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

MASTER SYLLABUS

CITA 215 – Database Application and Concepts
CIP Code: 11.0802

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Canino School of Engineering Technology
Decision Systems
Spring 2025

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

B.   **COURSE NUMBER: CITA215**

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

    # Credit Hours: 3
    # Lecture Hours per Week: 3
    # Lab Hours per Week:
      Other per Week:

    Course Length (# of Weeks):   **15**

D.   **WRITING INTENSIVE COURSE**:

E.   **GER CATEGORY:**

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

G.   **COURSE DESCRIPTION**:
In this course, students will learn the fundamentals of working with a database. Students will learn database organization. Students will learn to work with tables to extract data to answer questions – select, from, where, group by, having, order by. Students will learn to work with data types and database functions to enhance queries.

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

    a. Pre-requisite(s): CITA 152
    b. Co-requisite(s):
    c. Pre- or co-requisite(s):

I.   **STUDENT LEARNING OUTCOMES**:

Course Student Learning Outcome [SLO]	*PSLO*	*GER*	*ISLO*
a. describe the organization of a database	7		[5]
b. identify the primary and foreign key	7		[5]
c. identify table relationships – one-to-one, one-to-many, and many-to-many	7		[5]
d. implement table joins to bring data together	7		[2CA] [3]
e. filter data with basic and complex boolean expressions	7		[2CA] [5]
f. group data to extract summary information	7		[2CA], [5]
g. developed a waterfall design (common table expression) to show record set transformation to provide data insight	7		[2CA], [5]
h. display mastery of data type conversions and database functions	7		[5]

KEY	Institutional Student Learning Outcomes [ISLO 1 – 5]
ISLO #	ISLO & Subsets
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

J.   **APPLIED LEARNING COMPONENT:**   Yes___X___   No_____

If Yes, select one or more of the following categories:

Classroom/Lab__X_   Civic Engagement___
Internship___   Creative Works/Senior Project___
Clinical Practicum___   Research___
Practicum___   Entrepreneurship___
Service Learning___   (program, class, project)
Community Service___

K.   TEXTS:
Murach's SQL Server 2019 for Developers
By Bryan Syverson, Joel Murach
ISBN-13: 978-1-943872-57-2

L.   REFERENCES:
3W School SQL - https://www.w3schools.com/sql/

M.   EQUIPMENT: Computer Classroom

N.   GRADING METHOD: A-F

O.   SUGGESTED MEASUREMENT CRITERIA/METHODS:
Sql queries, exams, and quizzez

P   DETAILED COURSE OUTLINE:
I. Introduction to realtional databases, SQL, and data
- Describe how data needs have historically driven many information technology developments.
- Describe the evolution of data storage media during the last century.
- Relate the idea of data as a corporate resource that can be used to gain a competitive advantage to the development of the database management systems environment.
- Identify the three main hardware components of a client/server system.
- Recognize the differences between DML and DDL statements

- State the three coding techniques that can make SQL code easier to read and maintain

II.   Retrieve data from a single table
- Retrieve data from a database using SQL commands.
- Use compound conditions in queries.
- Use computed columns in queries.
- Use the SQL LIKE operator.
- Use the SQL IN operator.
- Sort data using the ORDER BY clause.

III.   Retrieving data from multiple tables
- Code a join query with two or more tables
- Code a union query with two or more tables
- Show when column names need to be qualified.
- Demonstrate the differences between an inner join, a left outer join, a right outer join, a full outer join, and a cross join.
- Make use of the rules associated with Union queries
- Distinguish the use of the union, union all, intersect, and except

IV.   Summary Queries
- write summaries queries with the Group BY and HAVING clause.
- recognize the difference between HAVING and WHERE in a summary query.
- demonstrate the use of ROLLUP and CUBE in a summary query.
- demonstrate the use of the Grouping Sets in a summary query.
- demonstrate the use of the OVER clause in a query.

V.   Sub Queries and common table expression
- demonstrate knowledge of a simple sub query.
- demonstrate knowledge of a correlated sub query.
- determine the proper use for the simple or correlated sub query.
- identify the parts of the common table expression.
- implement a common table expression.

VI.   Manipulating data
- Given the specifications for an action query, code the INSERT, UPDATE, or DELETE statement for doing the action.
- Use the MERGE statement to merge rows from a source table into a target table.
- Create a copy of a table by using the INTO clause of the SELECT statement.

VII.   Data Types and Functions
- code queries that use data conversions functions
- summarize the data that can be stored in the various data types
- code queries that require a data transformation on a column
- define a function's role in a query

Q.   LABORATORY OUTLINE: