University of California, Davis **Mehul Rangwala**
Graduate School of Management

MGB-287 - Business Database and Database Marketing (Winter 2019)

INSTRUCTOR: Mehul Rangwala mrangwala@ucdavis.edu

INSTRUCTOR OFFICE HOURS:
Short Response: Almost whenever you need me – before class, after class, during the week with appointment.
Long Response: I will stay back and be available after each class meeting as long as the students need. I encourage you to use this time to ask questions or review any part of the material that you are having difficulty with. If the time after class is not convenient, then a separate appointment can be arranged for a meeting either in-person or over Zoom. You can also ask me questions anytime without appointment via email, text, or phone. It is critical that you clearly understand the concepts covered in the course. Getting your questions answered and helping you understand the material, exercises, and homework are my topmost priorities.

COURSE DESCRIPTION:
Billions of transactions – cash, credit card, phone calls, website visits – occur every day. A large majority of this data are now stored in relational databases. Relational databases are among the most sophisticated and powerful software products in the world. They not only act as repositories for big data but also help business managers convert data into insights needed to drive business strategies. Structured Query Language (SQL) is the lingua franca for these relational databases. In this era where big data drives business decisions, it has become important for business managers to have an understanding and some experience with the concepts of database management and SQL. The intersection of more powerful information technology and contemporary methods to target specific customers is of great interest to marketing managers. The techniques of database marketing allow businesses to use the information stored in the relational databases to generate personalized communications in order to promote the product or brand. This course aims to introduce the concepts of database management, SQL, and database marketing and is divided into three sections:

Section 1:
The first section will start with an introduction to the hierarchical, network, and relational database models and highlight the differences among them. Students will then learn the fundamentals of relational database design and the creation of Entity Relationship Diagrams (ERDs or ER diagrams). Students will then create database objects and transform daily business activities into a relational database system based on these ERDs.

Section 2:
The second section of the course will introduce students to the fundamentals of SQL and techniques to write SQL queries to extract information from the relational databases. Topics in this section include but are not limited to the different types of joins, subqueries, aggregate queries, and window functions.

Section 3:
The third and the final section will cover the principles of database marketing and some core concepts – the Customer Lifetime Value (CLV), Customer Signatures, and the Recency, Frequency, and Monetary (RFM) Analysis.

In the second and third sections student will learn how to connect MySQL database with a data visualization tool Tableau, to visualize the database query results within Tableau or Excel.

As a part of the final project, students will design and deploy a database solution using MySQL.

LEARNING OBJECTIVES:
1. Understand the difference between hierarchical, network, and relational database models.
2. Understand the fundamentals of relational database management systems.
3. Create entity relationship diagrams.
4. Understand the fundamentals of SQL and how it is used to retrieve data from a relational database.
5. Understand the fundamental concepts of database marketing.
6. Understand and apply the Customer Lifetime Value Analysis.
7. Understand and apply Recency, Frequency, and Monetary Analysis.
8. Understand and create customer signatures.
9. Create visualizations of the query results using Tableau and Excel.

PREREQUSITES:
There is no prerequisite for taking the course.

AUDIENCE:
Students who are proficient in working with databases and writing SQL queries will not significantly benefit from taking the course.

CLASS SCHEDULE:

Date	Timing	Session Type
Friday, 1/4/2019	2:00 PM – 5:00 PM	Lecture
Friday, 1/4/2019	6:00 PM – 9:00 PM	Lecture
Friday, 1/18/2019	2:00 PM – 5:00 PM	Lecture
Friday, 1/18/2019	6:00 PM – 9:00 PM	Lecture
Friday, 2/1/2019	2:00 PM – 5:00 PM	Lecture
Friday, 2/1/2019	6:00 PM – 9:00 PM	Lecture
Friday, 2/15/2019	2:00 PM – 5:00 PM	Lecture
Friday, 2/15/2019	6:00 PM – 9:00 PM	Lecture
Friday, 3/1/2019	2:00 PM – 5:00 PM	Lecture
Friday, 3/1/2019	6:00 PM – 9:00 PM	Lecture
Friday, 3/15/2019	2:00 PM – 5:00 PM	Final

CLASS INSTRUCTION:
The class instruction will be a blend of lectures and in-class exercises. These exercises will entail designing databases, creating ERDs, writing SQL queries, and performing database marketing topics exercises.

TEXTBOOKS AND RESOURCES:

REQUIRED

1. SQL in 10 Minutes, Sams Teach Yourself (4th Edition)
   By Ben Forta
   Publisher: Sams Publishing
   ISBN-10: 0672336073
   ISBN-13: 978-0672336072

2. For Tableau, it is more convenient to follow online videos provided by Tableau (https://www.tableau.com/learn/training).

SUGGESTED (BUT NOT REQUIRED)

3. Fundamentals of Relational Database Management Systems
   By S. Sumathi and S. Esakkirajan
   Publisher: Springer
   ISBN-10: 364208012X
   ISBN-13: 978-3-642-08012-8
   You can get this downloadable ebook from our library. **No need to purchase this.**
   Link to download: https://link.springer.com/book/10.1007%2F978-3-540-48399-1

4. Data Analysis Using SQL and Excel (2nd Edition) (More advanced SQL applications)
   By Gordon S. Linoff
   Publisher: Wiley, December 14, 2015
   ISBN-10: 111902143X
   ISBN-13: 978-1-119-02143-8
   You can get this downloadable ebook from our library. **No need to purchase this.**
   Link to download: https://onlinelibrary.wiley.com/doi/pdf/10.1002/9781119183419

The following books are recommended for those who want to specialize in Marketing or want to take a deep dive into database marketing.

5. Strategic Database Marketing 4e: The Masterplan for Starting and Managing a Profitable, Customer-Based Marketing Program
   By Arthur Middleton Hughes
   Publisher: McGraw Hill
   ISBN-10: 0071773487
   ISBN-13: 978-0-071-77348-5

6. Optimal Database Marketing: Strategy, Development, and Data Mining
   By Ronald G. Drozdenko
   Publisher: SAGE Publications, Inc
   ISBN-10: 0761923578
   ISBN-13: 978-0-761-92357-2

NOTES AND HANDOUTS:
I will upload notes and in-class exercise files to Canvas before each class meeting.

COMPUTER PACKAGES:
Throughout the course we will use the community edition of MySQL database management system. MySQL is the most popular open source database management system and the community edition can be downloaded for free from https://dev.mysql.com/downloads/mysql/.

We will also be using MySQL Workbench to write SQL queries. MySQL Workbench provides the graphical user interface for performing database related tasks and can be installed free from https://dev.mysql.com/downloads/workbench/.

You can find YouTube videos and plenty of help online on how to install MySQL and MySQL Workbench on your computers (Macs or PCs). I recommend following the YouTube videos to install MySQL and MySQL Workbench.

HOMEWORKS:
There will be a total of five (5) homework assignments. These will be based on the topics covered in the class. Some assignments might require thought and will not be exact replicas of the in-class exercises. However, everything will be based on the topics covered in the class.

FINAL PROJECT:
The final project is intended to provide you with valuable hands-on experience in designing and implementing a real world database application. The final project will be done in two phases:
Phase 1: Database Design
Phase 2: Implementation of the design in MySQL, populating the database with data, writing queries to answer five business questions, visualizing the results of the queries in Tableau/Excel, and creating a report and a final presentation.

The final project should be done in groups of size 3. Additional details about the project will be provided in the beginning of the quarter.

FINAL EXAM:
There is only the term project and no separate final exam for the course. The final presentations will take place on the day of the final exam. See detailed schedule on the last page.

EVALUATION:

Individual Homeworks	60% (each homework worth 12%)
Project Phase 1	10%
Project Status Meeting	5%
Project Final Report	15%
Project Presentation	10%

ACADEMIC HONOR CODE:
All students are expected to adhere to the University of California, Davis' Code of Conduct as noted here: http://sja.ucdavis.edu/files/cac.pdf.

See schedule of topics on the next page

TENTATIVE SCHEDULE OF TOPICS:

	Date	Timing	Assignments	Topics
1	Friday, 1/4/2019	2:00 PM – 5:00 PM		Introduction, Database Design I
2	Friday, 1/4/2019	6:00 PM – 9:00 PM		Database Design II
3	Friday, 1/18/2019	2:00 PM – 5:00 PM	Homework 1 based on Database Design	Database Design III
4	Friday, 1/18/2019	6:00 PM – 9:00 PM		SQL I – SQL Basics and Joins
5	Friday, 2/1/2019	2:00 PM – 5:00 PM	Homework 2 based on Database Design and SQL Basics and Joins	SQL II – Aggregate Functions
6	Friday, 2/1/2019	6:00 PM – 9:00 PM		SQL III – Subqueries
	Sunday, 2/10/2019 or Monday, 2/11/2019	NO CLASS	Project – Phase 1	Each group will: • Meet with me via Zoom over these two days, and • Submit the deliverable on Canvas
7	Friday, 2/15/2019	2:00 PM – 5:00 PM	Homework 3 based on Aggregate Functions and Subqueries	SQL IV – Window Functions
8	Friday, 2/15/2019	6:00 PM – 9:00 PM		Database Marketing – CLV
	Friday, 2/22/2019	NO CLASS	Homework 4 based on Window Functions and CLV	NO CLASS
9	Friday, 3/1/2019	2:00 PM – 5:00 PM		Database Marketing – RFM
10	Friday, 3/1/2019	6:00 PM – 9:00 PM		Database Marketing – Customer Signatures
	Sunday, 3/3/2019 or Monday, 3/4/2019	NO CLASS	Project Status Meeting	Each group will meet with me via Zoom over these two days. This is just a checkpoint. No deliverable required.
	Sunday, 3/10/2019	NO CLASS	Homework 5 based on RFM and Customer Signatures	NO CLASS
11	Friday, 3/15/2019	2:00 PM – 5:00 PM	Final Project Presentations	In lieu of the final exam