Institute of Communication, Culture & Information Technology
UNIVERSITY OF TORONTO
MISSISSAUGA

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CCT374H5S LEC0101
Technologies of Knowledge Media (IDM)
Course Outline - Winter 2014

Class Location & Time	Tue, 02:00 PM - 04:00 PM
Instructor	Kelly Lyons
Office Location	BL612
Office Hours	Mondays 3:30 to 5:30
Telephone	416-946-3839
E-mail Address	kelly.lyons@utoronto.ca
Course Web Site	
Teaching Assistant	Christina Christodoulakis
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Course Description

The course covers understanding the context in which knowledge media are introduced, understanding the team, group, or work setting for designing collaborative knowledge media. We also explore different techniques for understanding and designing for the individual who uses or engages with knowledge media. Techniques and tools are 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 is discussed and the course concludes with an examination of the development of new techniques and tools for new design challenges. [24L, 12T]

Prerequisite: CCT372H5 (SSc)
Distribution Requirement: SSc

Only the Director of the CCIT program has the authority to give permission to waive course prerequisites. The UTM calendar states that students who lack the prerequisites for a course can be deregistered at any time.

Goals and Learning Objectives

The goals of this course are to introduce students to technologies of knowledge media through a combination of readings, lectures, guest lectures, tutorials, and hands-on activities, starting with and emerging from this definition by Ron Baecker, Founding Director of the Knowledge Media Design Institute at the Unviersity of Toronto: "Knowledge media are documents, artifacts, technologies, and systems intended to enhance human creativity, learning, and knowledge building." The course is divided into three main sections:

1. Introduction to knowledge media technologies: In this section, students will learn about data, information, and knowledge and the building blocks of technology in order to investigate a number of different existing technologies and knowledge media. Students will also learn methods that teams use to work together to develop knowledge media technologies. During tutorials, students will be given an introduction to Java programming in the context of IBM Code Rally.

2. Designing and developing knowledge media technologies: In this section, students will explore requirements gathering, design, implementation, and evaluation of knowledge media technologies. During tutorials, students will apply what they are learning in classes and work in teams to design and implement a Code Rally car in Java.
3. Emerging technologies: In this section, students will learn about future interfaces, collaborative technologies and groupware, and data analytics. During tutorials, students will continue developing and testing their team's car and, in the last tutorial, race their car against those of their classmates.

Upon successful completion of the course, students will be able to:

- Identify, describe, and critique knowledge media and technologies for knowledge media (demonstrated in assignments 1 and 2)
- Articulate requirements for technologies of knowledge media (demonstrated in assignment 3)
- Formulate high-level designs and low-fidelity prototypes of knowledge media applications (demonstrated in assignment 4)
- Implement simple design goals and requirements in Java (demonstrated in tutorials and group presentations)
- Explain ways in which open data can be used in the development of knowledge media (demonstrated in assignment 4)
- Describe and carry out an incremental software development methodology (demonstrated in tutorials, group presentations, and assignment 5)

Required Materials

The following Creative Commons Introduction to Programming Using Java Book will be used:

Eck, D. J., Introduction to Programming Using Java, Sixth Edition, Version 6.0, June 2011 (Version 6.0.2, with minor corrections, May 2013), http://math.hws.edu/eck/cs124/javanotes6/

Required readings for each week will be provided in Blackboard or are available online from the UofT library and are listed in the course schedule.

Assessment and Grading Policies

Type	Description	Due Date	Weight
Class Participation	(Individual) Demonstration of understanding of readings and class topics	On-going	15%
Assignment	(Individual) Exploring technologies of knowledge media: Students will write a blog post describing a specific knowledge media and its technologies	2014-01-21	15%
Assignment	(Individual) Provide feedback, context, additional perspectives on the knowledge media described in a classmate's blog post	2014-01-28	5%
Assignment	(Group) Articulate and document requirements for Code Rally car	2014-02-25	5%
Assignment	(Individual) Provide a high level design description of an app that uses open data from the City of Toronto Open data website. Include a use case diagram and sketch or low-fidelity (paper) prototype design of the app	2014-03-11	20%
Presentations	(Group) Presentations and demo of Code Rally car	2014-04-01	20%
Assignment	(Individual) Reflection paper about development method, process, and experience designing and implementing Code Rally car	2014-04-08	20%
		Total	100%

Requirements and Criteria

Writing Expectations:

Papers and blog posts should be well-written, well-organized and easy to follow. Ideas should flow easily from one point to the next and should demonstrate proper sentence structure, spelling, vocabulary and grammar. Each point should be articulated clearly and completely without being overly verbose. Writing should demonstrate an excellent understanding of the topics being studied in the course and a confidence in using the terms, techniques and issues that have been learned. Blog posts should take advantage of that medium and include links, diagrams, etc. as appropriate.

In written work the main point, thesis or debate in should be clearly stated and well argued. As always, references must be properly included and cited. In general, you should be creative, critical, bold, provocative, strong and confident in your ability to make your point(s), sufficiently argue your point(s), and generally in your ability to contribute to the learning and engagement of your readers.

Class Participation: (Individual) Students are expected to prepare for classes by reviewing the assigned readings and should come to class ready to participate in discussions about the readings and the topics presented in class. Students will be assessed on their engagement with the readings and the their contributions to the discussions in class. (15%)

Assignment 1: (Individual) Exploring technologies of knowledge media (part 1)

Due: January 21 before the start of class, submitted via the blog tool in Blackboard (15%)

Inspired by emerging the definition of Knowledge Media by Ron Baecker, Founding Director of the Knowledge Media Design Institute at the University of Toronto: "Knowledge media are documents, artifacts, technologies, and systems intended to enhance human creativity, learning, and knowledge building," students will identify a specific example of a knowledge media (drawn from examples explored in class) and write a 600-800 word blog post that: describes the knowledge media (providing links as appropriate) and its developer(s)/provider(s); discusses the way(s) in which it was designed to enhance human creativity, learning and/or knowledge building; identifies any of its underlying technologies or systems; and, provides an example of how it might be improved or used (perhaps maliciously) in ways not likely intended by the developer(s).

Assignment 2: (Individual) Exploring technologies of knowledge media (part 2)

Due: January 28 before start of class, submitted via the blog tool in Blackboard (5%)

Students will review blog posts of their classmates and select one knowledge media to explore further. After reviewing the blog post and the knowledge media described in the blog post, students will write a 300-500 word comment on the selected blog post. The comment should provide feedback, context, and additional perspectives on the knowledge media described in a classmate's blog post.

Assignment 3: (Group) Requirements

Due: February 25, 2013 before the start of class via the assignment submission tool in Blackboard (5%)

Students will work in their groups to identify a set of requirements for their Code Rally car. The requirements will be documented using a tool / template to be provided by the instructor. More details about this assignment will be made available in Blackboard.

Assignment 4: (Individual) Design

Due: March 11, 2013 before the start of class via the assignment submission tool in Blackboard (20%)

Students will identify an application that they would like to develop that makes use of open data from the City of Toronto Open data website (http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=9e56e03bb8d1e310VgnVCM10000071d60f89RCRD). Using tools from class, students will include a use case diagram and sketch or low-fidelity (paper) prototype design of the application. More details about this assignment will be

made available in Blackboard.

Group Presentations: (Group) Putting it all together: Development and Deployment

Due: Slides and other presentation materials are due before start of class on April 1 via the assignment submission tool in Blackboard. Presentations will take place April 1, 2013 during class (20%)

Each group will prepare and deliver a presentation that describes the development process (including development methodology, requirements, design, and implementation) of their Code Rally car. More details will be made available in Blackboard.

Assignment 5: (Individual) Reflecting on the Design and Development Process

Due: April 8 by 5pm via the assignment submission tool in Blackboard (20%)

Students will write a paper reflecting on their group's development process, car requirements, design, and implementation. Students may choose to organize their paper however they wish but must include the following: an overview of the development process, the requirements articulation, design processes, and implementation of the car; a discussion of the planning process, team dynamics, and development methodology used; a critique of the usefulness of and challenges with the Eclipse, Java, and Code Rally platforms; a discussion of the relationship of the group activity to technologies of knowledge media; and, a reflection on how the group activity and Code Rally development experience relates to or complements other courses in the program and the student's own personal learning objectives. This paper must be doublespaced, 12pt font, and should be roughly 1000-1200 words in length.

Teaching Methods

A variety of methods will be used in this course. Lectures will highlight important aspects of the readings. Guest lecturers will bring complementary perspectives and experiences. Additional material will be presented in the form of videos, online resources, and templates and tools. Immediately following the 2 hour class and after a short break, students will participate in a 1 hour tutorial. During class and tutorials, students will engage in hands-on activities to contexualize what they are learning in the readings and lectures.

Students are expected to take responsibility for their own learning experience. Students should think about their goals and what they want to achieve from this class then work with the instructor to determine how they can engage with the material to further their own goals.

Working in groups is critical for success in the real world. At the start of the course, students will provide a self-assessment on specific criteria and then will be assigned to groups that maximize diversity among the criteria. The intention is to put students together who bring diverse backgrounds and perspectives and whose learning objectives and goals complement each others'. Interaction among students and their collaborative work are essential to their learning experience in the classroom and to their future as leaders.

Students should think critically, apply their knowledge in unique ways, and ask the right questions. Some of the readings will be challenging and students are encouraged to come to class prepared with questions that can be addressed through discussion.

The tutorials will give students an opportunity to experience some programming in Java. Students will work in teams where they contribute different skills and knowledge to the overall team outcomes.

Procedures and Rules

E-Culture Policy

Only student Utormail accounts should be used for course communication and all emails from students must include the course code in the subject line and should be signed with the full student name and student number.

Please do not email questions to the instructor. If you have a question, there is a pretty good chance that 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 instructor's answers. Questions posted to Blackboard will be answered within two (2) business days. Students are encouraged to post answers to the questions of other students where appropriate.

Learning Technology

Blackboard will be used to access weekly materials including readings or links to reading materials.

Assignments 1 and 2 will be submitted using the Blackboard blog tool.

Assignments 3, 4, and 5 should be submitted using the assignment submission tool in Blackboard.

Group presentations will be given orally.

The classes and tutorials take place in a lab equipped with desktop computers which will be used to access online materials and the Java development environment.

Late Assignments, Extensions

You are expected to complete assignments on time. There will be a penalty for lateness of 10% deducted per day and work that is not handed in one week after the due date will not be accepted.

If you require more time to complete term work you should contact your instructor immediately, and no later than the due date. Original supporting documentation (e.g. U of T medical certificate, accident report) and a request for *Special Consideration Form* are to be brought to Rose Antonio, Academic Advisor in CC3018 no later than 72 hours after the due date. Your documentation must specify exactly the length of the period during which you were unable to carry out your academic work. Students must adhere to UTM policy and declare their absence on ROSI, in order to receive academic accommodation for any course work.

Academic Integrity

From the Code of Behaviour on Academic Matters:
"It shall be an offence for a student knowingly:
(d) to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e. to commit plagiarism. Wherever in the Code an offence is described as depending on "knowing", the offence shall likewise be deemed to have been committed if the person ought reasonably to have known."

From the U of T Mississauga Academic Calendar:
Honesty and fairness are considered fundamental to the University's mission, and, as a result, all those who violate those principles are dealt with as if they were damaging the integrity of the University itself. The University of Toronto treats academic offences very seriously. Students should note that copying, plagiarizing, or other forms of academic misconduct will not be tolerated. Any student caught engaging in such activities will be subject to academic discipline ranging from a mark of zero on the assignment, test or examination to dismissal from the University as outlined in the UTM calendar. Any student abetting or otherwise assisting in such misconduct will also be subject to academic penalties.

Students are assumed to be informed about plagiarism and are expected to read the handout, How Not to Plagiarize (http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize) written by Margaret Procter. It is a valuable and succinct source of information on the topic. You are also supposed to be familiar, and considered as being familiar, with the *Code of Behaviour on Academic Matters* (see UTM Calendar: Codes and Policies or http://www.governingcouncil.utoronto.ca/policies/behaveac.htm) and *Code of Student Conduct* (http://www.governingcouncil.utoronto.ca/policies/studentc.htm), which spell out your rights, your duties and provide all the details on grading regulations and academic offences at the University of Toronto.

Expectations for Conduct in the Academic Setting

Students agree that by taking this course, they agree to adhere to the "ICCIT Expectations for Conduct in the Academic Setting." See link for the Code: http://www.utm.utoronto.ca/iccit-code-of-conduct

Religious Observance

Information about the University's Policy on Scheduling of Classes and Examinations and Other Accommodations for Religious Observances is at
http://www.viceprovoststudents.utoronto.ca/publicationsandpolicies/guidelines/religiousobservances.htm

Other Resources

AccessAbility
The University accommodates students with disabilities who have registered with the AccessAbility Resource Centre. Please let me know in advance, preferable in the first week of class, if you will require any accommodation on these grounds. To schedule a registration appointment with a disability advisor, please call the centre at 905-569-4699 or e-mail at: access.utm@utoronto.ca.
http://www.utm.utoronto.ca/access/

Robert Gillespie Academic Skills Centre
Students can visit the Academic Skills Centre to consult with one of its strategists about understanding learning style, developing study plans for upcoming tests/exams, or discussing papers. Special Diagnostic Assessments are also offered and are designed to help you learn exactly where you stand with respect to critical academic skills.
http://www.utm.utoronto.ca/asc

UTM Library (Hazel McCallion Academic Learning Centre)
The University of Toronto boasts the biggest academic library in Canada and the second biggest in North America. Various services are available to students at the UTM Library and across the U of T library system. Services including borrowing, interlibrary loans, online references, laptop loans and the RBC Learning Commons. For more information, visit http://library.utm.utoronto.ca.

Course Schedule

Date	Topic
2014-01-07	**Beginning of Section 1 (4 Weeks): Introduction to Knowledge Media Technologies** Week 1: Course Introduction and Introduction to Knowledge Media and Technologies of Knowledge Media • No assigned readings this week! Week 1: Tutorial • No tutorial this week!
2014-01-14	Week 2: Knowledge • Norman, D. A. (1990). The Design of Everyday Things. Doubleday. Chapter 3, Knowledge in the Head and in the World, pp: 54 to 80 • Bellinger, G., Castro, D., Mills, A., Data, Information, Knowledge, and Wisdom, Systems Wiki, http://www.systemswiki.org/index.php?title=Data,_Information,_Knowledge_and_Wisdom • Creating Knowledge Objects, Systems Wiki, http://www.systemswiki.org/index.php?title=Creating_Knowledge_Objects • Norrie, J., Huber, M., Piercy, C., & McKeown, P. (2010). Introduction to Business Information Systems (2nd Canadian Edition), John Wiley & Sons Canada, Ltd Pages 204-213 Week 2: Tutorial • Introduction to Programming
2014-01-21	Week 3: Technologies and Media • Norrie, J., Huber, M., Piercy, C., & McKeown, P. (2010). Introduction to Business Information Systems (2nd Canadian Edition), John Wiley & Sons Canada, Ltd Pages 36-58 and 76-78 • Review the Code Rally website: https://www.ibm.com/developerworks/mydeveloperworks/blogs/code-rally/entry/play-code-rally?lang=en • Review the Code Rally Game Play Video: http://www.youtube.com/watch?v=hEZVpvx-Im8 • Read the first chapter of Eck, D. J., Introduction to Programming Using Java, Sixth Edition, Version 6.0, June 2011 (Version 6.0.2, with minor corrections, May 2013), http://math.hws.edu/eck/cs124/javanotes6/ Week 3: Tutorial • Introduction to Java and Code Rally
2014-01-28	Week 4: Development Methodologies • Stair, R., & Reynolds, G. (2009). Principles of Information Systems (9th edition), Course Technology Press, Cengage Learning, United States. Pages 486-510 Week 4: Tutorial • Basic data structures and a code rally car

2014-02-04	**Section 2 (4 Weeks): Designing and Developing Knowledge Media Technologies** Week 5: Open Data, Open Development Platforms, Citizen Design and Development of Knowledge Media • Kazman, R. & Chen, H.-M. (2009). The Metropolis Model: A New Logic for Development of Crowdsourced Systems, Communications of the ACM, Vol. 52, (No. 7, July 2009). Pp.76-84 • High, R. (2012). The Era of Cognitive Systems: An Inside Look at IBM Watson and How it Works, Watson Red Book http://www.redbooks.ibm.com/redpapers/pdfs/redp4955.pdf • Review the City of Toronto Open Data Initiative Website: http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=9e56e03bb8d1e310VgnVCM10000071d60f89RCRD Week 5: Tutorial • Basic operations and methods and code rally car methods
2014-02-11	Week 6: Design / System Requirements • N. Leveson, Intent Specifications: An Approach to Building Human-Centered Specification, IEEE Trans. on Software Engineering, Vol. 26, No. 1, January 2000, 15-35. • Review the Volere Requirements Specification Template: http://www.volere.co.uk/template.htm Tutorial Week 6: • Loops and conditional statements and code rally car requirements
2014-02-25	Week 7: Design • Guest Lecturer: Dr. Steve Szigeti • Rettig, M. (1994). Prototyping for tiny fingers. Communications of the ACM, 37(4): 21-27. • Sharp, H., Rogers, Y., & Preece, J. (2007). Interaction design: beyond human-computer interaction. *West Sussex, England: John Wiley & Sons.* Chapter 11 Design, Prototyping, and Construction, Pages 389-432 • UX Booth: Interview with Leah Buley, author of The User Experience Team of One: A Research and Design Survival Guide: http://www.uxbooth.com/articles/one-to-many-an-interview-with-leah-buley/ • UX Booth: Excerpt from Leah Buley's book: The User Experience Team of One: A Research and Design Survival Guide http://www.uxbooth.com/articles/where-ux-comes-from/ • Computer Professionals for Social Responsibility, What is Participatory Design: http://cpsr.org/issues/pd/introInfo/ Week 7: Tutorial • More complex data structures and operations and designing a code rally car

2014-03-04	Week 8: Testing and Evaluation • Review the Steve Krug website and Rocket Surgery Made Easy Video Easy at: http://www.sensible.com/rsme.html • Whiteside, J., Bennett, J., and Holtzblatt, K. (1988). Usability engineering: our experience and evolution. In M. Helander (ed.) *Handbook of Human-Computer Interaction*. North Holland, pp. 791-817. • J. Nielsen, Usability 101: Introduction to Usability, Nielsen Norman Group Evidence-Based User Experience Research, Training, and Consulting, January 4, 2012, http://www.nngroup.com/articles/usability-101-introduction-to-usability/ • M. Mccloskey, How to Run a Usability Test with Users Who Are on Your Site Now, Nielsen Norman Group Evidence-Based User Experience Research, Training, and Consulting, December 8, 2013, http://www.nngroup.com/articles/live-intercept-remote-test/ Week 8: Tutorial • More Java constructs and implementing a basic code rally car
2014-03-11	**Section 3 (4 Weeks) Emerging Technologies:** Week 9: Future Interfaces • Stroulia, E. (2010). Smart services across the real and virtual worlds. The smart internet: current research and future applications, Springer-Verlag, Berlin, Heidelberg, 2010 • Mann, Steve (2013): Wearable Computing. In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation. Available online at http://www.interaction-design.org/encyclopedia/wearable_computing.html Week 9: Tutorial • Continue Java constructs and implementing a basic Code Rally car
2014-03-18	Week 10: Collaborative Technologies and Groupware • Grudin, J. (1994). Computer Supported Cooperative Work: History and Focus. IEEE Computer, 27(5), 19-24. • Erickson, T. & Kellogg, W. A. (2000). Social Translucence : An Approach to Designing Systems that Support Social Processes. ACM Transactions on Computer-Human Interaction, 7(1), 59-83. • Dimicco, J., Millen, D. R., Geyer, W., Dugan, C., Brownholtz, B., Muller, M., and Street, R., Motivations for social networking at work, Proc. ACM Computer Supported Cooperative Work (CSCW 2008), pp. 711-720, 2008. Week 10: Tutorial • Implementing and testing a Code Rally car

2014-03-25	Week 11: Business Intelligence and Data Analytics • Guest Lecturer: Dr. Periklis Andritsos • LaValle, S., Lesser, E., Shockley, R., Hopkins, M. S. and Kruschwitz, N., (2011), "Big Data, Analytics and the Path from Insights to Value", MIT Sloan Management Review, Winter, 21-31. • Chen, H., Chiang, R. H. L. and Storey, V. C., (2012), "Business Intelligence and Analytics: From Big Data to Big Insights", MIS Quarterly 46 (4), 1-24. Week 11: Tutorial • Continued testing and fine-tuning a Code Rally car
2014-04-01	Week 12: Wrap Up and Group Presentations • No reading this week! Week 12: Tutorial • Code Rally Final Race!!

Last Date to drop course from Academic Record and GPA is March 9, 2014.

Every attempt will be made to follow this syllabus, but its content are subject to change, according to the rules as outlined in the UTM Instructor's Handbook, section 3.2.2.