

FSU CURRICULUM FILE SYLLABUS

DATE APPROVED _____ (COMPLETED AT UNIV LEVEL)

COURSE PREFIX/NUMBER: COP 4710

COURSE TITLE: Theory and Structure of Databases

PRE OR COREQUISITES: COP 3330, MAD 2104 REPEAT CODE: 00

LIST COURSE OBJECTIVES:

A student who has completed this course with a passing grade should be able to:

- Design and implement a database that employs the standard relational model, using the methodology of entity-relationship diagrams.
- Demonstrate an understanding of relational algebra and of how this provides a semantics for the structured query language (SQL).
- Use SQL for various types of queries, including ones entailing nesting and complex join operations, as well as for inserting and updating database records.
- Demonstrate an understanding of the standard techniques for physical data organization on disks and the construction of indexes.
- Understand how a database management system (DBMS) implements query processing, with and without indexes, and use this understanding to design optimally efficient SQL queries.
- Understand how a DBMS implements transaction processing and use this understanding to design effective and optimally efficient transactions.

OBJECTIVES SHOULD BE BROADLY STATED TO ALLOW FACULTY DIFFERENCES AND ALLOW CHANGES IN MODE OF DELIVERY. ENOUGH DETAIL SHOULD BE GIVEN TO DISTINGUISH FROM OTHER COURSES IN ASSIGNMENT OF A SUS COURSE NUMBER. COMMITTEE APPROVALS ARE REQUIRED FOR A CHANGE IN OBJECTIVES.

GIVE BRIEF OUTLINE OF TOPICS TO BE COVERED (NO DATES):

- **Overview of Databases and Transactions**
- **Introduction to Relational Databases**
- **The Relational Data Model**
- **Entity-Relationship (E-R) Diagrams**
- **The Unified Modeling Language (UML)**
- **Relational Algebra and SQL**
- **Triggers and Active Databases**
- **Physical Data Organization and Indexing**
- **Query Processing**
- **Properties of Transactions**
- **Implementing Isolation in Relational Databases**
- **Atomicity and Durability**

EVALUATION CRITERIA. CHECK ONE (CHANGE IN EVALUATION CRITERIA REQUIRES THE DEPARTMENT TO SUBMIT A NEW SYLLABUS FOR THE FILE)

EXAMS ONLY (THE NUMBER AND WEIGHT OF EACH TO BE REFLECTED ON THE STUDENT SYLLABUS)

EXAMS AND OTHER (SUCH AS LAB REPORTS OR ASSIGNMENTS, TERM PAPER OR WRITTEN PROJECT, ORAL PRESENTATION; THE WEIGHT OF EACH TO BE REFLECTED ON THE STUDENT SYLLABUS.

NO EXAMS - ONLY ASSIGNMENTS (TO BE DESCRIBED CLEARLY ON THE STUDENT SYLLABUS)