University of California, Davis
Graduate School of Management

MGT/P/B-287 - Business Database and Database Marketing (Winter 2021)

INSTRUCTOR: Mehul Rangwala mrangwala@ucdavis.edu

INSTRUCTOR OFFICE HOURS:
By appointment. Whenever I am available, we can meet at a mutually convenient time.

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 introduction to database marketing and is divided into three sections:

Section 1:
- An introduction to databases and database models.
- Fundamentals of relational database design and Entity Relationship Diagrams (ERD).
- Creating database objects and transform daily business activities into a relational database system based on these ERDs.

Section 2:
- Fundamentals of SQL
- Retrieve data from the database using SQL joins, subqueries, aggregate functions, and window functions.
- Visualizing query results using Tableau.

Section 3:
- Principles of database marketing.
- Introduction to Customer Lifetime Value (CLV).
- Introduction to Recency, Frequency, and Monetary (RFM) Analysis

LEARNING OBJECTIVES:
1. Understand the fundamentals of relational database management systems.
2. Create and read entity relationship diagrams.
3. Understand the fundamentals of SQL and how it is used to retrieve data from a relational database.
4. Understand the fundamental concepts of database marketing.
5. Understand and apply the Customer Lifetime Value Analysis.

6. Understand and apply Recency, Frequency, and Monetary Analysis.
7. Create visualizations of the query results using Tableau.

PREREQUSITES:
None. All topics will be covered from scratch without assuming any SQL/Database/Tableau background.

AUDIENCE:
You should take this course if:
- You know nothing or very little about databases and SQL.
- You want to challenge yourself and learn how to construct SQL queries at all difficulty levels.
- You want to learn how organizations use SQL and data modeling to answer business questions.
- You want to gain the end-to-end data modeling experience.

You should NOT take this course if:
- You are already familiar with the database design fundamentals.
- You are already familiar with writing SQL queries.

You can decide whether you will benefit from the course or not if:
- You have already taken the BAX-421 (Data Management MSBA course) – significant SQL overlap.
- You have already taken the one-unit MGB-490 (Introduction to SQL) – significant SQL overlap.

Students who have taken one of these courses will not discover any new material in the SQL portion but will learn database design fundamentals.

CLASS SCHEDULE:

Date	Timing	Session Type
Friday, 1/8/2021	2:00 PM – 5:00 PM	Lecture
Friday, 1/8/2021	6:00 PM – 9:00 PM	Lecture
Friday, 1/22/2021	2:00 PM – 5:00 PM	Lecture
Friday, 1/22/2021	6:00 PM – 9:00 PM	Lecture
Friday, 2/5/2021	2:00 PM – 5:00 PM	Lecture
Friday, 2/5/2021	6:00 PM – 9:00 PM	Lecture
Friday, 2/19/2021	2:00 PM – 5:00 PM	Lecture
Friday, 2/19/2021	6:00 PM – 9:00 PM	Lecture
Friday, 3/5/2021	2:00 PM – 5:00 PM	Lecture
Friday, 3/5/2021	6:00 PM – 9:00 PM	Lecture
Friday, 3/19/2021	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 dive deeper 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 (INDIVIDUAL):
There will be a total of four (4) 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 (GROUP) PROJECT:
The final project is intended to provide you with valuable end-to-end hands-on experience in designing and implementing a real-world database application. The final project needs to be completed 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.

Groups of three. Additional details about the project will be provided during the quarter.

Teams will present their final projects on the day of the final exam on Friday, 3/19/2020 from 2:00 PM – 5:00 PM.

EXAMS:
No midterm and final exams will be given in this course. Teams will present their final projects on the day of the final exam on Friday, 3/19/2020 from 2:00 PM – 5:00 PM.

EVALUATION:

Individual Homeworks	60% (each homework worth 15%)
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

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TENTATIVE SCHEDULE OF TOPICS (MAY NEED TO BE ADJUSTED ACCORDING TO THE PACE OF THE CLASS)

	Date	Timing	Assignments	Topics
1	Friday, 1/8/2021	2:00 PM – 5:00 PM		Introduction to Databases Database Design I
2	Friday, 1/8/2021	6:00 PM – 9:00 PM		Database Design II
3	Friday, 1/22/2021	2:00 PM – 5:00 PM	Homework 1	Database Design III SQL I • Introduction to SQL • Joins
4	Friday, 1/22/2021	6:00 PM – 9:00 PM		SQL II • Aggregate Functions • Grouping
5	Friday, 2/5/2021	2:00 PM – 5:00 PM	Homework 2	SQL III • Subqueries
6	Friday, 2/5/2021	6:00 PM – 9:00 PM		SQL IV • Data Manipulation • Window Functions
	Monday, 2/8/2021 Tuesday, 2/9/2021	NO CLASS	Project Phase 1	Each group will: • Meet with me via Zoom on one of these two days, and • Submit the deliverable on Canvas
7	Friday, 2/19/2021	2:00 PM – 5:00 PM	Homework 3	SQL V • Window Functions
8	Friday, 2/19/2021	6:00 PM – 9:00 PM		SQL VI • Window Functions Introduction to Database Marketing
9	Friday, 3/5/2021	2:00 PM – 5:00 PM	Homework 4	Tableau I
10	Friday, 3/5/2021	6:00 PM – 9:00 PM		Tableau II
	Saturday, 3/6/2021 Sunday, 3/7/2021	NO CLASS	Brief Checkpoint for the Project NO DELIVERABLE DUE	Each group will meet with me via Zoom on one of these two days
11	Friday, 3/19/2021	2:00 PM – 5:00 PM	Final Project Presentations	In lieu of the final exam