Stevens Institute of Technology
Howe School of Technology Management

Syllabus
MIS 630ST: Data and Knowledge Management

Semester Fall 2009	**Day of Week/Time** Sat: 8:30 pm – 11:00 pm Room B210 **Meeting Dates**: 1) Sept. 12 2) Sept. 19 (religious holiday No class) 3) Sept. 26 4) Oct. 3 5) Oct. 10 6) Oct. 17 7) Oct. 24 8) Oct. 31 9) Nov. 7 10) Nov. 14 11) Nov. 21 12) Nov. 28 13) Dec. 5 14) Dec. 12
Professor Name: Dr. Ira Sack **Office address:** Howe School of Technology Management, Management Department Babbio 418 Hoboken, NJ 07030 **Office phone number:** (201) 216-8229 **E-mail address:** isack@stevens.edu *E-mail is preferred form of communication!*	Office Hours: by appointment Class Website: https://elearn.stevens.edu/webct

Overview

MIS 630 is about understanding, precise specification, and using (that is, critical examination and evaluation) of more traditional (IT-oriented) and less traditional (business-oriented) frameworks for data, information and knowledge management. We will start with an overview of database management and consider organizational, managerial, and business user perspectives applied to IT and business areas. The course will *emphasize simplicity and elegance* and will outline a framework from which you can better understand (business, personal, and professional) problems, clearly communicate this understanding to yourselves and others, and design high quality solutions.

Principal topics include: data quality; database management (including relational DBMSs and normalization), data modeling for business and organizational systems, metadata and

the semantics (meaning) of data, ER modeling, database integrity, distributed database systems, data integration, data administration, *common concepts* – the importance of *abstraction* (separation of concerns, division of labor), precision, and explicitness for development of information services and decision making of data, information and knowledge and their relationships; IT alignment contexts in an SOA environment, dimensions of knowledge; information continuum, knowledge binding.

The course includes:

- An overview of database management with an emphasis on the essentials of the relational and ER data models;
- outlines of several high-quality frameworks that have been recently successfully used in data, information and knowledge management – the facts and some distilling of structures;
- a discussion of the fundamental problems that have existed in these areas – "what has been wrong and why",

Prerequisites: MGT501, MGT698, MGT679 (Formerly MGT771) or equivalent.

Learning Goals

After taking this course, the student will be able to:
- Develop and critique *ER and other data models*
- Design simple normalized *relational database models*
- Analyze and improve aspects of *data quality* in a business context

Pedagogy

The course will employ readings, class discussions, and both student individual and team research projects. The student will be responsible to participate in helping his/her team prepare a two-part team project report.

Required Text(s)

Kroenke and Auer, *Database Concepts (Fourth Edition),* Prentice Hall, 2010

Required Readings

Readings will be assigned for each week. See course schedule.

Additional Readings

Additional and optional readings will be posted on elearn (WEBCT).

Assignments

Detailed Outline of Class Meetings:

Lecture	*Themes*	*Required Readings/Assignments*
01.	Introduction, Overview, and Course Requirements	
02. .	An overview of database management, I ***Formation of teams**	Kroenke: Chapt. 1 pp. 3-19
03. -.04	Relational Model including normalization	Kroenke: Chapt. 2 pp. 55-77,
05.	ER modeling	Kroenke Chapt. 4 pp. 219 -242
	*ER modeling + Normalization Assignment Posted on WebCT (due week 8) Team Assignment: Part 1 Posted	
06.	Data Quality in Context	Strong: Data Quality in Context
07.	Data Warehouses and Business Intelligence, Knowledge Workers	Slides (WebCT)
08.	Knowledge Binding	Morabito, Sack and Bhate: **"The Architectural Continuum and an** Introduction to Knowledge Binding"
09. - 10.	Data, Knowledge and Information	Morabito, Sack and Bhate: Chapter 12

*Team Assignment Part 2 Posted- Week 9
*Final Project Posted on WebCT–Week 9

11.   Knowledge Formulation and   Slides (WebCT)
                Knowledge-based Systems/data mining

12.   Newer Data and Information Models   Berners-Lee: The SemanticWeb
         (Semantic Web, ontologies, distributed network information systems,
          SOA/ Master Data Management, Extended ER models)
          *Team Presentations

13.   ***Final Project Presentations**:
          Individual class presentations on non-traditional data, information and knowledge

Assignment	Grade Percent
Class Participation, Quizzes and Responsibility	**5%**
ER + normalization, assignment (individual)	**25%**
Team Assignment Part 1 (group)	**20%**
Team Assignment Part 2 (group)	**20%**
Final Project (individual)	**30%**
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/Teacher Evaluation

All course teacher evaluations are conducted on-line. You will receive an e-mail one week prior to the end of the course informing you that the survey site (https://www.stevens.edu/assess) is open along with instructions for accessing the site. Login using your Campus Pipeline (email) 'CPIPE' username and password. This is the same username and password you use for WebCT. Simply click on the course that you wish to evaluate and enter the information. All responses are strictly anonymous. We especially encourage you to clarify your position on any of the questions and give explicit feedbacks on your overall evaluations in the section at the end of the formal survey which allows for written comments. We ask that you submit your survey prior to the last class.

Course Schedule

Week	Subject	Readings/Assignments
1. 9/2	Introduction, overview and course requirements	Overall structure of course including general description of assignments
2. 9/9	An overview of Database Management I	Read Kroenke: Chapt. 1 pp. 3-19 ***Formation of Teams for Team Assignments.**
3. 9/16	Relational Model	Read: Kroenke: Chapter 2 pp. 55-77,
4. 9/23	Normalization	No new reading assignment. Reread!: Kroenke: Chapter 2. Pp 55 -77
5. 9/30	ER modeling	Read Kroenke Chapter 4 pp. 219 – 242 ***Team project part 1 assigned, may be turned in any time on or before Dec. 3.**
6. 10/7	Data Quality	Read Strong et al.: "Data Quality in Context" Other Postings on Data Quality on WebCT ***Team project part 2 assigned may be turned in any time with or after team project part 1 is submitted but no later than Dec. 3.**
7. 10/14	Data Warehouses and Business Intelligence	Read Kroenke: Chapter 8
8. 10/21	Knowledge Construction	Read Morabito, Sack & Bhate: "The Architectural Continuum and an Introduction to Knowledge Binding"

Week	Subject	Readings/Assignments
09. 10/28	Data, Knowledge and Information - Part I	Read: Morabito, Sack & Bhate: Chapter 12 pp, 199 – 208
10. 11/4	Data, Knowledge and Information - Part II	Read: Morabito, Sack & Bhate: Chapter 12 pp. 208 – 229
11. 11/11	Knowledge, Formulation and Knowledge-based Systems/Data mining	Instructor Slides (WebCT) + Reading to be decided and posted on WebCT
12. 11/18	Newer Data and Information Models	Read: Tim-Berners-Lee et al.: "The Semantic Web"
13. 12/ 3	**Team presentations**	Team class presentations on non-traditional data, information and knowledge management
14. 12/9	**Final Individual Project Presentations II**	*Last day to submit Team Projects* Individual class presentations on non-traditional data, information and knowledge management