MASTER SYLLABUS

CITA 215 - DATABASE APPLICATIONS AND CONCEPTS

Created by: Robert House
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A. **TITLE:** Database Applications and Concepts

B. **COURSE NUMBER:** CITA 215

C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

   # Credit Hours: 3  
   # Lecture Hours: 2 per week  
   # Lab Hours: 2 per week  
   Other: per week

   Course Length: 15 Weeks

D. **WRITING INTENSIVE COURSE:** No

E. **GER CATEGORY:** None

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

G. **COURSE 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.

H. **PRE-REQUISITES/CO-REQUISITES:**

   a. Pre-requisite(s): CITA152 Computer Logic
   b. Co-requisite(s): none
   c. Pre- or co-requisite(s): none

I. **STUDENT LEARNING OUTCOMES:**

   By the end of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>PSLO</th>
<th>ISLO</th>
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<tbody>
<tr>
<td>a. Install and configure a database server</td>
<td>3. Demonstrate a solid understanding of the methodologies and foundations of IT</td>
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<tr>
<td>b. Describe the major database models</td>
<td>3. Demonstrate a solid understanding of the methodologies and foundations of IT</td>
<td>5</td>
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<td>c. Apply course concepts to model an application using a database</td>
<td>3. Demonstrate a solid understanding of the methodologies and foundations of IT</td>
<td>5</td>
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<tr>
<td>d. Design a usable database with appropriate normalization and structure</td>
<td>3. Demonstrate a solid understanding of the methodologies and foundations of IT</td>
<td>5</td>
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<tr>
<td>e. Build and query a relational database using MS Access or MySQL</td>
<td>3. Demonstrate a solid understanding of the methodologies and foundations of IT</td>
<td>5</td>
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<tr>
<td>f. Working in teams, design and implement appropriate user</td>
<td>2. Identify issues and collaborate on solutions concerning IT in an effective and professional manner</td>
<td>2[CA, PS] 4[T]</td>
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J. **APPLIED LEARNING COMPONENT:** Yes \_X\_ No_______
   • Classroom/Lab

K. **TEXTS:** None

L. **REFERENCES:** Various online resource such as SUNY Canton Library Books24x7 ITPro Book Database

M. **EQUIPMENT:** Computer lab classroom with virtual machine software installed

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**
   • Exams
   • Assignments

P. **DETAILED COURSE OUTLINE:**

      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.

   II. 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

III. Introduction to HTML
   A. Creation and structure of a web page
   B. HTML Forms and their relation to entering data in a database

IV. Introduction to PHP
   A. Writing PHP scripts – form and function
   B. Processing HTML Form input
   C. Displaying SQL query data

V. Introduction to database design.
   A. Entity-attribute-relationship modeling.
   B. Data normalization.

VI. Data protection:
   A. recovery and concurrency.
   B. security and integrity.

VII. SQL: the build and insert statements; drop, create, etc.

VIII. More SQL: the select and update statements, joining tables, etc.

IX. Database performance and optimization.

X. Designing the user interface.

Q. LABORATORY OUTLINE: N/A