ICS 311: Database Management Systems

A. Course Description

Credits: 4

Prerequisites: ICS 141 Programming with Objects or equivalent knowledge of Java. AND MATH 215 Discrete Mathematics

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week:

MnTC Goals: None

Covers concepts and methods in the definition, creation and management of databases. Emphasis is placed on usage of appropriate methods and tools to design and implement databases to meet identified business needs. Topics include conceptual, logical and physical database design theories and techniques, such as use of Entity Relationship diagrams, query tools and SQL; responsibilities of data and database administrators; database integrity, security and privacy; and current and emerging trends. Use of database management systems such as MySQL. Coverage of HCI (Human Computer Interaction) topics. Development of GUI front ends to databases with application of HCI principles to provide a high level usability experience. Overlap: ICS 311T Database Management Systems.


C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Create SQL databases and populate and maintain/use data in the database (using INSERT, UPDATE, DELETE, and SELECT commands).
2. Gather requirements and create conceptual, logical, and physical Entity Relationship Diagrams based on requirements.
3. Create data warehouses for mining and information retrieval.
4. Design for transaction management, concurrency control, and recovery.
5. Create indexes and estimate mass storage sizes.
7. Relate database query language constructs to relational algebra and relational calculus operators.
8. Take advantage of query optimization alternatives.
9. Programmatically access databases and create GUI front ends based on sound HCI principles.

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Overlap: ICS 311T Database Management Systems. Note: Students are responsible to both be aware of and abide by prerequisites for ICS courses for which they enroll, and will be administratively dropped from a course if they have not met prerequisites.