Syllabus
MIS 712 – BPM and Workflow Implementation

Semester	Day of Week/Time
Spring1 2009	WebCampus 24/7
Dr. Michael zur Muehlen Stevens Institute of Technology Howe School of Technology Management Babbio 639	Office Hours: By appointment Class Website: http://howe.stevens.edu/BPM

Catalog Description

The course addresses the techniques and concepts required to map, implement, automate, and evaluate business processes. Focusing on the technical and implementation aspects of Business Process Management, the course leads students from technical process design through the implementation and management of workflows to the structure of process-aware information systems. It discusses the distinction between business processes and business rules and outlines how they can be supported by technology. It details the technical structure of process-aware applications and provides an overview of technology standards that affect BPM systems. Modules on the run-time monitoring of processes and post-execution evaluation techniques complete this course. Prerequisite: MIS 620; Co-requisite: MIS 710

Overview

Business Process Management (BPM) is the set of concepts, methods and tools surrounding the definition, implementation, measurement and improvement of lateral processes in organizations. BPM emerged as a combination of mature organizational transformation concepts (Business Process Reengineering, Six Sigma, Total Quality Management) and process-supporting technologies such as workflow management, process analysis and automation suites, and service-enabled systems. The use of Business Process Automation technology promises significant efficiency gains for organizations through the automated coordination of activities, allocation of tasks to process participants and the integration of applications. The demand for BPM is further stimulated by opportunities related to ongoing process performance improvement, process outsourcing/off-shoring and the interest in process standards such as ITIL and SCOR. Not surprisingly, global analysts such as the Gartner Group have identified Business Process Management as the number one priority of CIOs for a number of years.

This course is part of the four-course concentration in Business Process Management & Service

Innovation as part of the MSIS program. It should be taken together with or after MIS 710 – Business Process Management & Innovation, as it complements the contents of MIS 710 by providing a more technical view on the implementation and support of business processes in organizations. While MIS 710 focuses on the translation of organizational strategy to process designs, this course outlines implementation and execution details, introduces students to supporting technology, and provides an in-depth treatment of change-management issues related to BPM projects.

The course primarily addresses the needs of public and private organizations with Process Management initiatives. It covers topics relevant for IT staff that is participating in BPM Projects, Business personnel involved in process modeling projects, and executives involved in process management and strategic development projects. The program is also suitable for IT organizations with BPM tool offerings and provides business-level education for sales-force personnel, technical staff, and consultants. The course makes use of real-world case studies to illustrate specific aspects of process mapping, automation, and evaluation, and to test student comprehension of the material.

Current students can choose MIS 712 as an elective in the Information Management concentration of the MS in Information Systems program.

Introduction to Course

This course leads students through the operational phases of the Business Process Management lifecycle, which consists of the stages *goal setting, process design, process implementation, process enactment and measurement,* and *process evaluation*. While MIS 710 focuses on the goal setting and design phases (including as-is modeling and to-be modeling), MIS 712 covers the implementation of these process models, the management of their execution, and related analytics operations.

Each of the phases is described in detail to encompass the principal activities, methods, tools and techniques applied in the respective phase. Students will learn to identify appropriate supporting technologies for the different phases of the life cycle, assess the role of standards, and gauge the organizational impact of process change management activities.

The modules – and the areas of focus for the course - are:
 – Module 1: Detailed Process Mapping for Implementation
 – Module 2: Technology Platforms for Process Automation
 – Module 3: Process Implementation and Roll-Out
 – Module 4: Managing the Run-Time, Business Activity Monitoring
 – Module 5: Post-Execution Evaluation and Continuous Improvement

Relationship of MIS 712 to the other courses of the BPM & SI concentration
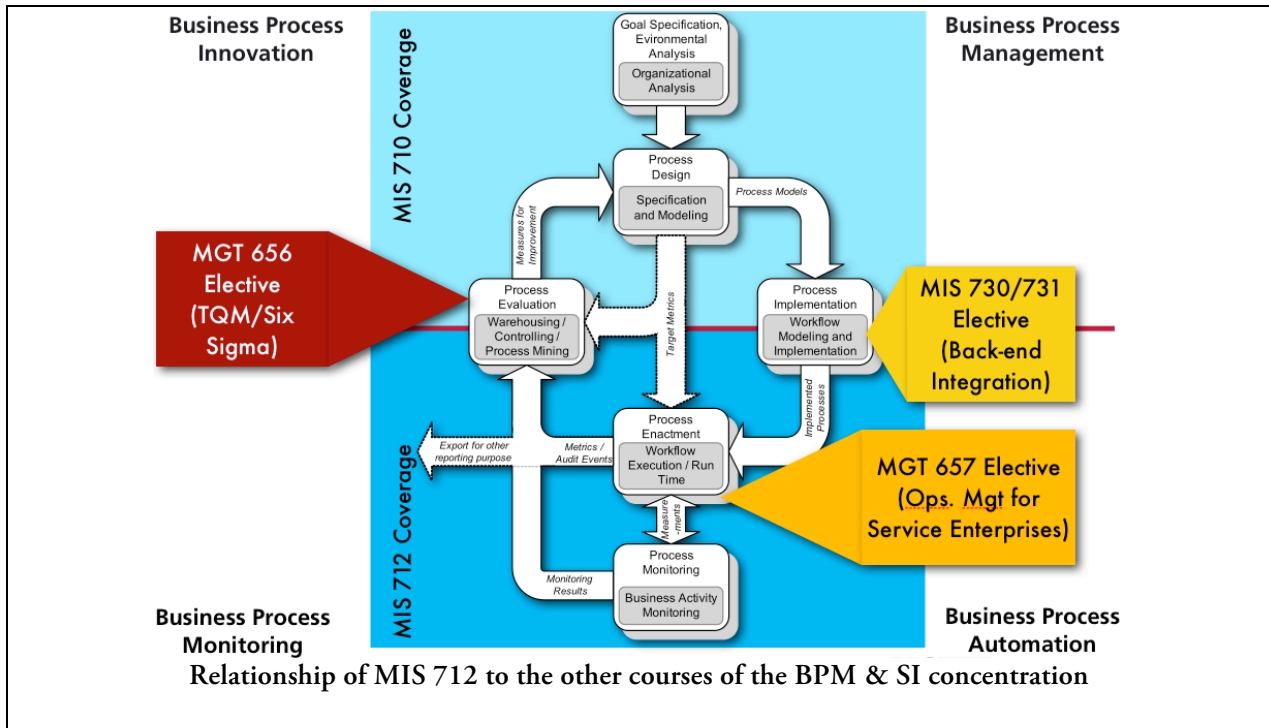
Relationship of Course to Rest of Curriculum

The BPM & Service Innovation curriculum expands and enhances the current offerings of the Howe School by focusing on a change management area that is predominantly populated by Information Systems professionals. It builds on the analysis techniques covered in MIS 620 – Analysis and Design of Information Systems and complements the content of MIS 710 – Business Process Management & Innovation. While MIS 710 addresses Business Process Management from a strategic perspective (how to translate organizational strategy into process design), MIS 712 addresses operational BPM topics (which technology is suitable for process support, how can processes be refined for implementation, implemented, and optimized.

Following MIS 710 and 712, students in this concentration take MIS 674 to apply BPM in a supply chain management context, followed by an elective.

As an elective in the BPM & SI concentration students can choose from:
– MIS 730 or 731 to study the information technology integration. While MIS 730 is application neutral, MIS 731 focuses on large-scale enterprise systems.
– MGT 657 for the management of operations in service enterprises
– MGT 656 to strengthen the continuous improvement aspect of the BPM lifecycle using Total Quality Management and Six Sigma
– MIS 800 to report on a research or real world BPM project via a thesis option

The course leverages the existing research program around BPM in the Howe School and uses partnerships with academics and industry to incorporate new research findings and technology into the curriculum.

Learning Goals

After taking this course:

1. Students will be able to model processes for subsequent implementation in Business Process Management Systems.
2. Students will be able to discern between technologies for human-centric process automation and system-centric process automation.
3. Students will understand the difference between Business Processes and Business Rules, and be able to select an appropriate information system.
4. Students will know the different phases of the process management lifecycle, supporting technologies, and how to transition between the phases of the lifecycle
5. Students will understand the technical capabilities of Business Process Management Systems, how they relate to concepts such as SOA and EAI
6. Students will be able to develop an implementation and integration strategy for processes that leverages organizational and technical capabilities of an enterprise
7. Students will improve their ability to communicate in group and presentation settings.

Pedagogy

- Lecture, reinforced through online discussion
- Case Studies
- Guest speakers from industry (if available)
- Hands-on student exercises
- Student individual and team presentations
- Readings from texts and selected relevant articles and publications

Required Text

– Harmon, Paul: Business Process Change. A Guide for Business Managers and BPM and Six Sigma Professionals. 2nd Edition, Morgan Kaufmann, San Francisco, ISBN-10: 0123741521 ISBN-13: 978-0123741523.

Required Readings (will be provided as PDF)

– Air Products and Chemicals Case Study, APQC 2005
– Becker, J., v. Uthmann, C., zur Muehlen, M., and Rosemann, M. "Identifying the Workflow Potential of Business Processes," 32nd Hawaii International Conference on System Sciences (HICSS 1999), IEEE, Wailea (HI), 1999.
– Bussler, C. "Policy Resolution in Workflow Management Systems," Digital Technical Journal (6:4) 1994, pp 26-49.
– Casati, F., Ceri, S., Pernici, B., and Pozzi, G. "Workflow Evolution," DKE (24:3) 1998, pp 211-238.
– Dourish , Paul; Holmes, Jim; MacLean, Allan; Marqvardsen, Pernille and Alex Zbyslaw: Freeflow: mediating between representation and action in workflow systems, Proceedings of the 1996 ACM conference on Computer supported cooperative work, p.190-198, November 16-20, 1996, Boston, Massachusetts, United States

- Endl, R., Knolmayer, G., and Pfahrer, M. "Modeling Processes and Workflows by Business Rules," 1st European Workshop on Workflow and Process Management (WPM'98), Zürich) 1998, pp 1998-1912.
- Hammer, Michael: The Process Audit. Harvard Business Review, April 2007, pp. 111-123.
- Leymann, F., and Altenhuber, W. "Managing business processes as an information resource," IBM Systems Journal (33:2) 1994, pp 326-348.
- Leymann, F., and Roller, D. "Workflow-based applications," IBM Systems Journal (36:1) 1997, pp 102-123.
- Mendling, J., zur Muehlen, M., and Pierce, A. "Standards for Workflow Definition and Execution," in: Process-Aware Information Systems. Bridging People and Software Through Process Technology, M. Dumas, W.M.P. van der Aalst and A.H.M. ter Hofstede (eds.), John Wiley & Sons, Inc., Hoboken, NJ, 2005, pp. 281-316.
- Nickerson, J.V., and zur Muehlen, M. "The Ecology of Standards Processes: Lessons from Internet Standardization," MIS Quarterly (30:Special Issue) 2006, pp 467-488.
- Raduescu, C., Tan, H.-M., Jayaganesh, M., Bandara, W., zur Muehlen, M., and Lippe, S. "A Framework of Issues in Large Process Modeling Projects," Proceedings of the 14th European Conference on Information Systems (ECIS 2006), Göteborg, Sweden, 2006.
- Schmidt, Kjeld: Of maps and scripts—the status of formal constructs in cooperative work, Proceedings of the international ACM SIGGROUP conference on Supporting group work: the integration challenge, p.138-147, November 16-19, 1997, Phoenix, Arizona, United States
- Vanderfeesten, I., and Reijers, H.A. "A Human-Oriented Tuning of Workflow Management Systems," International Conference, BPM 2005, 2005.
- WfMC "Terminology and Glossary, 3rd Edition," Workflow Management Coalition, Winchester (ID).
- zur Muehlen, M. "Evaluation of Workflow Management Systems Using Meta Models," 32nd Hawaii International Conference on Systems Sciences (HICSS 1999), IEEE, Wailea, HI, 1999.
- zur Muehlen, M. "Workflow-based Process Controlling - Or: What You Can Measure You Can Control," in: Workflow Handbook 2001, L. Fischer (ed.), Future Strategies, Lighthouse Point (Fl), 2000, pp. 61-77.
- zur Muehlen, M. "Organizational Management in Workflow Applications - Issues and Perspectives," Information Technology and Management (5:3) 2004, pp 271-291.
- zur Muehlen, M., Nickerson, J.V., and Swenson, K.D. "Developing Web Services Choreography Standards - The Case of REST vs. SOAP," Decision Support Systems (40:1) 2005, pp 9-29.
- zur Muehlen, M., and Rosemann, M. "Workflow-based Process Monitoring and Controlling - Technical and Organizational Issues," Proceedings of the 33rd Hawaii International Conference on System Sciences (HICSS 2000), IEEE, Wailea (HI), 2000.

Additional Readings (Optional References)

- Davis, R.: An Introduction to Business Process Modeling with the ARIS design platform: getting started with BPM, (1st ed.) Springer, New York, 2007.
- Dumas, M.; van der Aalst, W.M.P. and A.H.M. ter Hofstede (eds.): Process-Aware Information Systems. Bridging People and Software Through Process Technology, John Wiley & Sons, Inc., Hoboken, NJ, 2005

- – Jeston, John; Nelis, Johan: Business Process Management: Practical Guidelines to Successful Implementations. Butterworth-Heinemann, 2006, pp. 464, ISBN 0750669217
- – Khoshafian, S. Service-oriented Enterprises. Auerbach Publications, Taylor & Francis Group, Boca Raton, FL, 2007, pp. xxv, 438 p.
- – Scheer, A.-W. Business process change management : ARIS in practice Springer, Berlin ; New York, 2003, pp. xiii, 290 p.
- – van der Aalst, W.M.P., and van Hee, K. Workflow Management. Models, Methods, and Systems MIT Press, Cambridge, MA, USA, 2002.
- – BPTrends.org
- – International Journal of Business Process Management

Assignments

Assignments	Due
Individual Assignments	Week 3-7
Midterm Project	Week 8
Team Project	Week 14

Grading

Grading for each deliverable will be done on a scale from 0-100. The final grade will be computed based on the weighting of the deliverables according to the following resolution:

Points (100 scale)	Grade
91-100	A
76-90	B
50-75	C
0-49	F

Types of Assignments	Final Grade Weight
Individual Assignments	20
Midterm Project	30
Final Project	30
Reliability and Participation	20
Total Grade	**100**

Ethical Conduct

The following statement is printed in the Stevens Graduate Catalog and applies to all students taking Stevens courses, on and off campus.

"Cheating during in-class tests or take-home examinations or homework is, of course, illegal and immoral. A Graduate Academic Evaluation Board exists to investigate academic improprieties, conduct hearings, and determine any necessary actions. The term 'academic impropriety' is meant to include, but is not limited to, cheating on homework, during in-class or take home examinations and plagiarism."

Consequences of academic impropriety are severe, ranging from receiving an "F" in a course, to a warning from the Dean of the Graduate School, which becomes a part of the permanent student record, to expulsion.

Reference: *The Graduate Student Handbook, Academic Year 2003-2004 Stevens Institute of Technology, page 10.*

Consistent with the above statements, all homework exercises, tests and exams that are designated as individual assignments MUST contain the following signed statement before they can be accepted for grading. _____

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination. I further pledge that I have not copied any material from a book, article, the Internet or any other source except where I have expressly cited the source.

Signature _____   Date: _____

Please note that assignments in this class may be submitted to www.turnitin.com, a web-based anti-plagiarism system, for an evaluation of their originality.

Course Schedule

#	Title	Description	Assignment Due	Reading
1	**Introduction**	*What will you learn?* Overview of the course Overview of the Process Management Lifecycle Review of Process Modeling techniques		– Harmon Ch. 8,9 – Harmon Ch. 1,2 (optional background)
2	**Process Design for Implementation**	*What is the difference between an analytical and an implementable process model?* *How are graphical models translated to XML?* *How do computers understand processes?* Components of Workflow Models From BPMN to XPDL		– Becker (1999) – Leymann, Altenhuber (1994)
3	**Implementing Process Designs**	*How do you change the way people work?* Change Management Process Implementation Alternatives: – Manual Implementation – CSCW Systems – ERP Systems – Workflow & Business Process Management Systems – Process Outsourcing	Process Design 1	– Harmon Ch. 10, 15
4	**Automating Processes**	*How do we support processes with IS?* *What are the components of a process-aware application?* BPMS and Workflow Systems Components and Architecture	Process Design 2	– Harmon Ch. 16 – Georgakopoulos (1994) – WfMC (1999) – zur Muehlen (1999) – Leymann, Roller (1997)

#	Title	Description	Assignment Due	Reading
5	**Rules vs. Processes**	*How do we capture decision-making activities?* *How do we deal with unstructured work?* BPMS and BRMS Integrating ECA rules with processes Capturing Unstructured Processes	Process Analysis	– Harmon Ch. 10 – Casati (1998) – Dourish (1996) – Endl (1998) – Schmidt (1997)
6	**Managing the Run-Time**	*How do we ensure efficient processes?* *How do we know how well our processes are performing?* Process Metrics Business Activity Monitoring Business Intelligence Process Dashboards	Process/ Rule Analysis	– Harmon Ch. 11 – zur Muehlen, Rosemann (2000) – zur Muehlen (2002)
7	**Task and Resource Allocation**	*How do you ensure that the best performer does the job?* Organization models Task allocation strategies Mobile performers External Participants	Process Metrics	– Bussler (1994) – zur Muehlen (2004) – Reijers (2007)
8	**Midterm Exam**		Midterm	
9	**Case Study: Designing Technology Support for a Process-Oriented Organization**	*What did you understand and not understand?* Exam feedback Case Study		– Air Products Case Study
10	**Standards for Business Process Management**	*What standards exist in the BPM space and what is their significance?* WfMC Reference Model Process design standards: BPMN, IDEF Interchange standards: XPDL, BPEL Integration standards: Wf-XML, WS-CDL		– WfMC (1999) – zur Muehlen (2005) – Nickerson, zur Muehlen (2006) – Dumas Ch 12
11	**Post-Execution Evaluation**	*How do you evaluate your new processes?* Business Intelligence based on Process Data Process Mining	Final project sketch	– van der Aalst (2004) – Vanderfeesten, Reijers (2005)
12	**Business Process Management Maturity**	*How do you build sustainable BPM initiatives?* BPM Maturity Models BPM Centers of Excellence Organization Structure of BPM Efforts	Final project rough draft	– Hammer (2007) – Rosemann, de Bruin, Powers (2007)

#	Title	Description	Assignment Due	Reading
13	**Advanced Topics: Process Simulation and Data Mining**	*What else can we do with process audit trails?* Predictive Process Simulation Data Mining based on Process Data Integration of Process information into Strategy Maps		
14	**Final Presentations**	Students present their projects to the class	Final project due	

All assignments are due as noted. In fairness to others, late work will be penalized 10% per week overdue.