

# Research and Thinking of Ideological and Political Theory Teaching in Course of Control Theory for Mechanical Engineering

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## Abstract

In order to fully implement General Secretary Xi Jinping's speech spirit of "integrating ideological and political education in the process of education and teaching", universities across the country have actively launched exploration and practice of ideological and political curriculum. Based on the characteristics of automatic control principle course, this paper excavates its related ideological and political elements, introduces the general goal and importance of curriculum ideological and political education, lists several teaching cases related to curriculum ideological and political education, and analyzes the current exploration of curriculum ideological and political education in domestic colleges and universities as well as the existing problems and obstacles. With the development of science and technology, the course "Mechanical Control Theory" plays an increasingly important role in the field of modern machinery. It is of great significance to integrate the professional knowledge of this course with ideological and political elements to cultivate students' spirit of being diligent, rigorous, realistic and innovative, as well as to inspire students' national feelings of loving the party and patriotism.

**Keywords:** Control Principle, Curriculum Ideology and Politics, Education and Teaching, Teaching Case.

## 1. Introduction

The National Conference on Ideological and Political Work of Colleges and Universities was successfully held in December 2016. President Jinping Xi attended the conference and delivered an important speech. "The ideological and political work of colleges and universities is based on the work of being a person. The central link is to establish morality and cultivate people, and the core is to improve the ability of personnel training", Xi President said, "to use good classroom teaching the main channel, to adhere to in the improvement of ideological and political theory to strengthen and improve ideological and political education and targeted affinity and make all kinds of courses with the direction of ideological and political theory, form a synergistic effect.[1]" speak for the further implementation of the spirit, the national various universities actively lead the education workers should think seriously about how to ideological education better education throughout the teaching process, the new era will be Jinping Xi, thinking the ideas of socialism with Chinese characteristics into the ways and methods of the whole teaching process, and the method combined with this professional course characteristics of teaching reform. Educators in the new era should understand that the key to the national innovation-driven development strategy is to train

high-tech talents in line with the development requirements of China's socialist society, and the fundamental problem lies in how to train them.

For teachers in colleges and universities, "curriculum thinking and politics" is a kind of education idea and education mode that combines basic professional teaching knowledge, takes moral guidance as the fundamental task, and guides students by centering on traditional education thought. Curriculum ideology and politics is the unity of moral education and talent education, moral education and intellectual education in higher education, and it is the important foundation of the construction of socialism with Chinese characteristics. Educators should start from the theory, sort out the literature, and sum up the construction of curriculum ideological and political strategies suitable for the course of this major. Through the practice and investigation of college students' curriculum ideology and politics, this paper uses comparative analysis to find out the deficiencies and difficulties of the current curriculum ideology and politics. In addition, education workers should always ensure that should be paid attention to in teaching as the prerequisite of the implementation of curriculum education and learn more about the course education's important speech spirit, combined with the deployment of the work of the party central committee and the Ministry of Education, systematic and integrated construction was carried out on the course education, give full play to the function of political education classroom education out of the man of noble character, and the function of the professional class cultivate knowledgeable people, and realization for the development of the national transportation has the correct political consciousness, and strives for realism the innovation, strives for perfection the spirit of high level technology talents.

## **2. Introduction to the course "Mechanical Control Theory"**

"Mechanical Control Theory" is an important professional basic course for mechanical and electrical majors, such as mechanical design and manufacturing automation, electrical engineering, etc. The mechanical major has trained a lot of engineering talents with superb technology and strong professional ability for China's scientific research, which has laid a solid talent foundation for the development of China's manufacturing industry. The field of machinery is the foundation of China's social development. With the rapid development of science and technology, this professional field is constantly developing towards the direction of intelligent manufacturing, and the traditional manufacturing mode is gradually replaced by computer automated manufacturing [2]. In this era of rapid development of information, this course not only combines traditional control principles, but also integrates modern computer application technology, and its status and role become more and more prominent with the development of national scientific research. At present domestic education in the teaching goal of this course is to ask students to master the basic theory of mechanical control, on the basis of teaching material, classroom as the carrier, through the system of learning control system analysis methods, such as time domain analysis and root locus analysis, state space analysis and frequency domain analysis, etc., can let the student independently to simple continuous system carries on the preliminary qualitative analysis and quantitative estimation, gradually formed ability to design such a system [3]. Through the teaching process combining education with practice, educators let students learn the basic theoretical knowledge of mechanical control in the classroom, and cultivate students' ability to solve practical problems related to mechanical control in practical educational activities. In recent years, the Ministry of Education requires universities and colleges to carry out curriculum ideological and political education reform extensively, the goal is to cultivate a large number of strong ability, high moral level of outstanding technical personnel for the construction of socialism with Chinese characteristics, curriculum ideological and political education is the cornerstone of social construction, has

very important significance. So how to skillfully integrate the knowledge of the professional field with the curriculum philosophy and politics will be a very serious problem for educators.

In recent years, the education workers in the course of ideological education reform in our country has made certain achievements, such as, in the electricity class specialized Peihong Yang, Jijun Liu and Chong Ding respectively explored the teaching of the electrical education level and the direction of the integration of professional knowledge, to cultivate one's morality and to have to Angle and courses education with the combination of methods, such as [4]. Under the influence of the background of The Times, the course "Mechanical Control Theory" has gradually gained a significant position in the field of mechanical and electrical automation, and the integration of this course and course ideology and politics has become increasingly important.

### **3. Course ideological and political teaching objectives**

In addition to the quality training of knowledge and ability, the course ideological and political objectives are also reflected in the theoretical teaching of professional courses through the infiltration of socialist values and other political elements, to cultivate a batch of love and dedication, rigorous attitude of high-tech talents, and guide students to the sense of responsibility of The Times[10]. Course education is not simple to teach students the significance of education curriculum, it to teacher's teaching method has certain requirements, among them, the key for the teacher in class process of ideological and political education into specialized courses ably, such not only can cause resonance with the students, and students in the invisible to instill the right socialist political ideas, so that the students in the exposed to cultivate the correct values and form a consciousness of philosophy thinking[5]. Not only that, by conducting a series of practice and course design, not only can cultivate students' team spirit and collective spirit of cooperation, but also can guide the student's innovation consciousness, innovation driven development, visible in the colleges and universities to carry out the education of the course reform in higher education in our country has very important value and practical significance.

At present, China's automation control major curriculum ideological and political has made some remarkable achievements, but there are still some problems have not been solved[11]. On the one hand, most courses of engineering majors are based on natural science subjects, and the lack of in-depth study of humanities is bound to bring obstacles to the implementation of ideological and political courses. Existence education workers, on the other hand, has yet to form a good teaching mode, teaching too biased towards the professional knowledge in the process of teaching, and ignore the import or to carry out the model of a single course education, still adopts the traditional teaching method ignores the students accept knowledge experience and engaged and that ignores the subjective initiatives of students in the classroom, the classroom will be detrimental to the course education smoothly, in the feedback control theory of mechanical system inspired by the new teaching mode as shown in figure 1. Colleges and universities to carry out the exploration of course education is the inevitable requirement of upholding and developing China's characteristics socialism, colleges and universities as the cradle of talent training and the holy land, must always adhere to the party's principles and policies, implement the work plan for the Ministry of Education, actively trying to block the influence factors of the curriculum reform, promote the progress of curriculum education into the classroom, for the early realization of teaching goals and make unremitting efforts[12].

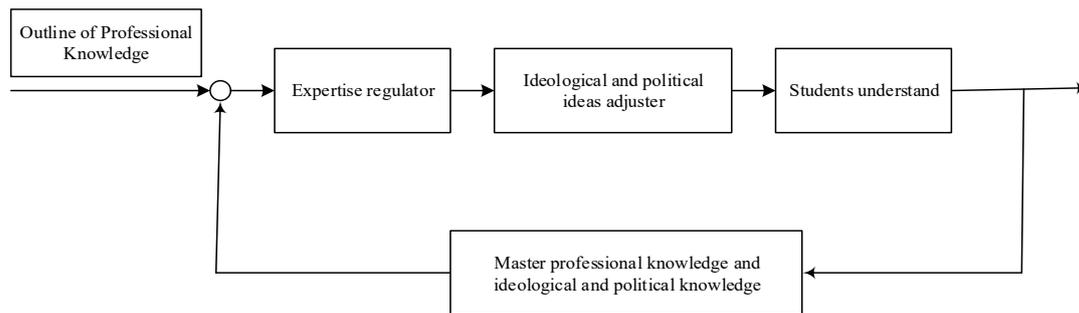


Fig. 1. New teaching mode

#### 4. Course ideological and political cases

The essence of ideological and political courses is not to change the essence of education, but to tell students the relationship between human and nature, society, country and world through the integration of ideological and political elements with professional knowledge as the carrier. Grasping the core objectives, digging and combining with course cases, can be briefly introduced as follows:

When telling students about the history of the development of control theory, it may be helpful to describe the steady development of the field of automation control in China to inspire students' spirit. The field of automation control in our country develops slowly and the development process is difficult. Since modern history, the level of scientific development in our country lags far behind other countries in the world. For 40 years, however, in the party under the unremitting efforts of the whole nation, bold and open up new roads, bold explore the great path of reform and opening up, after forty years of challenge in the rain and forge ahead, scientific development level of our country increase fast, China's comprehensive national strength, high and new technology in the field of automatic control but also have sprung up, emerge in endlessly. From this perspective, we can tell students that they should learn to be bold and innovative on the road of development, and have perseverance and perseverance in the face of challenges. Today's China is striding towards the center of the world stage, which is closely related to our spirit of making steady progress and working hard to tackle problems on the road of development.

In order to cultivate students' interest in learning control theory courses, it is recommended to focus on the great deeds of Xuesen Qian, a great scientist in the field of control and the father of automation control in China[6]. Xuesen Qian posterity affectionately called "the father of Chinese missiles", "the father of Chinese space", is China's automation control field the most outstanding representative of the older generation of scientists, to the field of Chinese automatic control of the impact of the largest and biggest contribution, for the development of modern control theory laid the foundation of it is very important. In 1950, Xuesen Qian was prevented from returning to China by the US government. In spite of the generous conditions offered by the US government, Xuesen Qian, who was dedicated to serving his country, was still determined to return to China and apply what he had learned all his life to the development of his own country. However, the US government refused to let him go, and he was even persecuted by the US government. However, faced with the house arrest of the US government, Xuesen Qian did not bow to them. With an attitude that he would rather die than surrender, Xuesen Qian finally broke through numerous obstacles and returned to China successfully in 1955. Since then also served as the rockets and missiles and spacecraft technology leadership positions, for our country the rocket missile and so on science and technology research and development has provided the precious plan [7], with the rockets, missiles,

aerospace career onto the fast track, the automatic control level of our country increase fast, rapid development in control fields. Comrade Xuesen Qian has made an indelible contribution to the development of automation control students' understanding of professional knowledge and ideological and political knowledge to master the ideological and political idea regulator. In the course of ideological and political teaching activities, through the explanation of this case can guide the students to set up a great patriotic feelings, improve the students' national consciousness and the overall situation consciousness, stimulate the students' sense of historical mission.

In the course of Mechanical Control Theory, one of the key knowledge is to learn the Laplace transform of transfer function, and some ideological and political elements can be incorporated in the introduction of the Laplace transform here [8]. Such as you can by emphasizing the Laplace scientists in the discovery and the Laplace transform of the great creative process, to guide the students in their daily study and scientific research in the life must be good at discovering, bold innovation, comply with the laws of science to question, to actively develop their independent thinking ability and the ability to analyze and solve problems dialectically. To strengthen students' faith and determination to support the leadership of the Communist Party of China, love the motherland, and safeguard national dignity, to safeguard the unity and peace of the motherland, to be bold and innovative, and to contribute to the scientific research of the motherland.

## 5. Conclusion

Curriculum ideology and politics is not only a kind of educational teaching idea, but also a way of thinking. He required educators to give full play to the moral function of the curriculum without changing the basic attributes of the professional curriculum, and to cultivate students' noble morality and quality in line with the requirements of contemporary social development [9]. Construction course education basic or construction, using the basic carrier of good, professional courses play a good role, with subtle way will be the spirit of the ideal faith level direct infusion in vivid professional foundation course, students will not feel boring, also with spiritual resonance case scenario, this is the charm of ideological construction course.

Under the background of new curriculum reform, the exploration and practice of the course education has very important value of times, it implements the integration of ideological and moral education and professional theory knowledge, integrating ideological education and professional education, cultivate the students' struggle for the great rejuvenation of the Chinese nation, adhere to the socialist core values, inherit and carry forward the Chinese revolution moral ideological and moral cultivation; Arousing the students to safeguard national interests, support the leadership of the Communist Party of China love the party patriotic feelings; Set up the students to serve the people, adhere to the self-value and social value of the unity of scientific three views; It cultivates students' professional qualities of love and dedication, honesty and trustworthiness, rigor and pragmatism, as well as artisans in big countries. In the field of automation control, it is of great significance to explore the course ideology and politics and to cultivate a batch of new mechanical innovation talents for the modern intelligent machinery science and technology research in the new era.

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