Department of Computer Science
Lehman College, City University of New York
CMP 420 &CMP 758 -OA01: Database Systems - Spring 2024 Syllabus

Semester	Class Section	Class Hours	Room Number
Spring 2024	OA01	Online Asynchronous	

Instructor	Email	Office Number	Office Hours	
Steven Fulakeza	steven.fulakeza@lehman.cuny.edu	GI-232	Mon & Wed 12:50 pm - 1:50 pm and Mon & Wed 03:50 pm - 4:50 pm	

Course webpage: http://comet.lehman.cuny.edu/sfulakeza/

CMP 426 Course Description: 4 hours, 4 credits
Introduction to theory of database systems and database management: theory of relational, hierarchical, and network database organization, with emphasis on the first; views of data, data organization, data dependency and redundancy, normal forms, and query language.

CMP 758 Course Description: 4 hours, 4 credits
Introduction to use and design of database systems. Topics include levels of extraction and views of data; data models, entity relationship, hierarchical, network, and relational data organization; data dependencies, normal forms; design algorithms; distributed databases; query languages.

Prerequisite:
- CMP 338 (Data Structures and Algorithms).

Course Objectives:
At the end of the course, students should be able to:
1. Understand fundamental concepts of modern database systems.
2. Describe database systems concepts and architecture.
3. Perform conceptual data modeling by ER/EER.
4. Understand the relational model.
5. Work with Structured Query Language (SQL).
6. Explain functional dependencies and normalization as a database design process.
7. Understand File/index structures.
8. Explain physical database design decisions, transaction processing concepts and theory, concurrency control techniques.
9. Discuss database recovery techniques.

Textbook:

- R. Elmasri and S. Navathe, Fundamentals of Database Systems, Pearson, Edition 7, 2016. ISBN:0-13-397077-9

References:

- Lecture Notes, Blackboard, and Course Website
- J. Murach, MySQL, Edition 2, Mike Murach & Associates, 2015
- P. Dubois, MySQL, Edition 5, Addison-Wesley, 2013
- R.F. van Der Lans, SQL for MySQL Developers, Addison Wesley, 2007
- MySQL 8.0 manual: https://dev.mysql.com/doc/refman/8.0/en/preface.html

Grade Policy:

Your grades will be computed based on the following:

CMP 420

Activity	Percentages
Projects, Assignments and Backboard Quizzes	40%
Midterm Exam	30%
Final Exam	30%

CMP 758

Activity	Percentages
Projects	40%
Midterm Exam	25%
Final Exam	25%
Research Paper and Presentation (for graduate students only)	10%

Grading Scale for CMP 420:

Letter Grade	Ranges %
A	93 - 100
A-	90 - <93
B+	87 - <90
B	83 - <87
B-	80 - <83
C+	77 - <80

C	73 - <77
C-	70 - <73
D	60 - <70
F	< 60

Grading Scale for CMP 758:

Letter Grade	Ranges %
A	93 - 100
A-	90 - <93
B+	87 - <90
B	83 - <87
B-	80 - <83
C+	77 - <80
C	73 - <77
F	< 73

A Make-up exam might be given only when a student's absence is unavoidable. In such a case, the student must file a formal written request.

Projects & Assignments
Several projects and homework assignments will be given during lectures, and some will be posted on Blackboard and the course website. Students must do their own work unless stated otherwise. Students handing in similar work will all receive a 0 and face possible disciplinary actions. **No late work will be accepted.** All work must be submitted on Blackboard. No emailed work will be accepted.

Exam Schedule:
- Midterm Exam date: **TBA**.
- Final Exam date and time: **12/18/2024 from 11:30 am to 01:30 pm**.

Honor Code, Academic Integrity and Plagiarism Policy
You are encouraged to work together on discussing and planning the overall design of the programs and homework. However, for specific programs and homework assignments, all code written must be your own creation. All submissions must be your own independent work. You are responsible for knowing and following Lehman's academic integrity code (available from the Undergraduate Bulletin, Graduate Bulletin, Office of Academic Standards and Evaluations, or the Smart Catalog). All incidents of cheating will be reported to the Vice President of Student Affairs. Statement may be found in the student handbook. For more information, refer to
http://www.lehman.cuny.edu/student-affairs/documents/Final-Student-Handbook-Lehman-College-9-19-18.pdf

You must complete all your homework assignments, projects, labs, and exams individually. This presents the best way to learn and absorb the material. Feel free to consult the textbook, the instructor, and the CS Tutoring Lab to help you solve problems.

You are allowed to discuss problems with classmates, but only in general terms, and you must specifically avoid discussing any solutions. If we find you plagiarizing and cheating, we will not accept "I didn't know" as an excuse.

You must also resist the urge to copy code from the web. Therefore, students in this course may not use any websites that enable cheating, such as by uploading or downloading material for this purpose. Use of these websites including uploading proprietary materials constitutes a violation of the academic integrity policy. Below are some sources which you are not allowed to use or even consult while taking this class:
- https://www.chegg.com/
- https://www.coursehero.com/
- https://www.bartleby.com/
- https://www.answersaccess.com/
- https://stackoverflow.com/
- Code generation tools (AI-based or otherwise), such as Github CoPilot, ChatGPT, Google Bard
- Submissions or work in progress from other students, past or present, in full or in part
- Solutions or solution fragments you may find online or elsewhere.
- Course materials from previous semesters, regardless of how you obtained them.
- Outside tutors or "work-for-hire" services.
- This list is not exhaustive; ask the instructor before using any source not explicitly listed above.

A note for students retaking the class: resubmitting or reusing your work from earlier attempts at the class is also considered plagiarism. You must do all the work from scratch, otherwise you will not learn as much as you should.

Posting, sharing or making available your own solutions (in full or in part) or any course materials such as homeworks, tests, quizzes, projects, exams, solutions is also a violation of our academic integrity policy. This extends even after the semester ends.

Attendance
Students are expected to attend lectures regularly and promptly. In the event of illness, or injury, students should notify me. Students who miss a class are responsible for learning materials presented in class and reading relevant textbook portions. If you need help, please do not hesitate to contact me.

Accommodating Disabilities
Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need classroom accommodations are encouraged to register with the Office of Student Disability Services. For more information, please contact the Office of Student Disability Services in Shuster Hall, Room 238, phone number, 718-960-8441.

Technology, Blackboard and Email
We will be using Blackboard for much of the class activities. It can be accessed through the Lehman website at www.lehman.cuny.edu. You will also need to have access to your Blackboard account. You can contact the IT Center if you have any problems accessing your account.

I will be communicating with you regularly throughout the semester using your email address that is available on Blackboard. Make sure you have access to your email. If you have any questions about your Lehman email address or your password, or if you have any problems accessing the site, please call the computer helpdesk at 718-960-1111.

Course Outline: (Tentative)
Part 1 - Introduction to Databases
- Chapter 1: Databases and Database Users
- Chapter 2: Database System Concepts and Architecture

Part 2 - Conceptual Data Modeling and Database Design
- Chapter 3: Data Modeling Using the Entity – Relationship (ER) Model
- Chapter 4: The Enhanced Entity–Relationship (EER) Model

Part 3 - The Relational Data Model and SQL
- Chapter 5: The Relational Data Model and Relational Database Constraints
- Chapter 6: Basic SQL
- Chapter 7: More SQL
- Chapter 9: Relational Database Design by ER- and EER-to-Relational Mapping

Part 6 - Database Design Theory and Normalization
- Chapter 14: Basics of Functional Dependencies and Normalization for Relational Databases
- Chapter 15: Relational Database Design Algorithms and Further Dependencies

Part 7 - File Structures, Hashing, Indexing, and Physical Database Design
- Chapter 16: Disk Storage, Basic File Structures, Hashing, and Modern Storage Architectures
- Chapter 17: Indexing Structures for Files and Physical Database Design

Part 9 - Transaction Processing, Concurrency Control, and Recovery
- Chapter 20: Introduction to Transaction Processing Concepts and Theory
- Chapter 21: Concurrency Control Techniques

Software Used for the Course:
- MySQL Community Server 8 (or 5.6.x or 5.7.x,)
- MySQL Workbench 8.x

Classroom Policies
- Take responsibility for your education and grades – Students have a common myth that because they pay tuition, they deserve to receive a passing credit. Students earn grades in accordance with course grading policies.
- Attend every class and get to class on time.
- Submit all your work on time.

- When having any academic difficulties, always seek assistance from your instructor.