Course Outline: Data Modeling and Database Design

Instructor: Andy Oppel **Email:** aoppel@berkeley.edu

Evening/Weekend Phone: (510) 864-2299

Day: Tuesdays **Time:** 6:30 - 9:30 p.m.
Location: San Francisco (425 Market St., Room 805 except 6/5)

Course Web Site: http://www.andyoppel.com/**X4025**

Course Objectives: At the completion of the course, the student will be able to do the following:

- Explain how data modeling and data mapping are used to represent expert business knowledge
- Incorporate the details of data entities, attributes and relationships (associations) into data models that represent management information needs
- Transform data models into physical database designs suitable for transactional databases as well as data warehouse (analysis) databases.

Recommended Course Prerequisites: X408 Concepts of Database Management Systems
--OR-- X409.1 Introduction to Database Management Systems

Text: *Data Modeling: A Beginner's Guide*
Andy Oppel
2010, McGraw-Hill Professional, ISBN 978-0071623988

Software Requirements: There is no specific software requirement for the course. However, students will find access to a relational database management system useful for testing database designs, and a drawing or data modeling application for the development of project assignments.

Grading:

Assignment 1	25%
Assignment 2	25%
Assignment 3	25%
Class Participation	25%

Schedule of Assignments & Topics	**Date**
1. Class Meeting 1	03/27/2012
1.1. Summary of Course and Objectives	
1.2. Chapter 1: Introduction to Data Modeling	
1.3. Chapter 2: Relational Database Components	
	***** no class on 04/03/2012 *****
2. Class Meeting 2	04/10/2012
2.1. Chapter 3: Data and Process Modeling	
2.2. Class Exercise on Supertypes and Subtypes	
3. Class Meeting 3	04/17/2012
3.1. Chapter 4: Organizing Database Project Work	
3.2. Chapter 5: Conceptual Data Modeling	
3.3. Class Exercise on Conceptual Data Modeling	
4. Class Meeting 4	04/24/2012
4.1. Chapter 6: Logical Database Design Using Normalization	
4.2. Class Exercise on Normalization	
4.3. Assignment 1 Due	
5. Class Meeting 5	05/01/2012
5.1. Chapter 7: Beyond Third Normal Form	
5.2. Class Exercise on Advanced Normalization	
6. Class Meeting 6	05/08/2012
6.1. Chapter 8: Physical Data Modeling	
7. Class Meeting 7	05/15/2012
7.1. Chapter 9: Alternatives for Incorporating Business Rules	
7.2. Class Exercise on Incorporating Business Rules	
7.3. Assignment 2 Due	
8. Class Meeting 8	05/15/2012
8.1. Chapter 10: Alternatives for Handling Temporal Data	
8.2. Class Exercise on Handling Temporal Data	
9. Class Meeting 9	05/29/2012
9.1. Chapter 11: Modeling for Analytical Databases	
9.2. Chapter 12: Enterprise Data Modeling	
9.3. Class Exercise Modeling Analytical Databases	
10. Class Meeting 10	06/05/2012
10.1. Class Presentations of Assignment 3	* Room 803 *