CSC 365 – Introduction to Database Systems

1. CSC 365 – Introduction to Database Systems

2. **credit units** 4  **contact hours** 6

3. **Course Coordinator**: Alex Dekhtyar

   

5. a. **Course Description**:
   Basic principles of database management systems (DBMS) and of DBMS application development. DBMS objectives, systems architecture, database models with emphasis on Entity-Relationship and Relational models, data definition and manipulation languages, the Structured Query Language (SQL), database design, application development tools. 3 lectures, 1 laboratory.
   
b. **Prerequisite**: CSC 141; or **CSC 348**; or CPE/CSC 102 and CPE/CSC 103 and **MATH 248**; or CPE/CSC 202 and CPE/CSC 203 and **MATH 248**.
   
c. **Required/Elective/Selective Elective for CPE, CSC, EE, SE**
   
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6. a. **Course Learning Objectives**
   The student will be able to:
   - Describe the basic DBMS architecture, components, and interfaces;
   - Utilize at least one modern database management system;
   - Use database models in database and application design;
   - Use SQL as a stand-alone and as an embedded language (e.g., JDBC, SQLJ);
   - Explain the following concepts as they relate to database management: transactions (ACID properties), data integrity, data independence, data protection, query processing, non-procedural programming;
   - Articulate the ethical aspects of database use in society.
b. **Level at which Student Outcomes are addressed**
(“B” = Basic level, “I” = Intermediate level, “A” = Advanced level)

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7. **Major Topics Covered: (number of lecture hours per)**
- Fundamental concepts of data management (3 hours)
- Relational model (relations, integrity constraints, relational algebra) (5 hours)
- SQL Relational database language (DDL, DML, SELECT-FROM-WHERE, grouping, aggregation, subqueries) (12 hours)
- Application development using JDBC (2 hours)
- Application development using PL/SQL (6 hours)
- Organization of DBMS – overview (2 hours)