

Davenport University
Department of Computer Information Science

1. CISP247, Database Design
2. 3 credits
3. Course coordinator: Gabriela Ziegler
4. Textbook
9780133544619
Modern Database Management
Jeff Hoffer; Ramesh Venkataraman; Heikki Topi
12th, 2016 / Pearson
- b. No Supplemental materials required
5. Specific course information
 - a. Catalog description: This course will examine the major types or data models of Database Management Systems (DBMS): hierarchical, network, relational, and object-oriented. The principles and problems of database design, operation, and maintenance for each data model will be discussed and compared. Topics that will be covered include design theory, query language, relational expressions, SQL, stored procedures, client-server interfaces, entity relationship diagrams, normalization, and database security.
 - b. CISP111, IAAS221 or IAAS224
 - c. Required course
6. a. Course Learning Outcomes:
 1. Discuss the advantages and disadvantages of the four types of database design; hierarchical, network, relational, and object-oriented.
 2. Discuss the role of SQL in database application development.
 3. Demonstrate the different modeling and design techniques for a DBMS.
 4. Demonstrate normalization and ERD diagramming.
 5. Discuss the importance of database security.
 6. Describe the developing changes in database design and implementation, including XML applications.
- b. Student Outcomes assessed by CISP247

2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles

c. Mapping of Course Learning Outcomes to Student Outcomes

Course Learning Outcomes 1, 2, 3 → ABET SO 2
Course Learning Outcome 4 → ABET SO 3
Course Learning Outcomes 5, 6 → ABET SO 4

7 Course Content:

Topic or Subtopic (Number of hours devoted to a topic are shown in parenthesis)

1. Database applications, database environment, Database roles (design, implement, use and administer), prototyping and agile-development (3)
2. ERD: terminology, ERD models, ERD relationships (3)
3. Data modeling: Supertype/subtype relationships, specialization (top-down perspective) and generalization (bottom-up perspective), completeness constraints and disjointness constraints, modeling business rules (4)
4. Relational data model, relations, integrity constraints, functional dependencies, determinants (3)
5. Indexes (3)
6. Normalization (6.5)
7. SQL (6)
8. DDL (3)
9. Data administration, access control, data management software, database security, database recovery (3)
10. Client/server computing, architectural structures, XML and XQuery (3)
11. Data warehouse, dimensional data, data marts, Extract-transform-load (ETL) process (6)