**100070008 Database Technology and Application**

**Lecture Hours: 32**

**Laboratory Hours: 16**

**Credits: 3**

**Prerequisite(s): Computer Basics**

**Course Description:**

This course is to explore how to use Access Database, VBA and SQL to create Database application system. The course is a basic course for computer applications, suitable for undergraduates of all majors. Through the study of this course, the students should be familiar with database design and operation, including the design and use of the database table, query, form, PivotTable / maps, reports, data access pages, macros and modules, and access support for Internet, database security management, etc. so as to achieve the ability to develop simple database application system, and lay the foundation for future study and application development.

**Course Outcomes:**

After completing this course, a student should be able to:

1. Master the basic theory of database technology and application

2. do Database analysis and design (1NF, 2NF, 3NF)

3. Use seven objects to develop a simple database application system

4. Use VBA and SQL to develop a simple database application system

**Course Content:**

**Lectures and Lecture Hours:**

Chapter 0 Introduction to the course (1)

Chapter 1 Basic concepts of database (3)

1．Relational database basics

2．Relational computing

3．Relation normalization basics

4．Introduction to Access

Chapter 2 Database and data table (4)

1．Database operations

2．Data table establishment

3．Basic operation of data table

Chapter 3 Query (4)

1．Basic concepts of query

2．Create select queries

3．Create calculation queries

4．Create special purpose queries

5．Create an action query

6．Create SQL queries

Chapter 4 form (2)

1．Understanding forms

2．Create forms

3．Form controls

4．Format forms

Chapter 5 Report creation and operation (4)

1．Basic concepts of report

2．Create reports

3．Design reports

4．Advanced design of reports

5．Modify Report

Chapter 6 Web data access page (2)

1．Overview of data access pages

2．Create data access pages

3．Edit data access pages

Chapter 7 macro (4)

1．Macro concept

2．Create macros

3．Run macros and debug macros

Chapter 8 Modules and VBA (4)

1．VBA basics

2．VBA program structure

3．Object Oriented Programming basics

4．Basic concepts of modules

5．Process calls and program debugging

Chapter 9 Design, development and release of Access application system (2)

1．Develop student achievement management system

2．Mainten student achievement management system

Design example and summary review (2)

**Laboratories and Laboratory Hours:**

1．Access installation and startup, database creation and maintenance (2)

2．Create tables and input data (2);

3．Design queries (2);

4．SQL programming (2)

5．Design forms (2);

6．Design reports (2);

7．Design macros (2);

8．VBA programming (2);

9．Design some database application systems (after class time)

**Grading:**

Usual grades 10%

Homework 30%

Final 60%

**Text & Reference Book:**

刘东，刘丽．Access数据库基础教程（M），北京：科学出版社，2012，ISBN 978-7-03-033675-0.

李玉霞，刘丽．Access 2010数据库基础教程（M），北京：中国铁道出版社，2016，ISBN 978-7-113-20377-1.