MIE 1505
ENTERPRISE MODELLING
2021

Instructor: Dr. M. Gruninger, BA8122, 416-946-8853, gruninger@mie.utoronto.ca

Times: TBD

Location: TBD

Prerequisite: A data modelling course

Course Description: To remain competitive, enterprises must become increasingly agile and integrated across their functions. Enterprise models play a critical role in this integration, enabling better designs for enterprises, analysis of their performance, and management of their operations. This course motivates the need for enterprise models and introduces the concepts of generic enterprise models and enterprise ontologies. It reviews research to date on enterprise modelling, including emerging standards and implementation technologies.

Project: Each student must complete a project of his or her choice (subject to the instructor's approval). The project may consist of
- the design and evaluation of a new enterprise model in some domain;
- extension of existing enterprise models;
- analysis of existing enterprise models.

Grading:
- Research paper reviews: 20%
- Project: 80%

Deadlines.
- 9 February: Project proposals
- 16 February: Project progress reports
- 6 April: Project final reports

Course Outline

Week 1: Introduction to Enterprise Modelling. (5 January)

Week 2: UML: Use Cases and Class Diagrams. (12 January)

Week 3: UML: State Charts and Sequence Diagrams. (19 January)

Week 4: Introduction to SysML (Systems Modelling Language). (26 January)
    Readings:

- C. Bock (2006) SysML and UML 2.0 Support for Activity Modeling, *Journal of the International Council of Systems Engineering*, vol. 9, no. 2, pp. 160-186, 2006.
- E. Herzog, et al. (2005) SysML – an Assessment, *Proceedings of the 15th INCOSE International Symposium*, 2005.

Week 5: IDEF. (2 February)
    Readings:

- Menzel, C. and Mayer, R. (2006) The IDEF family of languages, in *Handbook on Architecture of Information Systems, 2nd edition*, pp 215-250.

Week 6: Process Modelling: IDEF3 and UML Activity Diagrams. (9 February)

Week 7: Project Progress Report Presentations. (23 February)

Week 8: Introduction to BPMN (Business Process Modelling Language). (2 March)

Week 9: BPMN. (9 March)

Week 10: Enterprise Modelling Ontologies. (16 March)
    Readings:

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- Uschold, M., King, M., Moralee, S., Zorgios, Y. (1998) The Enterprise Ontology, in *Knowledge Engineering Review* 13:31-89.
- Gruninger, M. (2003) Enterprise Modelling, in *Handbook on Enterprise Architecture*, pp 515-544.
- Vernadat, F. (2001) UEML: Towards a Unified Enterprise Modelling Language, *Third Conference Francophone de MOdlisation er SIMulation Conception, Analyse et Gestion des Systemes Industriel*
- Anaya V., Berio G., Harzallah M., Heymans P., Matulevicius R., Opdahl A.L., Panetto H., Verdecho M. (2008). The Unified Enterprise Modelling Language : Overview and Further Work. Keynote paper. Proceedings of the IFAC World Congress, 118895-11906, July 6-11, Seoul, Korea, IFAC, ISBN 978-1-1234-7890-2/08

Week 11: Model-Driven Architectures. (23 March)
  Readings:

- Recker, J., Mendling, J., Wil van der Aalst, Roseman, M. (2006) Model-driven Enterprise Systems Configuration.
- Cohn, D. and Stolze, M. (2004) The Rise of the Model-Driven Enterprise, *Proceedings of the IEEE International Conference on E-Commerce Technology for Dynamic E-Business.*

Week 12: Final Project Presentations. (30 March)

Week 13: Challenges in Enterprise Modelling. (6 April)