

Reform and Practice of Specialty-Oriented Curriculum system of Electronic and Information Engineering

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Abstract. Electronic and Information Engineering major focuses on training advanced engineers and technical personnel who have received a strict science experimental training and a primary science research training with basic knowledge of electronic technology and information system and at the same time can be engaged in various electronic equipment and electronic information systems research, design, manufacture, application and development. This article has carried on an analysis of the situation and problems of system of professional basic course of electronic and information engineering specialty-oriented and professional course system and put forward the content of electronic and information engineering specialty-oriented and professional course system reform. Content of the reform is based on the professional directions and optional curriculum system integration and optimization, constructed the specialized theory and the practice curriculum system platform to meet the students' different need and cultivate multi-level, multi standard, multi types of talents.

Introduction

Electronic and information engineering major culture senior engineering and technical personnel with various kinds of electronic equipment and electronic information systems research, design, manufacture, application and development and so on. Based on the requirements of training goal, in recent years, our school on the basis of summary of electronic and information engineering training program, with reference to similar electronic information professional courses of domestic and foreign in university, combining with the characteristics of school education and social demand, talent training plan for the many discussions and revision, especially to the "course system of professional direction" made a larger adjustment, the purpose is to make students with a solid theoretical foundation in the electronic information collection, processing, please transfer, storage, display and control .and research design, manufacture, application of the electronic information system and development of innovation has strong ability of comprehensive application of knowledge [1], In order to cultivate innovative talents of the electronic information with "thick foundation, wide caliber, strong ability, high quality" [2]

Present Situation and the Problems Existing in the Direction of Professional Curriculum System of Electronic and Information Engineering

Specialty training mode of electronic and information engineering is to emphasize the education of students' quality and ability, so through the study of specialty course system of electronic and information engineering, the student will gradually establish the concept of "electronic system", understanding academic frontiers and development trend, grasp some new technology and experimental means of electronic field, and has certain foreign language level and the ability to read the literature of professional foreign language, master the basic method of literature retrieval and information query, and be able to use knowledge, with the help of the computer technology and the corresponding experimental equipment, solving the "design of electronic system" [3]. Because we

are a new undergraduate universities, though "course system of professional direction " has made a certain progress in the construction of the past, but with the training objectives of ministry of education is still a gap, mainly reflected in the following aspects:

The Contents of the Theory Curriculum System of the Professional Direction.

The theoretical course system setting of the professional direction and the rapid development of modern electronic technology is not synchronous, the curriculum content of professional direction and the plan of traditional training changes little, mostly on theoretical teaching, class hour of practice teaching arrangement is less, such as "data acquisition technology" (36 hours of theory:, 8 hours of experiment), it's the main content of teaching which included concept, sensor, circuit, anti-jamming technology ,it is seriously out of line with the scale integrated circuit of high speed development and application of the current IT industry big trend, when the students work ,they generally feel "learning knowledge is not application and need knowledge is not learn in practice ".

The Linking Problem between Theory Course Content of the Professional Direction.

In the theory curriculum system of the professional direction, course content and the specialized foundation is strong correlation, such as the content is pass on the role which "switching power supply design" and "analogue electronic circuit", "digital electronic technology", "single chip microcomputer principle", "electromagnetic compatibility technology", "electronic circuit CAD" and so on, so how to realize the linking among the course content , and flexible application content, improve the efficiency of students receive knowledge, it is the current problem that is solved.

Problems of Structure of Practice Teaching System in the Direction.

At present, the practice teaching in the professional direction, most courses is to verify experiment, the experiment of comprehensive design and curriculum design slants little, some students feel difficult on the design of "electronic system", resulting in little relationship between learning and practice application theory.

Young Teachers Has Not Been Fully Play the Role.

The new ideas, new thinking, new technology of young teachers has not obtained the integration and optimization in the course construction, ,no full play to their professional advantages, they are still teaching of the theory and practice in accordance with the traditional teaching mode.

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Architecture of Specialty Course System Reform of Electronic and Information Engineering.

In order to satisfy the different needs of students, cultivate special talent with " moderate professional theory knowledge, technology application ability strong, knowledge application wide, high comprehensive quality" [4], In the reform of curriculum system, advocating curriculum model of the "ability standard", Take the training method of " specification and specialty", fully consider the student's personality, to create conditions for the development of students' interest, potential efforts and expertise, we construct the two course module of "Information Engineering" and "electronic circuit design and realization " based on the above training objectives, at the same time also added a "professional optional course", the specific architecture is shown in Figure 1, each required module direction has four courses, forming a "package" of courses, students can choose the corresponding four courses of professional direction according to their interests and needs.

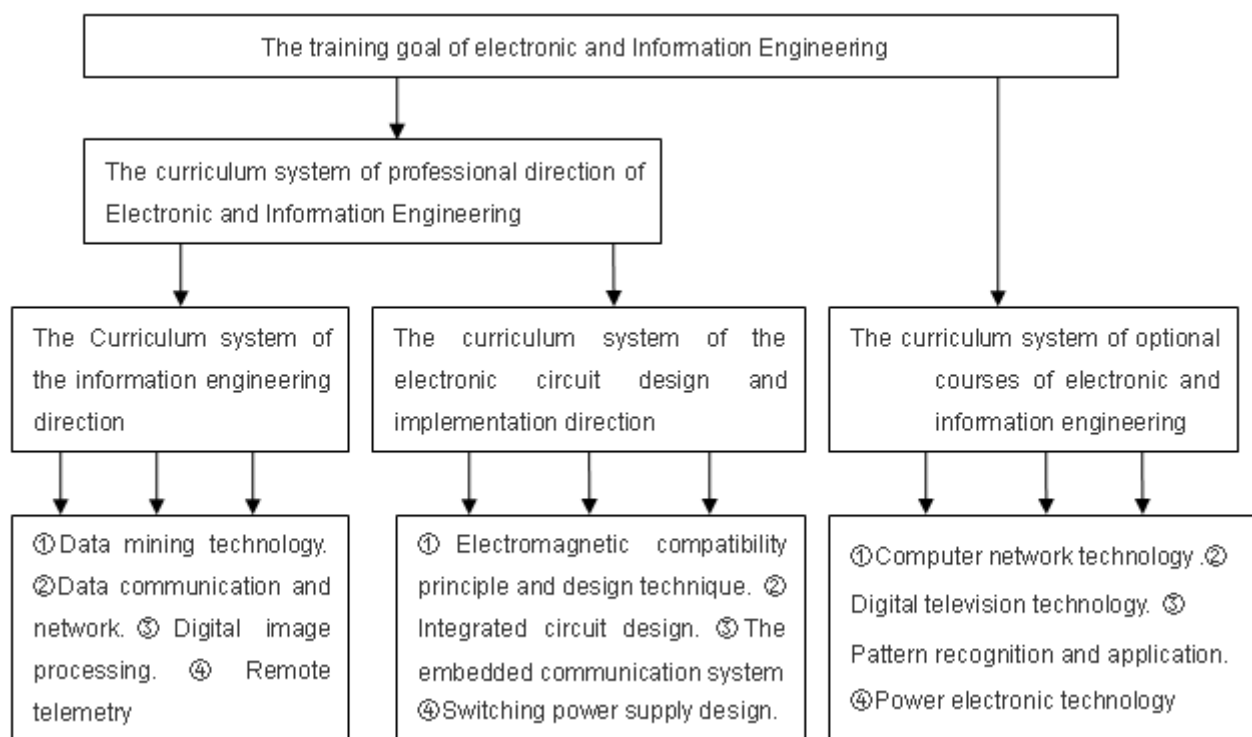


Fig.1. The architecture of course system of the professional direction of electronic and information engineering

The Course System of Information Engineering.

Course system of information engineering mainly includes the "data acquisition technology" (36 hours for theory, 8 hours for practice), "data communication and network" (42 hours for theory, 8 hours for practice), "remote control technology" (42 hours for theory, the new increase 8 hours for practice), "digital image processing" (42 hours for theory, 8 hours for practice) and so on , construct curriculum "package" of information direction, In the process of practical teaching, divided into three step which included the verification experiment course, comprehensive experiment course, comprehensive training of information engineering (40 hours for training), at the same time, increase the " course design of information engineering " , in the process of the implementation of the practical teaching, according to the needs of the students, according to the design requirements, design a " the electronic system of the information engineering" with professional knowledge and technology of computer. so as to lay the foundation for graduation design[6].

The Curriculum System of Electronic Circuit Design and Realization.

The course system of electronic circuit design and realization mainly includes "the principle of electromagnetic compatibility and Design Technology (" 36 hours for theory, the new increase practice 8 hours),"integrated circuit design" (42 hours for theory, practice 8 hours), "embedded communication system" (42 hours for theory, new increase practice 8 hours), "the design of switching power supply (" 42 hours for theory, practice 8 hours) and so on, construct curriculum "packages" of electronic circuit design and realization , increased " curriculum design of electronic circuit design and realization " (1 weeks), and comprehensive training of electronic circuit design and realization (training: 40 hours), in the process of the implementation of practice teaching, ,determine the content of four aspects, namely "switching power supply design", "MCU development and application", "ARM development and application", "FPGA development and application", according to the design requirements, design a " system of electronic circuits "with professional knowledge and technology of computer. so as to lay the foundation for graduation design[7].

Elective Course System of Professional.

Students of electronic and information engineering should have four knowledge According to the Guiding Committee of information science and Electronics of the Ministry of education: (1) circuit

and electronic; (2) electromagnetism; (3) information processing; (4) computer. Four skills are: (1) the installation, debugging and application of electronic circuit, and the application of electronic measurement technology and circuit testing ability; (2) the integrated use of knowledge in circuit design and experiment ability, (3) the use of CAD system environment analysis and design ability; (4) the ability of using the virtual instrument. Based on the requirement of the training objectives of electronic and information engineering, in the construction of professional elective course system, to unified planning, pay attention to before and after the link between various curriculum, to avoid duplication in the content, and the content have a certain depth and breadth, increase the advanced course of the society's need, according to the actual situation of our school, opened 10 courses in the professional elective course: "computer network technology", "digital TV technology", "pattern recognition and application", "power electronics technology" and so on, each student at least can choose 2-3 theoretical courses and practical courses in the given scope, so that not only met the students the demand, but also broaden the students' professional knowledge, a good foundation for the increase of employment.

Play the Role of Young Teachers in Curriculum Construction.

Young teachers is effective strength of the professional curriculum system construction , their characteristics are: high work enthusiasm, a wide range of knowledge, strong ability to absorb new information, have a certain understanding of the latest research results, therefore in the course system reformation and optimization of elective professional and professional direction, to give full play to their advantages and expertise, for computer technology and the high demand for foreign language level of professional courses, such as: "pattern recognition and application", " professional foreign language of electronic information " and so on , should let them participate actively, bold play to their ability and cleverness, realize own value of the young teachers in the professional direction and the professional elective course system construction

Conclusion

Our school of electronic and information engineering course system has been in constant improvement and optimization from the start-up, At present, in the face of the rapid development of electronic and information engineering technology, how to make the professional characteristic, is the problem that we need to research and exploration at present. Combination of professional training objectives, in the construction of curriculum, we should understand how needs talents, need to establish what kind of curriculum system, the students know what kind of skills, then based on the demand of the society, to strengthen the construction of curriculum, teaching material construction, teachers construction, the laboratory construction and other aspects, and the reform of curriculum system deeply to the relevant industry, make it become a dynamic process, and the process of a reform and innovation , only in this way, we can make undergraduate education of electronic and information engineering is full of vigor and vitality, to make the students to meet the needs of the society.

References

- [1] Rui Ha. Study On Modern Technology of Electronic and Information Engineering [J], Information System Engineering. 2003(11) 16-20.
- [2]. Qiuhua Wang. The Explore on Curriculum Reform of Electronic Information Engineering of Our School [J]. China Science and Technology Information .2008 (8) .229 -230.
- [3]Yongshun Liu, Jin Wang. Development trend of Modern electronic measuring instrument [J], Journal of Anyang Normal University.2008 (2) .56-58.
- [4]Ruirui Yao, The General trend of Modern Communication Technology Development [J] , Chinese High-tech Enterprises .2012 (2). 6-8.
- [5]Yan Xu, Qilong,Hou ,Quan Hou . The Development and The Prospect of

Modern Communication [J], Silicon Valley, 2012 (3). 97-98.

[6] Zining Yang. Development and Application of Microwave Technology [J], China Information of Science and Technology .2006 (18). 142-143.

[7]Xiaoyi Dong, Xueshen Lv. Development of Optoelectronic Devices [J], Optoelectronic Laser .1990(1). 46-50.