COURSE OUTLINE: CSD216 - DATABASES II

Prepared: Rodney Martin
Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	CSD216: DATABASES II
Program Number: Name	2095: COMPUTER PROGRAMMING
Department:	COMPUTER STUDIES
Academic Year:	2022-2023
Course Description:	The design of a database largely determines its efficiency and integrity. Students learn how to analyze and model information systems using Entity-Relationship diagrams and normalization techniques for relational databases, as well as the contrasting design needs of business intelligence and non-relational databases. Database administration techniques are explored in practical exercises using industry standard software tools.
Total Credits:	4
Hours/Week:	4
Total Hours:	56
Prerequisites:	CSD123
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**2095 - COMPUTER PROGRAMMING** VLO 6 Select and apply strategies for personal and professional development to enhance work performance. VLO 7 Apply project management principles and tools when working on projects within a computing environment. VLO 9 Support the analysis and definition of software system specifications based on functional and non-functional requirements. VLO 12 Model, design, implement, and maintain basic data storage solutions.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.

	EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	To successfully pass this course, the student must receive passing grades for both the Test portion of the class AND the Laboratory portion. Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 - 59% 1.00 F (Fail) 49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar`s office. W Student has withdrawn from the course without academic penalty.
Books and Required Resources:	Database Design and Implementation by Howard Gould Publisher: Bookboon.com https://bookboon.com/premium/reader/database-design-and-implementation Database Design for Mere Mortals: 25th Anniversary Edition, 4th edition by Michael J Hernandez Publisher: Michael J Hernandez Edition: 4 OPTIONAL BUT RECOMMENDED

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Design conceptual data models from a given system or problem description	1.1 Describe the relational model and its key concepts 1.2 Identify entities, attributes, and relationships in a system or problem description to produce a conceptual model 1.3 Distinguish and identify from a system or problem description different relationships like 1-to-1, 1-to-many, many-to-many, recursive, supertype/subtype 1.4 Create Entity-Relation diagrams for conceptual models
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Design normalized logical models	2.1 Create a logical model from a conceptual model and problem description 2.2 Use keys, data types, foreign key constraints, check constraints, and unique constraints to enhance data integrity in

	a logical model 2.3 Explain what normalization is and why it is important 2.4 Define the terms functional dependency , determinant , and dependent set as they pertain to normalization 2.5 Employ normalization techniques to reduce data redundancy and modification problems in a logical model
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Implement and optimize physical databases	3.1 Describe the circumstances in which denormalization is appropriate 3.2 Define and create relational database schemas using SQL 3.3 Discuss the purpose of indexes, and explain when their use is in/appropriate 3.4 Create and use indexes 3.5 Perform database backups 3.6 Describe vertical and horizontal scaling 3.7 Discuss the nature and limitations of distributed databases
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Explain how design for NoSQL databases differs from that of relational databases	4.1 Describe the (non-)schemas of the various NoSQL database types 4.2 Distinguish collections and documents from tables and rows 4.3 Explain why denormalization and redundancy are accepted in NoSQL databases 4.4 Discuss common design approaches for NoSQL databases
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Manage database server users and roles	5.1 Distinguish between database users and application users 5.2 Create database users 5.3 Create database roles 5.4 Assign privileges to database roles and users 5.5 Restrict access for specific roles/users to specific devices, databases, and/or tables
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Explain the design and use of business intelligence technologies	6.1 Distinguish between OLTP and OLAP systems 6.2 Define and distinguish Data Warehouses, Data Lakes, and Data Marts 6.3 Explain the Extract, Transform, Load (ETL) process 6.4 Explain how and why OLAP database schemas are different than those of OLTP databases 6.5 Define business intelligence, and describe related tools and techniques

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Lab Assignments	40%
Test 1	30%
Test 2	30%

Date:	June 1, 2022
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.