After completing this module, students will be able to:

* Define basic database terms
  + Table – list of related information in column and rows
  + Record – a row in a table
  + Field – is a column, represents an attribute of an entity
  + Data value – cell in a table (piece of data)
  + DBMS – create and maintain a database
* Understand the main characteristics of the relational model
  + A database is composed of a group of interrelated tables
  + Not a spreadsheet
  + What if a customer orders more than one DVD
    - Relational database reduces multiple records with all the same information
    - Relate tables together categorized by topic
    - Such as customers, orders, dvd inventory
  + Primary Key
    - Unique data values to identify each record
  + Relations
    - Tables linked by common fields
    - Consists of primary and related table
    - Primary table contains Primary Key Field
    - Two main types: One to one, one to many
    - One-to-One
      * Exists when primary record only has one related record
      * Ex: customer home address, customer billing address
    - One-to-Many
      * Most common relationship
      * Primary record has many related records
      * Uses foreign keys
      * Ex. One customer can order many DVDs
  + Lookup Table
    - Common reference for descriptive data tables referenced in a FK
  + File – A table, group of records about the same entity
  + Character – basic unit of data
* Explain database design using basic entity-relationship models
  + Based on one-to-one, one-to-many, and many-to-many relationships
    - One-to-one
      * Occurrence of data in one entity is represented by only one occurrence of data in other entity (e.g. SS# and person)
    - One-to-Many
      * Each occurrence of data in one entity can be represented by many occurrences of data in other entity (classes to teacher)
    - Many-to-Many
      * Multiple occurrences in both entites
      * Student can take many classes and each class has many students
* Explain the purpose of a Structured Query Language (SQL)
  + Data sublanguage
  + A DDL (Data Definition Language) and a DML (Data Manipulation Lang.)
    - **(DDL)** statements are used to define the database structure or schema.
    - **(DML)** statements are used for managing data within schema objects.
    - <http://stackoverflow.com/questions/2578194/what-is-ddl-and-dml>
    - <http://www.tomjewett.com/dbdesign/dbdesign.php?page=ddldml.php>
  + ANSI and ISO standards
* Understand the purpose of normalization
  + A table is not normalized if it contains repeated groups
  + Determines required tables and columns for tables to reduce/control redundancy
  + Multistep process
  + Data redundancy – same data in different locations in DB
  + Data anomalies – data inconsistencies
  + First-normal Form (1NF)
    - Primary key is identified and repeating groups are eliminated
    - Accomplished through composite PK
    - More than one column is required to uniquely identify a row
    - Can lead to partial dependency
      * A column is dependent on part of a PK
  + Second-Normal Form (2NF)
    - Partial dependencies are eliminated
      * Composite primary keys are broken into two tables
  + Third-Normative Form (3NF)
    - Transitive dependencies are eliminated
  + Normalizing the tables links the data through common fields
    - Common Field is usually a PK in one table and a FK in another
  + A record is in first-normal form (1NF) if no repeating groups exist and it has a primary key
  + Second-normal form (2NF) is achieved if the record is in 1NF and has no partial dependencies
  + After a record is in 2NF and all transitive dependencies have been removed, then it is in third-normal form (3NF), which is generally sufficient for most databases

Database is an organized collection of information