

Dept Number	CS 430	Course Title	Database Systems							
Semester Hours	3	Course Coordinator	Wen-Chi Hou							
Catalog Description	The course concentrates on the relational model and includes several query languages. Topics covered include normalization, database design, catalogs, transaction support, concurrency control, integrity support, backup and recovery, and security. Projects involve the use of both personal and enterprise database systems.									
Textbooks										
Database Management Systems, 3rd edition (required) by Raghu Ramakrishnan and Johannes Gehrke.										
References										
Course Learning Outcomes										
<ul style="list-style-type: none"> • To learn the principles and the core technologies of modern DBMS. • To obtain a solid understanding on all the major aspects of a DBMS. • To learn to develop professional database applications. 										
Assessment of the Contribution to Program Outcomes										
Outcome →	1	2	3	4	5	6	7	8	9	10
Assessed →		X	X		X					
Prerequisites by Topic										
CS 330 with a grade of C or better.										

Major Topics Covered in the Course

1. Background: basic database concepts, examples
Relational model
Network and hierarchical models {3 classes}
2. Microsoft access review: creating tables, entering data, updates, queries, reports, forms
{2 classes}
3. Database design methodology: goals, user views, methodology, examples, entity-relationship
model {5 classes}
4. SQL : data definition (DDL), simple queries, functions, joins, nesting, grouping, updates, views,
privileges, indexes, modifying table structure, catalog {5 classes}
5. Relational algebra: conventional set operations, select, project, join, and divide {4 classes}
6. Relational calculus: tuple relational calculus and domain relational calculus {4 classes}
7. Oracle: creating and filling tables, queries, SQL, reports, forms and SQL Plus {2 classes}
8. Application development: embedded database access and API-based approach (ODBC and
JDBC) {5 classes}
9. Schema refinement and normalization: functional dependence analysis, anomalies, 1st, 2nd, 3rd,
and BCNF {5 classes}
10. Components of a DBMS: data storage and retrieval, catalog, transactions, concurrency control,
recovery, security, communications, integrity {3 classes}
11. Selected additional topics: XML data model and XQuery, etc {2 classes}