CALIFORNIA STATE UNIVERSITY
LONG BEACH
College of Business

Standard Course Outline IS 680 Database Management Systems

I. General Information

- Course number: IS 680
- Title: Database Management Systems
- Units: 3
- Prerequisites: Graduate standing
- Course Coordinator: Sophie Lee
- SCO Prepared by Sophie Lee
- Date prepared/revised: January 31, 2017

II. Catalog Description

Use of information and database techniques to support management decision making. Decision support systems, groupware, expert systems, executive information systems, database management systems (DBMS), database analysis and design, database manipulation languages (SQL and QBE), and data warehousing.

Letter grade only (A-F).

III. Curriculum Justification(s)

This course is the first database course in graduate IS curriculum, with an emphasis on relational database modeling, application development, and project management. Database management is one of the foundations in Information Systems education. Database is not only a central repository of business data, but such data are also used to generate strategic information needed by the organization. Business data are massive and complex in nature. The processing, storage, retrieval, manipulation, and management of large amount of business data is an essential part of every information system. Many advanced courses references database understanding, so it is important that the instructor provides enough depth into this course. Major concepts include relational database model, data integrity, conceptual modeling of data, and structured query language (SQL). In terms of SQL, instructors should cover data definition language, data manipulation language, transaction control concept, join, grouping, subqueries, and other advanced query topics. The instructor should also introduce database administration, database project management, data mining, analytics, and other latest database topics.

IV. Course Objectives, Student Learning Outcomes, Evaluation Instruments, and Instructional Strategies for Skill Development

A. Measurable Student Learning Outcome(S).

Upon completion, students will be able to

1. identify data anomalies and integrity
2. understand conceptually manipulate data with relational algebra
3. understand normal forms and normalization

4. demonstrate competency in basic structured query language (SQL) commands
6. demonstrate competency in advanced SQL such as grouping and subquery
7. understand introductory database administration concepts
8. understand database project management
9. gain an understanding of recent database trends, such as noSQL, data warehouse, and big data.

B. Evaluation Instruments (Assignments).

Students learn by doing, especially in hands-on programming courses. It is recommended that the instructor assign at least 7 homework, one for each modeling or SQL topics. The instructor should also assign a comprehensive, individual development project. The instructor should also give quizzes and exams as evaluation instruments.

C. Instructional Strategies for Skill Development.

Instructors should develop examples that relate to serious business application development. It is recommended that instructor uses business related examples such as accounting, transaction processing, sales order/purchase order, inventory, marketing analytics as examples, especially ones that involve large data set with complex data relationship and logical processing for skill development.

V. Outline of Subject Matter

Topic 1. Introduction to relational data models

Topic 2. Relational algebra

Topic 3. Structure query language – data definition language

Topic 4. Structure query language – data management language

Topic 5. Structure query language – query

Topic 6. Join, outer join

Topic 7. Data integrity commands

Topic 8. UNION, INTERSECT, MINUS

Topic 9. Normalization

Topic 10. Entity relationship diagram

Topic 11. Grouping data: group by and having

Topic 12. Subquery

Topic 13. Database administration, database project management

Topic 14. NoSQL, data warehouse, big data

VI. Methods of Instruction

A. Instruction Mode.

May refer to University policies Academic Technology and the Mode of Instruction (PS 03-11) and Course Syllabi and Standard Course Outlines (PS 11-07), for descriptions of modes of instruction and for guidelines for non-traditional modes of instruction.[1]

- Traditional mode of instruction only
- This course should be taught by lectures and heavily hands-on programming. Instructors should build a solid conceptual foundation on relational database, data integrity, and normalization. Equal emphasize is then used on building a solid technical ability to program and develop using Structure Query Language. Advanced topics such as complex join, grouping data, and subquery must be covered. Instructors should provide students plenty of exercises to practice their conceptual and programming skills. An individual-based, hands-on project using Oracle or any other leading commercial database is required.

B. Classroom Activities.

Most classroom meetings are lecture based. About 50% of the semester should be devoted to relational modeling, and the other half in hands-on SQL development. The instructor should demonstrate lecture content and enforce by exercises and examples. There should be at least one lab session where students log into Oracle (or any other leading database software system). SQL topics and critical thinking skills can be taught in classrooms, accompanied by hands-on homework and exercises outside of the class time.

C. Extent and Nature of Technology Use

The course will use Oracle or a leading database software as a hands-on implementation technology. Instructors must assign homework, exercises, and **individual projects** that involve hands-on exercises of a database system.

VII. Information about Textbooks/Readings

The instructor will assign (1) a database textbook from a reputable publisher, and (2) an SQL technical reference as textbooks. Examples are:

- Rob, Peter, and Carlos Coronel, Database Systems: Design, Implementation, and Management, current edition.
- ORACLE 12c: The Complete Reference, 2016, by Oracle Press/McGraw-Hill, current edition.

VIII. Instructional Policies Requirements

Instructor's syllabi must contain explicit statements regarding their own policies with regard to plagiarism, withdrawal, absences, etc., which should be consistent with the university policies published in the CSULB Catalog. It is expected that every course will follow university policies on Attendance, Course Syllabi & Standard Course Outlines, and Final Course Grades, Grading Procedures, and Final Assessments. If some or all sections of the course are to be taught, in part or entirely, by distance learning, the course must follow the provisions of university policy on Academic Technology and the Mode of Instruction. Instructors should refer to the current CSULB Catalog and to the Academic Senate website for campus guidelines and policy statements as they develop their individual course policies.

All sections of the course will have a syllabus that includes the information required by the syllabi policy adopted by the Academic Senate. Instructors will include information on how students may make up work for excused absences. When class participation is a required part of the course, syllabi will include information on how participation is assessed. When improvement in oral communication is an objective of the course, syllabus will include a rubric for how oral communication is to be evaluated.

IX. Course Assessment and Grading

A. Description of Assessment.

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 hands-on course project that requires problem solving and use of a leading commercial database management system.

Suggested workload and grading:

- Homework 70 pt (7 hands on homeworks @10pt each)
- Quiz 30 pts
- Mid-Term 100 pt
- Final 100 pt
- Project 100 pts (2 deliverables at 10pts each; final project 80 pts)
- TOTAL 400 pt

B. GRADING POLICIES AND PROCEDURES.

Grading policies and procedures should be in compliance with university policies.

X. Disabilities:

- The Bob Murphy Access Center (BMAC) provides certification for students with disabilities and helps arrange relevant accommodations: Bob Murphy Access Center. Any student requesting academic accommodations based on a disability is strongly encouraged to register with Disabled Student Services (BMAC) each semester. A letter of verification for approved accommodations can be obtained from BMAC. Please be sure to provide your instructor with BMAC verification of accommodations as early in the semester as possible. The phone number for BMAC is (562) 985 5401. The email address is: bmac@csulb.edu.

- Assistive Technology

XI. Consistency of SCO Standards across Sections

All future syllabi will conform to the SCO. The course coordinator should review the SCO and offer advice and/or materials to faculty member new to teaching the course. The course coordinator may offer or require regular review of instructors' course materials as well as anonymous samples of student work.

XII. Additional Resources for Development of Syllabi

- University policy Course Syllabi and Standard Course Outlines (PS 11-07)
- Academic Technology (ATS) Accessible Syllabus Template
- Faculty Center for Professional Development (FCPD) Sample Syllabus Template