



# Web-Based Database Applications

## ITP 300x (3 Units)

**Objective** Examination of the architecture and use of database-enabled web sites. Define the foundation for using relational databases on the web. Architectural concepts, database applications programming using Structured Query Language, and interfacing on the web.

**Concepts** Understand web-based databases and its relationship to the dynamic world of information technology. Architecture of a relational database management system (RDBMS) on the world wide web and n-tier client/server systems will be discussed. In addition to understanding the architecture of web-databases, it is also important to understand how data is accessed and modified. Interfacing web-databases will be discussed as well as the role of SQL (Structured Query Language). Other topics examined in this course include e-commerce integration and performance.

**Prerequisite** ITP204x

**Lecture** 2.0hrs/week

**Lab** 2.0hrs/week

**Textbook** Database Driven Web Sites by Jesse Feiler, Morgan Kaufmann Publishers; ISBN: 01225133

**Grading** The following point-structure will be used in determining the grade for the course. Final grade will be based upon the total points received, the highest total in the class, and the average of the class.

Quizzes	20
Projects	80
Midterm	100
Final Project	100
Final Exam	100
Total	400

- Policies**
- Make-up policy for exams: In order to make up for a missed exam, the student must provide a satisfactory reason along with proper documentation. Usually make-ups are allowed only under extraordinary circumstances.
  - Projects: It is YOUR responsibility to turn in your lab projects on, or before, the deadlines as set by the instructor. IT IS NOT THE RESPONSIBILITY OF THE LAB TA!
  - Late Projects: Late submission of projects will lead to loss on point, so please turn in your projects on time! No projects will be

accepted after 2 weeks beyond the project's original due date.

Everything regarding a project should be settled within 2 weeks of the project's due date.

- Though working together is encouraged, the projects must be your own effort. "Duplicate" projects will all receive zero points and possible referral to the Office for Student Conduct.
  
- All students should read, understand and abide by the University Student Conduct Code  
<http://www.usc.edu/dept/publications/SCAMPUS/governance/gov03.htm>

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## Course Outline

### Week 1 - Introduction

Course Overview, Database Basics and Concepts, Relational Database Model, Web Database Overview

### Week 2 – Introduction to Client/Server for the Web

- Client/Server Model (N-Tier Approach), Tables and Indexes
- Physical vs. Logical database design

**Reading Assignment:** *Chapters 1, 2, 3*

**Project:** Familiarize with tools for the course; logon to database server and identify various toolset for the course.

### Week 3 – Overview of Web-Database Design

- Internet and Intranet considerations.
- Use of tables and forms with web-databases

**Reading Assignment:** *Chapters 4*

**Project:** Creating Database Tables for the Web

### Week 4 – Use of Structured Query Language (SQL) on the web.

- Basic SQL Statements
- Select
- Insert
- Delete
- Update

**Reading Assignment:** *Chapters 5,6*

**Project:** Writing queries to access web-data using SQL

### Week 5 – Interfacing with the Database on the Web

- ODBC considerations
- OLE-DB
- Diverse data stores
- Other interface considerations
- Web-forms

**Reading Assignment:** *ODBC vs. OLEDB Instructor Handouts*

**Project:** Using ODBC and OLE-DB to connect to your database

### Week 6 – Retrieval Methods from the Data Store

- Introduction to Joins
- Inner Joins
- Outer Joins
- Left Joins
- Right Joins

**Reading Assignment:** *SQL Server 7 Joins Handout*

**Project:** Using Joins to Extract Data

## **Week 7** – Understanding Schemas

- Introduction to Schemas
- Additional SQL techniques
- Issues and implications of electronic media
- Copyright and intellectual property
- Site Layout
- Building templates
- Using tables for page layout

**Reading Assignment:** *Chapter 5, 6, 7*

## **Week 8** - Midterm

Covers material from weeks 1 – 7

## **Week 9** - Introduction to Cold Fusion

- Using Cold Fusion Studio
- In-class product demonstrations
- Programming Syntax

**Reading Assignment:** *Chapters 8,9*

**Project:** Identifying the elements of the Cold Fusion Programming Environment

## **Week 10** – Database Operations with Cold Fusion

- Performing Database Lookups
- SQL Syntax for Cold Fusion
- Select
- Insert
- Delete
- Update

**Reading Assignment:** *Chapters 10, 11*

**Project:** Using SQL Statements in Cold Fusion

## **Week 11** – Server-side Operations

- Introduction to Stored Procedures
- Triggers
- Introduction to Database Views
- Constructing Dynamic SQL Statements

**Reading Assignment:** *Chapters 12, 13*

## **Week 12** – Integrating the Client with Cold Fusion

- Client side form field validation
- Integrating Javascript on the client
- Using input types (HTML) with client-side validation

**Reading Assignment:** *Lecture notes*

## **Week 13** – E-commerce and Web Based Databases

- Existing E-commerce solutions including databases
- The role of the middle tier in e-commerce
- Performing transactions between the middle tier and the db

**Reading Assignment:** *Lecture notes*

**Project:** Managing transactions with the database

## **Week 14** –Performance Issues with the Database

- Writing correct joins
- Evaluating views
- Roll back segments
- Basic troubleshooting

**Reading Assignment:** *Chapter 16*

**Project:** Work on Final Project

**Week 15 – Final Project**

- Work on final project
- Course Wrap-up

