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Experience on the Teaching of the Electronic Technology Foundation

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Abstract: This paper introduces the course of Electronic Technology Foundation, and expounds four teaching methods of this course, which are direct teaching method, heuristic teaching method, project teaching method, discussion teaching method, etc., this paper expounds their content and implementation process, and analyzes the teaching effectiveness.
Keywords: Course; Teaching methods; Process; Teaching effectiveness

1. Introduction to Electronic Technology Foundation

The course Electronic Technology Foundation is a compulsory course for undergraduates majoring in electrical in higher education. It is an introductory technical basic course. It has its own theoretical system and strong practicality. This course includes three parts: circuit analysis, analog electronic technology and digital electronic technology. The task of this course is to enable students to acquire basic theories, basic knowledge and basic skills in electronic technology, cultivate the ability to analyze and solve problems, and lay a foundation for further study, research and application of electronic technology in the future.

This course should enable students to preliminarily master the basic knowledge of circuits and analog circuits and the application of electronic technology, master the basic concepts and theorems of analog and digital electronic technology, master the use methods of various common basic components and integrated chips, master the common analysis methods of electronic circuits, master the conductive characteristics of semiconductors, the basic characteristics and main parameters of semiconductor diodes, common diode types and their application circuits, master the basic characteristics and main parameters of semiconductor triode, the composition and analysis method of triode amplification circuit, understand the structure and basic characteristics of integrated operational amplifier, master the analysis method of circuit composed of integrated operational amplifier, and master the basic laws of logic algebra and the simplification method of logic function, master the logic functions and external characteristics of TTL and CMOS gate circuits and various integrated flip flops, master the functions, analysis and design methods of combined logic circuits composed of SSI and MSI, master the functions, analysis and design methods of common sequential logic circuits, learn the design of synchronous counter and pulse signal generator, and understand the principle and application of programmable logic devices.

2. Description of teaching methods

As the platform main course of the basic courses of information disciplines in Colleges and universities, the course of Electronic Technology Foundation plays a very important role in relevant professional fields, therefore, it is very important in teaching, especially in teaching methods, the teaching methods are described below. This course is a highly practical course, while teaching theory, we should pay attention to practical teaching. While improving students' theoretical level, we should also enhance students' practical ability, so that students can have the ability to solve practical problems, in the teaching process, we should focus on the basic concept of circuit, basic analysis methods and the basic application of electronic technology, pay attention to cultivating students' practical skills and engineering application ability, cultivate students' engineering quality, and lay a solid foundation for being competent for relevant work in the future.

Teachers should have in-depth study and thorough understanding of the syllabus, fully understand the specific requirements of the syllabus for the course, arrange the course according to the requirements of the syllabus, summarize the key and difficult points of the teaching content of the course in the theoretical teaching, and focus on the key and difficult points of the teaching content from simple to deep in the teaching process, strive to make the teaching process clear, summarize and summarize the knowledge points in time, and strive to combine the theoretical teaching content with practice, at the same time, flexibly use various teaching methods in the teaching process, such as direct teaching method, heuristic teaching method, project teaching method, discussion teaching method, etc., and pay attention to the cultivation of students' thinking ability, strive to expand students' way of thinking and stimulate students' creative thinking, teachers should appropriately adjust teaching methods according to the professional characteristics of the class and students' learning habits.

Through careful analysis of the key and difficult points of the course, after a deep understanding, teachers express them in the most direct language in the classroom and strive to be vivid, which is conducive to students' understanding of knowledge points, and

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teachers should master students' learning situation in time.

Heuristic teaching method is carried out on the basis of teaching certain knowledge points, heuristic teaching method can promote students to actively think about problems, strive to keep up with teachers' thinking and teaching progress, achieve the purpose of firmly mastering knowledge points, better promote the effect of learning new knowledge on this basis, and more importantly, cultivate students' interest in learning, it enhances students' learning enthusiasm, improves students' subjective initiative, expands students' thinking space, cultivates students' ability to apply professional knowledge to solve practical problems, and cultivates students' innovation ability.

Electronic Technology Foundation is a highly practical course, theoretical teaching is the basic stage, and the cultivation of practical ability is the improvement stage, the cultivation of practical ability is carried out in the way of project training, the process design of project-based teaching method is: firstly, theoretical teaching is carried out around a specific project, and a difficult project is arranged after class, students complete the design by carefully studying the relevant knowledge points of the textbook and consulting various relevant materials, and complete the actual circuit implementation of the project in the subsequent curriculum design, in this way, students will take tasks in the learning process, which is conducive to the digestion and absorption of knowledge and skills, the adoption of project-based teaching method not only enriches the teaching content, but also highlights the learning focus, it also stimulates students' interest in learning.

Discussion based learning is a good learning method, for difficult knowledge points, the learning method of allowing students to discuss in groups can be adopted, teachers can guide students to discuss plans, let students actively express their opinions and debate. Modern science education theory holds that the teaching process is a bilateral activity process between teachers and students, and teachers should give full play to the leading role of teachers and students should give full play to the main role of students, improve students' understanding ability, reasoning ability and language expression ability through classroom discussion, carrying out classroom discussion is conducive to creating a vivid and lively classroom atmosphere and cultivating students' adaptability, and changing passive acceptance into active thinking, this discussion teaching method promotes students to comprehensively apply their knowledge to solve practical problems, consolidate students' knowledge, cultivate students' creative thinking, and produce good teaching effectiveness.

This course is a highly practical course, the practical teaching of this course includes experimental course and course design, the experimental course follows from shallow to deep, and provides confirmatory, design and comprehensive experiments, the course design examines students' comprehensive application ability and focuses on cultivating students' practical application skills.

In the experimental class, the teacher first teaches the experimental content, paying attention to the principle of the experiment, the students design the experiment on the experimental box, the students can decide the experimental scheme and realize the circuit according to the learned knowledge, and lap the circuit independently to complete the functions required by the experiment. Teachers can give guidance to students in the experimental process, through guidance, teachers can better teach the teaching content, teachers can understand the mastery of students' knowledge, adjust the teaching process and teaching content at any time, and effectively control the teaching process.

Course design is an important part of the practice link of this course, from consulting data, specifically carrying out the design of experimental circuit, selection of devices, connection and debugging of circuit, result acceptance, deepening the difficulty of the subject, continuing design, etc., so that students can master the function and comprehensive design ability of electronic circuit, in course design.

3. Conclusion

This paper introduces the course of Electronic Technology Foundation, and expounds four teaching methods of this course, which are direct teaching method, heuristic teaching method, project teaching method, discussion teaching method, etc., this paper expounds their content and implementation process, and analyzes the teaching effectiveness.

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