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

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CCT374H5S LEC0101
Technologies of Knowledge Media (IDM)
Course Outline - Winter 2016

Class Location & Time	Tue, 02:00 PM - 04:00 PM BL 417
Instructor	Kelly Lyons
Office Location	BL612
Office Hours	1pm to 2pm and 5pm to 6pm Tuesdays or by Appointment
Telephone	416-946-3839
E-mail Address	kelly.lyons@utoronto.ca
Course Web Site	
Teaching Assistant	Singh Tarunjit
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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

It is your responsibility to ensure that the prerequisites for course have been met. Students without the prerequisites can be removed at any time. No waivers will be granted.

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 Professor 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.
2. Designing and developing knowledge media technologies: In this section, students will explore requirements gathering, design, implementation, and evaluation of knowledge media technologies.
3. Emerging technologies: In this section, students will learn about future interfaces, collaborative technologies and groupware, and cognitive computing.

During tutorials, students will use Watson Analytics Cloud Solution to engage with concepts of knowledge media technologies.

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 4 and through Reading Engagements)
- Develop high-level designs and low-fidelity prototypes of knowledge media applications (demonstrated in assignments 3

and 4)
- Apply simple design goals and requirements (demonstrated in tutorials and assignment 2)
- Explain ways in which open data can be used in the development of knowledge media (demonstrated in assignments 3 and 4 and through tutorials)
- Determine the appropriateness of different techniques and tools for specific design problems and settings (demonstrated in assignments 3 and 4)
- Successfully use Watson Analytics Cloud Solution to load, refine and explore datasets, analyze data, make predictions and develop a story or infographic (demonstrated through tutorials, in group presentations and in assignments 2 and 4)

Required Materials

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
Other	(Individual) Reading Engagements (weeks 2 through 11)	On-going	15%
Assignment	(Individual) Exploring Technologies of Knowledge Media: Students will describe a specific knowledge media and its technologies	2016-01-26	15%
Assignment	(Group) Descriptions of Datasets and Story Plan for Watson Analytics Story	2016-02-23	15%
Assignment	(Individual) Design: Students will develop a high level design of an app that uses open data from a government open data website	2016-03-08	20%
Presentations	(Group) Presentation of Watson Analytics Story	2016-03-29	15%
Assignment	(Individual) Summative Assignment: Students will complete an assignment that reviews and reflects on key concepts from the entire course	2016-04-05	20%
		Total	100%

You should receive at least one significant mark (15%) before the last day you can drop a course without academic penalty.

Requirements and Criteria

Writing Expectations:

Papers and reports 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. Where useful, diagrams, figures, or images should also be included.

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.

Reading Engagements: (Individual) Students are expected to prepare for class 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 using a short quiz using the test tool in BlackBoard each week from Week 2 to Week 11 (inclusive). Each quiz is worth 1.5% for a total of 10x1.5%= (15%)

Assignment 1: (Individual) Exploring technologies of knowledge media

Due: January 26, 2016 before the start of class, submitted via Blackboard (15%)

Inspired by 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 800-1000 word report that: describes the knowledge media (providing citations and links as appropriate) and its developer(s)/provider(s); provides an argument for why it should be characterized as a knowledge media; 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). Images, figures, or diagrams should be included as appropriate. More details about this assignment will be made available in Blackboard.

Assignment 2: (Group) Descriptions of Datasets and Story Plan for Watson Analytics Story

Due: February 23, 2016 before the start of class via the assignment submission tool in Blackboard (15%)

Students will work in their groups to identify datasets to include in their Watson Analytics Story. Groups will develop a report that describes the dataset(s) in detail and discusses the ways in which analysis of the dataset(s) can enhance human creativity, learning, and knowledge building. The report will describe the spreadsheet that will be used and provide a list and description of each of the spreadsheet columns, some example data (rows), specific questions that will be explored through data analysis, and how the results of the analysis might be used. A detailed plan for the Watson Analytics story or infographic will be presented including a discussion of the audience for the resulting story or infographic. More details about this assignment will be made available in Blackboard.

Assignment 3: (Individual) Design

Due: March 8, 2016 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 a government open data website. Choosing from design tools presented in class and in the readings, students will present their proposed design and provide a sketch or low-fidelity (paper) prototype design of the application. More details about this assignment will be made available in Blackboard.

Group Presentations: (Group) Presentation of Watson Analytics Story

Due: Slides and other presentation materials are due before start of class on March 29, 2016 via the assignment submission tool in Blackboard. Presentations will take place March 29, 2016 during class (15%)

Each group will prepare and deliver a presentation that is similar to the case studies reviewed in class. Each presentation will descibe the dataset(s) and how they were refined, the general question(s) being explored, and the analysis conducted. The presentations will include data visualizations and explanations of the information presented through the visualizations. The ultimate goal is to present a story or develop an infographic that can be used to enhance human creativity, learning, and knowledge building. More details about the group presentations will be made available in Blackboard.

Assignment 4: (Individual) Summative Assignment

Due: April 5, 2016 by 5pm via the assignment submission tool in Blackboard (20%)

Students will demonstrate their knowledge of the concepts learned in class through an online assignment (delivered via the Blackboard test tool). This assignment will include questions to assess basic understanding but will also ask students to reflect on the concepts and knowledge learned in the course. Students will have one week to complete the assignment and will have access to all class materials while completing the assignment.

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 data analytics using a cloud-based tool, Watson Analytics. 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.

All assignments 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 Watson Data Analytics cloud-based tool.

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.

Appeal for Regrading Policy

When you receive your grade on a given assignment take careful note of the marker's feedback, the assignment instructions, and,*if applicable*, the associated marking rubric. If you have questions about your grade schedule an appointment with the person who marked your assignment within 10 business days of assignment return to discuss his/her comments in greater detail. The purpose of this meeting is to receive additional feedback on your work and ask any questions you may have about how to improve going forward. The marker will not change your grade except in the case of an obvious clerical error. If, after this meeting, you would like your assignment to be regraded please submit hard copies to me of the following before/after lecture or during my office hours: a) the marked copy of the assignment; b) a clean copy of the assignment; and c) a detailed letter, written by you, requesting a regrading. This letter should make specific reference to the marker's comments, aspects of the rubric *(if applicable)*, and the assignment instructions. You may also wish to review, and make reference to, UTM's Grading Scheme (a copy of which can be found in the Course Calendar). I will then review the materials, in consultation with the original grader if necessary, and render a decision in writing within one week. Your grade could be raised, it could remain the same, or it could be lowered. Appeals for regrading received more than 10 business days following the return of assignments will not be accepted. Please remember that grading is not meant to be a punitive exercise, nor is it personal. We are here to evaluate your work according to the University's standards, and to provide detailed and timely feedback to so that you can improve in the future. We make a significant effort in this course, and in every course, to ensure all grading is done fairly, and that grading practices are consistent across multiple sections and markers. This policy does not apply to Office of the Registrar administered final exams *(if applicable)*.

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.

You have the right to arrange for representation from downtown legal services (DLS), a representative from the UTM Students' Union (UTMSU), and/or other forms of support if you are charged with an academic offense.

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/

Students attending Sheridan-based courses need to register with the Student Advisement Center (B204) at Sheridan College, in addition to their accommodations at UTM.

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.

Equity Statement

The University of Toronto is committed to equity and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect. As a course instructor, I will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and wish to be alerted to any attempt to create an intimidating or hostile environment. It is our collective responsibility to create a space that is inclusive and welcomes discussion. Discrimination, harassment and hate speech will not be tolerated. If you have any questions, comments, or concerns you may contact the UTM Equity and Diversity officer at edo.utm@utoronto.ca or the University of Toronto Mississauga Students' Union Vice President Equity at vpequity@utmsu.ca.

Course Schedule

Date	Topic
2016-01-05	**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 • Watson Analytics Fundamentals course Lessons 1 & 2: http://bigdatauniversity.com/courses/watson-analytics-fundamentals/
2016-01-12	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 • Watson Analytics Fundamentals course Lesson 3: http://bigdatauniversity.com/courses/watson-analytics-fundamentals/
2016-01-19	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 Week 3: Tutorial • Watson Analytics Fundamentals course Lesson 4: http://bigdatauniversity.com/courses/watson-analytics-fundamentals/
2016-01-26	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 • Watson Analytics Fundamentals course Lesson 5: http://bigdatauniversity.com/courses/watson-analytics-fundamentals/

2016-02-02	**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 Link • Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. Government Information Quarterly, 29(4), 446-454. Link:http://simplelink.library.utoronto.ca/url.cfm/480625 Week 5: Tutorial • Explore Case Studies: https://community.watsonanalytics.com/?s=%22use+case%22 • Explore Datasets
2016-02-09	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. Link • Review the Volere Requirements Specification Template: http://www.volere.co.uk/template.htm (scroll down past the "pay" button to the "Sample and contents of the template:" section and review from there) Tutorial Week 6: • Identify and explore datasets and develop questions that can be answered (work in groups on assignment 2)
2016-02-23	Week 7: Design Guest Lecturer: Tiffany Tong, PhD Candidate in Mechanical and Industrial Engineering • Rettig, M. (1994). Prototyping for tiny fingers. Communications of the ACM, 37(4): 21-27.Link • 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 • Create data visualizations and further explore the datasets
2016-03-01	Week 8: Testing and Evaluation • Review the Steve Krug website and watch the Rocket Surgery Made Easy Video at: http://www.sensible.com/rsme.html • 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 • Continue to create visualizations

2016-03-08	**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 http://research.cs.queensu.ca/~cordy/SITCON/5.%20Stroulia-SITCON-Key-SS.pdf • 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 • Design presentation of assembled visualizations
2016-03-15	Week 10: Collaborative Technologies and Groupware • Grudin, J. (1994). Computer Supported Cooperative Work: History and Focus. IEEE Computer, 27(5), 19-24. Link • 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. Link • 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. Link Week 10: Tutorial • Implement design of assembled visualizations
2016-03-22	Week 11: Artificial Intelligence and Cognitive Computing • 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 • Kelly, K. (2014). The Three Breakthroughs That Have Finally Unleashed AI on the World, Wired Magazine http://www.wired.com/2014/10/future-of-artificial-intelligence/ Week 11: Tutorial • Refine design and finalize info visualization or story presentation
2016-03-29	Week 12: Wrap Up and Group Presentations • No reading this week! • No tutorial this week!

Last Date to drop course from Academic Record and GPA is March 6, 2016.

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.