

287 Business Database and Database Marketing Winter 2019

University of California, Davis
Graduate School of Management

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Monday 6:30-9:30pm, 2310 Gallagher Hall (1/7, 1/14, 1/28, 2/4, 2/11, 2/25, 3/4, 3/11, 3/18)
This is a joint class for MGT, MGP and MPAC.

Course Description

This course aims to provide a practical introduction to the fundamental principles of database management systems. After taking this course, students will be able to transform daily business activities into a database system from which information can be extracted, write SQL queries to extract information from the database, and understand some concepts of database marketing. Students will design and deploy a database solution using Microsoft SQL Server Express. A database containing purchase transactions will be available for students to design queries to answer business questions. Students will also learn how to connect databases to the data visualization tool Tableau and visualize database query results within Tableau.

Intended Audience and Prerequisites

The course is designed mainly for students who have no or very limited database background and are eager to learn how to set up his/her own database from scratch, write SQL queries to answer questions. Students with adequate SQL knowledge are **STRONGLY discouraged** from taking this class due to the large size of the class. No prerequisite is required for taking this course.

Software:

We will use the Microsoft SQL Server (the free Express edition) to build our databases and execute SQL queries. We will also use Tableau to visualize the results of the database queries. No programming skill is needed.

IMPORTANT: Every student **MUST** have a laptop with Windows OS before the third class (1/28). Microsoft SQL Server does not support Mac OS. Also, it's better to have a PC laptop running Windows instead of installing Windows on Mac which could have issues.

Textbook:

- Required:

SQL in 10 Minutes, Sams Teach Yourself (4th Edition)

By Ben Forta

Publisher: Sams Publishing

ISBN-10: 0672336073

ISBN-13: 978-0672336072

- Optional Book if you are interested:

Data Analysis Using SQL and Excel (2nd Edition) (More advanced SQL applications)

Gordon S. Linoff

Publisher: Wiley, December 14, 2015

ISBN-10: 111902143X

ISBN-13: 978-1119021438

For Tableau, it's more convenient to follow online videos provided by Tableau

(<https://www.tableau.com/learn/training>).

Grading:

Components	Grades
Class Participation	5%
7 Homework Assignments	65%
Term Project (Phase 1 report: 6%; Meeting: 3%; Final report: 16%; Presentation/poster: 5%)	30%

Class Participation: Class participation is evaluated by in-class exercises to see how well you have paid attention in class. There is one multiple-choice exercise in lectures 2~6. If your answer is correct, you earn 1 point, if not correct, you earn 0.5, and you earn 0 if you are absent. You can't make up for a missing class.

Canvas: All materials I need to hand out to you will be distributed via Canvas. All deliverables need to be submitted via Canvas.

Homework Assignments: There are 7 homework assignments. Because the solution to the homework will be posted on Canvas or discussed in class on the due date, late homework will not be accepted.

Groups: I will post a sign-up sheet for you to self-select your group (in Homework 1). A group will work together on the term project, and some questions in the homework assignments.

Peer Evaluation: Peer evaluation points will be allocated for the project and the homework assignments requiring group work.

Term Project

The term project is intended to provide you with valuable *hands on* experience in designing and implementing a *real world* database application. In this project, you should identify an application and develop a database system for it. If you are not able to find a proper application, you should come and talk to me before you choose anything else. You should have real data to populate your database. If you can't find a proper real data set which can be mapped into at least 5 tables in the database, you can design and implement a conceptual database, and then generate data for the tables, and then use a simpler real data set (which may not correspond to more than one table) to write queries to get the insights from the data.

The project has 2 phases.

Phase 1: Database design

- 1, Pick an application, describe the application and the data you will populate the database with.
- 2, Draw an Entity-Relationship diagram for the application. Indicate the assumptions and constraints of the ER diagram. Convert the ER diagram to well-structured tables. Discuss how to map the data to the tables.
- 3, Discuss how to convert the real world data you found online (e.g. Kaggle.com) to the tables in your design. If the real world data you found can't be mapped to at least 5 tables, discuss the possible questions you can answer using the real world data.
- 4, Submit your phase 1 report covering 1, 2 &3.

Note:

- 1, The application you pick has to have some complexity. You need to have at least 5 tables.
- 2, The ER diagram can be easily drawn in Microsoft PowerPoint or Word. Electronic version of the graph is required.

Phase 2: Implementation in Microsoft SQL Server, Project meeting with me, Final report and class presentation/poster.

- 1, Properly refine your phase 1 according to my suggestions. You are allowed to make other changes to phase 1 if desirable.
- 2, Implement the tables in Microsoft SQL Server.
- 3, Populate the tables. If you have real data for the 5+ tables in your database, that'll great. If not, make up some data for the tables.
- 4, You are required to design queries to address 5 problems (or answer 5 questions). Some of the problems can be addressed with a single query, and some will need to be addressed with a series of queries. Implement all the queries in Microsoft SQL Server. You will be graded based on the complexity of the problems/queries, and the insights you can obtain from the queries.
- 5, If your queries are not based on real data, please also find a simpler real data set to convert to a database, and write queries to answer 3 questions based on this real data, then discuss the insights behind the queries and results. Use Tableau to visualize some query results.
- 6, Meet with me to discuss your progress.
- 7, Submit final project report. The final report should properly integrate all the pieces you have done. In the report as well as the class presentation/poster, you should describe the business problem you are addressing, the challenges you encountered, the design, the insights behind the queries, and the potential uses of the database.

8, Class presentation or Poster. I will select several projects covering a variety of topics to be presented in class. The rest of the projects will be demonstrated via posters.

Class Schedule:

Date	Topic
1 (Jan 7)	Introduction
2 (Jan 14)	Database Conceptual Design – Entity Relationship Diagram
3 (Jan 28)	Converting ER diagram to database tables
4 (Feb 4)	SQL I
5 (Feb 11)	SQL II
6 (Feb 25)	Database marketing via queries – RFM Segmentation
7 (Mar 4)	Database marketing via queries – Building Customer Signatures (online lecture, project meeting in class)
8 (Mar 11)	Data Visualization using Tableau (online lecture, project meeting in class)
9 (Mar 18)	Term project presentation & Poster

The content of Lectures 7 and 8 is delivered via videos. During the class time of Lectures 7 and 8, I will meet with individual groups to discuss the progress of the group project.

Due Dates:

	Due Date
Homework 1 (2 points)	Jan. 14
Homework 2 (10 points)	Jan. 28
Homework 3 (10 points)	Feb. 4
Homework 4 (11 points)	Feb. 11
Project Phase 1 (6 points)	Feb. 18
Homework 5 (11 points)	Feb. 25
Homework 6 (10 points)	Mar. 4
Project meeting with me (3 points)	Mar. 4 or Mar. 11
Homework 7 (11 points) cover Lectures 7&8	Mar. 13
Project Final Report (16 points) & Presentation/poster (5 points)	Mar. 18

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