THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Advanced Database Management Systems

CSE 5242

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Transaction management; query processing and optimization; organization of database systems, advanced indexing, multi-dimensional data, similarity-based analysis, performance evaluation, new database applications.

Prerequisites and Co-requisites:
Prereq: 3241 or 5241, and 2421 or 5042.

Course Goals / Objectives:
- Master transaction processing, concurrency control and crash recovery
- Master query processing and optimization
- Master advanced indexing and data organization for DBMS
- Be competent with similarity-based querying
- Be familiar with new data management applications

Course Topics:
- Transaction Management: Concurrency Control and Serializability; Recoverability and Strictness; Two-phase locking; Two-phase commit
- Query Processing and Optimization: (a) Relational algebra transformations (b) Query size and I/O cost estimation (c) I/O cost for basic data management algorithms
- Advanced Indexing and Query Processing
- Multi-dimensional Index Structures
- Data Warehouse Design and Implementation
- New Topics and Applications, e.g., (a) Information Retrieval (b) Bioinformatics (c) Incomplete and Uncertain Databases (d) Non-relational Databases, (e) Data Stream Management
- Scalable Data Storage
- Parallel and Distributed Databases
- Database Performance
- Buffer and Storage Management

Designation:
Elective