Faculty of Information
University of Toronto

INF2169 User-Centered Information Systems Development
KMD2001 Human-Centred Design

Winter 2017

Thursdays 1:00 – 4:00 PM
Bissell Building Room 313
140 St. George Street

Instructor:
Dr. Vicky McArthur
Email: victoria.mcarthur@utoronto.ca
Office location: TBD
Office Hours: Thursdays 4 - 5pm.

Teaching Assistant:
Hervé Saint-Louis
Email: herve.saint.louis@mail.utoronto.ca

Calendar Descriptions:

INF2169 User-Centred Information Systems Development: Theoretical and practical implications for a user-centred perspective on the development of computerized information systems. Topics include user participation, alternative development methodologies, end-user computing, prototyping techniques, computersupported cooperative work. Emphasis on the development of systems at the workgroup level using common software packages.

KMD2001 Human-Centred Design: An approach to design grounded in understanding the real-world practices of users and user communities. Includes traditional design practices, visual literacy and the design science of human-computer interaction, graphics, and information visualization. Specific design practices include: ecological design, participatory design, user-centered design, contextual design, etc. A variety of qualitative and quantitative evaluation methodologies will be covered in the context of a usability engineering and user-centred approach.

Course Objectives

In this course, you will be working in teams to develop an interactive prototype of a socially inclusive, educational video game or mobile application. This year, we have partnered with the curator at the

Canadian Aviation and Space Museum (*Musée de l'Aviation et de l'Espace du Canada*) in Ottawa, Canada's national aviation museum and home to the Life in Orbit exhibit, dedicated to the International Space Station (ISS). Lectures will cover topics in educational game design, user-centered design, and HCI. This course also includes a small number of scheduled workshops designed to teach students how to rapidly develop interactive prototypes, and to conduct user studies and collect data for scientific reporting.

Course Learning Outcomes

This course aims to enable students to

1. Identify pedagogical design methods and their use in the study and design of educational games and applications
   a. Identify different genres of games research and literature on effective pedagogical media design
   b. Conduct a review of educational gaming research
   c. Summarize research findings and relate these to course readings
   d. Conduct scientific studies on games for learning
2. Develop a methodological toolkit for conducting HCI and user-centered research with interactive games and mobile applications
   a. Identify methodologies within HCI and user-centered research relevant to educational game design
   b. Design user studies and collect data on human subjects for scientific reporting
   c. Apply appropriate analyses to data collected in user studies
   d. Prepare a peer-review quality research paper in the ACM-SIGCHI reporting template.
3. Design information systems/knowledge media using rapid prototyping methods
   a. Identify tools for rapid interactive prototype design.
   b. Create an interactive prototype that is informed by the concepts and theories of effective pedagogical media design as identified in the literature.
   c. Effectively design a functional prototype for user testing.

Relationship between Course Learning Outcomes and Program Learning Outcomes

This course aligns with several of the program learning outcomes as it provides students with the opportunity to take on multiple roles, including that of practitioner (adopting user-centered design practices) and researcher (conducting evaluative studies on their own prototypes using HCI methodologies). These practices align with those currently in use in the games industry (as discussed by a guest speaker towards the end of term) and prepare students to adopt the fundamental concepts, theories, and practices of HCI researchers and practitioners. The final component in the course (the combined paper and research poster presentation) provides students with the opportunity to prepare an HCI research paper, outlining the design and results of their studies, in the ACM SIGCHI format – the standard publishing format in the top-tier HCI conference. Through this semester-long exercise, students develop an understanding of the development of theory concerning information, where it is found, and how it is used. Exceptional papers may be shepherded by the professor for submission to any one of the top ACM conferences on HCI, including ACM SIGCHI or ACM CHIPlay.

For more information on the MI Student Learning Outcomes, please see the following link: http://current.ischool.utoronto.ca/studies/learning-outcomes

Expectations of Background

Since this course is designed to appeal to students across a variety of disciplinary and professional orientations, the class will reflect a very wide range of backgrounds in terms of training, experience, and career expectations. It is useful for students to have some exposure to developing web pages and working with popular presentation and prototyping software packages. In addition, students should have an aptitude or at least willingness for engaging and collaborating with others who don't necessarily share similar perspectives, skills or interests. Students are not expected to have any game design experience or even to be gamers themselves. Diversity of background is welcome and will be an asset in group discussions and the project teams. If you have any questions about the suitability of your preparation, discuss this with the instructor.

Evaluation:

Type	Item	Due	Weight
Individual	Participation	On-going	10%
	User study workshop 2 participation	(week 8)	5%
	Midterm test	(week 6)	30%
Group	Proposal	(week 3)	5%
	Interactive prototype*	(week 8)	15%
	Poster Presentations	(week 12)	10%
	2 minute madness	(week 12)	5%
	Final report	(week 12)	20%

*Note that I have scheduled for all human participant studies to happen in class on week 8 (the same day the prototype is due). This means your prototype must be ready for user studies before 1pm that day. All students must attend and both collect data within their groups as well as be a participant in other group studies (this is where the 5% individual participation grade comes from).

Group Project Work

A central feature of this course is a group project involving participatory design in a 'live' field site (as indicated above worth in aggregate 55% of the final grade). This means intense collaborative work throughout the term with a group of 4-6 classmates. This can offer among the most rewarding learning experiences you are likely to encounter in your graduate program.

Texts

Required text:

> Mayer, Richard E. (2014) *Computer Games for Learning: An Evidence-Based Approach*, MIT Press

Supplemental text:

MacKenzie, I. S. (2012). *Human-computer interaction: An empirical research perspective*

Overview of Course Schedule

Week	Date	Lecture	Activity	Present/Hand In
1	January 12	Introduction		
2	January 19	Taking an evidence-based approach to games for learning	Virtual tour of Canadian Aviation & Space Museum	
3	January 26	Conducting scientific research on games for learning		Proposal
4	February 2	Applying cognitive science to games for learning	User study workshop 1	
5	February 9	Examples of three genres of games research		
6	February 16	*No lecture topic this week*		Midterm test
7	March 2	Value-added approach: which features improve a game's effectiveness		
8	March 9	Cognitive consequences approach: what is learned from playing a game?	User study workshop 2	Digital prototype
9	March 16	Media comparison approach: are games more effective than conventional media?		
10	March 23	Accessible game design		
11	March 30	The future of research on games for learning	Special guest speaker	
12	April 6	*No lecture topic this week*		Poster presentations, 2 minute madness, Final report

Writing Support

As stated in the iSchool's Grade Interpretation Guidelines, "work that is not well written and grammatically correct will not generally be considered eligible for a grade in the A range, regardless of its quality in other respects". With this in mind, please make use of the writing support provided to graduate students by the SGS Office of English Language and Writing Support (http://www.sgs.utoronto.ca/currentstudents/Pages/English-Language-and-Writing-Support.aspx). The services are designed to target the needs of both native and non-native speakers and all programs are free. Please consult the current workshop schedule (http://www.sgs.utoronto.ca/currentstudents/Pages/Current-Years-Courses.aspx) for more information.

Academic integrity

Please consult the University's site on Academic Integrity (http://academicintegrity.utoronto.ca/). The iSchool has a zero-tolerance policy on plagiarism as defined in section B.I.1.(d) of the University's Code of Behaviour on Academic Matters (http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppjun011995.pdf). You should acquaint yourself with the Code. Please review the material in Cite it Right and if you require further clarification, consult the site How Not to Plagiarize (http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize).

Cite it Right covers relevant parts of the U of T *Code of Behaviour on Academic Matters* (1995). It is expected that all iSchool students take the Cite it Right workshop and the online quiz. Completion of the online Cite it Right quiz should be made prior to the second week of classes. To review and complete the workshop, visit the orientation portion of the iSkills site: uoft.me/iskills

Accommodations

Students with diverse learning styles and needs are welcome in this course. If you have a disability or a health consideration that may require accommodations, please feel free to approach me and/or the Accessibility Services Office (http://www.studentlife.utoronto.ca/as) as soon as possible. The Accessibility Services staff are available by appointment to assess needs, provide referrals and arrange appropriate accommodations. The sooner you let them and I know your needs, the quicker we can assist you in achieving your learning goals in this course.

Academic Dates:

http://current.ischool.utoronto.ca/studies/academic-dates

Final date to drop full-year and winter session half (S) courses without academic penalty: Feb. 27, 2017