

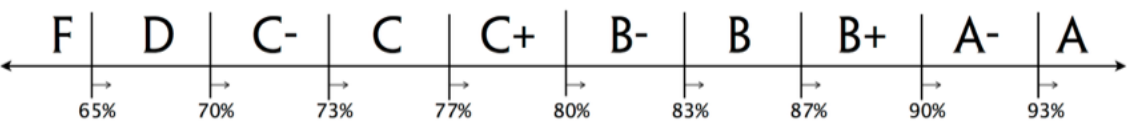
Database Systems

CMPT 308 • Spring 2025

Background

When and where	Tuesdays 8AM to 10:45AM in HC 2005 • Labs Fridays at 9AM in my office or online	
Suggested Text	<i>Database Systems The Complete Book, second edition</i> by Garcia-Molina, Ullman, and Widom. Published by Prentice Hall. ISBN 978-0-13-187325-4	
Web	https://www.labouseur.com/courses/db	
Instructor	Alan G. Labouseur Hancock 3007	Alan.Labouseur@Marist.edu (Office hours are posted.)

Grades

Letter Grades					
You can earn up to 1000 points, broken down as follows:	Labs / In-class Lab Quizzes	20.0%	200 points: 10 at 20 points each	[1, 2]	
	Relational Database Project	25.0%	250 points	[1, 2]	
	Mid-term Exam	25.0%	250 points - study sheet permitted	[1,2,5]	
	Final Exam	25.0%	250 points - study sheet permitted	[1,2,5]	
	Attendance & Participation	2.5%	25 points for quality & quantity	[5]	
	Laziness and Whining	2.5%	25 points for not (lazy or whining)	[5]	
				[1]	

Themes, Objectives, and Assessment

Assessment methods include assignments, quizzes, exams, discussions, presentations, peer review, and projects.	In this course, I hope that you will . . .	
[References] refer to Department of Computing Technology Goals available at https://www.labouseur.com/courses/goals.pdf	<ul style="list-style-type: none">• come to understand that data has value, and the right answer is infinitely better than a fast answer. [1, 2]• reach a solid knowledge of and appreciation for principles and foundations of relational and graph database systems. [1, 2]• gain an understanding of relational database concepts, terminology, and their superiority over NoSQL garbage like document stores. [1, 2]• attain in-depth knowledge of the relational data model and why it's superior to other data models in general, and will remain so. [1, 2]• realize that no SQL is better than NoSQL. [1, 2, 5]• realize that Lotus Notes and Ms-Access are not databases, and that it's unprofessional to use MySQL and mongoDB. [1, 2]• appreciate, understand, use, and bask in awe of SQL. [1, 2]• appreciate, understand, and bask in awe of graphs. [1, 2, 5]• design, implement, test, and document a BCNF relational database. [1, 2]• discuss and use new database technology. [1, 2, 5]• come to know some modern graph data techniques and technologies [1, 2]• develop continuing education skills. Capable problem solvers never stop learning. To the end, you will get practice in finding some answers for yourself. [1, 2]	

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Schedule

#	Week	Due	Chapters	Topics
0	28-Jan	—	1 9.1	The Plan — Data vs. Information — Data throughout history: Files, Hierarchies, Networks, Tables, Documents, Key-value stores, and Graphs
1	4-Feb	Lab 1 <i>Installing PostgreSQL</i>	2, 4.1, 5.1 6.1, 7.1, 9.2	The Relational Model — Relational Algebra — Data types — Keys Beginning SQL — Simple SQL queries
2	11-Feb	Lab 2 <i>Our beloved CAP database</i>	2, 6.2-3 7.1-2, 9.3	Entity/Relationship modeling — SQL create statements Referential Integrity and constraints — SQL subqueries
3	18-Feb	Lab 3 <i>Getting started with SQL</i>	2, 6.2-4 7.1-2, 9.3	Check constraints — Null and three-valued logic — More subqueries SQL: Insert, update, and delete — Aggregations with GROUP BY and HAVING
4	25-Feb	Lab 4 <i>Subqueries SQL</i>	6.1 - 6.5	Joining relations with Inner and Outer joins Set operations in SQL
5	4-Mar	Lab 5 <i>Joins Three-quel</i>	8.1-4 14.1-3 & G*	The System Catalog — Views — Indexes and Index Structures Graph Databases — Mid-term exam preview
6	11-Mar	Lab 6 <i>Interesting and Painful Queries</i>	—	Mid-term Exam in Hancock 2023 One-page study sheet permitted; some restrictions apply.
7	18-Mar	—	—	<i>No class meeting — Spring Break</i>
8	25-Mar	—	3 4.1-6	Introduction to Normalization, Functional dependencies, and Normal forms
9	1-Apr	—	—	<i>No class meeting — Alan's traveling</i>
A	8-Apr	Lab 7 <i>Normalization 1</i>	3 4.1-6	More Normalization — Functional dependencies — Normal forms The normalization process — Lossless Joins — Normalization examples
B	15-Apr	Lab 8 <i>Normalization 2</i>	3, 4.1-6 10.1	Discuss Lab 7 — Database design and data modeling Weak entities and entity subtypes — Authorization and Security
C	22-Apr	Lab 9 <i>Normalization 3</i>	9.4 1.2.4, 18.3-4 19.2	Discuss Lab 8 — Stored Procedures and Triggers, Locks, locking isolation levels, and deadlock
D	29-Apr	Lab A <i>Stored Procs</i>	1.2.4, 18.3-4 19.2, 6.6, 17	Discuss Lab 9 — Locks, locking isolation levels, and deadlock ACID — Transactions, Recovery, and the Log file — Final exam preview
E	6-May	Relational Database Project	Everything	Final Exam in Hancock 2023 One-page study sheet permitted; some restrictions apply.
F	13-May	—	—	Final class wrap-up at 9am