

CS 440 – Database Management Systems

Catalog Description: Purpose of database systems, levels of data representation. Entity-relationship model. Relational systems: data definition, data manipulation, query language (SQL), relational calculus and algebra, data dependencies and normal forms. DBTG network model. Query optimization, recovery, concurrency control.

Credits: 4 **Terms Offered:** Winter

Prerequisites: CS 261, CS 275

Courses that require this as a prerequisite: None

Structure: Three 50-minute lectures per week

Instructors: Toshimi Minoura

Course Content:

- Overview of data management
- Architectures of DBMSs
- Overview of data modeling
- Overview of relational database
- Data definition (including data definition with SQL Server)
- Data manipulation (including data manipulation with SQL Server)
- Views
- Entity/Relationship modeling
- Embedded SQL (Transact-SQL)
- HTTP, CGI, and HTML forms
- ASP programming
- Security
- Relational integrity
- Recovery
- Concurrency control

Measurable Student Learning Outcomes:

At the completion of the course, students will be able to...

1. **Collect, analyze, and decompose** system requirements (Level 4; ABET Outcomes: B)
2. **Create** a data model diagram for a complex, realistic database system (Level 3; ABET Outcomes: A)
3. **Use** advanced database tools such as application generators and form generators (Level 3; ABET Outcomes: I)
4. **Apply** methods and tools for web-based database applications (Level 3; ABET Outcomes: I)
5. **Use** advanced features of query languages (Level 3; ABET Outcomes: C, I)
6. **Design, implement and test** database applications of realistic complexity (Level 5; ABET Outcomes: B, C)

7. **Convert** data to/from various proprietary database formats (Level 2; ABET Outcomes: C)
8. **Participate** effectively in team development of a marketable database application (Level 3; ABET Outcomes: D)

Learning Resources:

- Ullman, J. D. and Windom, J. *A First Course in Database Systems*, Prentice Hall (required)
- Otey, Conte. *SQL Server 2000 Developer's Guide*, McGraw Hill (optional)
- Buser, David, et al. *Beginning Active Server Pages 3.0*, Wrox (optional)

Students with Disabilities:

Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through SSD should contact SSD immediately at 737-4098.

Link to Statement of Expectations for Student Conduct:

<http://oregonstate.edu/admin/stucon/achon.htm>

Revised: 8/15/07