**Introduction to the information system**

**course outline**

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| **Course name** | Introduction to Information System |
| **class hour** | 16 |
| **Experimental class hours** | 4 |
| **Course nature** | Subject foundation |
| **Applicable to professional** | Data science and big data technology |
| **Prerequisite** | Database system principle, computer network, and operating system |

**1. Course instructions**

Introduction to the Information System of this course is a basic course, which is applicable to data science and big data technology. The course aims to give a comprehensive and systematic introduction to the basic theories, basic concepts of the information system and its application in various fields. Through the study, students will be able to understand and master the core knowledge of the information system, and lay a solid foundation for the subsequent study and work.

This course adopts the teaching method of combining theory with practice, and focuses on improving students' practical operation ability and problem-solving ability. The course is dominated by case analysis and project combat, so that students can be familiar with and apply the knowledge and skills related to the information system in practice.

This course emphasizes the research of the latest information technology and data science, and timely updates the teaching content, so that students can keep up with the pace of technological development. At the same time, teachers will guide students to use the knowledge learned flexibly to solve practical problems according to their actual needs. Through this teaching method, students can not only acquire systematic professional knowledge, but also cultivate talents with innovative spirit and practical operation ability.

**2. Course Objectives**

Goal 1: Understand the basic principles and composition of computers and their role in the operation of information systems.

Goal 2: Understand and apply basic data structures and algorithms, such as arrays, linked lists, binary trees, etc.

Goal 3: Learn the database design and management knowledge, including data model, query language, transaction processing, etc.

Goal 4: Master the basic knowledge of network technology, including protocol, port, routing, etc., and be able to make simple network configuration.

**3. The correspondence between course objectives and graduation requirements**

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| **Graduation requirements** | **index point** | **program objective** |
| **1, firm ideals and beliefs** | 1) Have correct values and moral values, patriotic, honest, law-abiding; | 1 |
| 2) A high sense of social responsibility and a good spirit of cooperation; |
| 3) Have the scientific spirit and humanities and social science literacy required by engineering students. |
| **2.Solid professional skills** | 4) Master the necessary mathematical knowledge for engineering students; | 2 |
| 5) Master the basic knowledge of data science and engineering, including the related basic knowledge of computer, statistics and applied mathematics, and information systems; |
| 6) Master the basic models and algorithms of data analysis and machine learning. |
| **3. Advanced discipline concept** | 7) Have a deep understanding of the whole life cycle of data acquisition, modeling, management and utilization, and have a deep understanding of the relationship between data science and engineering-related technology development and social and economic development; | 2 |
| 8) Have a deep understanding of the enabling role of data for social and economic development, understand the technical problems of typical applications in finance, logistics, retail, manufacturing and other fields, and master the main solutions. |
| **4. Comprehensive engineering ability** | 9) Master the main data management and processing tools and the use of system platforms, be familiar with their characteristics, system architecture, and have the basic data system design and development capabilities; | 3 |
| 10) Understand the process of demand analysis, data and application modeling, system selection, application design, development and implementation in big data application, and have the ability to cooperate in system and application research and development; |
| 11) Master the design and development methods of open source software, master the use technology of cloud computing platform, and master the methods and technology of application design, development, implementation, operation and maintenance based on cloud computing; |
| 12) Have the ability of communication and cooperation required to participate in the data system or data application design, development, operation and maintenance engineering, and master the basic engineering management knowledge and ability. |
| **5. Outstanding research ability** | 13) Understand the discipline field of "Data Science and Engineering" and the frontier of technology development in related application fields; | 4 |
| 14) Have preliminary scientific training in data science and engineering research, and have the ability to engage in scientific research, teaching or engineering development of related disciplines. |

1. **Course Content and Schedule**

Chapter 01: Introduction

Credit hours: 2

content:

1. Introduce the concept and importance of the information system.

2. Discuss the development process of information technology.

Ask students to understand the definition and importance of information systems.

Chapter 02: The Foundations of Information Science

Credit hours: 2

content:

1. Discuss the classification of information and its interrelationships.

2. Introduce the basic principles and applications of data structure.

Students are required to master the basic concept and use method of data structure.

Chapter 03: Computational Theory

Credit hours: 2

content:

1. Introduce the basic knowledge of computational theory.

2. Discuss and analyze the main characteristics of the computational model.

Ask students to understand the basic concepts and mathematical foundation of computing theory.

Chapter 04: Computer hardware

Credit hours: 2

content:

1. Discuss the working principle and composition of computer hardware.

2. Discuss and compare the different types of computer hardware.

Ask students: to understand the basic composition and working methods of computer hardware.

Chapter 05: Computer Software

Credit hours: 2

content:

1. Discuss the development process and types of computer software.

2. Discuss and compare the characteristics of different types of computer software.

Students are required to master the basic development process and type of computer software.

Chapter 06: Operating system

Credit hours: 2

content:

1. Introduce the concept of the operating system and its function.

2. Discuss the basic principles and functions of the operating system.

Ask the students: to understand the basic concepts and use methods of the operating system.

Chapter 07: Database system

Credit hours: 2

content:

1, introduced the concept of the database and its importance.

2. Discuss the main features of the database management system.

Students are required to master the basic concepts and use methods of the database system.

Chapter 08: The Internet and its applications

Credit hours: 2

content:

1. Discuss the basic composition and operating mechanism of the Internet.

2. Discuss the application of the Internet in various fields.

Ask students to: understand the basic composition and application of the Internet.

Chapter 09: Network Security and Management

Credit hours: 2

content:

1. Discuss the importance of cyber security and its coping strategies.

2. Discuss the construction and implementation of the network security management system.

Ask students: to understand the basic principles and management methods of network security.

Chapter 10: Information System Planning and design

Credit hours: 2

content:

1. Introduce the basic theories and methods of information system planning and design.

2. Discuss the basic steps and precautions of information system planning and design.

Students are required to understand the basic processes and principles of information system planning and design.

Chapter 11: Information system implementation and maintenance

Credit hours: 2

content:

1. Introduce the basic theories and methods of information system implementation and maintenance.

2. Discuss the basic steps and precautions for the implementation and maintenance of the information system.

Students are required to understand the basic procedures and principles of the implementation and maintenance of information systems.

Chapter 12: Information system evaluation and evaluation

Credit hours: 2

content:

1. Introduce the basic theories and methods of information system evaluation and evaluation.

2. Discuss the basic steps and precautions of information system evaluation and evaluation.

Students are required to understand the basic processes and principles of information system evaluation and evaluation.

**V. Teaching methods**

This course adopts a combination of online and offline methods. First, students can preview the relevant knowledge by themselves through the courseware distributed in advance, and then explain in the offline classroom to explain the key and difficult points in detail. After class, students need to complete a lot of computer practice to improve their practical ability. The course will also organize theoretical tests and project defense to ensure that students have a deep understanding of knowledge and practical application. Through such a teaching mode, students will not only understand and master the basic knowledge of the information system, but also develop good practical ability and innovative thinking.

**Vi. Assessment methods**

This course aims to cultivate students' theoretical literacy, practical ability and innovative thinking. The course of introduction to information system is mainly assessed in the form of closed-book examination to investigate students' knowledge of theoretical understanding, algorithm application, practical operation and other aspects. The score consists of normal homework (30%), experimental report (20%) and classroom performance (10%), and the final assessment (40%) is the basis for the final score.