**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:** CSE 311 - Database Systems
2. **Number of Credits:** 3 Credits
3. **Type:** Core
4. **Prerequisites:** CSE 225
5. **Name of the Instructor:** Dr. Abu Sayed Md. Latiful Hoque
6. **Office and Contact:** SAC 1044B, mobile 01556346357, email: [abu.hoque@northsouth.edu](mailto:abu.hoque@northsouth.edu)
7. **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; relational data models and their languages. Functional dependencies and normal forms are discussed. Design, implementation, and optimization of query languages; security and integrity; transaction and 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.
8. **Course Objectives:**

The objectives of this course are to:

1. make students comprehend the advantages of using database system over flat files,
2. get students familiar with requirement analysis specially data requirements of an organization,
3. introduce the conceptual design from requirement analysis using E-R diagrams and also mapping ER diagrams into relational schema,
4. introduce the basics and usage of relational algebra that are the foundation of SQL,
5. transform a relational design into physical database design using popular commercialized database, e.g., Oracle, MySQL etc.,
6. design full-fledged physical database systems with least redundancy and most optimized manner,
7. acquire in depth knowledge about database storage and index structures,
8. acquire knowledge about the transaction processing, concurrency control and recovery in DBMS, and
9. build their independent projects emphasizing the data requirement.
10. **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), extended ER diagram and normalization technique and apply the design methodology to design database for real life application. | 30% |
| 2 | **use** relational algebra in simple and complex queries based on set theory, | 10% |
| 3 | **construct code** in SQL DDL (Data Definition Language) and , SQL DML (Data Manipulation Language) for table creation and query processing. | 20% |
| 4 | **explain** storage structure, indexing, transaction, concurrency control and recovery in RDBMS. | 20% |
| 5 | **build** a Web-based relational database system, using scripting languages (e.g., PHP) and an open-source database development system (e.g., MySQL). | 20% |

1. **Tentative lecture schedule**

**To be announced**

1. **Resources**

**Text book:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | Name of Author(s) | Year of Publication | Title of Book | Edition | Publisher’s Name | ISBN |
| 1 | Abraham Silberschatz ‎ Henry F. Korth,‎ S. Sudarshan | 2011 | Database System Concepts | 6th. | McGraw-Hill | ISBN-13: 978-0073523323 |

1. **Weightage Distribution among Assessment Tools**

|  |  |  |
| --- | --- | --- |
| **Assessment Tools** | **Weightage (%)** | **Remarks** |
| Attendance | 5 |  |
| Class Performance | 5 |  |
| Quizzes | 20 | Best 2 out of 3 |
| Midterm | 20 | One mid term with 20% option in questions. |
| Final Exam | 30 |  |
| Lab Work and Project | 20 |  |
| Total | 100 |  |

1. Examinations schedule

|  |  |
| --- | --- |
| **Assessment Tools** | **Date** |
| Attendance |  |
| Class Performance | Instant |
| Quizzes: QUIZ 1 | Week 4 |
| Quizzes: QUIZ 2 | Week 8 |
| Midterm | Week 10 |
| Quizzes: QUIZ 3 | Week 13 |
| Final Exam | As per NSU Schedule |
| Lab Work and Project |  |
| Result | As per NSU academic calendar |