GAU, Faculty of Engineering

Course Unit Title	Database Systems
Course Unit Code	CEN306
Type of Course Unit	Compulsory, Computer Engineering Students
Level of Course Unit	3rd Year BSc
National Credits	4
Number of ECTS Credits Allocated	7 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	3
Semester when the course unit is delivered	6
Mode of Delivery	Face to Face, Laboratory Experiments
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	Basic bacground computer programming, set theory, calculus

Objectives of the Course:

- Overview of the principles of database management systems
- Teaching database design with relational and entitiy relationship models.
- Teaching Flexible and stable database design
- Teaching Structured Query Language
- Practical deployment of database designs

Learning Outcomes

When this course has been completed the student should be able to		Assesment.
1	Analyze existing and future data warehousing needs	1
2	Construct database models from informal descriptions of business' rules, including all entities, relationships, attributes, and business rules	1
3	Implement, analyze and manipulate and relational databases	1
4	Translate E/R designs to the relational model	1
5	Realize their designs on MS-SQL DBMS	1,2,5
6	Populate and query databases using SQL	1,2,5

Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	2
2	Ability to design and conduct experiments as well as to analyze and interpret data	2
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	3
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	1
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	Ability to express their ideas and findings, in written and oral form	2
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	5
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	5
10	To apply fundamental concepts of software design, database design, data processing and artificial intelligence in the modeling, designing, implementing, testing and deploying software solutions.	5
11	Ability to analyse and design hardware systems by applying the principles of embedded systems, microprocessors, computer networks, distributed systems and data communication.	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)

Course Contents

Week			Exams
1	Chapter 1	Introduction	
2		Introduction	
3	Chapter 2	Design Principles: Entity Relationship (ER) Model	
4		Design Principles: Entity Relationship (ER) Model	
5		Design Principles: Case Studies	
6	Chapter 3	SQL DDL – CREATE/DROP	
7		SQL DML – INSERT/DELETE/UPDATE	
8			Midterm
9	Chapter 4	SQL DML – Basic SELECT queries	
10		SQL DML – Basic SELECT queries	
11		SQL DML – Aggregate functions	
12		SQL DML – Cross product and multiple table queries	2nd Midterm Exam
13		SQL DML – Subqueries	
14		SQL DML – Subqueries	
15			Final

Recommended Sources

Textbook:
Connolly and Begg, "Database Systems: A Practical Approach to Design, Implementation and Management", Addison Wesley, 5th Edition,2009.

Supplementary Material (s):
A. Silberchatz, H.F. Korth, S. Sudarshan, "Database System Concepts", McGraw Hill, 5th Edition, 2006.

Assessment

Attendance	10%	Less than 25% class attendance results in NG grade.
Laboratory	10%	Less than 25% laboratory attendance results in NG grade.
Midterm Exam	20%	Written Exam
2nd Midterm Exam	20%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	15	3	45
Labs and Tutorials	10	2	20
Assignments	-	-	-
Project/Presentation/Report Writing	5	4	20
E-learning Activities	-	-	-
Quizzes	-	-	-
Midterm Examination	2	15	30
Final Examination	1	15	15
Self Study	15	4	60
Total Workload			190
Total Workload/30 (h)			6.33
ECTS Credit of the Course			7