EAST WEST UNIVERSITY

Department of Computer Science and Engineering
Course Outline for CSE 301 Database Systems
Spring 2017 Semester

Course Information

Course: **CSE 301 Database Systems (Sections 1, 2, 3)**
Credit Hours:3+1 = 4
Pre-requisite: CSE 205 Discrete Mathematics

Instructor Information

Instructor: **Mohammad Rezwanul Huq, PhD, Assistant Professor, CSE Dept.**
Office: 629
Tel. No.: 09666775577 (hunting) Ext: 372
E-mail: mrhuq@ewubd.edu

TA: Fahim Shahriar Rasel (01554070646) and Puloma Roy

Class Routine & Office Hours

Day	08:30-10:00	10:10-11:40	11:50-13:20	13:30-15:00	15:10-16:40	16:50-18:20
Sunday	CSE 301 (1) Room 108	CSE 301 (1) LAB Room 630				
Monday	CSE 301 (3) Room 726	**Office Hour**	CSE 301 (2) Room 726	CSE 301 (3) LAB Room 630	**Office Hour**	
Tuesday	CSE 301 (1) Room 108	**Office Hour**		**Office Hour**	**Office Hour**	
Wednesday	CSE 301 (3) Room 726	**Office Hour**	CSE 301 (2) Room 726	CSE 301 (2) LAB Room 630	**Office Hour**	
Thursday				**Office Hour**		

Course Outcome (CO)

This course will concentrate on the principles, design, implementation and applications of database management systems. This course requires prior knowledge of computer programming and discrete mathematics. This course introduces the fundamental concepts and practices of designing and implementing a database system. It also addresses transaction management and concurrency control concepts to build an efficient database system.

Students successfully completing this course should be able:
(1) To understand basic concepts of a relational database.
(2) To learn data definition and manipulation languages.
(3) To construct complex queries for retrieving information from databases.
(4) To design and implement relational databases for information systems.

Course Contents & Teaching Schedule

Week	Lecture Topic(s)	Teaching Material and References
1	Introduction to Database Management Systems	Lecture Slide and Textbook (Korth Ch. 1)
2	Introduction to the Relational Model	Lecture Slide and Textbook (Korth Ch. 2)
3	Writing Queries using Relational Algebra	Lecture Slide and Textbook (Korth Ch. 6)
4	Writing Queries using SQL (Structured Query Language)	Lecture Slide and Textbook (Korth Ch. 3)
5	Intermediate and Advanced SQL Queries	Lecture Slide and Textbook (Korth Ch.4,5)
6	**Mid-Term I Exam**	
7	Designing a Database using E-R Model	Lecture Slide and Textbook (Korth Ch. 7)
8	Database Normalization based on Functional Dependency	Lecture Slide and Textbook (Korth Ch. 8)
9	Database Storage and File Structure	Lecture Slide and Textbook(Korth Ch.10)
10	**Mid-Term II Exam**	
11	Database Indexing Techniques	Lecture Slide and Textbook(Korth Ch.11)
12	Transaction Management	Lecture Slide and Textbook(Korth Ch.14)
13	Concurrency Control Protocols	Lecture Slide and Textbook(Korth Ch.15)
14	Other topics as required	
	Final Exam	

Lab Meeting	Lab Experiment Title	Lab Equipment/ Software
1	Familiarization with a commercial database system and Basic SQL Queries	Oracle Database XE, SQLPlus Tool
2	Creation of Database Tables with Integrity Constraints	Oracle Database XE, SQLPlus Tool
3	Formulation of SPJ (Select-Project-Join) SQL Queries - I	Oracle Database XE, SQLPlus Tool

4	Formulation of SPJ (Select-Project-Join) SQL Queries - II	Oracle Database XE, SQLPlus Tool
5	Introducing SQL Developer and Using the tool to formulate queries	Oracle Database XE, SQL Developer
6	**LAB Exam - I** on Formulation of Queries and Group Formation for the term project	
7	Familiarization with Oracle Application Express	Oracle APEX
8	Creation of Forms and Reports using ORACLE APEX – I **Group Assignment:** Designing E-R Diagram for the term project	Oracle APEX
9	Creation of Forms and Reports using ORACLE APEX – II **Group Assignment:** Designing a database schema based on previously designed E-R diagram	Oracle APEX
10	Creation of Login Page and uploading files, photos etc.	Oracle APEX
11	**LAB Exam - II** on ORACLE APEX	
12	**Term Project Presentation and Demonstration**	

Learning Outcomes

- ***Knowledge and understanding***
  - Understand basic concepts and terminologies of a database management system.
  - Understand a relational database schema including primary and foreign keys along with integrity constraints.
  - Understand relational algebra and SQL queries.
  - Understand the basics of E-R modeling and Normalization.
  - Understand file structure, indexing, transaction management and concurrency control.
- ***Cognitive skills (thinking and analysis)***
  - Be able to formulate new queries in relational algebra and SQL for CRUD (Create-Read-Update-Delete) operations.
  - Be able to design and implement a relational database schema for a subject of interest to the student.
  - Be able to perform database normalization.
- ***Psychomotor skills (use of precision equipment and tools)***
  - Be able to install, configure and interact with ORACLE database system.
  - Be able to implement a database (both front-end and back-end) using ORACLE Application Express.
- ***Communication skills (personal and academic)***
  - Individual assignments after each lab work and group assignments including demonstration and presentationinvolve receiving clear instructions, designing and writing an effective report and making an effective presentation.
  - A term project (group work) where students will be assessed in terms of their effectiveness as an individual or leader in the team.
- ***Practical and subject specific skills (Transferable Skills)***
  - Be able to design and implement a relational database management system.

Teaching Materials/Equipment

Textbook:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan, *Database System Concepts*, McGraw-Hill Education (6th edition)
2. Ivan Bayross, SQL, *PL/SQL: The Programming Language of Oracle,* BPB Publications (4th edition)
3. Hector Garcia-Molina. Jeffrey D. Ullman and Jennifer Widom, *Database Systems: The Complete Book*, Stanford InfoLab (2nd edition)

Teaching Materials: Textbook, Lecture Slides*, Lab Manuals*, Computers and Software**.
Teaching-Learning Method: Lectures, Discussions, Assignments, Lab Exercises.

** Lecture Slides and Lab Manuals will be made available to the students during the class. They can be also downloaded from* ***https://thiscourse.com/ewubd/cse301/sp17/***

*** List of related software is given below:*

Software Name	Link
Oracle Database 11g Express Edition	http://www.oracle.com/technetwork/database/database-technologies/express-edition/overview/index.html
Oracle SQL Developer	http://www.oracle.com/technetwork/developer-tools/sql-developer/downloads/index.html
Oracle Application Express	http://www.oracle.com/technetwork/developer-tools/apex/overview/index.html

Assessment Weightage (Evaluation and Grading Policy)

The relative contributions of exams, lab work, and reports are as follows:

Course Part	% of Mark
Theory Part	
Class Participation	5%
Class Tests (best three of four)	15%
Mid-Term I Exam	15%
Mid-Term II Exam	15%
Final Exam	20%
Lab Part	
Lab Performance	5%
Lab Assignments	5%
Lab Exam	10%
Project Development	
Term Project	10%

Student Learning Time (SLT)

Student Learning Time (SLT) can be divided into: Face to Face (36 hours), Guided Learning (24 hours), Independent Learning (94 hours) and Assessment (6 hours). The detailed breakdown is as follows:

NO.	TEACHING AND LEARNING ACTIVITIES	STUDENT LEARNING TIME (SLT)
1.	Lecture	36 hours (1.5 hours × 24 lectures)
2.	Lab	24 hours (2 hours × 12 weeks)

NO.	TEACHING AND LEARNING ACTIVITIES	STUDENT LEARNING TIME (SLT)
3.	Review lessons after lecture (including preparation for exams)	54 hours (36 hours × 1.5 hour study time)
4.	Student's preparation for lab	15 hours (10 labs × 1.5 hours)
5	Carry outAssignments	9 hours (6 Assignments × 1.5 hour)
6.	Implementation of Term Project	16 hours
7.	Carry out Term Project Presentation	1.5 hours
8.	Carry out Mid Term and Final Exams	4.5 hours
	TOTAL SLT	160 hours
	CREDIT = SLT/40	4.0

Note: 40 notional hours = 1 credit

Details:

- Group Assignments must be done in a group of 3, STRICTLY NO COPYING from other groups/individuals.
- Late assignment suffers a penalty rate of 20% per day, up to 5 days (weekends count towards the 5 days). Assignments that are more than 5 days late are penalized by 100%.
- Submit the signed Completion of Lab Formafter each lab.
- **Failing Grade:** Plagiarism, absenteeism, lack of preparation, and lack of effort will result in a failing grade.

Grading System

Marks (%)	Letter Grade	Grade Point	Marks (%)	Letter Grade	Grade Point
97-100	A+	4.00	73-76	C+	2.30
90-96	A	4.00	70-72	C	2.00
87-89	A-	3.70	67-69	C-	1.70
83-86	B+	3.30	63-66	D+	1.30
80-82	B	3.00	60-62	D	1.00
77-79	B-	2.70	Below 60	F	0.00

Exam Dates

Exam	Section 1	Section 2	Section 3
Mid-Term I	12.02.2017	15.02.2017	15.02.2017
Mid-Term II	12.03.2017	15.03.2017	15.03.2017
Final Exam	16.04.2017	19.04.2017	19.04.2017

Academic Code of Conduct

Academic Integrity

Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behavior related to obtaining academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties up to and including suspension and expulsion.**

Special Instructions

- Students **MUST WEAR dresses** in conformity with the **dress code of EWU** within the lecture/lab classes and examination hall.
- Students are expected to attend all classes, labs and examinations.
- Students will not be allowed to enter into the classroom after 15 minutes of the starting time.
- For plagiarism, the grade will be automatically become zero for that exam/assignment.
- There will be **NO make-up examinations**. In case of emergency, you MUST inform me within 48 hours of the exam time. Failure to do so will mean that you are trying to take UNFAIR advantage and you will be automatically disqualified. Also proper medical certificate (if applicable) has to be presented on the next class you attend.
- You MUST have at least 80% class attendance to sit for the final exam.
- All mobile phones MUST be turned to silent mode during class, lab and exam period.
- There is **zero tolerance for cheating** at EWU. Students caught with cheat sheets in their possession, whether used or not used, and/or copying from cheat sheets, writing on the palm of hand, back of calculators, chairs or nearby walls, etc. would be treated as cheating in the exam hall. The only penalty for cheating is expulsion from EWU.