UNIVERSITY OF St.Thomas

Department of Computer and Information Science

# CISC450: Database and Design 1

## Final Exam Structure

The list of topics we covered in class is as follows:

1. Introduction
2. Relational Databases
3. Relational Algebra
4. Conceptual Model (Functional Dependencies and Normalization)
5. Logical Model (ER Model)
6. Physical Model (SQL queries both Simple and complex along with aggregation functions, subqueries, and Joins)
7. Disk Storage (structure, access, block request policies, and block replacement policies)
8. Transaction
9. File Structure (Heap, Hash, and Sorted) and Query processing in terms of cost complexity.
10. Application programming (Java and Python)
11. Indexing

Following is the exam structure:

Total points: (60 Points)

1. Functional Dependency: (8 points)
    - Closure set F+
    - Relation decomposition (BCNF)
2. Relational Algebra: (8 points)
    - Query writing using relational algebra.
3. Logical Model: (10 Points)
    - ER Diagram
    - Conversion of ER model to Relational Model
4. SQL: (14 points)
    - Simple
    - Complex (including all clauses, subquery, and set operations)
    - Join
    - Aggregations
5. Disk Storage, File Structure, Indexing, and Transaction (20 points)
    - Conceptual questions (MCQ)
    - Block access policy (FIFO, SJF, and LOOK)
    - Block Replacement Policy (FIFO and LRU)
    - B+ tree Construction/operation (select or insert only, **no delete**)

**Note: Question 5 requires a calculator for seek time calculation.**