The Syllabus of

**Fundamentals of Computer Application**

**I. An overview of the course**

Course Code: 19110243

Course Name: Fundamentals of Computer Application

Course Category: general courses (compulsory)

Class hours: 48(experimental class hours: 24)

Credit points: 3

Suitable students: all college students of non-computer major

Assessment method: examination

Prerequisite courses: none

II. Course introduction

This course is a public compulsory course for non-computer major undergraduate students. It is the first level of basic computer education in colleges and universities, and the basis for learning other computer-related courses. This course starts from application and focuses on developing students' abilities and awareness of using computers to solve problems. The content of this course mainly includes: computer basic knowledge (software and hardware knowledge), microcomputer operating system, the application of common office software and so on. Through the study of this course, students will master the basic computer knowledge and basic operation skills necessary for working, studying and living in the information society.

III. Teaching purposes

This course is a public compulsory course for undergraduate students who are not computer majors. It lays a good foundation for students to understand the development trend of information technology, be familiar with the computer operating environment and working platform, have the common tools and software to deal with daily affairs and cultivate the necessary information literacy of students. This course focuses on cultivating students' basic abilities and thinking methods of applying computers, so as to enable students to acquire and process general information by using computers, and lay a good foundation for using computers to solve problems in their major and related fields in subsequent courses.

**Choose cases and learning materials about the great development of computer all over the world, let the students from the case study master modern computer knowledge.**

Iv. Teaching contents and requirements

**Chapter 1: Computer basics and digitization**

(I) Purposes and requirements

1. Understand the evolution process of computing technology and the basic concepts of computational thinking.

2. Understand the system composition of the computer.

3. Basic knowledge of information coding in computers.

4. Master the conversion methods of several common bases.

5. General knowledge of computer systems and information security.

**6. Understand the history and achievements of computer development in the world.**

(2) Teaching contents

Section 1: computer basics

1. Main content

(1) The development of electronic computers.

(2) Overview of computational thinking.

2. Basic concepts and knowledge

The development of computers, characteristics, classification and basic concepts.

3. Problems and applications

Q: given the current development of computers, what do you think computers will be like in the future?

After completing this section, students are required to have a certain understanding of the development of computers and their functional characteristics, and to initially establish the concept of computational thinking.

Section 2: information representation and storage

1. Main content

(1) Conversion between data representation, number system and commonly used carry counting system.

(2) Encoding representation of western characters (ASCII code).

2. Basic concepts and knowledge

Binary, octal, hexadecimal, ASCII, glyph code.

3. Problems and applications

Question: how are Numbers and symbols processed in a computer?

After completing this section, students are required to master the conversion between several common bases and understand the ASCII representation of western characters.

Section 3: an overview of the microcomputer system

1. Main content

(1) Working principle of computer.

(2) Computer hardware composition.

(3) Composition of computer software.

(4) Composition of microcomputer system.

2. Basic concepts and knowledge

CPU, memory, input/output devices, instructions, programs.

3. Problems and applications

Question: what are the main ideas of Von Neumann? How to understand these ideas?

Students are required to understand the software and hardware components of the computer and how it works. Understand the concept of storage capacity, address, bit, byte, KB, MB, GB, etc., understand the structure, function and principle of disk, understand the concept of system software and application software.

(3) Thinking and practice

Question: how do you understand the concept of computational thinking?

Arrange experiments to make students familiar with the software, hardware and network environment of the computer room and master the basic operation methods of the computer.

**Tell something about what computers do in science and technology nowadays.**

(4) Teaching methods and means

The combination of lecture and practice is carried out in the multimedia machine room.

**Chapter 2: Operating system**

(I) Purpose and requirements

1. Familiar with the function, classification and characteristics of the operating system.

2. Understand the features, functions, operating environment, startup and exit methods of Windows.

3. Understand the interface composition and basic operation of Windows.

4. Understand the concept of multitasking and master the running, switching and exiting of applications.

5. Understand the basic concepts of files and folders, and master the basic operations of files and folders.

6. Master the usage of common Windows accessories.

**7. Discuss how outstanding the OS is in computer software.**

(2) Teaching contents

Section 1: operating system basic knowledge

1. Main content

(1) Concept of operating system.

(2) Basic composition and operation of Windows operating system.

2. Basic concepts and knowledge

Operating system, files and folders, device management.

3. Problems and applications

Question: how to understand the concepts of single-user, multi-user, single-task, and multi-task in operating systems?

Students are required to understand the concept of the operating system, understand the development status of the mainstream operating system, understand the characteristics of the Windows system, and be familiar with the basic operations such as starting and closing Windows.

Section 2: file, folder and file management

1. Main content

(1) The concept and naming method of files and folders.

(2) Establishment of tree directory structure.

(3) Search, copy, move, rename and delete files and folders.

(4) Setting the properties of files and folders.

2. Basic concepts and knowledge

Files and folders, tree structures, file properties.

3. Problems and applications

Question: what is the purpose of creating a tree directory structure?

Students are required to master the basic concepts of files and folders, the basic methods of creating folders, and the basic operations of searching, copying, moving, renaming and deleting files and folders.

Section 3: use common Windows software and tools

1. Main content

(1) How to use drawing.

(2) How to use tablets.

(3) How to use notepad.

(4) How to use calculator.

(5) How to use screenshot tools.

(5) How to use operating system help function.

(6) How to use application help function.

2. Basic concepts and knowledge

Tablet, notepad, drawing, calculator, screenshot, help system.

3. Problems and applications

Question: how do you handle a difficult problem in a Windows environment?

After completing this section, students are required to master the use of operating system and application program help functions, and master the use of commonly used accessory tools.

(3) Thinking and practice

Question: what are the basic functions of an operating system? Think of it from the perspective of the computer and the user.

The experiment was arranged to let students master the basic management methods of files and folders in Windows environment, master the basic management methods of programs and devices in Windows environment and the use of common application tools.

(4) Teaching methods and means

The combination of lecture and practice is carried out in the multimedia machine room.

**Chapter 3: Word 2010**

(I) Purposes and requirements

1. Master the startup and exit methods of Word, be familiar with the composition of Word window, and understand the operating environment of Word.

2. Master the methods of creating, opening and saving documents, and be familiar with several common views of documents.

3. Master the input and editing methods of text.

4. Master the text character format and paragraph formatting and other editing methods.

5. Master how to use the style.

6. Understand what templates do.

7. Master the creation, editing, modification, calculation and conversion of forms and documents.

8. Master the establishment and editing methods of graphics and pictures, and realize the mixing of pictures and texts.

9. Master the basic methods of document directory, index and reference.

10. Master the basic methods of document review.

(2) Teaching content

Section 1: an overview of Word 2010

1. Main content

(1) Basic functions of Word.

(2) Creating and closing a document.

(3) Using template to create a document.

2. Basic concepts and knowledge

Word features and interface composition.

3. Problems and applications

Question: how do I show and hide various toolbars in a Word window?

Students are required to understand the basic functions of Word, master the starting and closing methods of Word, and be familiar with the interface composition of Word.

Section 2: document creation and editing

1. Main content

(1) Create a blank document.

(2) Editing the text.

(3) Selection of text content.

(4) Text movement, copy and delete.

(5) Search and replace.

2. Basic concepts and knowledge

Text range selection, search and replace.

3. Problems and applications

Question: how to quickly remove Spaces from a document?

Students are required to have a good command of the methods of creating documents, entering text and modifying common methods, how to select text, how to move, delete and copy text, and the search and replace functions with and without format.

Section 3: document layout

1. Main content

(1) How to set the font, size, font shape and character color.

(2) How to set the border, shading and spacing of characters.

(3) Paragraph arrangement.

(4) Paragraph indentation.

(5) How to set paragraph border and shading.

(6) How to set paragraph spacing.

(7) How to set the line spacing.

(8) How to set bullets and Numbers.

(9) How to use format brush.

(10) How to set margins.

(11) How to set the specification and printing direction of the paper.

(12) How to set the header and footer.

(13) How to print preview.

(14) How to set up columns.

2. Basic concepts and knowledge

Character, paragraph, and page formatting.

3. Problems and applications

Question: Word provides several views. What is the difference between them?

Students are required to complete this section after learning, master the methods of setting of character format, master the methods of setting of the paragraph format, mastering the paragraph merger, split, exchange, delete, basic operations, such as application projects signed and numbered, master brush with format copy method, character and paragraph format to grasp the method of columns, master page format setting method, to grasp the method of header and footer Settings, use the print preview to check the document layout effect.

Section 4: using templates and styles

1. Main content

(1) How to use the template provided by Word to create documents.

(2) How to create and apply styles.

2. Basic concepts and knowledge

Application of templates and styles.

3. Problems and applications

Question: what objects are targeted by the styles and templates?

Students are required to understand the concept of templates and master the use of styles after completing this section.

Section 5: preparation, calculation and mail combination of forms

1. Main content

(1) How to create a table.

(2) How to set the column width, row height, border, shading and other basic properties of the table.

(3) How to cell merging and splitting.

(4) How to insert or delete rows, columns, and cells in a table.

(5) How to format the table contents.

(6) How to use tables for simple arithmetic operations.

(7) How to make batch documents with mail merge function.

2. Basic concepts and knowledge

Create, edit, format and calculate tables.

3. Problems and applications

Question: is Word table calculation a function of Word itself?

Students are required to master several common methods of creating forms in Word, the basic editing methods of forms, the use of formatting methods such as manual setting and autoform, the basic arithmetic operation functions of forms, and the method of making batch documents by mail merging.

Section 6: text and graphics

1. Main content

(1) Several main methods of producing pictures and graphs.

(2) How to edit and modify pictures and graphics.

(3) How to use text boxes.

(4) How to edit text and graphics.

2. Basic concepts and knowledge

Source and basic editing of images and graphics.

3. Problems and applications

Question: how to set the image to appear as a background of a text?

Students are required to complete this section after learning, grasp the insert pictures in Word environment, clipart, inserted into various shapes, art words, mathematical formulae, such as organization chart, SmartArt diagram and the basic methods of various objects, master the basic editing modification method of images, graphics, master the use function of text box, master the typesetting by position.

Section 7: advanced document applications

1. Main content

(1) Document review

(2) Long document editing

2. Basic concepts and knowledge

Basic usage of annotations, revisions, footnotes, catalogues, indexes, etc.

3. Problems and applications

Question: how to automatically generate and grow document directories?

After completing this section, students are required to master several common document review methods and be proficient in editing the format of documents of graduation thesis type.

(3) Thinking and practice

Question to consider: what are some of the formats in Word that affect the overall layout? How do I prioritize layout?

The experiment was arranged to enable students to master the basic operation of Word and the layout design of Word documents, the establishment and design of Word forms, the function of mixing text and text, document review and long document editing.

**Why does Microsoft Office dominate the domestic market? Talk about your view from the history, present situation and development trend. What is the way for new office software?**

(4) Teaching methods and means

The combination of lecture and practice is carried out in the multimedia machine room.

**Chapter 4: Excel 2010**

(I) purpose and requirements

1. Understand and master the basic concepts of spreadsheets.

2. Master the startup and exit methods of Excel, and be familiar with the composition and operation environment of Excel Windows.

3. Proficient in creating, opening and saving worksheets.

4. Proficient in basic operations such as insert, copy, move, delete, rename of worksheet.

5. Proficient in data editing and formatting Settings of worksheets.

6. Proficient in the use of formulas and functions of worksheets.

7. Proficient in the management and analysis of worksheet data.

8. Understand the concept of charts and understand the creation and editing of charts.

9. Master page formatting and printing of worksheets.

(2) Teaching content

Section 1: an overview of Excel

1. Main content

(1) Basic functions of Excel.

(2) Creating and closing an Excel workbook.

(3) The interface of Excel.

2. Basic concepts and knowledge

Excel features, interface and basic operations.

3. Problems and applications

Question: how to switch between multiple worksheets in Excel?

After completing this section, students are required to understand the basic functions of Excel, master the startup and shutdown methods of Excel, and be familiar with the interface composition of Excel.

Section 2: working with workbooks

1. Main content

(1) Concept of workbook.

(2) Workbook establishment.

(3) Basic operation of workbook.

2. Basic concepts and knowledge

Workbook concepts and basic operations.

3. Problems and applications

Question: what is the relationship between workbooks, worksheets, and cells?

Students are required to understand the concept of worksheet, master a variety of ways to create workbook, and master how to open, save and close workbook.

Section 3: establishment and editing of worksheets

1. Main content

(1) Establishment of worksheets.

(2) How to input of several basic types of data.

(3) Generation of conventional sequence.

(4) How to edit worksheet data.

2. Basic concepts and knowledge

The establishment of worksheets, the input of all kinds of data and the generation of sequences, the basic editing method of working sheet cell data.

3. Problems and applications

Question: what are the characteristics of using the fill handle and the menu to produce a sequence?

After completing this section, students are required to understand the concepts of worksheets and cells, be familiar with the structure of worksheets and the method of cell representation, master the input and editing methods of numerical value, text and date-time type data, and master the method of automatically populating data with fill handles and fill menus.

Master the selection method of cells, continuous regions, and discontinuous regions, and the method of quickly locating cells and regions; master the naming method of cell regions; master the method of inserting columns, rows, and cells; master the methods of data replication, movement, deletion, elimination, and search and replace.

Section 4: management of worksheets

1. Main content

(1) Basic operation of worksheet.

(2) operation of worksheet window.

2. Basic concepts and knowledge

The basic operation of the worksheet.

3. Problems and applications

Question: is there a limit to the number of worksheets that can be inserted into a worksheet?

Students are required to master the operation of inserting, deleting, renaming, copying, moving and so on, as well as the method of splitting and freezing the worksheet window.

Section 5: worksheet formatting

1. Main content

(1) Custom formatting.

(2) Conditional format.

(3) Validity of data.

(4) Form format.

(5) How to copy a format and use the style

2. Basic concepts and knowledge

Worksheet format modifier.

3. Problems and applications

Question: what causes the truncated display of data and the # in the cell?

After completing this section, students are required to master several common formatting methods, including custom formatting, conditional formatting, table formatting, format replication methods and styles, etc., and master the methods of data validity setting.

Section 6: printing of worksheets

1. Main content

(1) How to set the printing area.

(2) How to set page number format.

(3) Print preview and print.

2. Basic concepts and knowledge

Print area Settings, print page formatting.

3. Problems and applications

Q: what is the main purpose of setting the print area?

After completing this section, students are required to master the basic methods of Excel document printing format setting, including the format setting of printing area, printing page, margins, header/footer, and the characteristics of printing preview and printing.

Section 7: formulas and functions

1. Main content

(1) How to use the formula.

(2) How to use functions.

2. Basic concepts and knowledge

How to use formulas and common functions.

3. Problems and applications

Question: how to understand the relationship between relative addresses, absolute addresses, and mixed addresses?

After completing this section, students are required to understand the purpose of formulas, master the input methods of various formulas, master the changing characteristics of three kinds of address reference forms (relative reference, absolute reference and mixed reference) in the process of formula replication, and master the use of the following commonly used internal functions of Excel.

Mathematical functions: ABS, INT, ROUND, TRUNC, RAND, PI, MOD

Statistical functions: SUM, SUMIF, SUMIFS, AVERAGE, COUNT, COUNTIF, COUNTIFS, COUNTA, MAX, MIN, RANK

Text functions: LOWER, UPPER, LEN, LEFT, RIGHT, MID, TEXT, FIND, SEARCH

Date and Time functions: DATE, DAY, MONTH, YEAR, NOW, TODAY, TIME

Conditional functions: IF, AND, OR

Financial function: PMT, PV, FV

Database statistics functions: DCOUNT, DCOUNTA, DMAX, DMIN, DSUM, DAVERAGE

Lookup functions: VLOOKUP, HLOOKUP, LOOKUP

Section 8: data management and analysis

1. Main content

(1) Data editing

(2) Data sorting.

(3) Data screening

(4) Data query.

(5) Data statistics.

(6) Classification and summary.

(7) The use of PivotTables and PivotCharts.

(8) Linkage operation of multiple worksheets.

(9) Data combination calculation.

2. Basic concepts and knowledge

Commonly used data query and statistical methods, data merge operation.

3. Problems and applications

Question: does a subtotal perform the same function as a database statistics function?

Students are required to complete this section after learning, to grasp the method of simple conditions and complex sequence database, senior master record sheet, screening and filtering method for query, master the methods of database statistics function is used to, and master the classification summary, pivot tables and data perspective to summary the data analysis method, the master data merge operations.

Section 9: chart function

1. Main content

(1) How to create charts.

(2) How to edit charts.

(3) How to analyze charts.

2. Basic concepts and knowledge

Charts and chart editing.

3. Problems and applications

Question: can you convert arbitrarily between different types of charts?

Students are required to be proficient in creating common charts such as bar charts, pie charts and line charts, understand the types and functions of charts, and master the basic methods of editing charts and the basic editing of chart elements.

**How to use the Knowledge of Excel to standardize their daily consumption and say no to bad consumption behavior?**

(3) Thinking and practice

Question to consider: Excel is called a spreadsheet. What do you think of the word "electronic"?

The experiment was arranged for students to master the basic operation of Excel and the format of worksheets, the use of formulas and functions, the use of sorting, filtering, categorizing, PivotTables and PivotCharts of databases, the simple use of data merging, and the methods of establishing, editing and formatting charts.

(4) Teaching methods and means

The combination of lecture and practice is carried out in the multimedia machine room.

**Chapter 5: Working with PowerPoint 2010**

(I) purpose and requirements

1. Master the starting and exiting methods of PowerPoint, be familiar with the composition of PowerPoint Windows, and understand the operating environment of PowerPoint.

2. Proficient in creating, opening and saving the presentation.

3. Proficient in the basic operations of slide deletion, copy, move and insert.

4. Proficient in adding text, tables, charts, pictures and other elements of the presentation.

5. Proficient in the generation of presentation animation, sound, video and other effects.

6. Be familiar with the types of views in PowerPoint and the slide manipulation under each view.

7. Proficient in master, theme, background and other methods to unify the slide style.

8. Proficient in the presentation mode, effect setting and switching operation methods.

9. Proficient in the hyperlink setting method between the presentation and the website and other files.

(2) Teaching content

Section 1: PowerPoint overview

1. Main content

(1) The function of PowerPoint.

(2) How to start and close PowerPoint.

(3) Composition of PowerPoint interface.

(4) View types of PowerPoint.

(5) Concept of design template and slide format.

2. Basic concepts and knowledge

PowerPoint features, interface composition and basic operations.

3. Problems and applications

Q: what are the features of making slides in various view modes?

After completing this section, students are required to understand the basic functions of PowerPoint, master the starting and closing methods of PowerPoint, be familiar with the interface composition of PowerPoint, master the characteristics of various operations in different view environments, and master the use of tools such as templates and slide formats.

Section 2: the creation of the presentation

1. Main content

(1) How to create a blank presentation.

(2) How to create presentations according to the template.

(3) How to create presentations with themes.

(4) How to create presentations based on existing content.

2. Basic concepts and knowledge

Basic methods for creating presentations.

3. Problems and applications

Q: what are the characteristics of several common methods of creating presentations?

After completing this section, students are required to familiarize themselves with several common methods of creating presentations.

Section 3 editing the presentation

1. Main content

(1) Making presentations and adding various elements.

(2) Browse, copy, move, insert and delete slides.

2. Basic concepts and knowledge

Basic operation of slides.

3. Problems and applications

Question: how to understand the use of placeholders?

After completing this section, students are required to master the methods of adding and editing various basic elements, including text, pictures, clipart, shapes, SmartArt charts, art words, tables, charts, organization charts, etc. Master the basic operation method of slide, such as slide insertion, delete, move, etc.

The fourth section of the presentation appearance effect Settings

1. Main content

(1) How to use theme.

(2) How to use the background.

2. Basic concepts and knowledge

Theme, background.

3. Problems and applications

Question: what aspect of the presentation does the theme change primarily?

After completing this section, students are asked to master several common ways to change the appearance of a presentation, including topic and background scenarios.

Section 5 creation of hyperlinks

1. Main content

(1) How to create a hyperlink to a location in the current presentation.

(2) How to create a hyperlink to the outside of the presentation.

2. Basic concepts and knowledge

Hyperlink concepts and settings.

3. Problems and applications

Question: how do I create relative links between slides in a presentation?

After completing this section, students are required to master the method of creating hyperlinks to a location in the document and to the outside of the document.

Section 6: the presentation

1. Main content

(1) Manual projection.

(2) Automatic projection.

(3) How to set slide switching effect.

(4) How to set slide animation effect.

(5) How to add multimedia objects to the slide.

(6) How to control slide show.

2. Basic concepts and knowledge

Slide show method.

3. Problems and applications

Question: how do I set the presentation to auto-play?

Students are required to master the manual and automatic slide show modes, be familiar with the Settings of slide switching effect and animation effect, understand the method of adding multimedia objects to the slide, and master the method of controlling slide show.

Section 7: packing and sending presentations

1. Main content

(1) How to package the presentation.

(2) How to send the presentation.

2. Basic concepts and knowledge

How to package and send presentations.

3. Problems and applications

Question: can you show a presentation without PowerPoint?

Students are required to master the packaging method of the presentation and the sending method of the presentation after completing this section.

(3) Thinking and practice

Question to consider: what are the main factors to consider when setting the layout of your presentation?

**Tell something about why do speakers like to use PowerPoints. Give examples of the status of PowerPoints in cultural exchanges around the world**

Students were given an experiment to complete the presentation.

(4) Teaching methods and means

The combination of lecture and practice is carried out in the multimedia machine room.

V. teaching hours allocation:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| TeachinghoursTeachingtypesTeachingcontents | **theory** | **exer****cise** | **discussion** | **experiment** | **Others** | **Sub-****total** |
| Chapter 1:computer basics | 1 |  |  | 1 |  | 2 |
| Chapter 2:operating system  | 2 |  |  | 2 |  | 4 |
| Chapter 3:Word 2010 | 5 |  |  | 5 | 2(midterm) | 12 |
| Chapter 4:Excel 2010 | 5 |  |  | 5 |  | 10 |
| Chapter 5:PowerPoint 2010 | 2 |  |  | 2 |  | 4 |
| Total | 15 |  |  | 15 | 2 | 32 |

Recommend teaching materials and teaching reference resources

1. Liu Yong. Fundamentals of university computer (2nd edition). Tsinghua university press, 2013.7

Learning website: http://5y.gdoa.net:8580

Vii. Other instructions

In this course, the final exam (accounting for 70% of the total score) is conducted by computer examination, and the score of this course is comprehensively evaluated by combining with the usual score (accounting for 30% of the total score).The performance of this course is mainly assessed from the aspects of mid-term examination, experiment completion, auxiliary learning platform practice, attendance and classroom performance.

Revised by: Cheng Aizhi Date: Jan. 2022

Approved by: Date: