

**EMBRY-RIDDLE AERONAUTICAL UNIVERSITY**  
**Department of Computing and Mathematics**  
**COURSE OUTLINE FOR**

**Course No.:** CS317  
**Credit Hours:** 3

**Title:** File and Database Systems

**Lecture Hours:** 3

**Laboratory Hours:** 0

**COURSE DESCRIPTION:**

Introduction to file and database systems. The course will cover the theory of the database systems, relational database design, implementation and management. Projects will reflect real-life problem-solving skills in the database world.

**GOALS:**

The course has two primary goals for students:

1. To learn the fundamentals of relational and object-relational database systems
2. To have hands-on experience on database design, implementation, management and programming.

**PERFORMANCE OBJECTIVES:**

After successful completion of this course the student should be able to:

1. Understand the architecture and process of a database system.
2. Distinguish the difference between physical and logical design of a database.
3. Identify features of an object-oriented database and understand UML.
4. Describe operations of relational algebra that are used for manipulating a database.
5. Design a relational database reflecting a real-life situation using ER/EER model.
6. Query and manipulate a relational database using SQL statements (DDL & DML).
7. Use FD to analyze a table object and normalize a relational database up to 3NF/BCNF.
8. Write Database application programs using JDBC connectivity.
9. Create, store and execute PL/SQL units.
10. Administrate and manage the Oracle database system at beginning level.
11. Understand database physical storage and Identify different kind of file organization.

**Department of Computing and Mathematics**  
**COURSE OUTLINE FOR CS317, Continued**

**TEXTBOOK:**

Elmasri & Navathe, *Fundamentals of Database Systems*, 3<sup>rd</sup> Edition, Addison-Wesley, 2000.

**SUGGESTED SUPPLEMENTAL MATERIALS:**

Sunderraman, *Oracle8 Programming: A Primer*, Addison-Wesley, 2000.

Connolly and Begg, *Database Systems: A Practical approach to Design, Implementation, and Management*, Addison-Wesley, 2000.

**PREREQUISITE KNOWLEDGE BY TOPIC:** CS225 and CS222

	TOPIC	CLASS HOURS	COURSE OBJECTIVES
1.	Database systems, Databases and Users	1.15	Understand a database system and a database
2.	Database System Concepts	1.15	Be able to distinguish physical and logical design
3.	Data Modeling Using the Entity-Relationship Model	2:30	Be able to design a relational database using a ER model
4.	Enhanced Entity-Relationship and Object Modeling	1.15	Be able to identify features of OODB and UML
5.	Relational Data Model and Relational Constraints	1.15	Understand and apply relational constraints appropriately
6.	Relational Algebra	2.30	Be able to query the database using 8 relational operations
7.	SQL – The Relational Database Standard	3.45	Be able to query the database using SQL statements
8.	ER model – to Relational Mapping	2.30	Convert ER/EER to a relational database or in reverse
9.	Functional Dependencies and Normalization	2.30	Be able to use FD to analyze a table object and normalize a relational database up to 3NF/BCNF
10.	Java Basics	1.15	Be able to write a simple Java program
11.	Client-Server and JDBC connectivity	1.15	Understand client-server architecture and JDBC connectivity

12.	JDBC Programming: Embedded SQL	2.30	Be able to write application programs using Java
13.	PL/SQL Unit	2.30	Be able to create and execute PL/SQL units
14.	Relational Database Management Systems: Oracle Architecture	1.15	Understand Oracle architecture and process
15.	Oracle database Administration	1.15	Administrate and manage the Oracle database system
16.	Database Physical Storage and File Organization	2.30	Understand database physical storage and different kind of file organization

### **LABORATORY:**

1. One-hour laboratory to do SQL exercises by each individual student
2. Two Projects to be finished by each individual student
  - Database Design and Implementation
  - JDBC Database Application Programming
3. Eight homework assignments on computers

### **COMPUTER USAGE:**

1. Oracle Enterprise 8i client-server running on NT 4.0 network
2. JDK 1.2 Java compiler on NT 4.0 network

### **GRADING SYSTEM:**

Points will be distributed as follows:

Assignments	18%
Quizzes	10%
Mid-Term I	18%
Mid-Term II	18%
Project I	6%
Project II	6%
Final Exam	24%

The final grade will be determined on the above performance.

Grading Scale: A 90-100%, B 80-89%, C 70-79%, D 60-69%, F 0-59%

### **ESTIMATED CONTENT:**

<b>Skills:</b>	<b>40%</b>
<b>Content:</b>	<b>60%</b>