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

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CCT376H5S LEC0101
Introduction to Modelling Information (IDM)
Course Outline - Winter 2016

Class Location & Time	Tue, 11:00 AM - 01:00 PM RL 1150
Instructor	Eric Yu
Office Location	BL635
Office Hours	Tues 5-6
Telephone	416 978-3107
E-mail Address	eric.yu@utoronto.ca
Course Web Site	yu.ischool.utoronto.ca

Course Description

The analysis and modelling of information is key to being able to develop appropriate information architectures for organizations in particular and society as a whole. Students explore the modelling and analysis of information from a conceptual, technical and practical perspective. [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 the course are to:

(1) acquaint students with the concepts and practices of modeling in the context of online information service and systems design;

(2) provide students with the opportunity to experience the use of a range modeling techniques in the context of design projects;

(3) encourage students to explore the value and benefits of modeling and systematic analysis in system and service design.

Students having completed this course should be able to:

1. Explain the concept and value of modeling as used in the design of online information systems and services (as demonstrated in Assignment 1, 2, and 3; Presentations 1 and 2).
2. Describe different types of modeling techniques (as demonstrated in Assignment 1, 2, 3; Presentations 1 and 2).
3. Select and apply modeling techniques relevant to a design project (as demonstrated in Assignment 1, 2, 3; Presentations 1 and 2).
4. Model and analyze a service design using service blueprints (Assignment 1, Presentation 1)
5. Model and analyze stakeholders and their motivations (Assignment 2, Presenation 1)
6. Analyze data requirements using high-level data models (Quiz, Presentation 2)

Required Materials

Readings are listed in the Course Schedule section. All required readings will be accessible online or made available through Blackboard. Most supplementary materials are also online or available in the UofT library system.

Assessment and Grading Policies

Type	Description	Due Date	Weight

Assignment	A1. Service modeling (group)	2016-01-26	20%
Assignment	A2. Stakeholder modeling (individual)	2016-02-09	10%
Presentations	P1. Service design with stakeholder modeling (group)	2016-03-01	15%
Quiz	Qz. Quiz on data modeling (individual)	2016-03-15	10%
Presentations	P2. Service design with data modeling (group)	2016-03-29	15%
Assignment	A3. Reflections on modeling (individual)	2016-03-29	20%
Class Participation	In-class and online participation (individual)	On-going	10%
		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

The course consists of three main segments - service and process modeling (weeks 2-4), stakeholder and value modeling (weeks 5, 6, and 8), and data modeling (weeks 7, 9, 10, and 12).

The course work will primarily revolve around a team-based design project. The objective is for students to experience how different types of modeling techniques may offer different kinds of insights in the design of an information service. Students are encouraged to use, as a starting point or baseline, a service design that they had previously completed (for example in another course), in which the modeling techniques covered in this course were not used. The baseline can then help reveal the benefits and limitations of various types of modeling.

Assignment 1 In this assignment, students will work in a team (of three) to apply service design modeling techniques to design (or revise the design of) an information service. The emphasis will be on the technique of Service Blueprinting. The deliverable is a concise written project report to be submitted by the team. Suggested length is 4-5 pages, including 1-2 pages of diagrams.

Assignment 2 In the second assignment, students will work individually to examine the broad range of stakeholders that may be relevant in the design of the service. These stakeholders and their motivations will be analyzed using modeling techniques. Each student will submit a written analysis. The suggested length is 3-4 pages, including 1 page of diagrams. Students on the same team are asked not to consult with each other during this stage of the project.

Presentation 1 In the next stage of the project, students will again work together as a team. Team members will compare, reconcile, and merge their individually conducted stakeholder analysis. With the benefit of the stakeholder analysis, the team will revise the design of the service to better address the needs, desires, and concerns of all relevant stakeholders as much as possible. The deliverable for this stage is a team presentation (12-15 minutes, including discussion). The objective is to present and to discuss with the class how the stakeholder analysis led to changes to the design. Presentation slides are to be submitted 24 hours before the presentation class. The slides should cover specifics of the resulting design as well as artifacts used during the design process, such as models. Figures should be accompanied by bullet text explanations of key concepts, design issues and choices. A written report is not required.

Presentation 2 In the final stage of the project, students will work as a team to use data modeling to conduct a more detailed analysis of the data relevant to the service. By employing data modeling together with the techniques learned in the preceding stages, the team will again rethink and redesign the service, this time keeping data in mind from the beginning of the design cycle. The deliverable is a team presentation (12-15 minutes, including discussion) to discuss how considerations of data led to new design ideas and a new design. Presentation slides are to be submitted 24 hours before the presentation class.

Assignment 3 At the end of the course, a written report is required from each student individually. The report will reflect on the use of modeling as experienced during the course, within the student's own team, as well as by others in the class as revealed through class discussions and presentations. Students are expected to refer to readings, and to refer to models from projects. The suggested length is 2000-2500 words (excluding references), 5 to 7 pages single-spaced, 12-point, including figures. Additional research or reference to material outside the course is not expected.

In-class and online participation. Students are expected to contribute actively to discussions in class as well as on the course discussion forum on Blackboard. As a rough guide, each student is expected to contribute 3 thoughtful posts. At least one of posts should discuss one of the supplementary readings.

All course work is expected to be of high professional quality. All members of a team are equally responsible for the work of the entire team. Team members will be asked to assess peer contributions. Individual members of a group may receive different grades

in case of unequal contributions.

More detailed instructions will be given for each assignment.

There will be a quiz to assess students' understanding of data modeling concepts and techniques. Students will have 30 minutes and it will be closed book. There will be short questions on concepts and on model construction.

Teaching Methods

Most class sessions will consist of lectures, discussions, and in-class exercises or activities. Students are expected to have read the required readings before each class. Supplementary references may be read after the designated class, but it will be beneficial to spend at least a few minutes to skim through each one before class.

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.

Students should check the course site on Blackboard regularly for announcements and possibly updates to the course outline or readings.

Learning Technology

All assignments and presentation slides must be handed in electronically through Blackboard. See Blackboard for details on the submissions. Students are
advised to submit their Assignments a reasonable period before the Assignment is due. Students are reminded that they should make electronic
copies of all the work and keep these copies for a reasonable period of time. Note that files time stamped with your system clock time do NOT
constitute reliable evidence of completion prior to the deadline.

Document files (for assignments) should be submitted in pdf format. Presentations files may be submitted in Powerpoint or pdf.

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.

Missed Term Tests

Students who miss a term test for reasons entirely beyond their control (e.g. illness or accident) must, within 72 hours of the missed test, submit an official request to the INSTITUTE (not the instructor) by completing a *Special Consideration Form* that explains the reason for missing the test. This form can be picked up at any ICCIT Office and should be submitted to the Academic Advisor, Rose Antonio (CCT 3018 along with the ORIGINAL supporting documentation (e.g. U of T medical certificate, death certificate, etc.). Students must adhere to UTM policy and declare their absence on ROSI. A departmental committee will review requests and students whose requests are approved will be contacted by the instructor via email.

Once approval is received from the ICCIT office, a make-up test will be scheduled. The student will be informed of the make-up date via email. The test should be written within 2 weeks of the original test. Normally, 5-7 days of notice will be given before the test. However, advance notice is sometimes not possible and students should therefore be prepared for the make-up test at any time.

Medical certificates or Doctor's Notes must include the statement: "[Name of student] was unable to write the test on [date] for medical reasons." Documentation must show that the physician was consulted within one day of the test. A statement merely confirming the report of an illness made by a student is not acceptable.

You are responsible for providing an accurate phone number and email address on your*Special Consideration Form.* Although the Academic Advisor and/or Instructor informs you by email, it is your responsibility to obtain the decision from the department. Claims that a departmental decision was not received will not be considered as reason for further consideration.

A student who misses a term test cannot subsequently petition for late withdrawal from the course without academic penalty on the grounds that he or she has had no term work returned before the drop date.

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.

Normally, students will be required to submit their course essays electronically to Turnitin.com for review of textual similarity and detection of possible plagiarism. In doing so, students will also essays to be included as source documents in the Turnitin.com database, where they will be used solely for the purpose of detecting plagiarism. Turnitin.com services are described on the Turnitin.com website.

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	**W1 Information modeling - objectives, contexts, varieties** • We'll start with an overview of information modeling. Why do modeling? Who does it? For whom? When? What types of modeling are there? How does information modeling relate to modeling in general? Required readings: none Supplementary references: • Kaplan, Robert S., and David P. Norton. "The strategy map: guide to aligning intangible assets." *Strategy & Leadership* 32.5 (2004): 10-17. • IDEF0 overview. http://www.idef.com/IDEF0.htm • Jurisica, Igor, John Mylopoulos, and Eric Yu. "Using ontologies for knowledge management: An information systems perspective." *Proc. of American Society for Information Science*. Vol. 36. Information Today; 1999.
2016-01-12	**W2 Modeling for service design** We will examining a variety modeling techniques relevant for designing services, including service blueprints, service journey mapping, and more. Required readings: • Bitner, Mary Jo, Ostrom, Amy L., & Morgan, Felicia N. (2008).Service Blueprinting: A practical technique for service innovation. California Management Review, 50(3), 66-94.
2016-01-19	**W3 Modeling for service design (continued)** Required readings: • Design methods for developing services. Design Council (UK) 2011. • Robert Glushko; Lindsay Tabas. "Designing service systems by bridging the "front stage" and "back stage." Information Systems and e-Business Management (September 2009), 7 (4), pg. 407-427 doi: 10.1007/s10257-008-0106-0 Supplementary references: • Shostack, G. Lynn. (1984) Designing services that deliver. Harvard Business Review, 62(1), 133-139 • Glushko, Robert J. (2010) Seven Contexts for Service System Design. in: P.P. Maglio et al. (eds.), Handbook of Service Science. Springer. 219-249
2016-01-26	**W4 Modeling in information systems and software design** We examine some well-known modeling techniques used in the context of software and information systems design. Required readings: • Object Management Group (2005) Introduction to OMG's Unified Modeling Language (UML). http://www.omg.org/gettingstarted/what_is_uml.htm • Sparx systems. UML tutorial. http://www.sparxsystems.com/uml-tutorial.html • Object Management Group. Business Process Model and Notation http://www.bpmn.org/ Supplementary references: • Fowler, Martin. *UML Distilled: A Brief Guide to the Standard Object Modeling Language*. 3rd ed. Addison-Wesley Professional, 2004.

2016-02-02	**W5 Stakeholder modeling** We go beyond users and customers to consider a wide range of stakeholders and actors. We examine techniques for modeling stakeholders and their motivations and wants. Required readings: • Alexander, Ian F. A Taxonomy of Stakeholders: Human Roles in System Development International Journal of Technology and Human Interaction, 1(1), 2005, 23-59 • Motivation matrix | Service Design Tools http://www.servicedesigntools.org/tools/20 Supplementary references: • Morelli, Nicola, and Christian Tollestrup. "New representation techniques for designing in a systemic perspective." *Nordes* 2 (2007). 1-6. • Zachman, John A. "A framework for information systems architecture" *IBM systems journal* 26.3 (1987): 276-292. • Engelsman, Wilco, et al. "Extending enterprise architecture modelling with business goals and requirements." *Enterprise Information Systems* 5.1 (2011): 9-36. **DOI:** 10.1080/17517575.2010.491871 • Chapman, Christopher N., et al. "Quantitative evaluation of personas as information." *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. Vol. 52. No. 16. SAGE Publications, 2008.
2016-02-09	**W6. Value modeling** A number of techniques have been proposed to model and analyze value creation or flows. We examine how these can contribute to the design of information services and systems. Required readings: • Allee, Verna. "Reconfiguring the value network." *Journal of Business strategy* 21.4 (2000): 36-39. Version with color figures. Supplementary references: • Nicola Morelli, (2009),"Service as value co-production: reframing the service design process", Journal of Manufacturing Technology Management, Vol. 20 Iss: 5 pp. 568 - 590. DOI: 10.1108/17410380910960993 • Osterwalder, A., Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, John Wiley & Sons, New Jersey.
2016-02-16	**Reading week.**
2016-02-23	**W7. Data modeling** We will begin with basic concepts of data modeling, and continue with more details in Weeks 9 and 10. Required readings: • Hoberman, Steve. Data Modeling Made Simple: A Practical Guide for Business and IT Professionals, 2nd Edition. Technics Publications, 2009. Read Chapters 1, 2, 4 - 7. http://go.utlib.ca/cat/7228469
2016-03-01	**W8. Project presentation P1**

2016-03-08	**W9. Data modeling, continued** Required readings: Hoberman, Steve, Donna Burbank, and Chris Bradley. *Data Modeling for the Business:* : A Handbook for Aligning the Business with IT using High-Level Data Models. Technics Publications, 2009. Read Chapters 3, 7, and 14. http://go.utlib.ca/cat/7261302
2016-03-15	**W10. Data modeling, continued** We will start with an in-class quiz on data modeling. Then we will consider further applications of data modeling. Supplementary references: • Jett, Jacob, et al. (2015) "A conceptual model for video games and interactive media" *Journal of the Association for Information Science and Technology*. 15pp. • Matz, Kevin. (2012) "Why understanding your application's domain and data model is a prerequisite for good user interface design." Blog post June 19, 2012.
2016-03-22	**W11. Perspectives on information modeling** We will review topics covered in the course, and explore additional perspectives and ongoing developments, evolving needs, and research in information modeling. We will discuss information architecture in organizations and society. Supplementary references: • Bannon, L. J. (1995). "The politics of design: representing work." Communications of the ACM, 38(9), 66-68. • Holtzblatt, Karen and Beyer, Hugh R. (2014). "Contextual Design." In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation. • Edelman, Jonathan, and Rebecca Currano. "Re-representation: affordances of shared models in team-based design." Design thinking. Springer Berlin Heidelberg, 2011. 61-79. • Dunne, D., & Martin, R. (2006). "Design thinking and how it will change management education: An interview and discussion." Academy of Management Learning & Education, 5(4), 512-523. • Ahas, R., Silm, S., Järv, O., Saluveer, E., & Tiru, M. (2010). "Using mobile positioning data to model locations meaningful to users of mobile phones." Journal of Urban Technology, 17(1), 3-27. • Tan, W., Blake, M. B., Saleh, I., & Dustdar, S. (2013). "Social-network-sourced big data analytics." IEEE Internet Computing, (5), 62-69. • Hendler, James, et al. "Web science: an interdisciplinary approach to understanding the web." *Communications of the ACM* 51.7 (2008): 60-69. • Leganza, Gene. Information Architecture - topic overview. 2010. Forrester.
2016-03-29	**W12. Project presentations P2**

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.