

Faculty of Information • University of Toronto
INF2183 • Knowledge Management & Systems

Instructor: Prof. Eric Yu.

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(I will answer questions posted on the Blackboard forum “Questions to Instructor”. Please use that instead of email for all questions related to this course.)

Lectures: Thursdays, 6:30 - 9:30 pm. Room BL313 (January - April 2017)

Office hours: Mondays 4-5:30 pm

Teaching Assistant: Soroosh Nalchigar

Course Description

Knowledge management from an information systems perspective. Analyzing information and knowledge processes in organizations. Explicit and implicit/tacit knowledge in software systems and in human social systems. Languages and models for codifying knowledge. Application of information technologies to knowledge management. Ontologies and the semantic web. Knowledge management in information systems development. Applications in selected areas such as enterprise management, e-commerce, healthcare, media, and education.

Course Objectives

Information systems professionals are increasingly called upon to help manage knowledge in organizations, beyond conventional information processing. A wide range of information technologies, such as collaboration and social software, enterprise repositories, knowledge-based or expert systems, software agents, as well as traditional information systems, are being used to support work in organizations. This course examines knowledge management from an information systems perspective. Notions of knowledge in the management literature and in the information systems area are reviewed. Modelling techniques that can be used during systems analysis in the context of organizational knowledge management are examined.

The course aims to expose students to the issues of knowledge management in organization and across communities, and to provide opportunities to learn and apply modelling and analytical techniques to understand the use of various types of information technologies in meeting organizational knowledge management needs.

Scope

The theme of knowledge management is treated in a number of courses at the iSchool. This course focuses on knowledge management from an information systems perspective.

Course Learning Outcomes

At the end of this course, students should be able to:

- analyze and identify knowledge management needs in organizational settings (demonstrated in Assignment 2 and through in-class activities)
- apply modeling techniques to analyze organizational processes from a knowledge management perspective as well as information systems perspective (demonstrated in Assignment 2 and through in-class activities)
- analyze and identify potential IT systems solutions to address knowledge management needs (demonstrated in Assignment 3 and through in-class activities)
- explain and illustrate potential application of ontologies in the context of knowledge management. (demonstrated in Assignment 3 and through in-class activities)
- describe and explain knowledge management concepts in relation to the application of information technologies and systems (demonstrated in Assignment 1 and through in-class activities; reviewed through mid-term test)

Relationship to Master of Information (MI) Program-Level Student Learning Outcomes [\(link\)](#)

This course introduces students to knowledge management concepts and relates them to information systems concepts and practices (Outcome 1). Through a practical project (Assignments 2 and 3) and class discussion of project experiences from multiple diverse settings, students develop knowledge and values that will prepare them for future professional practice (Outcome 2). Through readings, class presentations and discussions (Assignment 1), students are exposed to a broad range of theories about knowledge management (Outcome 4) and how KM concepts can contribute to the understanding of the emergence and evolution of various information technologies and systems practices (Outcome 5). By encouraging and enabling students to interpret advances in information technologies and systems practices through KM perspectives, students are equipped for life-long intellectual growth throughout their future careers (Outcome 6).

Pre-requisites

INF1341 Systems Analysis and Process Innovation, or permission of instructor. For iSchool students specializing in Information Systems & Design, the sequence INF1341, INF1342, INF2177, INF2183 is recommended.

Course Topics and Schedule

Schedule is approximate and may be adjusted. Additional readings may be assigned. Most readings are available online via UofT digital library.
A(n) -- Numbered items with an 'A' or 'B' prefix are to be presented and discussed by a student as Assignment 1.

Week 1 (Jan 12): **Course overview.** Overview of knowledge management, motivations, current perspectives, examples, relationships to current issues in information systems and other information disciplines.

Readings:

Davenport, Thomas, and Laurence Prusak (1998). <i>Working Knowledge: How Organizations Manage What They Know</i> . Boston: Harvard Business School Press. (HD58.82 .D38 1998 -- 2 hour loan [Check availability] and [e-book]) Google books preview .	
Kitson, Alison, and Sharon E. Straus (2010, February). The Knowledge-to-Action Cycle: Identifying the Gaps . <i>Canadian Medical Association Journal</i> , 182(2): E73-E77.	
Davis, Dave, Mike Evans, Alex Jadad, et al. (2003, July). The Case for Knowledge Translation: Shortening the Journey from Evidence to Effect . <i>British Medical Journal</i> . 327: 33-35.	

Supplementary:

- Stewart, Thomas A. (1997). *Intellectual Capital: The New Wealth of Organizations*. New York: Doubleday. (HD53 .S74 1997 -- 2 day loan [[Check availability](#)])
- Stewart, Thomas A. (1994, October). [Your Company's Most Valuable Asset: Intellectual Capital](#). *Fortune Magazine*. 130(7): 68-74.
- Stewart, Thomas A. (1997, March). [Brain Power: Who Owns It... How They Profit From It](#). *Fortune Magazine* 135(5): 105-110.
- Sveiby, Karl E. (1997). *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*. San Francisco: Berrett-Koehler Publishers. (HD53 .S84 1997 -- 2 day loan [[Check availability](#)])

Week 2 (Jan 19): **Knowledge management from Information Systems perspectives.**

Readings:

Alavi, Maryam, and Dorothy Leidner (2001, March). Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues . <i>MIS Quarterly</i> 25(1): 107-136.	
Grover, Varun, and Thomas H. Davenport (2001, Summer). General Perspectives on Knowledge Management: Fostering a Research Agenda . <i>Journal of Management Information Systems</i> 18(1): 5-21.	

Supplementary:

- Baskerville, Richard and Alina Dulipovici (2006). [The Theoretical Foundations of Knowledge Management](#). *Knowledge Management Research & Practice* 4: 83-105.

Week 3 (Jan 26): **Knowledge management from management and social science perspectives.** Tacit and explicit knowledge. Knowledge generation, codifications, transfer. Knowledge as intangible asset. Knowledge sharing and markets. Communities of practice. Organizational memory and learning.

Readings:

A1 Nonaka, I., Toyama, R., and N. Konno. (2000). SECI, Ba and Leadership: A Unified	
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	Model of Dynamic Knowledge Creation . <i>Long range planning</i> , 33(1): 5-34.	
A2	Wenger, E. C., and W. M. Snyder (2000, January/February). Communities of Practice: The Organizational Frontier . <i>Harvard Business Review</i> 78(1): 139-145.	
A3	Lee, Laurence Lock (2005, January). Balancing Business Process with Business Practice for Organizational Advantage . <i>Journal of Knowledge Management</i> 9(1): 29-41.	

Supplementary:

- Seely-Brown, J. and Paul Duguid (1991) [Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation](#). *Organization Science* 2(1): 40-57.
- Nonaka, Ikujiro (1994). [A Dynamic Theory of Organizational Knowledge Creation](#). *Organizational Science* 5(1): 14-37.

Week 4 (Feb 2): **Analyzing knowledge management needs; Knowledge modelling, ontologies.** Analyzing knowledge work processes. Information and knowledge processes. Analytical frameworks. Objects and processes. Knowledge, actors and actions. Time, locality, and intentionality. Integration and autonomy. Process modelling, data and modelling, object-oriented modelling, strategic actor relationships modelling. Knowledge modelling, ontologies. Readings:

	review of modelling techniques from INF1341 - DFD, ER, OO, i*. For i* Strategic Actor Relationships modelling, see guide to readings on i*.	
A5	Noy, Natalya F., and Deborah L. McGuinness (n.d.). Ontology Development 101: A guide to creating your first ontology .	
A4	Sowa, John (2001). Building, Sharing, and Merging Ontologies . In: A Guided Tour of Ontology .	
A6	Shalom, Erez, et al. (2009). Can Physicians Structure Clinical Guidelines? Experiments with a Mark-Up-Process Methodology . In: D. Riaño (Ed.): K4HeIP 2008, <i>LNAI 5626</i> , pp. 67–80.	

Supplementary:

- Smith, Barry (2003). [Ontology: Philosophical and Computational](#). In Luciano Floridi (ed.), *Blackwell Guide to the Philosophy of Computing and Information*. Oxford: Blackwell. pp.155-166. ("short version" on webpage) - for the philosophically-minded. (Eng. & Comp. Sci.: QA76.167 .B53 2003 [[Check availability](#)])
- Noy, N. F., Shah, N. H., Whetzel, P. L., Dai, B., Dorf, M., Griffith, N., Jonquet, C., Rubin, D. L., Storey, M. A., Chute, C. G., and Musen, M. A. (2009, July). [BioPortal: ontologies and integrated data resources at the click of a mouse](#). *Nucleic Acids Research*, 37 (Web Server issue).
- Peleg M, Tu S, Bury J, Ciccarese P, Fox J, Greenes RA, Hall R, Johnson PD, Jones N, Kumar A, Miksch S, Quaglini S, Seyfang A, Shortliffe EH, and Stefanelli M. (January, 2003). [Comparing Computer-Interpretable Guideline Models: A Case-Study Approach](#). *Journal of the American Medical Informatics Association* 10(1): 52-68.
- Doerr, M. (2009). [Ontologies for cultural heritage](#). In *Handbook on Ontologies* (pp. 463-486). Springer Berlin Heidelberg.
- Malone, Thomas W., Crowston, Kevin, Lee, Jintae, et al. (1999, March). [Tools for Inventing Organizations: Toward a Handbook of Organizational Processes](#). *Management Science* 45(3): 425-443.

Week 5 (Feb 9): **Information technologies for knowledge management.** The role of various ITs from knowledge management perspectives. Groupware, intranets and portals, document and

content management, classification and search. Knowledge-based systems, knowledge acquisition and engineering, knowledge sharing among knowledge bases. Data mining and knowledge discovery, information extraction.

Readings:

A8	Marwick, A. D. (2001). Knowledge Management Technology . <i>IBM Systems Journal</i> 40(4): 814-830.	
A9	O’Sullivan, Dympna et al. (2008). A Concept-Based Framework for Retrieving Evidence to Support Emergency Physician Decision Making at the Point of Care . In: D. Riaño (Ed.): <i>Knowledge Management for Health Care Procedures</i> , K4CARE 2007, LNCS 4924, pp. 117–126.	
A10	McAfee, Andrew P. (2006, Spring). Enterprise 2.0: The Dawn of Emergent Collaboration . <i>Sloan Management Review</i> 47(3): 21-28. See also Gotta (2007) below.	

Supplementary:

- Gotta, Mike (2007). [Enterprise 2.0: Collaboration and Knowledge Management Renaissance](#). Burton Group In-depth Research Report. 54pp. (“free resource”, registration required)
- Davenport, Thomas H. and Jeanne G. Harris (2005, Summer). [Automated Decision Making Comes of Age](#). *Sloan Management Review* 46(4): 83-89.
- Markus, M Lynne, Majchrzak, Ann, and Les Gasser (2002, September). [A Design Theory for Systems that Support Emergent Knowledge Processes](#). *MIS Quarterly* 26(3): 179-212.
- Tuzhilin, Alexander (2011, October). Knowledge Management Revisited: Old Dogs, New tricks. *ACM Transactions on Management Information Systems* 2(3), Article no. 13.

Assignment 2 due Thursday Feb 16.

Week 6 (Feb 16): **Knowledge management from technology perspectives.** Knowledge in information systems. Semantic representation in data and software. The movement towards knowledge orientation in information and software systems. The semantic web, ontologies, software agents. Semantic interoperability.

Readings:

A24	Tuomi, Ilkka (1999/2000, Winter). Data is More than Knowledge: Implications of the Reversed Knowledge Hierarchy for Knowledge Management and Organizational Memory . <i>Journal of Management Information Systems</i> 16(3): 103-117.	
A13	Isern, David, Moreno, Antonio, et al. (2011, April). Agent-based Execution of Personalised Home Care Treatments . <i>Applied Intelligence</i> 34(2): 155-180.	
A12	Markus, M. Lynne (2001, Summer). Towards a Theory of Knowledge Reuse: Types of Knowledge Reuse Situations and Factors in Reuse Success . <i>Journal of Management Information Systems</i> 18(1): 57-93.	

Supplementary:

- Abidi, Syed Sibte Raza (2008). [Healthcare Knowledge Management: The Art of the Possible](#). In: D. Riaño (Ed.): *Knowledge Management for Health Care Procedures*, K4CARE 2007, LNCS 4924, pp. 1–20.
- Batet, M., Isern, D., et al. (2010). [Knowledge-Driven Delivery of Home Care Services](#). *Journal of Intelligent Information Systems* 38(1): 95-130.

- Fensel, Dieter (2004). [Ontologies: A Silver Bullet for Knowledge Management and Electronic Commerce](#). 2nd ed. 162pp. Springer (Eng. & Comp. Sci.: QA76.9 .D3 F46 2004X [[Check availability](#)])
- Isern, David, Sanchez, David, et al. (2007). [An Ontology-Driven Agent-Based Clinical Guideline Execution Engine](#). *Artificial Intelligence in Medicine*, LNCS 4594, pp. 49-53.
- Abecker, A., and L. van Elst. (2009). [Ontologies for knowledge management](#). In *Handbook on Ontologies* (pp. 713-734). Springer Berlin Heidelberg.

Reading week - no class on Feb. 23

Week 7 (Mar 2): Mid-Term Test; Semantics; Semantic web; Knowledge in systems development.

Readings:

- Berners-Lee, Tim, Hendler, James, and Ora Lassila (2001, May). [The Semantic Web](#). *Scientific American*. pp. 34-43.

A11	Pathak, J., Kiefer, R. C., & Chute, C. G. (2012). Applying linked data principles to represent patient's electronic health records at Mayo clinic: a case report . In Proceedings of the 2nd ACM SIGHIT International Health Informatics Symposium (IHI '12), pp. 455-464.	
A17	Rus, Ioana, and Mikael Lindvall (May, 2002). Knowledge Management in Software Engineering . <i>IEEE Software</i> , 19(3): 26-38.	

Supplementary:

Semantics and semantic web:

- Decker, Stefan, et al. (2000a, September). [The Semantic Web: The Roles of XML and RDF](#). *IEEE Internet Computing* 4(5): 63-73.
- Decker, Stefan, et al. (2000b, November). [Framework for the Semantic Web: An RDF tutorial](#). *IEEE Internet Computing* 4(6): 68-73.
- Hepp, Martin, De Leenheer, Pieter, de Moor, Aldore, and York Sure. (Eds.) (2008). [Ontology Management: Semantic Web, Semantic Web Services, and Business Applications](#). Series: Semantic Web and Beyond , Vol. 7. 295 p. (fulltext on SpringerLink)
- Davis, Randall, Shrobe, Howard, and Peter Szolovits (1993). [What is a Knowledge Representation?](#) *AI Magazine* 14(1): 17-33.
- Borgida, Alex, and John Mylopoulos (2005). [Data Semantics Revisited](#). In: C. Bussler et al. (Eds.): *Proceedings of 2nd International Workshop on Semantic Web and Databases (SWDB 2004)*, Revised Selected Papers. LNCS 3372. Springer Verlag, pp.9-26.
- Musen, Mark A. (2007). [Technology for Building Intelligent Systems: From Psychology to Engineering](#). *Nebraska Symposium on Motivation* 52: 145-84.
- Jurisica, Igor, Mylopoulos, John, and Eric Yu (2003). [Ontologies for Knowledge Management - An Information Systems Perspective](#). to appear in *Knowledge and Information Systems*. (manuscript)
- Yu, Eric (2002). [Agent-Oriented Modelling: Software Versus the World](#). In: *Agent-Oriented Software Engineering AOSE-2001 Workshop Proceedings*. LNCS 2222. Springer Verlag, pp. 206-225.
- Mylopoulos, John (1992). [Conceptual Modelling and Telos](#). In: P. Loucopoulos and R. Zicari (Eds.): *Conceptual Modelling, Databases and CASE: An Integrated View of Information Systems Development*. New York: John Wiley & Sons, Inc., pp. 1-20.
- Mylopoulos, John, Borgida, Alex, and Eric Yu (1997, July). [Representing Software Engineering Knowledge](#). *Automated Software Engineering* 4(3): 291-317.

Week 8 (Mar 9): Knowledge and management. Knowledge management initiatives. Knowledge theories of the firm. Intellectual property management. Knowledge and strategic management.

Readings for discussion:

A14	Earl, Michael (2001, Summer). Knowledge Management Strategies: Toward a Taxonomy . <i>Journal of Management Information Systems</i> 18(1): 215-233.	
A15	Rivette, Kevin, and David Kline (2000, Jan/Feb). Discovering New Value in Intellectual Property . <i>Harvard Business Review</i> 78(1): 54-66.	
A18	Cases, M., Furlong, L. I., Albanell, J., Altman, R. B., Bellazzi, R., Boyer, S., Brand, A., Brookes, A. J., Brunak, S., Clark, T. W., Gea, J., et al. (2013). Improving Data and Knowledge Management to Better Integrate Health Care and Research . <i>Journal of Internal Medicine</i> , 274(4): 321-328.	

Supplementary:

- Kane, Gerald C, and Maryam Alavi (2007). [Information Technology and Organizational Learning: An Investigation of Exploration and Exploitation Processes](#). *Organization Science* 18 (5): 796-812.
- March, James G. (1991, February). [Exploration and Exploitation in Organizational Learning](#). *Organization Science* 2(1): 71–87.
- Yu, Eric, Liu, Lin, and Ying Li (2001). [Modelling Strategic Actor Relationships to Support Intellectual Property Management](#). In: *20th International Conference on Conceptual Modeling (ER-2001), Yokohama, Japan, November 27-30, 2001*. LNCS 2224, Spring Verlag, pp. 164-178.

Week 9 (Mar 16): Knowledge and management, cont'd.

Readings for discussion:

A16	Grant, Robert M. (1996). Toward a Knowledge-Based Theory of the Firm (Winter Special Issue). <i>Strategic Management Journal</i> 17(S2): 109-122.	
A22	Nelson, R. R., Buterbaugh, K., Perl, M., & Gelijns, A. (2011). How medical know-how progresses . <i>Research Policy</i> , 40(10), 1339-1344.	
A20	Teece, David J. (1998). Capturing Value from Knowledge Assets: The New Economy, Markets for Know-How, and Intangible Assets . <i>California Management Review</i> 40(3): 55–78.	

Supplementary:

- Brown, John S., and Duguid, Paul. (2001). [Knowledge and Organization: A Social-Practice Perspective](#). *Organization Science* 12(2): 198-213.
- Sanchez, Ron, and Joseph T. Mahoney. (1996). [Modularity, Flexibility, and Knowledge Management in Product and Organization Design](#). *Strategic Management Journal* 17 (Winter special issue): 63-76.
- Galbraith, Jay R. (1974). [Organization Design: An Information Processing View](#). *Interfaces* 4(3): 28-36.
- Volkoff, Olga, Elmes, Michael B., and Diane M. Strong (2004). [Enterprise Systems, Knowledge Transfer and Power Users](#). *Journal of Strategic Information Systems* 13(4): 279-304.

- Cummings, Jeffrey L., and Bing-Sheng Teng (2003, June). [Transferring R&D knowledge: The Key Factors Affecting Knowledge Transfer Success](#). *Journal of Engineering and Technology Management* 20(1-2): 39-68.
- Leidner, Dorothy E., and Timothy Kayworth (2006). [A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict](#). *MIS Quarterly* 30(2): 357-399.

Week 10 (Mar 23): **Knowledge management analysis of IS development issues.** (Student presentations and discussions)

Selected topics may include: open source software development, agile methods, design rationales, requirements traceability, software reuse, design patterns, process improvement, etc. For presentation topics and readings, see "Knowledge Management in Information Systems Development" section (the "B series") under References.

Week 11 (Mar 30): **Knowledge management and systems in selected application areas.**

Student project presentations (Asg 3P) and discussions. Application areas may include, but are not limited to:

- Healthcare
- Enterprise management
- E-business
- Education and e-learning
- Scholarly research, publishing, and digital libraries
- Product development and engineering
- Consultancy

Week 12 (Apr 6): **Knowledge management in selected application areas.** (cont'd)

Assignment 3W due Friday Apr 7, 4pm.

Course requirements

Assignment 1: [15%] Presentation on selected readings. (individual work)

The presenters will summarize and present highlights from the selected reading(s) and raise questions for class discussion in relation to the objectives and themes of the course. The presenters will present for 15 minutes, followed by a discussion period of 15 minutes. Everyone in the class is expected to have read all the required readings before class. A written report is not required. The presentation dates are distributed throughout the term.

You must sign up to select readings from the A-series or the B-series at beginning of term. Presentation slides are to be submitted 48 hours before the class designated for that reading, by posting on Blackboard.

Assignment 2: [20%] Analyzing knowledge management needs. (4-person teams)

Select an application domain area. Select an organizational setting in this domain. Apply appropriate analytical frameworks and modelling techniques to study, from a knowledge management perspective, the problems and opportunities in the selected setting. Identify

knowledge management needs. The analysis will include existing information technology systems, if any. Interactions among technology and human social systems must be fully considered. Future knowledge management needs and issues arising from internal and external changes should also be considered.

The setting may be based on actual site studies, or constructed from the literature (e.g., a composite of published case studies). The scope of the setting should include several work groups or communities with some interactions from a knowledge point of view. These may involve groups or communities outside the organization. Alternatively, with approval from the instructor, the study may analyze selected knowledge practices within an application domain or industry sector, e.g., evidence-based medicine, or the role of patents in knowledge creation and dissemination.

A written report is required. (approx. 3000 words + figures and references, single-spaced 12pt font.)

Assignment 3: Identifying IT systems solutions to address knowledge management needs. (4-person teams)

The team will select one study site from among those studied by team members in Assignment 2. From the knowledge management needs identified in Assignment 2, select appropriate technologies to meet those needs. The selected technologies should complement each other so that together they meet the overall needs. State assumptions about organizational and technology architectures, if any. Consider issues of interoperability and evolution from a knowledge perspective. Consider the applicability of ontologies. Provide at least one example of the need to support multiple ontologies. Define the requirements for the various technology systems in the context of the organizational setting. Use appropriate documentation and modelling techniques. Interactions among technology and human social systems must be fully considered.

Report: [20%] A written report is required. (approx. 4000 words, plus figures and references, single-spaced 12pt font)

Presentation: [10%] An in-class presentation (Week 11 or 12, 15 minutes per team), to be followed by designated discussants, then open discussion. There will be team and individual marks. Detailed presentation slides are to be submitted the day before the presentation (24 hours before start of class), by posting onto Blackboard.

Mid-Term Test: [15%] This will be an in-class closed-book written test that covers material up to the preceding class. It is expected to consist of 8-10 short questions that can be answered in a few sentences. No aids allowed. Duration 40 minutes.

Online discussion: [10%]

(1) Each student is expected to contribute to online discussions on course topics and readings on Blackboard. A rough guide is that each student will contribute at least two (2) thoughtful posts over the duration of the term. You are also expected to comment on each other's postings, to share and jointly create knowledge.

(2) In addition, you are expected to comment on: (option a) two of the final project presentations, noting especially the strengths and limitations of particular methods and techniques for analyzing knowledge management needs and the use of technologies and systems to address those needs, as demonstrated by other project teams, OR (option b) one project presentation, and one of the B-series presentations.

In-class participation: [10%] Class attendance and participation in discussions is mandatory.

Peer assessment of contributions by team members is required for all team work and is considered part of the participation grade. In team work assignments, grades for individual members may differ.

Textbook none.

References

See readings for each week in the above schedule.

- Healthcare and medicine
 - [OpenClinical](#) – knowledge management for healthcare
 - Unified Medical Language System ([UMLS](#))
 - Davenport, Thomas, and John Glaser (2002, July). Just-in-Time Delivery Comes to Knowledge Management. *Harvard Business Review* 80(7). [Excerpt](#) at HBS Working Knowledge.
 - Tudorache, Tania, Falconer, Sean, Nyulas, Csongor, Storey, Margaret-Anne, Üstün, Tevik, and Mark A. Musen (2010). [Supporting the Collaborative Authoring of ICD-11 with WebProtégé](#). *AMIA Annual Symposium Proceedings*, Washington, DC. pp. 802-806.
 - Pöschko, Jan, Strohmaier, Markus, Tudorache, Tania, Noy, Natalya F., and Mark A. Musen (2012). [Pragmatic Analysis of Crowd-Based Knowledge Production Systems with iCAT Analytics: Visualizing Changes to the ICD-11 Ontology](#). AAAI Spring Symposium, Stanford, CA, USA.
 - Barry Smith et al. (2007). [The OBO Foundry: Coordinated Evolution of Ontologies to Support Biomedical Data Integration](#). *Nature Biotechnology* 25: 1251 - 1255
 - Cabitza, Federico, Simone, Carla, and Marcello Sarini (2008). [Knowledge Artifacts as Bridges Between Theory and Practice: The Clinical Pathway Case](#). In: *IFIP Advances in Information and Communication Technology* (pp. 37-50). Springer US.
 - Cabitza, Federico, Simone, Carla, and Giovanni Zorzato (2009). [ProDoc: an Electronic Patient Record to Foster Process-Oriented Practices](#). In: *ECSCW 2009* (pp. 85-104). Springer London.
- Education and learning
 - IEEE P1484.12 [Learning Object Metadata Working Group](#)
 - [IMS Global Learning Consortium](#).
- E-business
 - Fensel, D. et al. (2001, January). [Ontologies and Electronic Commerce](#) (special section). *IEEE Intelligent Systems* 16(1): 8-14.
 - [RosettaNet.org](#). see especially Partner Interface Processes (PIP) specifications.
 - Smith, Howard (2000). [The Role of Ontological Engineering in B2B Net Markets](#).
- Scholarly research and publishing

- Shum, Simon B., Motta, Enrico, and John Domingue (2000). [ScholOnto: An Ontology-Based Digital Library Server for Research Documents and Discourse](#). *International Journal on Digital Libraries* 3(3): 237-248.
- Motta, Enrico, Shum, Simon B., and John Domingue. (2000). [Ontology-Driven Document Enrichment: Principles, Tools and Applications](#). *International Journal of Human-Computer Studies* 52(6): 1071-1109.
- Domingue, J., and E. Motta (2000, May/June). [PlanetOnto: From News Publishing to Integrated Knowledge Management Support](#). *IEEE Intelligent Systems and their Applications* 15(3): 26-32.
- [Scholarly Ontologies Project](#)
- Consultancy
 - Cole, Kevin, Fischer, Olivier, and Phyllis Saltzman (1997, July). [Just-In-Time Knowledge Delivery](#). *Communications of the ACM* 40(7): 49-53.
 - Orlikowski, Wanda. (1995). [Evolving with Notes: Organizational Change around Groupware Technology](#). MIT Center for Coordination Studies. Working Paper #186.
 - Ko, Dong-Gil, Kirsch, Laurie, and William King (2005). [Antecedents of Knowledge Transfer from Consultants to Clients in Enterprise System Implementations](#). *MIS Quarterly* 20(1): 59-85.
- Enterprise and project management
 - Haeckel, Stephan H., and Richard L. Nolan. (1993, September/October). [Managing By Wire](#). *Harvard Business Review* 71(5): 122-139.
 - Bubenko jr., Janis, Persson, Anne, and Janis Stirna (2001). [D3: User Guide of the Knowledge Management Approach Using Enterprise Knowledge Patterns](#), Royal Institute of Technology (KTH) and Stockholm University, Stockholm, Sweden.
 - D'Adderio, Luciana (2003). [Configuring Software, Reconfiguring Memories: The Influence of Integrated Systems on the Reproduction of Knowledge and Routines](#). *Industrial and Corporate Change*, 12(supplement:2): 321-350.
 - Newell, Sue, Bresnen, Mike, Edelman, Linda, Scarbrough, Harry, and Jacky Swan (2006, June). [Sharing Knowledge Across Projects: Limits to ICT-led Project Review Practices](#). *Management Learning* 37(2): 167-185.

Knowledge Management in Information Systems Development (“B series” of readings for selection for Assignment 1)

- **B1. Open source software development**
 - Scacchi, Walt (February, 2002). [Understanding the Requirements for Developing Open Source Software Systems](#). *IEE Proceedings-Software* 149(1): 24-39.
 - Supplementary:
 - Spinellis, Diomidis, and C. Szyperski (2004, January). [How Is Open Source Affecting Software Development?](#) Guest Editors' Introduction to special issue. *IEEE Software* 21(1): 28-33.
 - Gacek, Cristina, and Budi Arief. (January, 2004). [The Many Meanings of Open Source](#). *IEEE Software* 21(1): 34-40.
 - Lakhani, Karim R., and Eric von Hippel (2003). [How Open Source Software Works: “Free” User-to-User Assistance](#). *Research Policy* 32(6): 923-943.
 - von Hippel, Eric, and George von Krogh (2003, March/April). [Open Source Software and the “Private-Collective” Innovation Model: Issues for Organization Science](#). *Organization Science* 14(2): 209-223.

- Mockus, Audris, Fielding, Roy T., and James D. Herbsleb (2002, July). [Two Case Studies of Open Source Software Development: Apache and Mozilla](#). *ACM Transactions on Software Engineering and Methodology* 11(3): 309-346.
- von Krogh, George, Spaeth, Sebastian, and Karim R. Lakhani (2003, July). [Community, Joining, and Specialization in Open Source Software Innovation: A Case Study](#). *Research Policy* 32(7): 1217-1241.
- Gurbani, Vijay K., Garvert, Anita, and James D. Herbsleb (2006). [A Case Study of a Corporate Open Source Development Model](#). *ICSE 2006*, pp. 472-481.
- **B2. Managing experience**
 Basili, Victor, Caldiera, Gianluigi, and H. Dieter Rombach (1994). [The Experience Factory](#). In: *Encyclopedia of Software Engineering*. pp. 469-476. (Downsview: QA76.758 .E53 1994 v.1-2 [[Check availability](#)]); and Eng. & Comp. Sci.: QA76.758 .E53 2002 v.1-2 [[Check availability](#)])
 -Supplementary:
 - Strohmaier, Markus, Yu, Eric, Horkoff, Jennifer, Aranda, Jorge, and Steve Easterbrook (2007, January). [Analyzing Knowledge Transfer Effectiveness – An Agent-Oriented Modeling Approach](#). *2007 40th Annual Hawaii International Conference on System Sciences (HIC SS'07)*, pp. 188b-188b.
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- **Other topics of interest**
 - **B7. Design patterns**
 - **B9. Business rules**
 - **B15. Cognitive computing**
 - **B16. Sentiment analysis and text mining**

Grading

Please consult the iSchool's Grade Interpretation Guidelines (<http://current.ischool.utoronto.ca/grade-interpretation>) and the University Assessment and Grading Practices Policy (<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/grading.pdf>). These documents will form the basis for grading in the course.

Late Policy

There will be a penalty of half a letter grade for every 24 hour period an assignment is submitted after the due date and time. For example, a B+ becomes a B/B+ if submitted one minute after the due date and time, a B if submitted 24 hours after. Requests for extensions will only be considered for medical reasons with doctor's note. Assignments will not be accepted one week after the due date.

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.I.(d) of the University's Code of Behaviour on Academic Matters (http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppju_n011995.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.

Acknowledgement of Traditional Land

“I (we) would like to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit River. Today this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.”

See also, the Faculty of Information’s Commitment to the Findings And Call for Action of the Truth and Reconciliation Commission (approved at the Feb. 4, 2016 Faculty Council):

https://current.ischool.utoronto.ca/system/files/user/1186/ischools_trc_commitment.pdf

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