COURSE OUTLINE

CITA 215 DATABASE APPLICATIONS AND CONCEPTS

Prepared By: Robert House

CANINO SCHOOL OF ENGINEERING TECHNOLOGY
Decision Systems Department
May 2015
A. **TITLE:** Database Applications and Concepts

B. **COURSE NUMBER:** CITA 215

C. **CREDIT HOURS:** 3

D. **WRITING INTENSIVE COURSE (OPTIONAL):** N/A

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall/Spring

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
   Two hours lecture, two hours laboratory per week

H. **CATALOGUE DESCRIPTION:** Database management systems are studied in the context of a SQL-based product. Topics include: logical organization versus physical organization; relational, network and hierarchical models; normalization; installation and administration of a database server; and the creation of a web-based user-interface to manipulate tables. A term project is assigned.

I. **PRE-REQUISITES/CO-COURSES:**
   a. Prerequisites
      • CITA 152 Computer Logic or
      • Permission of the instructor.
   b. Co-requisites: None.

J. **GOALS (STUDENT LEARNING OUTCOMES):**
   Upon completion of the course, the student will be able to:

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Institutional SLO</th>
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<tbody>
<tr>
<td>1. Install and configure a database server</td>
<td>2. Critical Thinking</td>
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<td>3. Professional Competence</td>
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<td>2. Describe the major database models;</td>
<td>3. Professional Competence</td>
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<td>3. Apply course concepts to model an application using a database;</td>
<td>2. Critical Thinking</td>
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<td>3. Professional Competence</td>
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<td>4. Design a usable database with appropriate normalization and structure;</td>
<td>2. Critical Thinking</td>
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<td>3. Professional Competence</td>
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<td>5. Build and query a relational database using MS Access or MySQL; and</td>
<td>2. Critical Thinking</td>
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<td>3. Professional Competence</td>
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<td>6. Working in teams, design and implement appropriate user interfaces for a database application.</td>
<td>1. Communication Skills</td>
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<td>2. Critical Thinking</td>
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<td>3. Professional Competence</td>
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<td>4. Inter/Intrapersonal Skills</td>
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K. **TEXTS:** Online resources selected by the instructor.
L. REFERENCES:
HTML version 4.01 standard, W3C. (http://www.w3.org/TR/html4/)

M. EQUIPMENT: Computer lab classroom with one set of computers connected to the campus network and a second set of computers connected to a local classroom network for hands-on project development.

SOFTWARE: Linux operating system (Ubuntu – current stable server version)
Apache HTTP Server
PHP: Hypertext Preprocessor
MySQL – Community Edition
MySQL Administrator
MySQL Query Browser
CoffeeCup HTML Editor

N. GRADING METHOD: A-F

O. MEASUREMENT CRITERIA/METHODS: Assignments and examinations

P. DETAILED TOPICAL OUTLINE:
1. Introduction: A brief history of the development of database models.
   a. The evolution of data structures and access methods: flat files, master files, indexed sequential files; hierarchical, network, matrix, and relational databases; indices, search methods, etc.
   b. A closer look at the hierarchical and relational database models: common applications for each and comparisons.
2. Database server installation and administration
   a. Installation of a LAMP (or WAMP) server
   b. Configuring the Apache HTML server
   c. Configuring the MySQL database server
3. Introduction to HTML
   a. Creation and structure of a web page
   b. HTML Forms and their relation to entering data in a database
4. Introduction to PHP
   a. Writing PHP scripts – form and function
   b. Processing HTML Form input
   c. Displaying SQL query data
5. Introduction to database design.
   b. Data normalization.
6. Data protection:
   a. recovery and concurrency.
   b. security and integrity.
7. SQL: the build and insert statements; drop, create, etc.
8. More SQL: the select and update statements, joining tables, etc.
10. Designing the user interface.

Q. **LABORATORY OUTLINE**: n/a