Teaching Reform and Practice for Electrical Machinery *

Hailan Wang
Beijing Forestry University, Beijing 100083, China
wanghailan@bjfu.edu.cn

Abstract - Electrical machines is the main course for electrical engineering specialty. The quality of teaching has an important impact on the following professional courses. This paper provides reform and practice in the teaching approach for electrical machinery. By using multimedia development, internet google, and bilingual teaching, reform is put forward about teaching organization and design of teaching content, includes teaching methods and means, practise form. The object is to foster the applied ability of students as the core. It is helpful to confront underguaduate students in a more attractive and efficient way with electrical machines**.**

Index Terms - Electrical machinery, Teaching reform, multimedia development, Bilingual teaching.

1. Introduction

With the rapid development of technology and knowledge, Internet surfing is very popular in Phones, Computes, and society changed to a world of images. During these years, electrical energy is the more economic development lifeline in the world, and electrical machinery is the more important course in ability teaching for most colleges and universities. Electrical machinery has abstract theories and rich content, with much conception and contact tightly with engineering practice. So it is eager to stimulate the interest of the students in learing. By the process of tens years teaching, the reform ideas and practical experiences is produced in electrical machinery.

2. Teaching Approach

Since electrical machinery is the important element in power system, from 2000 Electrial Machinery was revised to a professional course of electrical engineering and automation specialty in our university. It is hard to teach and learn. So it brings new challenges and demands to the traditional teaching mode.

A. Introduce multimedia technology

Electrical machinery has abstract theories, such as the rotating magnetic field generated by alternate current in stator windings. Multimedia courserware concerns a collection of media like photos, animations, sound, diagram, television, video, images, etc. It is better way to demonstrate the machines' structure, composition, the theories and characteristics by multimedia vividly. It shows be effective on teaching and learning.

B. Make use of internet

At the same time, we assign homeworks for the students to google, for example the present and future of different electrical machines, the rotoe coils, the commucation function, etc. It enchance the ability for students to learn from Internet google.

C. Combine with bilingual teaching

With the rapid international development of 21st century, bilingual teaching is the inevitable trend for Chinese students. Learning professional theory in professional foreign languages will make students to have more chance to commutate with the professional foreign expert and expand their knowledge, such as the present and future of different electrical machines, the useful micro-motor.

D. Combine with simulation software

Using the powerful computer software Matlab, it is easy to simulate the steady and transient process of electrical machinery, show the waves timely about the current, the voltage, the torque, the rotate speed, etc. It can stimulate the interest of the student to understand the work condition.

3. Experiment and Practice

In the basis of the traditional textbook experiment, two other practice aspects are introduced for students in our course.

A. Making simply machine by themselves

Simply machine was assigned for homework to exercise understanding and operation. Some students make dc motor, some make dc generate, some make transformer, etc. By finishing this homework, students find and assemble the main poles, the coils, the brushes, the commutation, etc. At last they can understand the principle and construction of machines very deeply.

B. Adding the course design

In the course design, different knowledge students learned is required and should be combined with to complete a whole design task. For example, the system must use microchip or PLC to control a motor rotating, showing the speed in the LCD and alarming. At the same time a simulation software helps to give the image of some parameters. It make students to review all the knowledge they learnd, and mix up to finish the system.

* This work is partially supported by by the 2012 excellent course of Electrical Machines and Drives in Beijing Forestry University, Course construction and teaching methods of research on embedded microcomputer (BJFU2013JG035).

4. Conclusion

During these years, it is verified that the use of flexible teaching methods and focusing on linking theory with practice can gain satisfactory results.

By training in experiments and practice, students can validation theories and operation skills, deepen understanding, enhance memory and stimulate interest in leaning. The practice and experiment are the indispensable parts in electrical machinery teaching.

Acknowledgment

The project supported jointly by the 2012 excellent course of Electrical Machines and Drives in Beijing Forestry University, Course construction and teaching methods of research on embedded microcomputer (BJFU2013JG035).

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