Syllabus

COMP 520 Database Design
Tuesday 9 --- 12
John Blumberg

Course Description

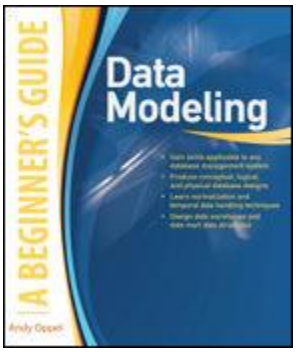
An introduction to developing database applications with business users. Topics include fundamentals of the relational model, structured query language, data modeling, and database design and implementation. Students use a variety of database management system tools to model, code, debug, document, and test database applications. Students complete real-world team projects.. 4 cr.

Objectives

Upon completion of this course, students should be able to:

1. Design and build database applications using database management tools
2. Model databases using normalization and represent database models using the unified modeling language (UML)
3. Write, run, debug, and test database queries written in a structured query language (SQL)
4. Design and prototype data entry and reporting features for a database application developed as a team project
5. Use open source collaborative software and content and configuration management systems to develop a team project
6. Communicate timely
7. Work in a team effectively
8. Argue for open source collaboration practices.

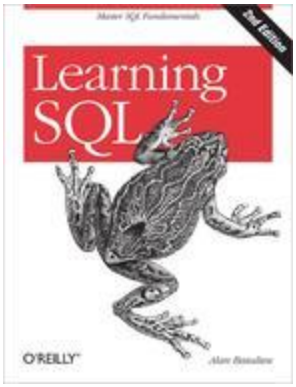
Textbooks



Data Modeling

- **By:** Andy Oppel
- **Publisher:** McGraw-Hill

- **Pub. Date:** December 21, 2009
- **Print ISBN-10:** 0-07-162398-1
- **Print ISBN-13:** 978-0-07-162398-8
- **Pages in Print Edition:** 361



Learning SQL, 2nd Edition

- **By:** Alan Beaulieu
- **Publisher:** O'Reilly Media, Inc.
- **Pub. Date:** April 20, 2009
- **Print ISBN-13:** 978-0-596-52083-0

The SQL textbook is also available **online, free of charge**, through the digital databases of the UNH library. The Data Modeling book must be purchased from Amazon or Google Store or UNH Bookstore.

- Go to MyUNH [Blackboard], log in, click on the **Library** tag
- Click on **Connect to Databases**
- Click on **S-T** index range, and then on **Safari Books Online**.
- On the Safari Books Online home page, type in the search box the name of any of these books.

Software Tools

- MySQL server (Community Edition)
- MySQL command line utility (comes with the MySQL server)
- MySQL Workbench
- Violet UML editor

Collaboration Tools

- A video lecture series https://class.stanford.edu/ . The instructor, Jennifer Widom, is the chair of the CS department at Stanford.
- Tom Jewett's DB Design with UML and SQL 3rd edition at http://www.tomjewett.com/dbdesign/dbdesign.php

Student Work and Class Activities

Learning in this class depends on active participation and open collaboration in and outside class with peers, class-linked tutor, course instructor, other faculty members, and external partners.

Blending In- and Outside Class Learning

The course has 15 weekly 3-hour class meetings. When in class, learning occurs through direct interactions among students and instructor around questions and problems prompted by the assigned reading, assignments, and project work. Class materials and learning resources are made available online. Students must study and practice with them to prepare for in-class learning activities. The instructor is a lecturer, and a learning coach, who prompts and facilitates questions and answers, guides lab activities, and assesses students' preparation.

Learning results from doing the reading and homework assignments, taking the exams, participating on the class forum, working on the team project, and reflecting on individual progress.

Other rules of the game are spelled out in the Policies section, including attendance and use of digital devices during class period. The complete set of policies is in the *UNH Student Right, Rules, and Responsibilities* handbook.

Collaboration, Communication, and Teamwork

Students are expected to lead and participate in problem solving activities in- and outside class. Peer instruction learning model is used to support this type of activities.

- Outside class problem solving activities via assigned homework problems in Blackboard.
- In-class problem solving activities make up the whole class period.
- Pair programming is used in class for UML, SQL, and project-related activities.

Reading Assignments

Reading assignments are given weekly and must be completed prior to class. Like lab assignments, reading assignment are not graded. However, student learning is seriously compromised if assigned work is not completed prior to class.

Homework Assignments and Projects

There is a total of **7 homework assignments (4 points each)**. There are **4 project iterations (6 points each)**. Students work solo on the homework assignments and in teams on the course projects..

Team projects are real-world projects that solve database problems raised by real clients. The clients could be non-profit organizations, state agencies, businesses, or individuals, such as

researchers, scientists, scholars, educators, or community members involved with IT-related projects.

Assignment and project work products include data models, database designs, SQL source code, documentation, self evaluations, status reports, etc. Students attach assignment work products to the online assignments . Project work products are uploaded to Blackboard.
No late submissions are accepted.

Laboratory Assignments

All classes include lab activities. Pair programming method is used to do lab assignments.

Class Participation

Each student is expected to attend class, ask questions, answer questions and work on in class exercises. **(4 Points).**

Examinations

There are two in-class exams, mid-term and final (22 points each). The midterm and the final may have two parts:

1. Closed examination part is a set of short questions (fitting on one page) to evaluate mastery of basic concepts and techniques. Students do not have access to any resource while taking this portion of the exam.
2. Open examination part evaluates student proficiency in applying concepts and techniques to solving new problems. Textbook, notes, course site, and online course materials can be used for this part.
3. OR, each test may be open book Do At Home.

No collaboration is allowed while taking the examinations.

Grading

- Homework assignments: 28 points
- Examinations: 44 points
- Team Project: 24 points
- Class Participation. 4 points.

Schedule

This is an outline of a tentative. See Schedule in Blackboard for the up-to-date schedule.

Class Date	Topic	Due	Have Read
1/23/2018	Intro & basics & MySql		SQL 1 & DATA 1
1/30/2018	Relational Model	Assgnd HW one	DATA 2 & 3
2/6/2018	Relational Model	Assgnd HW two	DATA 4 & 5
2/13/2018	Entity Relationships	Assgnd HW three	DATA 6 & 7
2/20/2018	Normalization		
2/27/2018	Data Model Practice SQL	Assgnd HW four	SQL 2
3/6/2018	Data Model Practice SQL		
3/13/2018	No Class	Assgnd HW five	
3/20/2018	Cover Test & SQL		Midterm due 3/19
3/27/2018	Projects & SQL	Assgnd HW six	SQL 3, 4 & 5
4/3/2018	Projects	Assgnd HW seven	SQL 7 & 8
4/10/2018	Projects	Project One	SQL 9 & 10
4/17/2018	Projects		SQL 13 & 14
4/24/2018	Projects	Project Two	
5/1/2018	Projects	Project Three	
5/8/2018	Final Test Time	Project Four	Final Test Due 5/12

Policies

Attendance

Attendance is taken every class. Students are responsible for attending all classes and expected to abide by the University Policy on Attendance (as stated in the *UNH Student Rights, Rules, and Responsibilities*). Students who miss a class, have the responsibility to:

- Let the instructor know via email about the circumstances for missing that class prior to the next class.
- Check the course site and class information and contact their peers to get informed about class topics and activities.
- Make sure that missed work is made-up as soon as possible.

Late Submissions and Make-Up Exams

Policy for late make-up exams is very strict and applies only in exceptional cases of student illness, accident, or emergencies that are properly documented. A late submission or make-up exam may be granted only if the student:

- Emails prior to the deadline and
- Explains the circumstances that have prevented the student from meeting class requirements.

Failing to comply with these rules results in no credit for the late submission or missed exam.

Homework and Project papers may be submitted late with a 20% penalty the first late week and 10% each week there after.

Academic Honesty and Collaboration Policy

Members on the same team are required to fully collaborate to do the assigned work, whether homework assignment or project iteration.

- Collaboration is limited to discussing and reviewing assignment specifications and clarifying the understanding of what concepts and techniques could be applied to solve the assignment's problems.
- Homework or project submissions must be entirely the work of the individual student and may not include work submitted by other students.

Failing to comply with these rules is considered a violation of the academic honesty policy. There are very serious repercussions if you deviate from the academic honesty policy:

- The penalty for the first occurrence of an instance of academic dishonesty and plagiarism is no credit for the assignment in question. The Associate Dean will be immediately notified of the incident.
- The second attempt is penalized with failing the course.

No collaboration is allowed while taking the examinations. Cheating on examinations is penalized with failing the course.

A Note on Electronics:

My classes are an EFZ [Electronics Free Zone]. On this I am serious!!! The only use for computers during this class is for Violet UML or MySQL work.

Cell Phones: Cell phones that are turned off are welcome. If you expecting an important call, let me know, keep your phone on vibrate, and when it rings leave the room quietly. If that can not be done because of the situation, then you should probably not be in school.

Computers: Your personal notebook, laptop, PDA, Blackberry or whatever is welcome in my classroom if and only if it is turned off. During class lab time you are welcome to use your own computer to perform the hands-on exercises if you have the proper software and files.

Other WizBang Gadgets: Just leave them in the car or in your book bag, unless you wish to do a "show and tell" to the entire class.

Other Issues: Texting, calling, messaging, emailing or the like information and answers to other students during tests, quizzes or laboratory hands-on exercises is cheating and will be handled as such.