CS 440 – Database Management Systems

Catalog Description: Relational database design, normalization, file structures, disk storage, query processing and optimization, team development of database applications.

Credits: 4

Prerequisites: CS 261, CS 275

Courses that require this as a prerequisite: None

Structure: Three 50-minute lectures per week or two 80-minute lectures per week.

Instructors: Arash Termehchy

Course Content:
- Functional dependencies and normalization for relational databases
- Relational database design algorithms
- Disk storage, basic file structures, and hashing
- Indexing structures for files
- Algorithms for query processing and optimization
- Special topics in emerging database technologies and applications (as time permits)

Learning Resources:
- Elmasri, R. and Navathe, S., *Fundamentals of Database Systems*, Addison-Wesley (required)
- Williams, H., Web Database Applications With PHP & MYSQL, O'Reilly Media (required)

Measurable Student Learning Outcomes:
At the completion of the course, students will be able to…
1. **Collect, analyze, and decompose** system requirements (ABET Outcomes: B)
2. **Create** a data model diagram for a complex, realistic database system (ABET Outcomes: A, J)
3. **Optimize** a relational database design by dependency analysis and normalization (ABET Outcomes: A, B, I, J, K)
4. **Explain** disk usage, basic and indexed file structures, and hashing for data storage (ABET Outcomes: I, J)
5. **Choose** appropriate methods for query processing and optimization. (ABET Outcomes: I, J)
6. **Design, implement,** and **test** database applications of realistic complexity (ABET Outcomes: B, C, J, K)
7. **Participate** effectively in team development of a realistic database application (ABET Outcomes: D, K)

Students with Disabilities:
Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS 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 DAS should contact DAS immediately at 737-4098.

Link to Statement of Expectations for Student Conduct, i.e., cheating policies
http://oregonstate.edu/admin/stucon/achon.htm