

CMSC 461: Database Management Systems

Syllabus: Spring 2008

Lecture: Monday and Wednesday, 5:30-6:45 in ITE 231.

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Web Page: Problem sets, project descriptions, important dates and deadlines, and other course materials will be available at: <http://www.cs.umbc.edu/~arm1/461/>.

Textbook: Silberschatz, Korth, and Sudarshan, *Database System Concepts*, Fifth Edition, McGraw-Hill, 2005. ISBN 0-07-295886-3. <http://codex.cs.yale.edu/avi/db-book/> (SKS)

Prerequisite: CMSC 341 – Data Structures.

Description: This course covers database management and the different data models used to structure the logical view of databases. The course also covers database design and implementation techniques, including file organization, query processing, concurrency control, recovery, integrity and security.

Each student will (1) learn the fundamental concepts of database management, including database design, models and languages, and system implementation techniques, and (2) develop skills to apply those concepts in practical data management applications.

Course Content:

- Data Models – Entity-Relationship Model, Relational Model
- Relational Databases – SQL, Other Relational Languages, Integrity and Security, Relational Database Design
- Data Storage and Querying – Storage and File Structure, Indexing and Hashing, Query Processing
- Transaction Management
- Database System Architecture

Grading:

- Problem Sets (5) – 20%
- Project – 20% (Presentations: May {5, 7, 12}, 2008 – 5:30-6:45 PM)
- Midterm – 20% (March 3, 2008 – 5:30-6:45 PM)
- Final Exam – 20% (May 19, 2008 – 6:00-8:00 PM)
- Class Participation – 20%

Students learn better when they actively participate in discussions. Therefore, you must attend class regularly and ask questions, answer other students' questions, make comments or observations relevant to the topic of discussion, and read and digest all readings prior to the class meeting in which they are discussed.

Your final grade will be based upon your total score on the items above with their associated weights. The instructor will convert the total score into a letter grade using the following mapping: [90 – 100] ⇒ A, [80 – 90] ⇒ B, [70 – 80] ⇒ C, [60 – 70] ⇒ D, [50 – 60] ⇒ P, [0 – 60] ⇒ F. These levels may be adjusted in your favor. Your grade is given for timely work done during the semester. Makeup exams, late submission of assignments, and incompletes are allowed only under extraordinary circumstances as per University policy.

Project: You will be required to work on a project requiring substantial work. Project work requires working in a team of students. Details of the project will be posted on the course webpage by mid-February. Teams will also be assigned at the same time. A presentation of the project will be scheduled for each team. You are also required to pass intermediate milestones. No late projects are accepted.

Academic Integrity: *By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory. [Statement adopted by UMBC's Undergraduate Council and Provost's Office.]*

Consult <http://www.umbc.edu/integrity/overview.html> for more information on UMBC's Academic Integrity Policies.

Date	Topic	Reading	Homework Out	Homework In
Mon 01/28	Introduction	SKS 1		
Wed 01/30	Relational Model	SKS 2		
Mon 02/04	SQL	SKS 3		
Wed 02/06	SQL	SKS 3	HW 1	
Mon 02/11	Advanced SQL	SKS 4		
Wed 02/13	Other Relational Languages	SKS 5		HW 1
Mon 02/18	Database Design and E-R Model	SKS 6	HW 2	
Wed 02/20	Database Design and E-R Model	SKS 6		
Mon 02/25	XML	SKS 10		HW 2
Wed 02/27	Relational Database Design	SKS 7		
Mon 03/03	Midterm Exam			
Wed 03/05	Relational Database Design	SKS 7		
Mon 03/10	Relational Database Design	SKS 7		
Wed 03/12	Relational Database Design	SKS 7		
Mon 03/17	Spring Break			
Wed 03/19	Spring Break			
Mon 03/24	Relational Database Design	SKS 7		
Wed 03/26	Relational Database Design	SKS 7	HW 3	
Mon 03/31	Application Design and Development	SKS 8		
Wed 04/02	Application Design and Development	SKS 8		HW 3
Mon 04/07	Storage and File Structure	SKS 11	HW 4	
Wed 04/09	Storage and File Structure	SKS 11		
Mon 04/14	Indexing and Hashing	SKS 12		HW 4
Wed 04/16	Indexing and Hashing	SKS 12	HW 5	
Mon 04/21	Query Processing	SKS 13		
Wed 04/23	Query Processing	SKS 13		HW 5
Mon 04/28	Transaction Processing	SKS 15		
Wed 04/30	Transaction Processing	SKS 15		
Mon 05/05	Project Presentations			
Wed 05/07	Project Presentations			
Mon 05/12	Project Presentations			
Mon 05/19	Final Exam			