Course System and Teaching Reform of Electronic Information Engineering Specialty

Li Li and Shaohua Hu
School of Mechanical and Electrical Engineering, Guangdong University of Science & Technology, Dongguan 523083, Guangdong, China

Abstract—This paper introduces the orientation, syllabus and objectives of the major of electronic information science and technology in colleges and universities, and designs the curriculum system and teaching methods of the major in order to improve the teaching quality according to the corresponding needs of the society and the market in the new situation.

Keywords—course system, teaching reform, electronic information engineering specialty, quality education.

I. INTRODUCTION

The level of development of information technology directly indicates the level of modernization of the country. The country regards the development project of information technology as the primary task of its development strategy. Electronic information science and technology is the leading subject of information science and technology. This major is based on Mathematics and physics. It studies the source, acquisition, transmission, generation, storage, display and processing of information. It is based on this and bases for the related electronic consumables, components and integrated electronic systems. The specialty has penetrated into many fields, such as computer, communication, life science and medicine, electronic science and machinery, etc. Electronic information science and technology are the basis of realizing social modernization and informatization.

Electronic information engineering is a subject which applies modern technology such as computer to control and process electronic information. It mainly studies the acquisition and processing of information, the design, development, application and integration of electronic equipment and information system. In recent years, the specialty of electronic information engineering is a popular specialty with strong social demand. Its enrollment scale is expanding rapidly, and the development of electronic information technology is changing rapidly. If we can not timely reform the curriculum structure, update the teaching content and improve the experimental means, the teaching quality will not be guaranteed.

II. PROBLEMS EXISTING IN ELECTRONIC INFORMATION ENGINEERING SPECIALTY

The content of theoretical courses is obsolete, the means of teaching is single, and the content of practice is few, which is seriously out of touch with the rapid development of modern electronic technology. Most of them focus on theoretical teaching, and students have less opportunities to practice. The course content is obsolete, which is severely disconnected from the current trend of high-speed development and application of large-scale integrated circuit devices in IT industry. The
teaching effect is poor. Students generally feel that the knowledge they need in practice is not used, and the knowledge they need in practice has not been learned.

There is a lack of organic connection between the teaching contents of each course and a unified and clear goal. Some courses have too many theories and are not closely related to modern technology. Some courses have repetitions with other courses. Generally speaking, the purpose of training is scattered.

On the one hand, the teaching content is severely disconnected from the latest development of technology. On the other hand, the knowledge structure of teachers is not optimized and enriched, which easily leads to the vicious circle of teachers not daring to speak more, students not willing to listen more and start doing nothing.

The content and means of the practice link are relatively single. The practice link only enables students to understand and grasp the most basic things. It lacks the necessary contents in the aspects of comprehensive ability training, practical problem solving and innovation.

In this case, it is an urgent need to train modern electronic professionals to carry out the construction of electronic information engineering specialty to meet the needs of the times.

III. MEASURES OF TEACHING REFORM

To improve the level of skills as the core of teaching and adopt a variety of practical teaching methods. The teaching methods of practical teaching should be different according to the different contents of teaching, so the unchanged teaching mode can't be adopted. Practice topics are divided into different types of courses: project center type, task center type, problem center type, training center type, experience center type, case center type and compound type. For example, the practical training of MCU adopts the compound teaching method of "task center", "training center" and "project center", which takes the completion of a practical project as the center, drives training and projects, and learns relevant knowledge. In the process training of electronic products, the teaching method of training center is adopted. The training is repeated and intensive from the measurement of components, assembly of components, welding of components, debugging of circuits, maintenance of circuits and other processes. Through a lot of practice, students' skill level and proficiency can be improved. The assessment methods of practical courses should also be changed accordingly, emphasizing the quality assessment and skill assessment, and reducing the memory assessment of knowledge. The written examination of practical courses should be open-book examination, allowing students to use any tools and instruments. Some practical courses can be assessed by stages and in real time.

Strengthen the construction of teaching staff. In order to better train applied undergraduate electronic talents, the construction of teaching staff is the key. Without a team of teachers who meet the requirements of higher education, even with good teaching plans and first-class experimental and training equipment, the goal of training qualified students can not be achieved. It is an important task to build a "double-qualified" teaching staff with good teaching effect, strong scientific research ability, abundant practical experience, noble teachers' morality and reasonable structure.

Focus on the integration of basic knowledge of computer technology and electronic information engineering. With the development of computer technology, computer technology has become an indispensable tool and an important part of various disciplines, among which electronic information engineering is most closely related to computer technology. Electronic information engineering is a subject of electronic information control and information processing using modern technologies such as computers. It mainly studies the acquisition and processing of information, the design, development, application and integration of electronic equipment and information system, and the development of application calculation for students' ability to use computers, using software and hardware technology. The basic task of computer basic education in undergraduate education is to
cultivate students' ability to operate and use computers and to develop the ability of software design for the application of computers. Therefore, students should have strong theoretical knowledge and practical ability in computer application. Besides using the developed software packages, they should also develop the existing software packages or design and develop them directly with a high-level language. They should also be engaged in the design and debugging of control circuits and interface circuits. Therefore, the computer foundation of electronic information engineering specialty is particularly important. Students' computer ability is related to whether they can achieve the training objectives and meet the needs of talents in the electronic information industry. The combination of electronic information technology and computer technology is very close. In the teaching of basic courses and specialized courses of electronic information engineering specialty, although the content of computer is independent, it is difficult to separate computer technology separately in many cases. The combination of computer technology and computer technology is very close, and gradually moves towards integration. Therefore, we must pay attention to this integration in the course design and content convergence of electronic information engineering specialty, and combine computer technology in the theoretical and experimental teaching of basic courses and specialized courses.

Establish the monitoring and evaluation mechanism of experimental teaching quality, strengthen the organization and management of open experimental teaching, and ensure the quality of open experimental teaching. The quality of open experimental teaching management directly affects the final teaching effect. In the process of open experiment teaching, we should not only adhere to the principle of "student-centered, independent learning", meet the requirements of students both in and out of class, but also provide correct guidance to students in time. For the experiment completed in the course, the way of centralized teaching in advance should be adopted. After the students complete the preview, the experiment time should be reserved online. The computer management system timely ranks the students and records all kinds of relevant information according to the students' experiments for teachers and students to inquire. In view of the problems that students may plagiarize experimental data and report after open experiment, the monitoring and evaluation mechanism of experimental teaching quality should be established. The specific ideas are as follows. When students enter the experiment for in-class experiment, they must pass the pre-examination, realize the network management in the process of basic experiment teaching, random random check of the experimental quality of students by teachers on duty, increase the proportion of experimental reports and adopt the examination method of combining reply and centralized operation examination to ensure openness on quality of experimental teaching.

Take quality education as the core, adhere to the concept of sustainable development and boldly carry out comprehensive teaching reform. Sustainable development is a new concept of development, and education plays an extremely important role in the strategy of sustainable development. On the one hand, all kinds of problems in the reform and development of education, from development strategy, training objectives, specialty setting to teaching content, curriculum system, teaching methods and teaching management, can be inspired by the concept and principle of sustainable development; on the other hand, in the process of implementing quality education for college students, we must hold on to them. Continuous development of ideas, knowledge, abilities and behaviors is an important part of cultural quality education. Starting from the concept and principle of sustainable development and the implementation of quality education, higher education and teaching reform can avoid detours when facing and solving a series of problems such as the transformation of economic system and the arrival of popularization of higher education. In the practice teaching reform, we can give students more autonomy in choosing to study, enable them to practice relatively independently and develop their strengths; in the reform of traditional examination methods, we should mainly evaluate the comprehensive practical ability, and use experimental operation and completion of design topics to examine students, so as to promote students' real ability.
VI. CONCLUSION

The field of electronic information technology has gradually changed from information simulation to information digitalization and programmable technology, resulting in changes in all basic theoretical knowledge and skills. In addition, the new electronic system is more complex. With the changing needs of the market, consumer-related electronic products are constantly developing towards intellectualization and miniaturization. To produce electronic products with the characteristics of high integration, high density and low power consumption, complex circuit testing technology has emerged. Technology and electronic automation design technology, so we should keep pace with the times in the teaching content, so that students can adapt to the development of society and the continuous progress and update of science and technology.

REFERENCES