and 4-panel brochure) accompanying the strategic plan.

The design team with the highest score will be awarded a 5% bonus added to each member's final grade. Second- and third-place teams will receive 3% and 1% bonuses, respectively.

Schedule

January 12	Overview of Design II Basic HCI/d Review Time and Travel I (📖 [13]) [Enrichment]
January 19	PRInCiPleS Time and Travel II (📖 [13]) HCI Theory (📖 [14]) Critique of Individual Portfolios (first iteration) Presentations from Community Partners
January 26	PRInCiPleS II Ex**plan**ations (📖 [3]) Wikis Critique of Literature Reviews [Enrichment]
February 2	Designerly Thought (📖 [4,5]) Critique of PRInCiPleS components [Enrichment]
February 9	Methods (📖 [8,9]) Team Presentations (first iteration) – A/B/C [Enrichment]
February 16	Sustainable Design (📖 [6,10,11]) Team Presentations (first iteration) – D/E/F [Enrichment]
February 23	Visual Literacy (📖 [17,18,19]) Critique of HCI Literature Reviews [Enrichment]
March 2	Human Centered Design (📖 [7]) Critique of PRInCiPleS components [Enrichment]
March 9	Reflective Practice (📖 [15]) Critique of Posters and Brochures (first iteration) [Enrichment]
March 16	SPRING BREAK WEEK

March 23	Science of Design (📖 [16]) Team Presentations (second iteration) – D/E/F [Enrichment]
March 30	Open Topics (📖 TBA) Team Presentations (second iteration) – A/B/C [Enrichment]
April 6	Open Topics (📖 TBA) Critique of HCI Literature Reviews [Enrichment]
April 13	Open Topics (📖 TBA) Critique of Individual Portfolios (first iteration) [Enrichment]
April 20	Team Design Presentations – A/B/C/D/E/F
April 27	CHI (Montreal) – NO CLASS
May 2	DURING FINALS @ 12:30p (Tuesday) Reflection Groups Awards Ceremony

Enrichment Videos

1. Larry Keeley on enterprise strategy
   http://www.uctv.tv/library-test.asp?showID=11062
2. Freeman Dyson on technophiles
   http://www.researchchannel.org/program/displayevent.asp?rid=1252
3. Tom Kelly of IDEO on product design
4. Dean Kamen on the segway
5. Edward Schlossberg on media
6. Rodney Brooks on robots
7. Hole in the wall on humanity-centered design
   http://www.pbs.org/frontlineworld/stories/india/thestory.html
8. Sixteen decisions (micro-lending in Bangladesh) on humanity-centered design.
9. Seamless for fashion design

Optional Field Trips

1. Columbus Indiana Architecture Tour
2. Herman Miller Sustainable Design Center
   http://www.hermanmiller.com/CDA/SSA/Category/0,1564,a10-c608,00.html

Readings

(Some links require an IU IP address to access materials)

1. Alexander, Christopher. (2002). The Nature of Order. Volume II. The Center for Environmental Structure. Berkeley, CA USA. Order at: http://www.natureoforder.com/
   You must read enough to become familiar with the concept of Structure Preserving Transformations.

2. Atwood, M. E., McCain, K. W., and Williams, J. C. (2002). How does the design community think about design? In Proceedings of the Conference on Designing interactive Systems: Processes, Practices, Methods, and Techniques (London, England, June 25 - 28, 2002). DIS '02. ACM Press, New York, NY, 125-132. DOI= http://doi.acm.org/10.1145/778712.778732
   Read entirely.

3. Blevis, E., & Siegel M. (2005). The Explanation for Design Explanations. 11th International Conference on Human-Computer Interaction: Interaction Design Education and Research: Current and Future Trends. (Las Vegas, NV, USA, July 22 - 27, 2005). http://design.informatics.indiana.edu/eli/desexplan.pdf
   This paper must be read carefully, as it contains the framework for your presentations.

4. Cross, N. (2001). Designerly Ways of Knowing: Design Discipline Versus Design Science. Design Issues. MIT Press, 17(3). 49-55. http://tinyurl.com/cnoea
   Read entirely.

5. Fallman, D. (2003). Design-oriented human-computer interaction. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (Ft. Lauderdale, Florida, USA, April 05 - 10, 2003). CHI '03. ACM Press, New York, NY, 225-232. DOI= http://doi.acm.org/10.1145/642611.642652
   Read entirely.

6. Fry, T. (1999) A New Design Philosophy: An Introduction to Defuturing. UNSW Press, Sydney, AU. http://tinyurl.com/cxrdv (Amazon.com link), electronic resource may soon also be available from the library.
   For the philosophically inclined student concerned with issues of sustainability, this is essential reading. You can get the sense of this writing from the design philosophy papers journal http://www.desphilosophy.com/dpp/dpp_index.html

7. Kling, R. and Star, S. L. (1998). Human centered systems in the perspective of organizational and social informatics. SIGCAS Computing Soc. 28, 1 (Mar. 1998), 22-29. DOI= http://doi.acm.org/10.1145/277351.277356
Read entirely.

8. Löwgren, J. 1995. Applying design methodology to software development. In Proceedings of the Conference on Designing interactive Systems: Processes, Practices, Methods, & Techniques (Ann Arbor, Michigan, United States, August 23 - 25, 1995). G. M. Olson and S. Schuon, Eds. DIS '95. ACM Press, New York, NY, 87-95. DOI= http://doi.acm.org/10.1145/225434.225444
Read entirely.

9. Löwgren, J. & Stolterman, E. (2004). Thoughtful Interaction Design. MIT Press, Cambridge MA. http://tinyurl.com/8c48j (Amazon.com link)
Read chapter 4 in particular, on Methods.

10. Margolin, V. Ed. (2002). The Politics of the Artificial. University of Chicago Press. London, UK. http://tinyurl.com/9k5a7 (Amazon.com link)
This anthology is a good source of articles that you may want to write about on the design eXchange wiki. It complements Simon's The Sciences of the Artificial listed below.

11. Margolin, V., & Margolin, S. (2003). A "Social Model" of Design: Issues of Practice and Research. Design Issues (MIT Press), 18(4), 24-30. http://tinyurl.com/8kmbm
Read entirely.

12. Norman, D. A. (1999). Affordance, Conventions, and Design. Interactions 6, 3 (May. 1999), 38-43. DOI= http://doi.acm.org/10.1145/301153.301168
Read entirely.

13. Reed, C., Wang, H.W., & Blevis, E. (2005). Recognizing Individual Needs and Desires in the Case of Designing an Inventory of Humanity-Centered, Sustainability-Directed Concepts for Time and Travel. DPPI 2005 Designing Pleasurable Product Interfaces. Eindhoven, The Netherlands.
The presentation will be given in class. Link TBA.

14. Rogers, Y. (2004) New Theoretical approaches for Human-Computer Interaction. Annual Review of Information, Science and Technology, 38, 87-143.
http://www.slis.indiana.edu/faculty/yrogers/papers/ARIST_Rogers.pdf
Read entirely.

15. Schön, D.A. (1983). The Reflective Practitioner: How Professionals Think in Action. New York: Basic Books. http://tinyurl.com/9pw4d (Amazon.com link)
Read chapter 3 in particular, design as a reflective conversation with the situation.

16. Simon, H.A. (1996) The Sciences of the Artificial, 3rd Edition. MIT Press. Cambridge, MA. http://tinyurl.com/9fyyp (Amazon.com link)
Read Chapter 5 in particular, The Science of Design: Creating the Artificial.

17. Tufte, E. (1992) The Visual Display of Quantitative Information. Graphics Press. Cheshire, CT. http://tinyurl.com/9qu5d (Amazon.com link)

18. Tufte, E. (1990) Envisioning Information. Graphics Press. Cheshire, CT. http://tinyurl.com/bu7x3 (Amazon.com link)

19. Tufte, E. (1997) Visual Explanations: Images and Quantities, Evidence and Narrative. Graphics Press. Cheshire, CT. http://tinyurl.com/9vulo (Amazon.com link)
Tufte books are references for Visual Literacy. Highly recommended reading.

Sources of Materials for the Wiki

(Some links require an IU IP address to access materials)

1. The ACM Digital Library: http://portal.acm.org/
2. Design Studies Journal: http://tinyurl.com/a2z2j
3. Design Issues Journal: http://mitpress.mit.edu/catalog/item/default.asp?ttype=4&tid=19
4. Design Philosophy Papers: http://www.desphilosophy.com/ (current issue is free)
5. International Journal of Human-Computer Studies (IJHCS): http://ijhcs.open.ac.uk/
6. Other Journals: Journal of Computer Mediated Communication (JCMC), ACM Transactions on Computer-Human Interaction (TOCHI), etc.
7. Conference Proceedings (ACM): SIGCHI, DIS (Designing Interactive Systems), DUX (Designing for User eXperience), etc.
8. Other Resources: HCI Index (http://degraaff.org/hci/), HCI Bibliography (http://www.hcibib.org/), OK/Cancel (http://www.ok-cancel.com/)