UNIVERSITY OF DELTA, AGBOR, NIGERIA
COMPUTING
INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)
B.Sc. Information and Communication Technology

UNIDEL-SEN 302: Database Systems (3 Units; Compulsory; LH=30)

Senate-approved Relevance
Emphasis is in the training of graduates who are knowledgeable and are able to provide demonstrable skills in the area of database systems. A study of data models, data description languages, and query facilities including relational algebra and SQL, data normalization, transactions and their properties, physical data organization and indexing, security issues and object databases is a necessary condition for the study of computers. These demonstrable skills are in tandem with the mission and vision of UNIDEL. The relevance of this is seeing computing graduates of UNIDEL with demonstrable potentials and skills to answer pressing modern concerns to draw reasoned inferences and defensible conclusions; and solve problems and make decisions based on Database Systems potentials

Overview
Database is an integral aspect of information and communication technology as there enormous generation of data and information and needs to be storage and be retrieved in an effective and efficient way. Different applications whether web application, desktop and mobile application needs these databases to appropriately address the needs of the user. There is a strong advocate for database storage at the backend to reduce the workload in the front end and to ensure higher performance of the software.

This course presents the fundamental concepts of database design and use. It provides a study of data models, data description languages, and query facilities including relational algebra and SQL, data normalization, transactions and their properties, physical data organization and indexing, security issues and object databases. It also looks at the new trends in databases, for example, Big Data, MapReduce, and NoSQL. The knowledge of the above topics will be applied in the design and implementation of a database application using a target database management system.

Objectives
The objectives of this course are to: (i) describe the basics of SQL and construct queries using SQL (ii) Explain the relational database design principles. (iii) Differentiate between transaction processing and concurrency control. (iv) Identify database storage structures and access techniques(v) Discuss database structures(vi) Determine the problems of setting up complicate**d** files (vii) Discuss query facilities in database systems

Learning Outcomes
Upon completion of this course, the students will be able to: (i) identify data description languages (ii) Use query facilities in database systems (iii) Identify security issues in database system (iv) Design a database system (v) Identify new trends in databases (v) Apply the techniques of database management system(vi) Explain the relational database design principles (vii) Identify database storage structures and access techniques

Course Content

Fundamental concepts of database design and use. Data models. Data description languages. Query facilities including relational algebra and SQL. Data normalization. Transactions and their properties. Physical data organization. Indexing and hashing. Security issues and object databases. New trends in databases. Big data. MapReduce. NoSQL. Entities and Entity Sets. Relationships & Relationship Sets. Attributes. Mapping Constraints. Keys, Primary Keys for Relationship Sets. The Entity Relationship Diagram. Reducing E-R Diagrams to Table. Structure of Relational Database. Basic Structure. Database Scheme. Query Languages.

Minimum Academic Standard:

NUC minimum academic standard requirements for facilities.