STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

CITA 215 - DATABASE APPLICATIONS AND CONCEPTS

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SCHOOL OF SCIENCE, HEALTH AND CRIMINAL JUSTICE
CENTER FOR CRIMINAL JUSTICE, INTELLIGENCE AND CYBERSECURITY
FALL 2022

A. **TITLE**: Database Applications and Concepts

B. **COURSE NUMBER:** CYBR/CITA 215

C. **CREDIT HOURS:** 3

- 2 hours of lecture and 2 hours of lab per week

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:

Course Student Learning Outcome [SLO]	***PSLO***	***ISLO***
a. Install and configure a database server	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
b. Describe the major database models	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
c. Apply course concepts to model an application using a database	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
d. Design a usable database with appropriate normalization and structure	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
e. Build and query a relational database using MS Access or MySQL	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
f. Working in teams, design and implement appropriate user interfaces for a database application	2. Identify issues and collaborate on solutions concerning IT in an effective and professional manner 4. Apply problem solving and troubleshooting skills	2[CA, PS] 4[T] 5

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:

I. 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.

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. <u>LABORATORY OUTLINE</u>: N/A