

CS 2300 Instruction to Database Systems

ABSTRACT: The course introduces the fundamental concepts of database systems, database modeling, and database programming using SQL. The Entity-Relationship (E/R) diagram is investigated as a means for modeling data relationships. Next, the relationships described by the E/R model are implemented using the relational data model. The SQL database language is used to support operations on the relational model. Normalization and functional dependencies are used for efficient database design and to optimize the tables. B-trees and hashing are introduced to store and index the data at the physical level. Students are required to design and implement database projects.

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PREREQUISITES: CS 153 Data Structure

TEXTBOOK:

Elmasri, R. and Navathe, S., **Fundamentals of Database Systems**, 7th Edition, Addison-Wesley Publishing Company.

COURSE OUTLINE:

- Introduction
- Database Concepts
- ER Model
- ER to Relational Mapping
- Relational Data Model
- Relational DB Design
- SQL
- Functional Dependencies and Normalization
- Disk storage, Indexing, B-trees and Hashing

CLASS SCHEDULE: The class schedule is contained in a separate document. The document should be checked regularly as it is under constant revision.

CLASS TIMINGS: T/Th 9:30am to 10:45 PM

OFFICE HOURS: T/Th 11PM to 12PM (Room CS323) or by appointments

EVALUATION AND GRADING: % of grade

Midterm Exam 20%

Final Exam 30%

Home work (4-5) 20%

Programming Project (3 phases) 20%

Quizzes (2-4) 5%

Class Participation 5%

All grading will be determined based on a scale of: A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: 0-59%. Final grades in the course may be curved at the instructor's discretion.

NOTES:

Course documents will be available online. It contains, among other things, this syllabus, a schedule for the class, as well as homework assignments and handouts. You should regularly check the syllabus, schedule, and homework documents as they may be updated periodically.

COURSE POLICY:

- Homework and project deadlines will be announced in class. Late homework and project will be penalized 20% per day within 48 hours of the time it is due. **No credit** after that.
- Please do not use laptops, cell phones or other smart devices in class.
- I strongly recommend you not to miss the classes and I may take action on being absent more than 5 classes other than due to sickness/Emergency and reserve the right to drop you from the class. Class participation marks also depends on the class attendance.
- No makeup test/quiz unless under some special cases with prior approval by the instructor and in case of illness, with doctor's written advice for rest or under some valid emergency. In any case, the instructor needs to be informed by email within 24 hours of the due date.

ACADEMIC DISHONESTY:

Students are strongly advised that any act of cheating will result in a score of 0 for the entire assignment and repeat offences will be reported to the Office, and may result in an automatic F grade. You are encouraged to discuss problems and ideas but the final solution must be your own. Page 30 of the S&T Student Academic Regulations handbook describes the student standard of conduct relative to the System's Collected Rules and Regulations section 200.010, and offers descriptions of academic dishonesty including cheating, plagiarism or sabotage. Additional guidance for faculty, including a description of the process for dealing with issues related to academic dishonesty, is available on-line at <http://registrar.mst.edu/academicregs/index.html>.

SPECIAL NEEDS:

If you have a documented disability and anticipate needing accommodations in this course, you

are strongly encouraged to meet with me early in the semester. You will need to request that the Disability Services staff send a letter to me verifying your disability and specifying the accommodation you will need before I can arrange your accommodation." More information is at <http://counsel.mst.edu/>

EMERGENCY EXIT FROM CLASSROOM:

<http://registrar.mst.edu/documents/egress>