Computer Science & IT Department
Bicol University College of Science
Legaspi City

Database Systems

Course Description

The course introduces the students to database concepts: data independence, architecture, models, administration, normalization, query optimization, integrity and security.

Course Objectives

Upon completion of this course, you should be able to

- grasp the concepts of database systems; and
- design and build a database system application.

Course Outline

A. Introduction

- Overview of Database System
- Advantages of database system over the Traditional, manual, system of record-keeping
- Disadvantages of File Processing Systems
- Benefits of database system
- Database Development Process
- Database Systems Architecture

B. Database Analysis

- Data Modeling using Entity-relationship Model
- Enhanced Entity-Relationship Model
- Reducing ER/EER Diagrams to Tables

C. Database Design

1. Logical Design
   - The Relational Model
   - Integrity Constraints
   - Functional Dependencies
   - Normalization (1NF, 2NF, 3NF, BCNF)

2. Physical Database Design

D. Structured Query Language (DDL, DML, DCL)

E. Transaction Concept and Management

F. Database Security and Integrity

References

- **Modern Database Management, Sixth Edition**

by Jeffrey A. Hoffer, Mary B. Prescott and Fred R. McFadden

- **Database System Concepts, Second Edition**

by Henry Korth and Abraham Silberschatz

- **Fundamentals of Database Systems, Third Edition**

by Elmasri and Navathe

- **Introduction to Database Systems, Eighth Edition**

by C.J. Date

Grading System

- Lecture: 70%
  - 2-3 Long Exams (60%)
  - Class Participation (10%)
    - Quizzes, Recitation, Problem Sets, etc.

- Laboratory (Database System Application): 30%
  - Group Project (max of 4 members per group)
  - Progress Report every week
  - Phases 1-3 Reports
  - Presentation