Database Management
CS579 A1, Fall 2018

- **Course Format**: On Campus
- **Time and Location**: Tuesday 6:00 – 8:45 PM, CAS 213

- **Instructor**: Jack Polnar
- **E-mail**: jpolnar@bu.edu
- **Office Hours**: I will be here about 45 min before and after class.

- **Course Objectives:** The goal of this course is to study basic concepts of database systems with emphasis on relational databases.

    1. **Database Design through Normalization**

    2. **SQL Language – Select, Join, Aggregates, Subqueries**

    Topics:

    - Relational data model
    - Entity-relationship model
    - SQL DML and DDL
        - Selects, Joins, Subqueries, Aggregates, Inserts, Deletes etc.
    - Database design for relational databases
    - Functional dependencies and normalization
    - Relational algebra
    - Introduction to Indexes, stored procedures, and triggers
    - Introductory topics:
        - Introduction to query processing and transaction management
        - Introduction to Data Warehousing
        - Introduction to Big Data & NoSQL: MapReduce, Hadoop & Spark

- **Prerequisites**: MET CS231 or MET CS232 or instructor's consent

- **Text**: R. Elmasri and S.B. Navathe, "Fundamentals of Database Systems," 7th Ed., 2016, Addison Wesley

- **Courseware**: Blackboard Learn, URL: https://learn.bu.edu

- **References**: Our textbook is comprehensive. There are also many good database books, and any book which you think would best suit your style should be OK as a reference. A book on SQL will be also helpful.

- **Grading**:
    - Midterm: 20%, Final: 25%
    - Homework: 35%
    - Class Project: 20%

- **Letter Grade**:

$90 \leq G < 94$: A- $94 \leq G$: A,
$80 \leq G < 83$: B- $83 \leq G < 87$: B $87 \leq G < 90$: B+
$70 \leq G < 73$: C- $73 \leq G < 77$: C $77 \leq G < 80$: C+
$60 \leq G < 70$: D
$G < 60$: F

- **Assignment**
  - There will be two ERD homework modeling assignments and 5 SQL Labs.

- **Class Project**: This is a design and implementation of a database. The project follows a typical database design process and consists of three parts. Details will be discussed in the class.

- **Academic Integrity Policy**
  - Cheating and plagiarism will not be tolerated in any Metropolitan College course. They will result in no credit for the assignment or examination and may lead to disciplinary actions.
  - Please take the time to review the Student Academic Conduct Code: http://www.bu.edu/met/metropolitan_college_people/student/resources/conduct/code.html.
  - This should not be understood as a discouragement for discussing the material or your particular approach to a problem with other students in the class. On the contrary – you should share your thoughts, questions and solutions. Naturally, if you choose to work in a group, you will be expected to come up with more than one and highly original solutions rather than the same mistakes.

- **Attendance and Absence**: Attendance is not required but strongly encouraged. If a student misses a class it is his/her responsibility to catch up with the material discussed during the missed class.

- **Late Policy**
  - All assignments are due at the beginning of the class on the due date.
  - A late homework is subject to a penalty of 10% per day. An exception may be made if a student is in an unusual/urgent situation and obtains permission from the instructor before the due date.

- **Make-up Exam**
  - A make-up examination for the midterm can be arranged when a student has an emergency (e.g., a medical emergency or an urgent family matter). Students may need to provide the instructor with an appropriate document (such as a letter from a physician).
  - There will be **no make-up exam for the final exam**. If a student cannot take the final exam on the designated day, she/he will received an incomplete grade.

- **Tentative Schedule**
  - The schedule is subject to change according to the actual progress of the class.
  - Students are strongly encouraged to read book chapters assigned for each lecture before coming to the class.

Week	Date	Lecture	Readings (Book chapters)	Project Assignment Due
1	9/4	Basic concepts	1, 2	
2	9/11	Data Model, ERD Intro	3	Visio or Lucid Chart Installed
3	9/18	ERD Modeling	5, 9.1.1	
4	9/25	Introduction to SQL & Lab 1	6	• DBMS Installed • ERD Assignment
5	10/2	SQL Joins & Lab 2	6	SQL Lab 1
	10/9	No Class Monday Schedule		
6	10/16	Normalization	14	• Project Conceptual ERD • SQL Lab 2
7	10/23	Normalization	14	
8	10/30	**Midterm**		
9	11/6	SQL Aggregates & Lab 3	7	Normalized ERD Assignment
10	11/13	Relational algebra & transaction management	8	SQL Lab 3
11	11/20	SQL Subqueries & Lab 5	7	Project Normalized ERD
12	11/27	Indexes, SQL Subqueries & Lab 5	17	
13	12/4	Stored procedures and triggers – Lab 4	7	SQL Lab 5
14	12/11	Intro to Data Warehousing & Big Data	Optional:24, 25, 29	SQL Lab 4
	12/12			Term Project Due
15	**12/18**	**Final Exam**		

- **Communication**
    - All official announcements will be made in the class.
    - All assignments will be posted on the class web page.
    - **Important:** The primary method of communication is through in-class announcements. The class web page is only supplementary. So, if you miss a class you need to talk to a friend in the class or contact me to find out whether there was any important announcement.
    - **Email communication**: When it is necessary to communicate to you, I will send an email to your BU email account. So, you need to check your BU email regularly (e.g., once a day).