CSC 215/INF 215: DATABASE DESIGN 1

A. **Instructor**
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5) **Course URL:** http://ucms.ucc.edu.gh --Course page where PowerPoint and videos on the course can be downloaded with login access.

B. **Course Description**
The aim of this course is to give a thorough introduction to the theoretical and practical issues underlying the design and implementation of modern database systems. The course aimed at is the development of the students' knowledge and hands-on experience to design and build database for everyday use. Thus this course will provide students with a general overview of databases, introducing you to database history, modern database systems, the different models used to design a database, and Structured Query Language (SQL), which is the standard language used to access and manipulate databases.

C. **Justification**
Database application is all around us such Library cataloging system, Web Search Engine's result, Students Transcript system, and payroll system among others Computer students should have the skills in designing, developing and implementing such applications. Database skill is one of the core skills that graduates with degree in Computer Science, Information Technology, Information System and Software Engineering should possess.

D. **Course Objectives**
On completion of this subject students should be able to:

1) Use Microsoft Access to create, populate, query and manage databases;

2) Demonstrate an understanding of the principles underlying database systems and the kinds of purposes for which they are used;
3) Use SQL to formulate realistic queries to realistic databases;
4) Explain what a database system is as well as the various components;
5) Identify the various people involved in database management systems;
6) Explain the historical background of database management systems;
7) Compare the various database models;
8) Describe the functions of a database management system;
9) Explain the three-schema database architecture;
10) Describe what tables, indexes, and views are as well as discuss the differences among them;
11) Explain the entity-relationship model;
12) Develop an entity-relationship model based on user requirements;
13) Describe the relational database model;
14) Explain the process of normalization;
15) Convert an entity-relationship diagram to a set of normalized relations;
16) Explain referential integrity;
17) Identify how relational algebra is used to construct queries;
18) Describe and use data definition commands;
19) Describe and use data manipulation commands;
20) Explain how to join tables together for queries;
21) Write a simple PHP code;
22) Use GUI and SQL View to create, populate and execute queries for Microsoft Access 2013; and
23) Use CLI and phpMyAdmin to create, populate and execute queries for MySQL in WAMP (LAMP, MAMP) and XAMPP.

NB: Objective in black would be achieved during face-to-face lecturing while red during online self-pace learning.

E. In-class topics to be covered

Week	Topics
1	Chapter 1 Databases and Database Users
2	Chapter 2 Database System Concepts and Architecture
3	Chapter 3 The Relational Data Model and Relational Database Constraints
4	Chapter 7 Data Modeling Using the Entity-Relationship (ER) Model
5	Chapter 9 Relational Database Design by ER- and EER-to-Relational Mapping
6	Chapter 6 The Relational Algebra
7	Chapter 4 Basic SQL
8	Chapter 5 More SQL: Complex Queries, Triggers, Views and Schema Modification

	9	Chapter 15 Basics of Functional Dependencies and Normalization for Relational Databases
	10	Chapter 16 Relational Database Design Algorithms and Further Dependencies
	11	Chapter 10 Practical Database Design Methodology

F. Recommended Textbooks

1) Throughout the course the textbook that would be used is **Fundamentals of Database Systems** Sixth Edition by Ramez Elmasri and Shamkant B. Navathe, Publisher: Addison-Wesley.
2) Microsoft Access 2013: Comprehensive by Phillip Pratt and Mary Last. Publisher: Cengage Learning

Teaching Methods

1) Mode of lesson delivery
   The flipped classroom strategy of the blended learning instructional mode will be used. 50% of the course objectives would be attained by attending face-to- face lectures on scheduled period and venue whiles the remaining 50% would self-paced done online from MOOC platforms for online supplement courses listed below.
2) Practical session
   Four practical sessions would done at the ICT Centre on Saturdays or Sundays at the date/time to be announced in class.

Course Assessment:

1) For each supplement courses listed, students are to enroll, watch its the videos, write personal notes and take the assessments, which will account for the assigned marks of their continuous assessment for the course.

Courses	MOOC Platform	Marks	Pace
Diploma in Databases and T-SQL - Revised	www.alison.com	10	Self-paced
CS403: Introduction to Modern Database Systems	www.saylor.com	10	Self-paced
Microsoft Access 2013 for Beginners - Start Your Database Journey		10	Self-paced
Microsoft Access 2013 - Advanced. Master Databases	www.alison.com		
Homework		10	

2) You are to complete your assessments three weeks (**11:59pm**) to the writing of the **End of Semester Exams**.

3) When done, fill the MOOC Exercise -Inspection page on the Moodle platform after you have changed your passwords as directed.

4) I will then log into the platforms with your filled credential to record your marks obtained for the continuous assessment for this course.

5) 1 mark per day will be deducted from continuous assessment mark for each delay after the deadline/dateline in 2 above.

6) Continuous assessment will be displayed at least a week before writing the final assessment of this course.