Course Syllabus
ETM 567/667 -- Knowledge Management

Instructor: Dr. Charles Weber (WeberCM@gmail.com)

"Knowledge is Power” Francis Bacon

In the 21st Century the competitive advantage of individuals, organizations, firms, regions and nations to a large degree depends on managing knowledge.

This course introduces the students to some of the critical issues and debates in knowledge management. The course stresses the human and business aspects of knowledge management. It will be taught from the perspective of the user of technical tools and methods.

All graduate students are eligible to take the course. There are no technical prerequisites.

The following topics will be covered in the course:

- **Human cognition from the technology manager’s perspective (10 hours)**
  - Knowledge creation at the level of the individual, group and organization.
  - The nature of technical problem solving
  - Formulating knowledge
  - Explicit and codified knowledge
  - Tacit, implicit and sticky knowledge
  - Technological versus pre-technological knowledge
  - Experts and expertise

- **Managing organizational knowledge, learning and intellectual capital (12 hours)**
  - Developing metrics for knowledge, learning and intellectual capital
  - Knowledge quality
  - Organizational knowledge creation theories and their application.
  - Experimentation strategies for knowledge creation
  - Knowledge diversity and knowledge integration
  - Multi-dimensional organizational learning
  - Knowledge transfer
  - Value-of-ownership models

- **Knowledge Management Tools (10 hours)**
  - Diagnostic technologies and their value
  - Data management, information technology and organizational productivity
  - Web-centric knowledge management
  - Global, joint, simultaneous problem solving in a value network
  - Content Analysis

- **Applications of knowledge management (8 hours)**
o Case Study: Managing knowledge in a semiconductor process development effort
o Knowledge management in manufacturing and the service sector

Students' grade will be determined by three factors:

- A paper on a topic pertaining to knowledge management (40%)
- An in depth analysis of a topic that pertains to knowledge management and is approved by the instructor (40%).
  - The students will present their analysis in class and lead a discussion on the subject matter.
  - The in depth analysis can be performed by a team of students or an individual basis.
  - The in depth analysis should include a study of literature and an illustration of a practical application.
- Participation in class discussion (20%)

Knowledge Management Reading List

Please retrieve all of the following material from the specified sources.

Required – please obtain by Week 2


Morris, Jason, “Expert Systems Glossary” (Blackboard)


Introduction to Expert Systems: MYCIN, pp. 1-8. (Blackboard)


Yield learning and the sources of profitability in semiconductor manufacturing and process development
Weber, Charles (Department of Engineering, Portland State University) Source: IEEE Transactions on Semiconductor Manufacturing, v 17, n 4, November, 2004, p 590-596 (PSU Library or Blackboard)


Required – please obtain by Week 4


Quantifying the value of ownership of yield analysis technologies, Weber, Charles (MIT Sloan School of Management); Sankaran, Vijay; Tobin Jr., Kenneth W.; Scher, Gary Source: IEEE Transactions on Semiconductor Manufacturing, v 15, n 4, November, 2002, p 411-419 (Blackboard or PSU Library)

The role of self-directed work teams in a concurrent, multi-generation semiconductor process development effort, Weber, Charles (Hewlett-Packard Co); Rosner, Jeff; Chang, Patrick Source: IEEE/SEMI Advanced Semiconductor Manufacturing Conference and Workshop, 1997, p 322-327 (Blackboard)

An integrated framework for yield management and defect/fault reduction, Weber, Charles (Hewlett-Packard Co); Moslehi, Bizhan; Dutta, Manjari Source: IEEE Transactions on Semiconductor Manufacturing, v 8, n 2, May, 1995, p 110-120 (Blackboard)

Optional

