

Course Outline

School:	Eng. Tech. & Applied Science
Department:	Information and Communication Engineering Technology (ICET)
Course Title:	Introduction To Database Concept
Course Code:	COMP 122
Course Hours/Credits:	56
Prerequisites:	COMP 100
Co-requisites:	N/A
Eligible for Prior Learning, Assessment and Recognition:	Yes
Originated by:	Bhim Harlal
Creation Date:	Fall 2013
Revised by:	Patrick Gignac
Revision Date:	Fall 2014
Current Semester:	Winter 2016
Approved by:	<i>p pesikan</i> <i>l c/o</i>

Chairperson/Dean

Students are expected to review and understand all areas of the course outline.

Retain this course outline for future transfer credit applications. A fee may be charged for additional copies.

This course outline is available in alternative formats upon request.

Course Description

This course introduces students to relational database concepts, as related to personal, client server, and enterprise database systems. Topics will include data types, table structure, and relationships, data access queries using QBE grid and SQL, normalization, and database security. These concepts will be reinforced using hands on exercises with one or more database software products such as Oracle or Microsoft SQL for lab work and the group term project. Microsoft Visio or other software will be used as the diagramming tool to create ERDs.

Program Outcomes

Successful completion of this and other courses in the program culminates in the achievement of the Vocational Learning Outcomes (program outcomes) set by the Ministry of Training, Colleges and Universities in the Program Standard. The VLOs express the learning a student must reliably demonstrate before graduation. To ensure a meaningful learning experience and to better understand how this course and program prepare graduates for success, students are encouraged to review the Program Standard by visiting <http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/>. For apprenticeship-based programs, visit <http://www.collegeoftrades.ca/training-standards>.

Course Learning Outcomes

The student will reliably demonstrate the ability to:

1. Explain the term Database and Database Management System (DBMS), as well as the use of Primary and Foreign Keys.
2. Design simple table structures and associate them to a prescribed business problem.
3. Determine cardinality between tables, and use cardinality symbols (Crow's Foot notation) to represent 1-1, 1-M, and M-N relationships.
4. Use Cardinality symbols to draw Entity Relation Diagrams (ERDs) to model tables and relationships.
5. Explain fundamental differences between logical and physical database design.
6. Interpret the SQL script generated in the creation of simple queries in an Access environment.
7. Use SQL Data Definition Language (DDL) to create simple relational databases.
8. Use SQL Data Manipulation Language (DML) to create and query sample data.
9. Use normalization techniques to remove redundancies in tables.
10. Apply security measures such as password, encryption, and hiding database objects to secure data in Access databases.

Essential Employability Skills (EES)

The student will reliably demonstrate the ability to*:

1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
3. Execute mathematical operations accurately.
4. Apply a systematic approach to solve problems.
5. Use a variety of thinking skills to anticipate and solve problems.

6. Locate, select, organize, and document information using appropriate technology and information systems.
7. Analyze, evaluate, and apply relevant information from a variety of sources.
8. Show respect for diverse opinions, values belief systems, and contributions of others.
9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
10. Manage the use of time and other resources to complete projects.
11. Take responsibility for one's own actions, decisions, and consequences.

**There are 11 Essential Employability Skills outcomes as per the Ministry Program Standard. Of these 11 outcomes, the following will be assessed in this course.*

Global Citizenship and Equity (GC&E) Outcomes

N/A

Text and other Instructional/Learning Materials

Text Book(s):

Joan Casteel. 2015. Oracle 12c: SQL, 3rd Edition.

Boston: Course Technology.

ISBN-10: 1305251032

ISBN-13: 9781305251038

RECOMMENDED:

Coronel, C., Morris. S., Rob, P. 2013. Database Systems. Design, Implementation, and Management, Tenth Edition. Boston: Course Technology, Cengage Learning.

ISBN-10: 1111969604

ISBN-13: 9781111969608

Online Resource(s):

www.microsoft.com

www.oracle.com

Evaluation Scheme

- ⇒ Assignment 1: Case Problem
Chapter 3
- ⇒ Assignment 2: Case Problem
Chapter 7
- ⇒ Assignment 3: Case Problem
Chapter 9
- ⇒ Project: Complete database schema and ERD.
- ⇒ Midterm Test: Chapter 1 - 5
- ⇒ Final Test: Chapter 7 - 11

Evaluation Name	CLO(s)	EES Outcome(s)	GCE Outcome(s)	Weight/100
Assignment 1	1, 2, 3, 4, 5, 6, 7, 8, 9	2, 3, 4, 5, 6, 7, 8, 10		10
Assignment 2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	2, 3, 4, 5, 6, 7, 8, 10, 11		10
Assignment 3	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	2, 3, 4, 5, 6, 7, 8, 10, 11		10
Project	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11		20
Midterm Test	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	2, 3, 4, 5, 6, 7, 8, 10, 11		25
Final Test	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	2, 3, 4, 5, 6, 7, 8, 10, 11		25
Total				100%

If students are unable to write a test they should immediately contact their professor or program Chair for advice. In exceptional and well documented circumstances (e.g. unforeseen family problems, serious illness, or death of a close family member), students may be able to write a make-up test.

All submitted work may be reviewed for authenticity and originality utilizing Turnitin®. Students who do not wish to have their work submitted to Turnitin® must, by the end of the second week of class, communicate this in writing to the instructor and make mutually agreeable alternate arrangements.

When writing tests, students must be able to produce official College photo identification or they may be refused the right to take the test or test results will be void.

Student Accommodation

It is College Policy to provide accommodation based on grounds defined in the Ontario Human Rights Code. Accommodation may include modifications to standard practices. Students with disabilities who require academic accommodations must register with the Centre for Students with Disabilities. Students requiring accommodation based on other human rights grounds should talk with their professors as early as possible. Please see the Student Accommodation Policy.

Use of Dictionaries

- Any dictionary (hard copy or electronic) may be used in regular class work.

Program or School Policies

N/A

Course Policies

N/A

College Policies

Students should familiarize themselves with all College Policies that cover academic matters and student conduct.

All students and employees have the right to study and work in an environment that is free from discrimination and harassment and promotes respect and equity. Centennial policies ensure all incidents of harassment, discrimination, bullying and violence will be addressed and responded to accordingly.

Academic honesty is integral to the learning process and a necessary ingredient of academic integrity. Academic dishonesty includes cheating, plagiarism, and impersonation. All of these occur when the work of others is presented by a student as their own and/or without citing sources of information. Breaches of academic honesty may result in a failing grade on the assignment/course, suspension or expulsion from the college.

For more information on these and other policies, please visit www.centennialcollege.ca/about-centennial/college-overview/college-policies.

Students enrolled in a joint or collaborative program are subject to the partner institution's academic policies.

PLAR Process

This course is eligible for Prior Learning Assessment and Recognition (PLAR). PLAR is a process by which course credit may be granted for past learning acquired through work or other life experiences. The PLAR process involves completing an assessment (portfolio, test, assignment, etc.) that reliably demonstrates achievement of the course learning outcomes. Contact the academic school to obtain information on the PLAR process and the required assessment.

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Topical Outline (subject to change):

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
1	Discuss course materials, lab exercises and project requirements. Overview of Database System SQL Developer	Casteel - Chapter 1 Coronel - Chapter 1	Installed software	Demonstration		
2	Overview of Databases 1. Terminology 2. DBMS 3. Database Design ER Modelling Normalization Table relationships	Casteel - Chapter 1 Coronel - Chapter 2,3,4	Differentiate between data information Describe the various Database Management System (DBMS) functions and architectures, metadata, data inconsistency, data integrity, data anomaly, query language, Structured Query Language (SQL). Explain the importance of database design. Explain the term structural dependence and data dependence Differentiate between logical data format and physical data format List and briefly describe the main components of a database system. Define the term data redundancy and explain its effects on the quality of information produced.	Lecture Demonstration Lab Session Hands-on: 1-10 Case Study: City Jail		
3	Basic SQL Select Statements Select statement Column selection Column aliases NULL values Aliases UNIQUE and DISTINCT Concatenation	Chapter 2 Basic SQL Select Statements	Describe some essential SQL Data Definition commands and SQL Data Manipulation commands. Interpret and use different data types.	Lecture Demonstration Lab Session Hands-on: 1-10		
4	Database Creation Database design And table creation Table creation from a subquery Data types Modifying tables	Chapter 3 Database Creation	Creation of a database and table from an DDL statement and subquery.	Lecture Demonstration Lab Session: Hands-on: 1-10 Case Study.	Assignment 1 Case Study	

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
	Deleting and truncating tables					
5	Constraints Column Level Table Level Primary key Foreign key Unique Check Not Null Multiple vs single column constraints	Chapter 4	Create table level and column level constraints. Explain how foreign keys help to minimize data redundancies and data anomalies.	Lecture Demonstration Lab Session Hands-on: 1-10 Case Study: City Jail		
6	Data Manipulation DML Insert Update Delete Commit Rollback Locking	Chapter 5 Data Manipulation	Data Manipulation Language (DML) Describe some essential SQL Data Manipulation commands. Apply DML commands of SQL to select, insert, update, delete, and retrieve data.	Lecture Demonstration Lab Session Hands-on: 1-10 Case Study: City Jail Creating Advanced Queries and Enhancing Table Design, and Case Problem 2 (AC297-298)		
7	Review and Midterm Test	Review Chapters 1 - 5	Review	Question and answer review and test.	Midterm Test	
8	User creation and management Data security User creation Privileges Passwords Roles User and privilege deletion	Chapter 7 User creation and management	Students will be able to implement basic security measures such as creating users, password management, granting, revoking and passing privileges, assigning roles, and granting access to the public.	Lecture Lab Session Hands-on: 1-10 Case Study: City Jail	Assignment 2 Case Study	
9	Restricting Rows and Sorting Where Order by Between, in, like Logical operators Null values	Chapter 8 Restricting Rows and Sorting	Students will be able to create where clauses, order select statements and use other restriction logical structures.	Lecture Demonstration Lab Session Hands-on: 1-10 Case Study: City Jail		

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
10	Joining Tables Cartesion Equality Non-equality Self Outer Set operators	Casteel - Chapter 9 Joining Tables Coronel - Chapter 6	Create sql statements to join tables. Normalize tables by detecting violations of the normal forms and apply normalization rules	Lecture Demonstration Lab Session Hands-on: 1-10 Case Study: City Jail	Assignment 3 Case Study	
11	Single Row Functions Conversion Functions Manipulation Functions Number Date Other DUAL	Chapter 10 Single Row Functions	Explain and implement single-row functions.	Lecture Demonstration Lab Session Hands-on: 1-10 Case Study: City Jail		
12	Group Functions SUM AVG MAX MIN COUNT Nesting Statistical functions	Chapter 11 Group Functions	Explain and implement group functions.	Lecture Demonstration Lab Session Hands-on: 1-10 Case Study: City Jail		
13	Project Presentations	Project Presentations	Project Presentations	Project Presentations	Projects Due	
14	Review and Final Test	n/a	n/a	n/a	Test on Chapters 7 - 11	