CSC430/530 – Database Management Systems
Midterm study guide

Lessons 1 & 2 - Introduction to Databases / Database System Concepts & Architecture.

Theory - **Quiz #1.**

Definitions of database & database management systems.

Stages of database design process (list and define).

Categories of data models (list and define).

Definitions of database schema & state.

Logical & physical data independence.

Practice - **NULL**.

Lessons 3 & 4 - Entity-Relationship Model, Enhanced Entity-Relationship Model

Theory - **Quiz #2.**

Definitions of entity, entity type, entity set.

Constraints on specializations (generalizations):

> Disjointness constraint (disjoint, overlap).

> Completeness constraint (total, partial).

Relationship, relationship type, relationship set.

Constraints on relationships:

> Cardinality ratio (1:1, 1:N, M:N). Define & provide examples.

> Participation constraint (total, partial). Define & provide examples.

Practice - **Hands-on "ER for UNIVERSITY DB" & Assignment #1.**

> Given a mini-world description, construct an EER diagram.

Lessons 5 & 5.1 - Relational Data Model & Constraints, EER-to-Relational mapping

Theory - **Quiz #3.**

Describe relation components – table name, column names, rows.

Schema-based constraints:

> Domain constraint.

> Key constraint.

> Entity integrity constraint.

> Referential integrity constraint.

Practice:

> **Lesson 5 examples** (Operations & Constraints Violations, pp. 26-33).

>> Given an operation, define if it violates any schema-based constraints.

> **Hands-on "Foreign Keys & Referential Integrity Constraints".**

>> Given a relational schema define foreign keys and show referential integrity constraints.

> **Assignment #2.**

>> Given an EER diagram, map it to a relational schema.

Lesson 6 - Relational Algebra

Theory - **NULL**.

Practice:

Assignment #3 & **Lesson 6 examples** (Examples of Queries, pp. 33-45)

Given an operation description, construct a query, using relational algebra operations:

Select, Project, Rename, Union, Intersection, Set Difference, Join, Grouping & Aggregation.