DATAWAREHOUSE – DATA MODELING COURSE CONTENT

1. Definitions
    - Benefits of logical data modeling
    - Data modeling vs. physical database design
    - Roles involved in data modeling
    - Steps in the data modeling process
    - Example data model
2. Entities
    - Identifying entities
    - Validating entities
    - Documenting “instances” of entities
    - Distinguishing entities from attributes
    - Naming entities
    - Starting an Entity/Relationship (E/R) diagram
3. Relationships
    - Identifying significant relationships
    - Determining the “cardinality” or “degree” of a relationship
    - One-to-Many
    - Many-to-Many
    - Determining whether a relationship is optional or mandatory
    - Giving a relationship a name
    - Documenting the relationships in the E/R diagram
    - Walking people through an E/R diagram
    - Resolving Many-to-Many Relationships
    - Real-world examples of many-to-many relationships
    - Why many-to-many relationships are broken down into simpler relationships
    - Identifying “association” or “intersection” entities

- Documenting the new relationships in the E/R diagram
- Attributes and Normalization
- Defining and categorizing attributes
- Domains and integrity rules

4. Unique identifiers/primary keys
    - Foreign keys
5. Occurrence population
    - Normalization: validating the placement of each attribute
    - Attribute does not repeat (first normal form)
    - Attribute is dependent on its entire UID (second normal form)
    - Attribute is dependent only on its UID (third normal form)
6. Subtypes and Supertypes
    - Identifying subtypes: real-world examples of subtypes and supertypes
    - Determining when entities are similar
7. UIDs
    - Attributes
    - One-to-one relationships
    - Creating subtypes and supertypes
    - “Type” entities
    - Using subtypes to apply fourth normal form
    - Establishing the relationships of the sub- and super-entities to other entities
    - Mutually exclusive vs. non-mutually exclusive subtypes
    - “Role” entities to handle complex subtypes
    - Recursive Relationships
    - Real-world examples of recursive relationships
    - Discovering recursive relationships
    - Determining whether the relationships are optional or mandatory
    - Documenting the new relationships in the E/R diagram
    - Hierarchical vs. Network recursive relationships
    - “Structure” or “Bill of Materials” entities: fifth normal form
    - Implementing a Relational Database
    - Relational database objects: tables, views, indexes, etc.
    - Mapping logical objects to physical objects

- Denormalization
- Why
- How
- Pros/Cons
- Distributing databases
- Referential integrity