



IYA ABUBAKAR COMPUTER CENTRE
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA
Where Professionalism is Excellent



Diploma in Computer Science (Year II)

COURSE COVERAGE SYLLABUS:
DCS 209 – Introduction to Database Management Systems (I)

1. Course Description:

“Introduction to Databases (I)” is a practical-oriented course designed to introduce students to databases by providing fundamental knowledge on the concepts of data, records, databases and database management systems in general. Particular emphasis shall be laid on the design and development of relational database systems.

2. Prerequisites:

Students are *not* assumed to have acquired any computing skills, but knowing how to navigate generally around the Microsoft Windows Operating System environment will help a lot.

3. Course Objective:

The course is designed to provide Diploma Students with basic, practical knowledge and skills required for successfully designing and building relational database back-ends that will serve the requirements of any individual or organization that needs a database solution for their day-to-day operations.

4. Course Coverage Outline:

The course is organized into two areas of coverage, namely the theoretical background of database systems, and the practical applications of database systems.

(a) Theoretical Coverage:

Fundamental concepts of databases: focus on the relational data model; properties of relational tables; files, tables, records and fields; keys, entities and entity-relationship (E-R) diagrams; explaining the crow’s foot notation of E-R diagramming; introduction to Structured Query Language (SQL).

Database design & development process: general steps in the design process; advantages of database systems; disadvantages of database systems.

(b) Practical Applications:

- A case study shall be proposed to the students upon which the practical classes shall be based. A good case study in point will be how to build a database structure for managing students’ records at I.A.C.C., A.B.U. Zaria.
- In building the case study, the following shall be covered in class before moving on to the lab works: requirements gathering and analysis; identifying the key entities; building the E-R diagrams; specifying the relational schema; and the data dictionary; actual implementation in the lab.

5. Expected Learning Outcomes:

Upon successful completion of this course, students will be able to:

- (i) explain the fundamental concepts of databases and database management systems.
- (ii) analyze user requirement statements and design conceptual data entities (complete with their relationships) to appropriately represent the stated user requirements.
- (iii) using a specific DBMS (e.g. Microsoft Access), translate entity designs into actual database tables that handle all the entities and their relationships as conceptualized in the design.
- (iv) write SQL scripts that could insert, delete or update records in the database.
- (v) write SQL scripts that could query the database to return various kinds of reports as might be required by the user.

6. Detailed Lab Coverage:

Week	Topics to Cover	Assignments Given	Assignments Due
1	General introduction to databases, a look at (historical) flat file-oriented records keeping approaches, limitations of file-oriented records keeping systems.		
	Database systems meet the challenges of electronic data management, advantages of database systems (as against flat file-oriented systems), shortcomings (disadvantages) of database management systems.	Assignment #1	
2	Formal definitions of data, database, database management systems, and data access.		
	Summarized overview of some database models and techniques (flat model, hierarchical model, network model, relational model, object and object-relational model).	Assignment #2	Assignment #1 Due
3	Organization / Classification of databases (centralized and distributed databases), purpose and functions of database management systems.	Assignment #3	Assignment #2 Due
	Fundamental concepts of the relational data model: files, tables, records, fields, keys, entities. Properties of relational tables		
4	Database design and development process: General steps in the design process, characteristics of a good database design process.		Assignment #3 Due
5	Data modeling with E-R diagrams, using crow's foot notation.		
6	Course Case Study		
	Introducing the project, requirements specifications, preliminary analysis and design, the process, the entities, the e-r diagrams, the relational schema and data dictionary.		Last day to turn in all assignments!
7 – 13	Course Lab Sessions		
	General Revisions		
	Final Exam		

7. Textbooks:

Bespoke lecture notes shall be prepared by the Instructor and made available free-of-charge to the students. The lecture notes shall be in pdf *and* PowerPoint presentation formats.