

COP 3540 Introduction to Database Structures

Credits: 3 credits

Textbook, Title, Author and Year: Database Management Systems, third edition. Raghu Ramakrishnan and Johannes Gehrke. McGraw-Hill Higher Education, 2002, ISBN-13: 978-0072465631
Lecture slides, hands-out and notes

Reference Materials: Ramez Elmasri and Shamkant B. Navathe Fundamentals of Database Systems. Fourth Edition, Addison-Wesley, 2004. ISBN 0-321-12226-7.

Abraham Silberschatz, Henry F. Korth and S. Sudarshan. Database System Concepts. Fourth Edition. McGraw Hill, 2004. ISBN 0-07-255481-9.

Specific Course Information

- a. **Catalog Description:** An introduction to the design, implementation and use of relational database systems. Topics include DBMS design, relational model, SQL language, indexing techniques, etc. Programming projects will be done in SQL in MySQL database.
- b. **Prerequisites:** COP3530 Data structure and algorithm analysis. Or permission of the instructor
- c. **Specific Goals for the Course:** This course will provide students with an in-depth understanding of the theory, operation and application of modern database systems. At the end of the class, students should be able to master concepts of DBMS design, relational model, indexing techniques, etc. Students will apply SQL programming language to perform relational database operations. Presentations will be given by students to discuss their projects. Students will use MySQL database systems to design and develop a database application.

Brief List of Topics to be Covered

Topics	Chapters
Introduction	1
DBMS Design, ER Model	2
Relational Model	3
Relational Algebra & Calculus	4
SQL	5
Midterm and Review	
File Organization and Storage	8 and 9
Indexing Techniques	10 and 11
Transaction Management	16
Concurrency & Crash Recovery	17 and 18
Normalization	19
Latest Trends in Database	Selected Parts in chapters 25 - 28
Project Presentations	