



## Standard Course Outline

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### I. General Information

- ♦ Course number: IS 480
- ♦ Title: Advanced Database Management
- ♦ Units: 3
- ♦ Prerequisites: IS 301, IS 380
- ♦ Course Coordinator: Sophie Lee
- ♦ SCO Prepared by: Sophie Lee
- ♦ Date prepared/revised: October 8, 2012

### II. Catalog Description

Advanced approaches such as object-oriented, data warehousing, and client/server methods to database applications and development. Use of entity-relationship analysis to identify objects. Development of relational database systems for a business. Application software development project using cutting-edge database technology.  
Letter grade only (A-F).

### III. Curriculum Justification(s)

This class extends students' skills and knowledge to beyond the traditional introductory, "modeling" aspect of database management, and provides an advanced and in-depth understanding of how to create a working 3-tier database application. The power of a complete database management system lies in its ability to capture and process complex organizational rules, and to deliver useful information for end users. This goal cannot be achieved without integrating the third generation language, fourth generation language, and user interface design available in a DBMS. To that end, this class is designed to introduce the third generation language and user interface design aspects of database management systems to students, and seek ways to master all three tools.

### IV. CBA Undergraduate Program Learning Goals:

This course meets the following CBA undergraduate learning goals:

#### **Learning Goal #5 – Business Functions**

Students will have advanced understanding of business functions in Information Systems, and how an database systems works in the entire organization

#### **Learning Goal #6 – Quantitative and Technical Skills**

Students will have enhanced knowledge in quantitative and technical skills in database management systems.



## V. Course Objectives, Measurable Student Learning Outcomes, Evaluation Instruments, and Instructional Strategies for Skill Development

Upon completion, students will be able to

1. program in complex and advanced ad-hoc queries.
2. learn the back-end third generation language (3GL) of a leading commercial DBMS, such as Oracle's PL/Sql.
3. understand stored procedure, function, and package.
4. understand database cursor operation
5. understand other advanced database operation such as trigger, exception, and dynamic SQL.
6. create a complete 3-tier Database Management Systems (DBMS) application.

## VI. Outline of Subject Matter

(Required)

1. Advanced SQL ad-hoc queries
2. PL/Sql anonymous block and stored procedure
3. PL/Sql executable section and commands
4. PL/Sql stored procedure, function, and package
5. SQL in PL/Sql
6. Database cursor
7. Database trigger
8. Exception
9. User interface design and calling backend procedures

(Optional)

10. Dynamic SQL
11. Electronic Data Interchange (EDI) and Oracle UTL\_FILE package for string processing

## VII. Methods of Instruction

This course should be taught by lectures and heavily hands-on programming. First, the instructor should devote about 3 weeks on a quick review of SQL, and advanced SQL queries, such as the use of NVL, DECODE, string, number, date manipulation, Oracle functions, advanced use of subqueries for I/U/D. Secondly, about half of the semester should be used to cover a database backend language, such as Oracle's PL/SQL (or SQL Server's T-SQL). Students should understand stored procedure, function, package, how to program SQL in the backend language (merge of 3GL and 4GL), cursor processing control, database triggers and exceptions. The last few courses should link a user interface design tool to the backend engine. If there is extra time, an instructor may cover other topics such as Dynamic SQL and string processing EDI commands (like Oracle's UTL\_FILE package).

## VIII. Extent and Nature of Technology Use

Instructors must assign homework, exercises, and projects that involves hands-on exercises of a database system.



## IX. Textbooks

The following is a short list of textbooks that are most likely to be used for this course. Instructors may assign one or more of these and/or include other relevant texts/readings. Instructors may be asked to justify the use of old textbooks, if updated texts are available.

(Required)

1. Urman, Scott, Oracle 10g PL/SQL Programming, Osborne/McGraw Hill Publishing. ISBN 00722-30665.
2. IS 480 Lecture Notes; will be available on BeachBoard.

(Optional)

1. Koch and Loney, Oracle10g The Complete Reference, Osborne/McGraw Hill Publishing. – If you don't have Oracle background, this is a very complete reference.

## X. Instructional Policies Requirements

### A. Assessment Criteria

#### Homework

Students will complete individual homework profiling their competence in various subject matters.

#### Quizzes and Exams

Students will complete quizzes (optional), mid-term exam (required; at least one), and final exam (required).

#### Projects

Instructors must assign comprehensive course project that requires problem solving and use of a leading commercial database management system.

Suggested workload and grading:

Homework (10 pt x 10)	100 pt
Exam 1	50 pt
Exam 2	100 pt
Final Exam	100 pt
<u>Project</u>	<u>100 pt</u>
TOTAL	450 pt

### B. Required Statement

In compliance with university policy: Final grades will be based on at least three, and preferably four or more, demonstrations of competence. In no case will the grade on any class tests count for more than one-third of the course grade.

### C. Attendance, Withdrawal, Late Assignments



Students are expected to attend courses and turn in assignments on time. Specific attendance and late assignment policies are up to each individual instructor's discretion. The withdrawal policy is the same as that of the university.

*D. Disabilities*

Students with disabilities are responsible for notifying their instructor as early as possible of their needs for an accommodation of a verified disability. A student with a disability is urged to consult with Disabled Student Services as soon as possible in order to identify possible accommodations to enhance academic success.