Course Objective and Outcome Form

Department of Electrical and Computer Engineering
School of Engineering and Physical Sciences
North South University, Bashundhara, Dhaka-1229, Bangladesh

1. **Course Number and Title:** CSE311 - Database Management Systems
   CSE311L - Database Management Systems Laboratory

2. **Number of Credits:** 3 + 0 = 3 Credits

3. **Type:** Core

4. **Prerequisites:** CSE 225

5. **Contact Hours:** 3 (Theory)+ 3 (Lab)

6. **Course Summary:** This course introduces students with database management systems for the first time in their undergraduate study. Drawbacks of flat file system are demonstrated and advantages of relational database systems are introduced. The course examines the logical organization of databases: the entity-relationship model; the hierarchical, network, and relational data models and their languages. Functional dependencies and normal forms are discussed. Design, implementation, and optimization of query languages; security and integrity; concurrency control, different level of indices, e.g., tree and hash based indices are introduced. Access costs are compared for different alternatives. This course has separate mandatory laboratory sessions every week in a separate course CSE 311L which has 0 credits, but the students (in group) use hands on SQL queries and as a culmination, they build a full-fledged database system including a front end. The evaluation of the lab works is carried over to the theory part of the course.

7. **Course Objectives:**

   The objectives of this course are

   a. to make students comprehend the advantages of using database system over flat files.
   b. to get students familiar with requirement analysis specially data requirements of an organization
   c. To introduce the conceptual design from requirement analysis using E-R diagrams and also mapping ER diagrams into relational schema.
   d. to introduce the basics and usage of relational algebra that are the foundation of SQL.
   e. to transform a relational design into physical database design using popular commercialized database, e.g., Oracle, MySQL etc.
   f. to demonstrate and show the evils of redundancy by introducing the concepts of functional dependencies and their types.
   g. to design full-fledged physical database systems with least redundancy and most optimized manner.
   h. to build their independent projects emphasizing the data requirement.

8. **Course Outcomes (COs):**

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

Sl.	CO Description	Weightage (%)
1	**explain** conceptual model through entity, relationship diagrams (E-R diagram) and extended ER diagram	30%
2	**use** relational algebra in simple and complex queries based on set theory including relational model	20%
3	**construct code** in SQL DDL (Data Definition Language) and SQL DML (Data Manipulation Language) for table creation and query processing.	25%
4	**build** a Web-based relational database system, using scripting languages (e.g., PHP) and an open-source database management system (e.g., MySQL).	25%

9. **Mapping of CO-PO:**

Sl.	CO Description	PO	KP	Bloom's taxonomy domain/ level	Delivery methods and activities	Assessment tools
CO1	**explain** conceptual model through entity, relationship diagrams (E-R diagram) and extended ER diagram, including relational model.	a	K3	C2	Lectures, Notes	Exam
CO2	**use** relational algebra in simple and complex queries based on set theory	a	K3	C3	Lectures, Notes	Exam
CO3	**construct code** in SQL DDL (Data Definition Language) and SQL DML (Data Manipulation Language) for table creation and query processing.	c	K5	C3	Lectures, Notes, Lab	Exam
CO4	**build** a Web-based relational database system, using scripting languages (e.g., PHP) and an open-source database development system (e.g., MySQL).	e	K6	C6	Lectures, Notes	Report and Demonstra-tion

10. **Resources**

Text books:

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Abraham Silberschatz Henry F. Korth, S. Sudarshan	2019	Database System Concepts	7th.	McGraw-Hill	ISBN-13: 978-0073523323

Reference books:

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Ramez Elmasri, Shamkant B. Navathe	2015	Fundamentals of Database Systems	7th	Pearson	ISBN-13: 978-0133970777
2	Raghu Ramakrishnan Johannes Gehrke	2003	Database Management Systems	3rd	McGraw-Hill	ISBN-13: 978-0072465631
3	Timothy Boronczyk, Elizabeth Naramore, Jason Gerner *et al.*	2009	Beginning PHP 6, Apache, MySQL 6 Web Development	1st.	Wiley	ISBN-13: 978-0470391143

11. **Weightage Distribution among Assessment Tools**

Assessment Tools	**Weightage (%)**
Attendance and class performance	10
Quizzes	20
Midterm	20
Final Exam	30
Lab Work	10
Term Project	10
Total	100

12. **Grading policy:** As per NSU grading policy available in

http://www.northsouth.edu/academic/grading-policy.html