

NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY ITD 132 – STRUCTURED QUERY LANGUAGE (3 CR.)

Course Description

Incorporates a working introduction to commands, functions and operators used in SQL for extracting data from standard databases. Lecture 3 hours per week.

General Course Purpose

This course provides a comprehensive foundation sufficient for a student to write ANSI/ISO Structured Query Language (SQL) statements to access a relational database.

Course Prerequisites/Corequisites

Prerequisite: ITE 115 or introductory knowledge of database application software

Course Objectives

Upon completing the course, the student will be able to:

- Write generic ANSI/ISO standard SQL statements
- Describe what a query is and how it is used to access data in a database
- Understand the processing of data with row and aggregate functions
- Understand the definition and use of primary and foreign keys
- Understand the concept and the advantages of database indexes
- Understand what a database view is and when it should be used
- Understand the role of users and roles/groups in database security
- Execute an SQL script

Major Topics to be Included

- Creating tables in a database
- Inserting, deleting and updating data in tables
- Queries, sub-queries, and joins
- Functions
- Indexes and views
- Database security
- Writing SQL scripts

Student Learning Outcomes

Creating tables in a database

- Explain database model with necessary primary and foreign keys
- Implement SQL CREATE statements
- Describe constraints and when they should be used
- Implement constraints when necessary

Inserting, deleting and updating data in tables

- Implement SQL INSERT statements
- Implement SQL UPDATE and DELETE statements

Queries, sub-queries, and joins

- Implement SQL SELECT statement with simple and compound selection criterias
- Implement SQL SELECT statements that access multiple tables (joins)
- Implement SQL SELECT sub query statements
- Implement SQL SELECT statements using GROUP BY and HAVING clauses
- Explain Boolean choices in query construction

Functions

- Implement SQL SELECT statements using string, date, and time functions
- Implement SQL SELECT using summary aggregate functions

Indexes and views

- Create database indexes
- Explain what a database view is and when it should be used
- Create a database view

Database security

- Create new users and roles/groups
- Grant and revoke priveleges for users and groups on database objects
- Drop user and roles/groups

Writing SQL scripts

- Write and save an SQL script using any of the SQL commands
- Execute an SQL script
- (optional) Introduction to PL/SQL

Required Time Allocation per Topic

Topics do not need to be followed sequentially. Many topics are taught best as an integrated whole, often revisiting the topic several times, each time at a higher level. The final exam time is not included in the time table. The last category, *Other Optional Content*, leaves time for an instructor to tailor the course to special needs or resources.

Topic	Time in Hours	Percentages
Topic 1: Creating tables in a database	3	6%
Topic 2: Inserting, deleting and updating data in tables	6	13%
Topic 3: Queries, sub-queries, and joins	12	27%
Topic 4: Functions	9	20%
Topic 5: Indexes and views	6	13%
Topic 6: Database security	3	7%
Topic 7: Writing SQL scripts	3	7%
Other Optional Content	3	7%
Total	45	100%