**The course outline of 信息系统概论**

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| **course\_name** | 信息系统概论 |
| **course\_alltime** | 16 |
| **course\_labtime** | 4 |
| **course\_type** | Subject foundation |
| **course\_sub** | 数据科学与工程 |
| **course\_pre** | Introduction to prerequisite courses usually include computer principles, data structures and algorithms, database principles and technology, operations, etc. |

**Ⅰ Course description**

&lt;||&gt; Introduction is a suect foundation course for data science majors. The course is designed to allow students to understand and master basic concepts, components, capabilities and service models, understand their role and value in modern society, and train students to apply them in the era. Ability to solve practical problems using digital, computer and network technologies. The course teaching design focuses on the combination of theory and practice, and guides students to deeply understand and master the composition, capabilities and operating mechanisms by explaining the basic structure, service model and principles. At the same time, the course also emphasizes practical application, cultivating students&#39; application and abilities through cases and practical projects, so that students can truly experience beauty and practicality during the learning process. Course teaching methods include classroom explanations, cases, experiments and other forms, aiming to stimulate students&#39; interest in learning and cultivate students&#39; active learning and problem-solving abilities. During the teaching process, teachers will pay attention to the latest developments in real time and combine them with actual teaching content, so that students can master basic theories while also possessing practical operation and application abilities, laying a solid foundation for engaging in related careers in the future.

**Ⅱ Course objectives**

Objective 1: Understand computer concepts, development history, components and basic principles. Objective 2: Understand computer data models, data structures, algorithms and databases. Goal 3: Master computer software engineering methods, and design. Goal 4: Use computer technology to realize and solve practical problems.

**Ⅲ Teaching content and class schedule**

Chapter 1: Working with Data Hours: 4 Content: 1. Definition and difference of working with data; 2. Working with data base; 3. Working with data and its application in modern society. Students are required to: master the concepts of data base and understand the importance of data in education. Chapter 2: Computers and Learning Hours: 4 Contents: 1. History and classification of computer development; 2. Computer hardware and software; 3. The role of computers in computer science. Students are required to: Understand the basic components of computers, master basic knowledge of computer hardware and software, and understand the core role of computers in education. Chapter 3: Data and Data Processing Hours: 4 Content: 1. Data base concepts and types; 2. Data processing technology; 3. Data and storage. Students are required to: master data base concepts, understand data processing technology, and understand data and storage base methods. Chapter 4: Design and Learning Hours: 4 Content: 1. Design and basic principles; 2. Life cycle; 3. and design methods. Students are required to: understand design and basic principles, master the life cycle, and understand and design basic methods. Chapter 5: Network and Internet Hours: 4 Content: 1. Basic concepts and classification of networks; 2. Development and composition of the Internet; 3. Network protocols and network communications. Students are required to: Understand the basic concepts of network, master the development and composition of the Internet, and understand the basic principles of network protocols and network communication. Chapter 6: Database Hours: 4 Content: 1. Basic concepts of database; 2. Database (dbms) capabilities; 3. Database design. Students are required to: understand basic database concepts, master basic database capabilities, and understand basic database design methods. Chapter 7: Software Engineering Hours: 4 Contents: 1. Basic concepts of software engineering; 2. Software methods and technologies; 3. Software quality and evaluation. Students are required to: Understand the basic concepts of software engineering, master software methods and technologies, and understand the basic methods of software quality and evaluation. Chapter 8: Artificial Intelligence and Machine Learning Hours: 4 Content: 1. Basic concepts of artificial intelligence; 2. Basic concepts of machine learning; 3. Applications of artificial intelligence. Students are required to: Understand the basic concepts of artificial intelligence, master the basic principles of machine learning, and understand the important role of artificial intelligence in practical applications. Chapter 9: Security Hours: 4 Content: 1. Basic concepts of security; 2. Security attack and defense; 3. Security technology. Students are required to: understand security-based concepts, master security attack and defense-based methods, and understand the application of security technology in education. Chapter 10: Big Data and Data Mining Hours: 4 Contents: 1. Basic concepts of big data; 2. Data mining technology; 3. Big data applications. Students are required to: Understand the basic concepts of big data, master the basic principles of data mining, and understand the important role of big data in practical applications. Chapter 11: Cloud Computing and Edge Computing Hours: 4 Content: 1. Basic concepts and technologies of cloud computing; 2. Basic concepts and technologies of edge computing; 3. Cloud computing and edge computing applications. Students are required to: Understand the basic concepts of cloud computing, master the basic principles of edge computing, and understand the important role of cloud computing and edge computing in practical applications. Chapter 12: Development Hours: 4 Content: 1. Development process; 2. Development trends; 3. Development prospects. Students are required to: understand the development process, grasp development trends, and understand development prospects.

**Ⅳ Teaching method**

Teaching methods: 1. Before class: students preview relevant knowledge and understand the course content through distributed courseware. 2. In-class: Class learning is conducted in offline classrooms, and teachers focus on explaining key and difficult content. 3. After class: Students conduct computer practice, consolidate theoretical knowledge, and use course technology to complete projects. 4. At the end of the course: a theoretical test and a project defense will be organized to assess students’ learning outcomes. Through this teaching method, students can preview and consolidate theoretical knowledge, hone their abilities through extensive computer practice, deepen their understanding of theoretical knowledge, and lay a solid foundation for related work in the future.

**Ⅴ Assessment method**

This course aims to cultivate students' theoretical literacy, practical ability and innovative thinking. Introduction The assessment method for this course can refer to the above courses and be designed based on the characteristics of the course. First of all, closed-book examinations are still the main assessment method to ensure that students master the theoretical knowledge of the course. The examination content should cover the core concepts, basic principles and applied practices in the course to examine students&#39; comprehensive abilities. The exam time is also 2 hours. Secondly, experimental work and experimental report assessment can be added to improve students&#39; practical ability and innovation ability. Experimentation can include building simple models, existing models, designing solutions, etc. The experimental report mainly evaluates students&#39; experimental design, implementation and ability, as well as report writing level. In addition, classroom performance is also an important part of the assessment, including students&#39; participation in class, questioning, discussion and group activity performance, etc. This helps evaluate students&#39; mastery of course content and ability to work in teams. Finally, according to the characteristics of the course and the teaching objectives, the weight of each assessment method can be flexibly adjusted to achieve an evaluation effect that is more in line with the course requirements. For example, for chapters that emphasize practical applications, the weight of experimental work and experimental reports can be appropriately increased; and for the mastery of theoretical knowledge, the weight of closed-book exams can be appropriately increased. In short, the assessment method of introductory courses should comprehensively use multiple methods such as closed-book examinations, experimental work, and classroom performance to comprehensively evaluate students&#39; theoretical knowledge and practical abilities.