Dongseo University

Division of Computer Engineering

Advanced Databases

Instructor(s): Hyontai Sug, Ph.D.   **Classroom: UIT308**

Office: UIT309   **Class Time: MW 3:00PM-4:50PM**

Phone: 051-320-1733   **Office Hours: Tue~Th, 1:00PM-3:00PM**

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Course Description:

This course examines concepts and principles of database management systems (DBMS) for large databases; as well as, data analysis, data modeling, and database implementation in large size.

More specifically, it introduces semantic database modeling using entity-relationship models; functional dependency, normalization, and the advanced Structured Query Language (SQL). Using Oracle's Oracle DBMSs as implementation vehicles, this course provides hands-on experience in database design and implementation through assignments and lab exercises. Advanced database concepts such as transaction management and big data processing are also introduced.

Course Goals & Objectives:

At the conclusion of this course, the successful (passing) students will be able to:

- Describe advanced data and database concepts
- Create large databases using popular database management system products
- Solve problems by constructing database queries like the Structured Query Language
- Develop insights into future data management tools and technique trends
- Recommend and justify strategies for managing data security, privacy, audit/control, fraud detection, backup and recovery
- Critique the effectiveness of Database Management Systems in computer information systems

Course Outline:

- **Week 1 : introduction to advanced databases**

- **Week 2 : relational algebra and relation variables**

- **Week 3: functional dependency**

- **Week 4: normalization 1**

- **Week 5 : normalization 2**

- **Week 6 : ER models**

- **Week 7 : real world large database applications**

- **Week 8** : **Mid-Term Week**

- **Week 9 : relationships and entities**

- **Week 10 : transforming ER models into relations 1**

- **Week 11 : transforming ER models into relations 2**

- **Week 12 : recovery and transactions**

- **Week 13 : big data processing**

- **Week 14 : term project discussion**

- **Week 15 : Final Week**

Textbook(s)

- Required: Database Systems: A Practical Approach to Design, Implementation, and Management, 6/E, Tomas Connolly, Carolyn Begg, Pearson, 2014.
- Recommended: Murach's Oracle SQL and PL/SQL for Developers, 2/E, Joel Murach, Mike Murach & Associates, 2014.

Class Website: e-Class

Course Assignments & Grading:

- *Exams: there will be two exams; mid-term and final exam.*

- *Quizzes*: quizzes may be given if necessary.

- *Course Projects*: there will be a term project that will cover relatively small database application

- *Assignments*: there will be one or two assignments related to survey and proposal of database application system development.

- *Bonus Credit*: students who are actively participate the class may get extra points

- *Grading*: mid-term exam, final exam, term project 25% each, attitude 5%, homework and presence 10%

Grading Policies:

• *Late Work:* All assignments must be submitted on the due date. Late assignments will not be accepted.

• *Make-Ups:* There will be no make-ups given for any of the assignments of this course.

• *Contesting:* Grades can be contested during a two-week period from the time that they are announced. After such period has elapsed, grades may not be contested.

Course Policies:

- Attendance: class attendance will be counted and will be 10% of your grade.
- Academic Misconduct Policy: We really do not expect it, so please do not disappoint us! However, any form of cheating will be penalized and may result in failing the course or expulsion from the university.