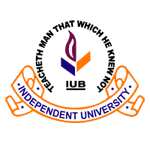
**Independent University, Bangladesh**

**Department of Computer Science & Engineering**

**Course Outline**

**Course Title: Database Management + Lab Work**

**Course Code: CSE303 +CSE303L**

**Spring 2018, STs at 13:40, S at 15:20(section-1),**

**MWs at 15:20, M 17:00 (Section-2)Duration: 1:30 mints**

**Room: CSC Lab04, Level 4**

**Instructor’s details:**

Dr. Mahady Hasan, Asst. Professor, CSE

Office: Room-5011, Visiting Hours: MWs at 13:30 to 15:00, Thursday at 14:00-17:00

Email: [mahady@iub.edu.bd](mailto:mahady@iub.edu.bd)

**Course Description**

Conventional and database approaches. Basic concepts of DBMS. Hierarchical, network and relational data models. Entity-relationship modeling. Relational database designing: decomposition and normalization; functional dependencies. Relational algebra and calculus. Structured query language (SQL). Query optimization. Database programming with SQL and PL/SQL. Database security and administration. Distributed databases. Object-oriented data modeling. Specific database systems: oracle, MS SQL server, access.

**Course Policy:**

1. It is the student’s responsibility to gather information about the assignments/project and covered topics during the lectures missed. Regular class attendance is mandatory. Points will be taken off for missing classes. Without 70% of attendance, sitting for final exam is NOT allowed. Student should come on time to get the attendance. In case of failing 70% of attendance a student will receive W grade automatically.
2. The date and syllabus of class tests, midterm and final exam is already given here, however, announcements will be given ahead of time. There is **NO** provision for make-up.
3. The reading materials for each class will be given prior to that class so that student may have a cursory look into the materials.
4. Class participation is vital for better understanding of the topics of this course. Students are invited to raise questions.
5. Students should take tutorials with the instructor during the office hours. Prior appointment is required.
6. Students must maintain the IUB code of conduct and ethical guidelines offered by the school of computer science and engineering.
7. No working mobile phones are allowed in class. Using one for any purpose will result in serious consequences.
8. To pass the course student must pass in both Midterm and Final.

**Assessment and Marks Distribution:**

Students will be assessed on the basis of their overall performance in all the exams, quizzes, and class participation. Final numeric reward will be the compilation of:

* Two Class Tests(10%)
* Three assignments (6%)
* One **mid-term** test (30%)
* One Project and Presentation(10%)
* One report (9%)
* A cumulative **final** exam (35%)

**Grade Conversion Scheme:**

The following chart will be followed for grading. This has been customized from the guideline provided by the School of Engineering and Computer Science.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | **A-** | **B+** | **B** | **B-** | **C+** | **C** | **C-** | **D+** | **D** | **F** |
| 85-100 | 80-84 | 75-79 | 70-74 | 65-69 | 60-64 | 55-59 | 50-54 | 45-49 | 40-44 | 0-39 |

**Required Text:**

The course will be based mostly on the following books [some other books and journals may be referred time to time]:

* **Modern Database Management by Jeffrey A. Hoffer, Mary B. Prescott, Fred R. Mcfadden**
* **Database Management Systems, by Raghu Ramakrishnan and Johannes Gehrke**
* **Fundamentals of Database Systems, By RamezElmasri, Shamkant B. Navathe**
* **Microsoft MSDN, W3 School**
* **An Introduction to Database System by C. J. Date**

**Link to Virtual Learning System: https://www.facebook.com/groups/csc401.iub/**

**Audit:** Students who are willing to audit the course are welcome during the first two classes and are advised to contact the instructor after that.

**Note:**

In the event of a student being found to have plagiarized or cheated in some way in exam, that student will be given a zero mark in that exam. Similarly a student who fails to submit the exam paper on time will also receive a zero mark. The student will also receive a zero mark on assignments in case of the following

* Deliberate copying or attempting to copy the work of other students with or without their consent
* Deceitful conduct by submitting the work of another student (as their own).
* Using or attempting to use information that has been prohibited to use in an exam/assignment or prohibited by law.
* Plagiarism (i.e., taking and using the thoughts and writings of another with the intent to claim the work as their own)

**University Regulation and Code of Conduct:**

**­­­­**Please see the Green Book for further information about academic regulation and policies, including withdrawal and grading, appeals and penalties for plagiarism and academic misconduct.

**Students with Disabilities:**

Students with disabilities are required to inform the Department of Computer Science and Engineering any specific requirement for classes or examination as soon as possible.

**Class & Exam Schedule,Topics and Readings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sessions** | **Topics** | **Learning Outcome** | | **Readings** |
|  |  |  | |  |
| Session – 1 | Introduction  Introduction to concept of database | 1. Introduction  2. Student will learn basic concept of Database. | |  |
| Lab – 1 | Introduction to .net framework | 1. Students will learn the basic concept of the .net framework.  2. Students will be able to identify the various components of .net framework. | |  |
| Session – 2 | Introduction to database and DBMS development process, architecture; languages and Interfaces | 1. Students will learn about the roles of individuals who design, implement, use, and administer Databases.  2. Students will learn about the differences among external, conceptual, and internal schemas. | |  |
| Session – 3 | Entity relationship diagram Model | 1. Students will learn about entities, relationships, and attributes.  2. Students will be able to learn about degree of relationship.  3. Students will be able to model E-R diagram considering different types of attributes, entities, relationship, and cardinality constraints. | |  |
| Lab – 2 | Introduction to .net framework | 1. Students will be able to create various types of forms using the components of .net framework’s windows form. | |  |
| Session – 4 | Entity relationship diagram Model | 1. Students will be able to differentiate different relationship types.  2. Student will be able to identify the reason of different types of attributes.  3. Students will be able to realize the need of relationship constrains. | |  |
| Lab – 3 | Introduction to .net framework | 1. Students will be able to create the interface of a basic software. | |  |
| Session – 5 | Enhanced ERD model | 1. Student will learn about subtype super type relation.  2. Student will learn completeness and disjoint type relations. | |  |
| Session – 6 | Transferring ERD to Relations | 1. Students will learn to convert the entity to relations.  2.Students will learn to map attribute in the relations.  3. Students will be able to design the relationship in terms of relations. | |  |
| Lab – 4 | Introduction to database using MS Access and My SQL | 1. Students will be able to create and use database in MS Access.  2. Students will be able to create and use database in MySQL. | |  |
| Session 7 | Introduction to normalization | 1. Students will be able to list five properties of relations.  2. Students will be able to state two essential properties of a candidate key.  3. Student will be introduced with the concept of normalization: first normal form, second normal form, and third normal form.  4. Students will learn briefly about four problems that may arise when merging relations. | |  |
| Session 8 | Introduction to normalization | 1. Students will be able to realize the need of normalization.  2. Students will be able to perform normalization on any case study.  3. Students will learn about Boyce-Codd normal form. | |  |
| Lab – 5 | MS Access and My SQL | 1. Students will be able to manipulate data in the MS Access and MySQL. | |  |
| Session – 9 | Physical Database Design Data dictionary | 1. Students will learn the physical database design process, its objectives, and its deliverables.  2. .Students will learn about storage formats for attributes from a logical data model.  3. .Students will learn how to select an appropriate file organization by balancing various important design factors.  4. Students will be able to translate a relational data model into efficient database structures, including knowing when and how to normalize the logical data model. | |  |
| **Midterm** | | | | |
| Session 10 | Relational Algebra | 1. Students will learn about the formal notations.  2. Students will learn how to add constraints to the set union, set intersections. Set difference and Cartesian products.  3. Students will learn how to implement and use them in database. | |  |
| Lab – 07 | Connect frontend GUI interface with backend database. | 1. Students will be able to connect the front end interface with the server to exchange data. | |  |
| Session – 11 | SQL: DDL, DML, DCL | 1. Students will learnto interpret the history and role of SQL in database development.  2. Students will know how to define and use the data types and constrains in the database using DML. | |  |
| Session – 12 | SQL: Retrieve information | 1. Students will learn how to fetch the data from the database. | |  |
| Lab – 08 | Create Database and manipulate data in My SQL. | 1. Students will learn how to define the database and specify data types, structures and constrains on the data.  2. Students will learn how to manipulate those data in the database. | |  |
| Session – 13 | SQL: Retrieve information | 1. Students will learn how to retrieve and manipulate that information from the database using SQL. | |  |
| Session – 14 | Advance SQL | 1. Students will learn how to use union, join etc. using SQL.  2. Students will be able to establish referential integrity using SQL.  3. Students will know about the SQL: 1999 and SQL: 2008 standards. | |  |
| Lab – 09 | Writing Query in my SQL | 1.Students will be able to write single-table queries using SQL commands. | |  |
| Session – 15 | Advance SQL | 1. Students will learn how to write sub-queries using SQL query.  2. Students will learn how to establish referential integrity using SQL. | |  |
| Session – 16-21 | BPRM | 1. Students will learn how the process diagram works.  2. Students will learn where the data comes from and where it goes and where it will be stored.  3. Students will learn how to deal with the data in the model of the system.  4. Students will learn about one of the three essential perspectives of the structured-systems analysis and design method  5. Students will learn how the Business process diagrams can be used in both Analysis and Design phase. | |  |
| Lab – 9 | Writing advance query in my SQL | 1. Students will be using different types of advanced SQL query to solve different types of problems. | |  |
| Session – 22 | Input form and Output reports | 1. Students will learn how to define the appropriate format and media for a computer Input.  2. Students will learn to identify and describe several automatic data collection technologies.  3. Students will learn how to develop their own input form based on their own systems. | |  |
| Lab – 10 | Introduction to the .net web forms | 1.Students will be able to create and manipulate the web form of .net framework. | |  |
| Session – 23 | Input form and Output reports | 1. Students will learn to distinguish between internal, external and turnaround outputs.  2. Students will learn about differentiate between detailed, summary, and exception reports.  3. Students will be able to identify several output implementation methods. | |  |
| Session – 24 | Database architecture | 1. Students will be able to explain the three components of client/server systems: data presentation services, processing services, and storage services.  2. Students will be able to distinguish between two-tier and three-tier architectures.  3. Students will be able to describe the key components of a web application and the information flow between the various components. | |  |
| Lab – 11 | Input and output display | 1.Students will be able to design and prototype computer inputs and outputs.  2. Students will be able to show connect and display the data from their database into web forms. | |  |
| Session – 25 | Database administrations &  Revision | 1. Students will learn why organizations needs data administration for.  2. Students will be able to describe the three levels of data warehouse architecture from database administrator point of view.  3. Students will be able to develop the requirement for a data bank. | |  |
| Session 26 | **Final Exam** | | | |
|  |  | |  | |