Course Code: Title	CSD210: DATABASE MODELLING
Program Number: Name	2090: COMPUTER PROGRAMMER 2091: COMPUTER - PROG/ANAL
Department:	COMPUTER STUDIES
Semesters/Terms:	20F
Course Description:	This course will introduce students to database design and implementation. Students will learn to analyze and model an end-user`s data environment using Entity-Relationship Diagrams and normalization techniques. Database models will be physically implemented using a relational DBMS and SQL (Structured Query Language). To understand the database development process, the following concepts will be discussed: data integrity, entities, attributes, relationships, cardinalities, primary and foreign keys, normalization, conceptual modeling, logical modeling, physical modeling.
Total Credits:	4
Hours/Week:	4
Total Hours:	60
Prerequisites:	CSD102
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	CSD220
Vocational Learning Outcomes (VLO's) addressed in this course: Please refer to program web page for a complete listing of program outcomes where applicable.	**2090 - COMPUTER PROGRAMMER** VLO 6 Select and apply strategies for personal and professional development to enhance work performance. 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 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.
Course Evaluation:	Passing Grade: 50%, D

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.

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	A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Evaluation Methods Weight Tests 60% Assignments/Labs 40% 100% 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. 1. In order to pass this course the student must obtain an overall test/quiz average of 50% or better, as well as, an overall assignment average of 50% or better. A student who is not present to write a particular test/quiz, and does not notify the professor beforehand of their intended absence, may be subject to a zero grade on that test/quiz. 2. There will be no supplemental or make-up quizzes/tests in this course. 3. Assignments must be submitted by the due date according to the specifications of the professor. Late assignments will normally be given a mark of zero. Late assignments will only be marked at the discretion of the professor in cases where there were extenuating circumstances, and, in such cases, a late penalty of 10% per day will be assessed. 4. Any assignment/projects submissions, deemed to be copied, will result in a zero grade being assigned to all students involved in a particular incident. 5. It is the responsibility of the student to ask the professor to clarify any assignment requirements. 6. The professor reserves the right to modify the assessment process In order to meet any changing needs of the class.

Course Outcomes and Learning Objectives:	**Course Outcome 1**	**Learning Objectives for Course Outcome 1**
	Understand the problems with spreadsheet/file processing systems and	1.1 define/describe the following terms: i) database iii) data redundancy ii) database management system iv) data integrity

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how database oriented systems provide solutions to those problems	1.2 compare database processing with spreadsheet/file processing 1.3 understand the disadvantages of spreadsheet/file processing 1.4 understand the advantages and disadvantages of database processing 1.5 identify and describe the functions of a database management system 1.6 identify the role of various components of a database system
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Understand anomalies and the need for normalization through application of the Relational Model	2.1 define and apply the concepts of the following terms: i) relation/row/column v)functional dependency ii) attribute vi)determinant iii)normal forms vii)primary key/foreign key/candidate key iv)modification anomalies viii)referential integrity 2.2 understand anomalies and the need for normalization 2.3 understand how to assign primary keys to tables 2.4 determine the functional dependencies among attributes 2.5 understand the goal of domain key normal form 2.6 compose relations applying the concepts of normalization and functional dependencies
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Demonstrate the use of basic SQL queries to manipulate and retrieve data in a database	3.1 query a database retrieving row and column data 3.2 query a database using conditions to restrict the data retrieved 3.3 rename column headings in the retrieved data 3.4 create queries involving two or more tables using joins 3.5 insert, update, and delete data in a table
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Understand the Relational Database Model and apply the Entity-Relationship Model for modeling business data requirements	4.1 relate this course to systems analysis and design 4.2 define and apply the concepts of the following terms: i) Entity-Relationship Model vii) internal/physical model ii) entity viii) weak entity iii) attribute ix) category types iv) relationship x) supertypes/subtypes v) external/user view(subschema) xi) cardinality vi) conceptual/logical model(schema) xii) domain xiii) recursive 4.3 understand the importance for data modelling and design tools and techniques 4.4 identify and name entities in a user`s environment 4.5 differentiate between an entity type and entity occurrence 4.6 allocate attributes to their respective entities 4.7 differentiate entity occurrences by assigning primary/unique

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identifiers to those occurrences
4.8 understand how entities and relationships are represented
4.9 understand and apply connectivity`s and cardinalities
4.10 understand and apply the following types of binary relationships

i) one-to-one ii) one-to-many iii) many-to-many

4.11 understand how user views are related and combined to form an overall database design
4.12 use modeling tools to create E-R diagrams (data models)

Course Outcome 5	Learning Objectives for Course Outcome 5
Transform E-R data models into a physical relational design	5.1 create tables from the entities defined in the E-R Model and the list of attributes assigned to those entities 5.2 define primary and secondary keys for each table 5.3 implement one-to-one, one-to-many, and many-to-many relationships, and, explain how these relationships facilitate the retrieval of information 5.4 enforce referential integrity constraints
Course Outcome 6	Learning Objectives for Course Outcome 6
Understand NoSQL databases and when they are appropriate	6.1 Understand JSON and how it is stored in both a SQL and NoSQL database 6.2 Describe the different types of NoSQL databases 6.3 Discuss the advantages and disadvantages of NoSQL vs relational databases
Course Outcome 7	Learning Objectives for Course Outcome 7
Explain what a data warehouse is and how to perform ETL	7.1 Describe what a data warehouse is and how enterprises use them 7.2 Describe the typical schemas used in data warehouses 7.3 Understand the Extract, Transform, and Load process 7.3 Explain the difference between a data warehouse, data mart, and data lake

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Labs	40%
Tests	60%

Date: July 22, 2020

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.

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