Administrative Unit: Computer and Mathematical Sciences Department

Course Prefix and Number: CISS 430

Course Title: Database Systems

Number of: Credit Hours: 3  Lecture Hours: 3  Laboratory Hours: 0

Catalog Description: Design and implementation of relational and object-oriented database systems. Relational algebra, normal forms and normalization, query processing, efficiency and security considerations. Prerequisite: CISS 285 (or CISS 280). Offered odd Spring.

Prerequisite(s)/Corequisite(s): CISS 285 (or CISS 280).

Text(s): Most current editions of the following:


Course Objectives:

- To develop a strong foundation in database concepts.
- To learn theory and practice of designing and using databases.

Measurable Learning Outcomes:

- To understand data modeling including constructing entity-relationship diagrams.
- To understand database design and normalization including functional dependencies, first through third normal forms, Boyce-Codd normal form, lossless join and dependency-preserving design trade-offs.
- To understand the issues involved in designing and supporting object-oriented databases.
- To understand SQL and how to use SQL to create, maintain, and inquire of database systems.

Topical Outline (major areas of coverage):

- Abstraction in a database management system.
- ER diagrams
- The relational model:
  - Relational algebra
  - Normal forms for relational schemes
- Physical data organization:
  - Hashed files
  - Indexed files
  - B-trees
- Query processing and query optimization
- Integrity and security issues.
Material from this course may be tested on the Major Field Test (MFT) administered during the Culminating Experience course for the degree.

Recommended maximum class size for this course: 20

Library Resources: Online databases are available at http://www.ccis.edu/offices/library/resources.asp. You may access them from off-campus using your eServices login and password when prompted.

Prepared by: Lawrence West
Name __________________________ Signature __________________________

Date: April 13, 2005

NOTE: The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.

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