

KMD2002: Technologies for Knowledge Media

Term: Fall 2015

Instructors: Dr. Steve Szigeti

Contact Information: steve.szigeti@gmail.ca
cell: 416-473-5685 Twitter: @steveszigeti

Course Meeting time: Monday, 1pm to 4pm

Course Location: Semaphore Lab, Robarts Library (Ground Floor)

Course Description: "Knowledge media are documents, artifacts, technologies, and systems intended to enhance human creativity, learning, and knowledge building" (Ron Baecker). The course will provide opportunities to gain experience with various approaches and tools for designing knowledge media. The focus will be on learning different techniques and tools for requirements analysis, prototyping, and evaluation. The course covers the need to understanding related data, the user, stakeholders and the context in which knowledge media is introduced. Techniques and tools will be drawn from a range of design perspectives including traditional user centered design, participatory design, engineering, and industrial design. The appropriateness of each technique and tool for different design problems and settings will be discussed.

We will address a design problem specific to an industry or government client. Note that the design problem and client(s) will change from year to year as this course will always incorporate a partner from outside the university. Students will be introduced to the partner and will work in teams, drawing on their subject expertise.

Upon completion, students will (i) have experience working with "real world" clients, including the development of positive client relationships, working directly with clients to frame and explore a design problem, and managing changing client needs, (ii) apply design thinking to a specific problem, (iii) select research methodologies appropriate to gathering key information related to addressing a design problem, (iv) understand how to communicate research findings and design outcomes to partners, and (v) expand their network of industry contacts.

The design challenge that we will address this term is, "How can open data, made available by the City of Toronto, be used to improve citizenship engagement?"

Textbook and readings: There is no textbook for this course. Instead there are readings that students are expected to read to inform both classroom discussion and course related assignments.

Goals and Learning Objectives: The course has five key learning objectives:

- Provide an environment in which theory and technique can be put into practice. The course is built around a specific design challenge which must be answered with tangible artifacts.
- Provide an opportunity to work directly with clients. This includes understanding client relationships, means to communicate with clients, as well as recognizing client needs and perspectives.
- To implement different design strategies and techniques, including brainstorming, the creation of personas, prototype development, and user testing.
- To build on KMD1001 and implement design as a problem solving strategy.
- To enlarge each student's network of contacts related to knowledge media and design.

The student should be able to apply relevant concepts, principles, and techniques to express information, arguments, and analyses accurately and with clarity, both orally and in writing.

Course Structure: This course has three (3) contact class hours per week. The class sessions will be a combination of lectures, discussions, teamwork, interactive exercises and in-class activities. Blackboard will be used as a learning management system to support project teams (groups), sharing of information, weekly slides, important dates, assignments, and other information about the course, as well as the facilitation of interaction among students on topics related to the course. Note that for every one (1) hour of contact, you can expect to do 2 hours of reading and preparation work on your own (ie., you'll need to schedule at least 6 hours outside of class time for related activities)

Note that this course relies heavily on group work. Students will be put into groups (of 4-5 people) in order to work together on activities during the classes and to collaborate for Assignments 3 to 5.

This is a graduate level course and most students have some experience with broadly defined knowledge media design. As such, we will learn together, from one another, and relate the knowledge learned through the course to our past experiences and imagined future opportunities. The course instructors will provide an outline and structure for the course, present lectures, define assignments, and assign readings, but students will largely define the scope of their assignments and will be asked to contribute and share relevant materials and readings as well. The interaction among students and their collaborative work is essential in making the course a success. Students are expected to use the experiences and knowledge they bring into the course to help define their learning objectives, contribute to the course content, and complement their own learning experience and that of their classmates.

Deliverables and Evaluation

Students will be evaluated through four (4) assignments and a participation grade.

Assignment	Weight	Due Date	Type
1. Personal preferences	1%	Wed, Sept. 23 (noon)	Individual
2. Literature / Market review	25%	Monday, Oct 5 (start of class)	Individual
3. Project proposal	10%	Monday, Oct 26 (during class)	Collaborative
4. Prototype and User Testing Report	20%	Monday, Nov 30 (start of class)	Collaborative
5. Project report and presentation	30%	Monday, Dec 14 (1-4pm)	Collaborative
6. Participation	14%	Throughout course	Individual

The **first assignment** is an individual assignment which will be completed online. The purpose of this assignment is to gather information on your interests in order to form groups.

The second to fifth assignments all focus on the same project. They represent two milestones and a final deliverable. You will conduct a literature/market review, propose a project (related to the design challenge), then develop a prototype, and finally present a project report to a client (your clients will be the course instructor as well as an organization external to the university).

The **second assignment** (a market review) is a review of existing applications, policies and/or uses of open data. The goal is to understand the existing market landscape related to the use of open data.

The **third assignment** is the definition of a concept for the project. These will be presented to the class for critique and submitted (in written form) to the instructor on October 26 (Week 6). Project proposals follow a pre-specified outline (which will be supplied as part of the assignment details). They must be well-written, concise, and communicate the necessary information effectively.

The **fourth assignment** is a user evaluation report, submitted to the instructor for evaluation a week after testing (on Monday, November 30). In this assignment, students will conduct research and share results. The required report sections will be provided in the assignment definition.

The **final assignment** is a project report, which includes a presentation to a client. The report will be comprised of material developed throughout the previous eleven weeks of the course and represents a culmination of concepts, ideas, prototypes, and user testing related to the use of open data.

Groups / Teams: Project groups (teams) of size 4-5 will be selected by the instructor based on your interests, course goals and learning objectives submitted in Assignment 1. The intention is to put together project teams of people who bring diverse backgrounds and perspectives and whose learning objectives and goals complement one another's. In addition to demonstrating how successful design projects often require teams with diverse strengths, it is hoped that this strategy will maximize individual learning opportunities and create some interesting and thought-provoking discussions and situations.

Assignment Details

1. Personal preferences (1%)

In order to form groups, you are asked to complete an online survey regarding your interests and learning goals related to knowledge media design. This assignment will be assigned a pass/fail grade. Visit <https://www.surveymonkey.com/r/KMD2002> to complete.

2-5. Design project

The design challenge will be broken down into a series of activities and deliverables throughout the term. The four deliverables include a review of existing uses of open data, a project proposal, a low fidelity prototype of your groups concept or reply to the design challenge, and the final project report.

2. Market and Literature Review (25%)

While this review should consider related academic research literature, the focus will be on the critique and evaluation of existing uses of open data in the context of the design challenge.

3. Project proposal (10%)

You will present an idea for the use of open data to the class and submit a written report outlining your concept, supported by a review of related literature.

4. Prototype and User Testing Report (20%):

Prototyping is one of a number of ways to assess a concept, and you will be asked to develop and test a low fidelity prototype of your project idea. You will submit a report following user evaluation of your prototype.

5. Project report and presentation (30%)

Each project team is to submit a project report for evaluation.

The report is to include:

- The project proposal and prototypes (including revisions made based on the critiques)
- A discussion of the strength and weaknesses of the concept (including, but not limited to, feasibility, usability, cost, and long term value)
- Review of literature pertaining specifically to project.
- Project Poster
- Single page handout for client evaluation

General Expectations:

1. **Communication Policy:** Please do not email questions to the instructors. If you have a question, there is a good chance other people in the course have the same question or, at least, will benefit from the answer. Please post all questions to Blackboard (using the most appropriate forum) so that everyone in the course can benefit from your questions and the replies. Questions posted to Blackboard will be answered within two (2) business days.
2. **Readings:** It is important to complete the required readings before your class in order to fully benefit from the class activities.
3. **Late policy:** Late submission of an assignment carries a penalty of one grade (e.g., from B+ to B) for every two days. Submissions will not be accepted after two weeks. Exceptions will be made only when supported by appropriate documentation.
4. **Requests for assignment extensions:** Please make every effort to meet the assignment deadlines. If you absolutely require an extension, please send both instructors a request with the following information: (i) reason for extension, (ii) current status of the assignment, and (iii) due date requested. If an extension is granted, you must include correspondence regarding the request and the reply with your assignment.
5. **Academic Integrity:** The essence of academic life revolves around respect not only for the ideas of others, but also their rights to those ideas and their promulgation. It is therefore essential that all of us engaged in the life of the mind take the utmost care that the ideas and expressions of ideas of other people always be appropriately handled, and, where necessary, cited. For writing assignments, when ideas or materials of others are used, they must be cited. You may use any formal citation format, as long as it is used consistently in your paper, the source material can be located and the

citation verified. What is most important is that the material be cited. In any situation, if you have a question, please post it to Blackboard. Such attention to ideas and acknowledgment of their sources is central not only to academic life, but life in general. Please acquaint yourself with the University of Toronto's *Code of Behaviour on Academic Matters*: <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>.

6. **Participation and Attendance:** Discussion and interaction in the classes are important ways to learn. Sharing your experiences and ideas with your classmates is central to your learning experience in this course. As such, you should attend and participate in every class. There will be exercises and discussions that you will participate in within your groups in your class. Some of the activities will be very helpful in completing your assignments.
7. **Students with Special Needs or Health Considerations:** All students are welcome in this course and we will make every effort to ensure a meaningful, respectful and positive learning experience for everyone. If there are special considerations that you require to help you successfully fulfill the requirements of the course, please feel free to see one of the instructors, the Faculty of Information Student Service (<http://www.ischool.utoronto.ca/services/personal-advising>), and/or contact the Accessibility Student Office (<http://www.accessibility.utoronto.ca/index.htm>) as soon as possible so we can ensure you are able to successfully meet the learning objectives for this course.
8. **Writing Resources:** Please review the material you covered in the Cite it Right presentation and familiarize yourself with:

How not to plagiarize site: <http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize>

U of T's policy regarding citation:

<http://www.sgs.utoronto.ca/governance/policies/academicmisconduct.htm>

Office of English Language and Writing Support:

<http://www.sgs.utoronto.ca/informationfor/students/english.htm>

Principles for project work

As the core of the course is based on project work, we will be adapting project management principles. Students are expected to practise project management principles in every aspect of their coursework and interactions.

- Practise effective communication. Ensure your communications are effective regardless of which medium you use: email, discussion boards, verbal, and phone (if appropriate). Think about how to make your point or pose your question efficiently and clearly and be concise.
- Build your social network and practise "getting along well with others" in all interactions. Try "stepping in others' shoes" and see the project or task at hand from their perspective.
- Practise time management and estimating how long tasks will take. Do this for all of your classes, work, and other non-school activities so you won't have to ask for extensions on assignments.
- Practise setting goals and measuring results against those goals. Determine your priorities and schedule activities that are highest priorities such that they will be completed on time.
- Learn about yourself and how and when (under what conditions) you work best.

Weekly Schedule

Class 1 (September 14) Overview of course and introduction to knowledge media design

No required reading for first class

Class 2 (September 21) Open data and the market review

Guest presentation: Keith McDonald, Open Data Lead, Information and Technology, City of Toronto.

Required readings

- City of Toronto Open Data (2015).
<http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=9e56e03bb8d1e310VgnVCM10000071d60f89RCRD>
- Liedtka, J., King, A., Bennett, K. (2013). Engaging the Citizens of Dublin. In *Solving Problems with Design Thinking*. Columbia Business School. New York. Pp 160-178

Related readings

- Ahern, K. (1999). Ten Tips for Reflexive Bracketing. *Qualitative Health Research*. 9 (3). 407-411.

Reminder: Assignment #1 due Wednesday, September 23 (noon)

Visit <https://www.surveymonkey.com/r/KMD2002> to complete.

Class 3 (September 28) Design Thinking

Required readings

- Buchanan R., (1992). Wicked Problems in Design Thinking. *Design Issues: Vol. 8, No. 2* pp. 5-21
- Cross, N. (1982). *Designerly ways of knowing*. Design Studies Vol 3, No 4, pp. 221-227.

Related readings

- Buxton, B. (2007). *Sketching User Experiences*. Morgan Kaufman Publishers. San Francisco, CA. [e-book version (PDF) available via UTL <http://search.library.utoronto.ca/details?6949422>]
- Stanford (2013). *An Introduction to Design Thinking*. Institute of Design at Stanford. [PDF handout]

Class 4 (October 5) Brainstorming and personas

Assignment #2 (Market review) due

Required readings

- Buxton, B. (2007). *Sketching User Experiences*. Focal Press. Morgan Kaufman Publishers. San Francisco, CA. pp. 115-119, 135-151
- Lehrer, J. (2012). Groupthink: The Brainstorming Myth. *The New Yorker*. January 30, 2012.

Related readings

- Greenberg, S., Carpendale, S., Marquardt, N., and Buxton, B. (2012) *Sketching User Experiences: The Workbook*. Morgan Kaufmann Publishers, Waltham, MA, USA.

Thanksgiving Monday – No Class

Class 5 (October 19) Requirement gathering, ideation and story boarding

Required readings

- Sharp, H. & Rogers, Y. & Preece, J. (2007). Chapter 3: Understanding Users and Chapter 10: Identifying Needs and Establishing Requirements. In *Interaction design: beyond human-computer interaction, second edition*. Both chapters available online via U of T library via <http://common.books24x7.com.myaccess.library.utoronto.ca/toc.aspx?bookid=40936>.
- Buxton, B. (2007). *Sketching User Experiences*. Focal Press. Morgan Kaufman Publishers. San Francisco, CA. pp. 115-119, 135-151

Related readings

- Greenberg, S., Carpendale, S., Marquardt, N., and Buxton, B. (2012) *Sketching User Experiences: The Workbook*. Morgan Kaufmann Publishers, Waltham, MA, USA.
- Martin, B. & Hanington, B. (2012) *Storyboards. Universal Methods of Design*. Rockport Publishers. Beverley, MA. pp 170-171

Class 6 (October 26): Project concept presentations to client

Assignment #3 (Project Proposal) due

Required readings

- Whittington, J. "The process of effective critiques", *Computer Graphics* 28 (3): 401-407, June 2004.

Class 7 (November 2): Low-fidelity prototyping

Required readings

- Snyder, C. (2003) Chapter 7: Preparing the Prototype. From *Paper Prototyping*. Morgan Kaufman Publishers. San Francisco, CA. pp 145-169.

Related readings

- Beaudouin-Lafon, M. and Mackay, W.E. (2002) Prototyping Development and Tools. In J.A. Jacko and A. Sears (Eds), *Handbook of Human-Computer Interaction*. New York: Lawrence Erlbaum Associates, pages 1006-1031. (Revised edition 2007)
- Mulsby, D., Greenberg, S., and Mander, R. (1993) *Prototyping an intelligent agent through Wizard of Oz*. Proceedings of the ACM CHI'93 Conference on Human Factors in Computing Systems, Amsterdam, The Netherlands, ACM Press, pp. 277–284.

Reading Week (No class on November 9)

Class 8 (November 16): User testing and evaluation

Required readings

- Barnum, C. (2011). *Usability Testing Essentials*. Chapter 6: Preparing for Usability Testing. Morgan Kaufman. New York, NY.

Related readings

- Martin, B. & Hanington, B. (2012) Rapid Iterative Testing & Evaluation (RITE). *Universal Methods of Design*. Rockport Publishers. Beverley, MA. pp 142-143
- Dumais, J.S. and Redish, J.C. (1999) *A Practical Guide to Usability Testing*. Revised Edition. Intellect Books
- Gould, J.D., Conti, J., and Hovanyecz, T. (1983) *Composing Letters with a Simulated Listening Typewriter*. *Communications of the ACM* 26, 4 (April), pp. 295–308
- Saulnier, P., Sharlin, E., and Greenberg, S. (2011) *Exploring Minimal Nonverbal Interruption in HRI*. *Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (Ro-Man 2011)*, Atlanta, Georgia, IEEE Press

Class 9 (November 23): User Testing Exercise

Required readings

- Barnum, C. (2011). *Usability Testing Essentials*. Chapter 7: Conducting a Usability Test. Morgan Kaufman. New York, NY.

Related readings

- Barnum, C. (2011). *Usability Testing Essentials*. Chapter 9: Reporting the Findings. Morgan Kaufman. New York, NY.

Class 10 (November 30): Prototype revisions

Assignment #4 (User Evaluation Report) due

Required readings

- Usability.gov. (2015). *Report Template: Usability Test*.
<http://www.usability.gov/how-to-and-tools/resources/templates/report-template-usability-test.html>

Class 11 (December 7): Communicating with clients

Guest presentations: Tessa Mintz, Client Relations Consultant
Gabe Sawney, Senior Associate, Design Strategy, Bridgeable

Class 12 (December 14): Public presentations

Assignment #5 (Project Report and presentation) due

We will present our work in two different contexts. The first presentation will be for the client and takes place on December 14 at City Hall, 100 Queen Street West (Room TBD). The second presentation will be to an academic audience at the annual KMDI holiday event and poster session (Date and location TBD).

Useful electronic resources at U of T (e-books)

Buxton, B. (2007). *Sketching User Experiences*. Focal Press. Morgan Kaufman Publishers. San Francisco, CA. [<http://search.library.utoronto.ca/details?6949422>]

Sharp, H. & Rogers, Y. & Preece, J. (2007). *Interaction design: beyond human-computer interaction, second edition*. Both chapters available online via U of T library via <http://common.books24x7.com.myaccess.library.utoronto.ca/toc.aspx?bookid=40936>.

Snyder, C. (2003) *Paper Prototyping*. Morgan Kaufman Publishers. San Francisco, CA [<http://search.library.utoronto.ca/details?6356117>]