

The Practice and Exploration of Curriculum with Ideology and Politics in the “Signals and Systems” Course

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Keywords: Signals and systems, Ideological and political education of curriculum, Education reform, OBE concept, Moral education

Abstract: Based on the concept of OBE, this paper designs the ideological and political system of the course "Signals and Systems" from the integration of teaching objectives, teaching content, teaching methods, assessment methods, course achievement evaluation and continuous improvement. The ideological and political construction of the curriculum should be carried out from the aspects of knowledge mastery, ability training and quality formation. The objective of concise ability and quality is integrated into the teaching objective of curriculum knowledge; The construction of case base, deeply digging the ideological and political elements of the course implanted in the teaching content; To explore the blended online and offline teaching method permeating ideological and political elements; Perfect knowledge, ability, quality, the trinity of assessment; According to the accreditation standards of engineering education, the course goal achievement degree is evaluated and continuous improvement is carried out. It has realized the student-centered, closed-loop course ideological and political teaching process, and has a certain guiding role in the course ideological and political construction of professional courses.

1. Introduction

Chinese President Xi delivered an important speech at the national conference on university ideological and political work. He emphasized that "the ideological and political work in universities is related to the fundamental issue of what kind of people universities cultivate, how to cultivate people, and for whom. We should adhere to the central link of establishing morality and cultivating people, run the ideological and political work through the whole process of education and teaching, achieve the goal of educating people in the whole process and in all directions, and strive to create a new situation for the development of China's higher education" [1]. The integration of ideological and political elements into professional courses is the expectation of the Party and the country for higher education, and also the requirement of implementing the fundamental task of establishing morality and cultivating people.

2. The necessity of ideological and political construction of “Signals and Systems” Course

"Signals and Systems" is an important basic course for electronic information majors. It takes the basic concepts of signal and system, the analysis methods of time domain and transformation domain as the core content, which reflects the laws of natural science and has objectivity and universality. Under the requirement of "three complete education", the ideological and political course of "Signals and Systems" has very far-reaching significance and very urgent necessity [2].

However, as a professional basic course with many mathematical derivations, strong theory and abstract content, "Signals and Systems" is more difficult to carry out ideological and political courses. There is a simple mechanical combination of "course" and "ideological and political", which is superficial. The ideological and political construction of the curriculum is still in its initial

stage, and the teachers only choose scattered educational carriers to fragment into the ideological and political education content. The implementation of the ideological and political curriculum is still faced with the difficult problem of how to integrate with the professional knowledge professor. On the other hand, with the development of communication technology, new technologies and methods are constantly emerging, the teaching objects are constantly changing, and the educational carriers of ideological and political courses are also constantly changing. It is also a challenge for the ideological and political course of signal and system analysis to update the teaching content which is compatible with the goal of ideological and political education. Therefore, IT is urgent to construct a teaching operation system of ideological and political education according to the moral education objectives of the curriculum, vigorously carry out the reform of teaching methods, explore the formation of an effective educational model integrating professional education and ideological and political education, and adapt to the new requirements of education in the new era with new features, new attitudes and new forms of curriculum teaching.

3. Practice of ideological and political construction of "Signal and System" course

Under the background of golden course construction in the new era, the course group relies on the national first-class professional construction points and provincial first-class courses to carry out the ideological and political development of "Signals and Systems" course with the concept of OBE education. The ideological and political design of "Signal and System Analysis" course is integrated from the aspects of teaching objectives, teaching contents, teaching methods, assessment and evaluation, course achievement evaluation and continuous improvement, as shown in Figure 1.

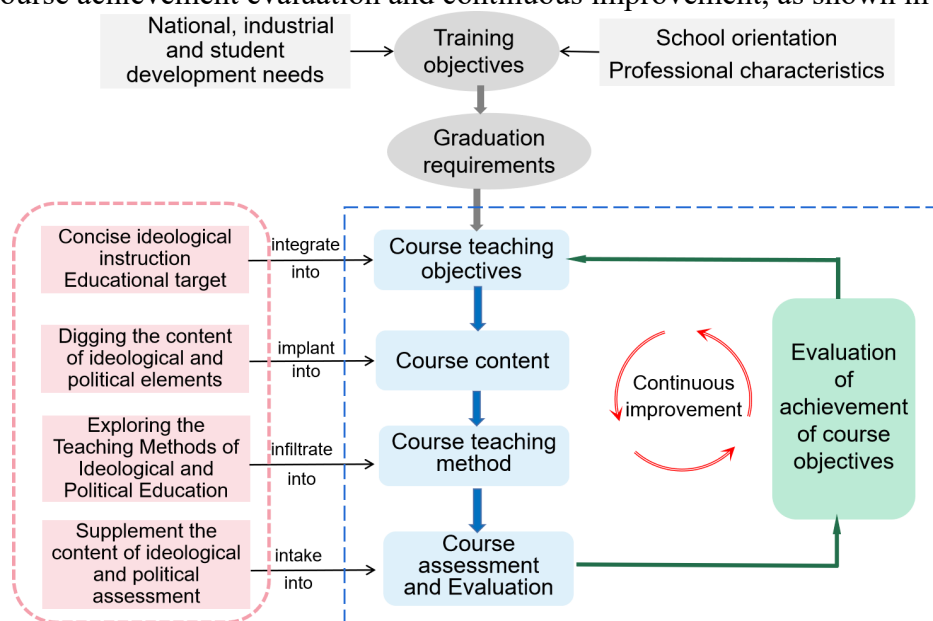


Figure 1 The integrated design block diagram of Signals and Systems course based on OBE

3.1 Define teaching objectives

Course group according to the construction of the education of institutions of higher learning course guide outline as a guide, with OBE's education concept as the guidance, build the "Signals and Systems" curriculum integration of knowledge, ability and quality of the teaching goal (as shown in Table 1), cultivate the feelings strong, mathematical basis, engineering ability of innovative talents, the implementation of khalid ents basic task.

Table 1 Teaching Objectives of the Course "Signals and Systems"

Knowledge and ability objectives (A)	Ideological and political literacy goals(B)
<p>A1. By learning the signal representation and system description methods, system function analysis methods, signal flow diagrams and other knowledge, the mathematical model of the actual signal processing system can be established to represent the complex engineering problems in the electronic information field;</p> <p>A2. Based on the learned mathematical foundation and circuit theory, master the basic principles and methods of system analysis of continuous time system and discrete time system in time domain, frequency domain and complex frequency domain, and be able to deduce and analyze complex engineering problems of electronic information.</p>	<p>B1. Cultivate students' patriotism and sense of mission and responsibility of rejuvenating the country through science and technology;</p> <p>B2. Be able to actively explore, find and solve problems with dialectical materialism, and cultivate scientific literacy and awareness of self-learning and lifelong learning;</p> <p>B3. Strengthen students' engineering ethics education, and cultivate the spirit of craftsmanship of a great country to keep improving;</p> <p>B4. Encourage students to imagine boldly, dare to put forward personal opinions, express personal ideas, and cultivate students' innovation ability;</p> <p>B5. Establish professional ethics and quality concepts such as dedication, trustworthiness, efficiency and cooperation, and have humanistic feelings and legal awareness.</p>

3.2. Optimizing course content

Platform for the teaching goal, the curriculum education organic into specialized courses teaching, education putted forward construction course, optimize curriculum content^[3] :

(1) Deeply excavate the philosophical principles behind the knowledge theory, such as similarity, multifaceted, complexity, quantitative change leading to qualitative change, and cultivate students' scientific and rigorous analytical methods and dialectical thinking.

(2) Expand the application of knowledge and cutting-edge technology, social hot spots, national development and other contents, guide students to strengthen the "four self-confidence" and promote the sense of responsibility of national rejuvenation.

(3) Set examples for students by the advanced deeds of scientists in the history of professional and technological development, encourage students to have the courage to explore, and form good scientific literacy and correct world outlook, outlook on life and values.

(4) Through engineering application simulation cases, inspire students to have the courage to explore, make efforts to innovate, and pursue the scientific spirit of excellence, and improve students' engineering literacy of combining theory with practice, unity and cooperation.

3.3 Improve teaching methods

From the traditional "teacher-centered" to "student-centered", modern educational technology is used to innovate teaching methods and means, and relying on first-class provincial courses, the blended online and offline teaching method of "Internet + curriculum ideological and political" is explored^[4].

(1) Online resources are shared before class, and students learn independently

Teachers use the rain classroom to release preview tasks, including MOOCs, videos or reading materials integrating ideological and political elements, preview exercises and other resources. Students use mobile phones and computers to learn anytime and anywhere to complete the learning tasks.

(2) Comprehensive classroom interaction in class promotes students' participative learning

In the course, the teacher carefully designs the teaching content integrating ideological and political elements. By using PPT courseware, rain classroom interaction, MATLAB simulation and

other teaching methods, students are deeply involved in learning through inspiring discussion, classroom demonstration, case practice, MATLAB simulation operation and other teaching activities [5-6].

(3) After class reflection and questioning, promote innovation

After class, teachers reflect and summarize, supplement online learning resources, carefully design after-class exercises, focus on the application of knowledge, and promote innovation. Students learn again through platform discussion, peer learning, homework mutual evaluation and other ways to consolidate and improve the education effect.

3.4. Reform the curriculum evaluation method

The course assessment and evaluation methods are shown in Figure 2. The "trinity" assessment goal of knowledge, ability and accomplishment is constructed, and the content and method of assessment are designed scientifically. The assessment and evaluation is established in all aspects of the whole teaching process. The learning data of the online platform is used to combine the formative assessment and the final assessment, so as to increase the assessment of students' ideological and political literacy. It emphasizes students' participation and interaction, the combination of self-evaluation and other evaluation, and realizes the diversification of evaluation subjects. Finally, according to the course objectives to achieve the evaluation, "Signals and Systems" course continuous improvement.

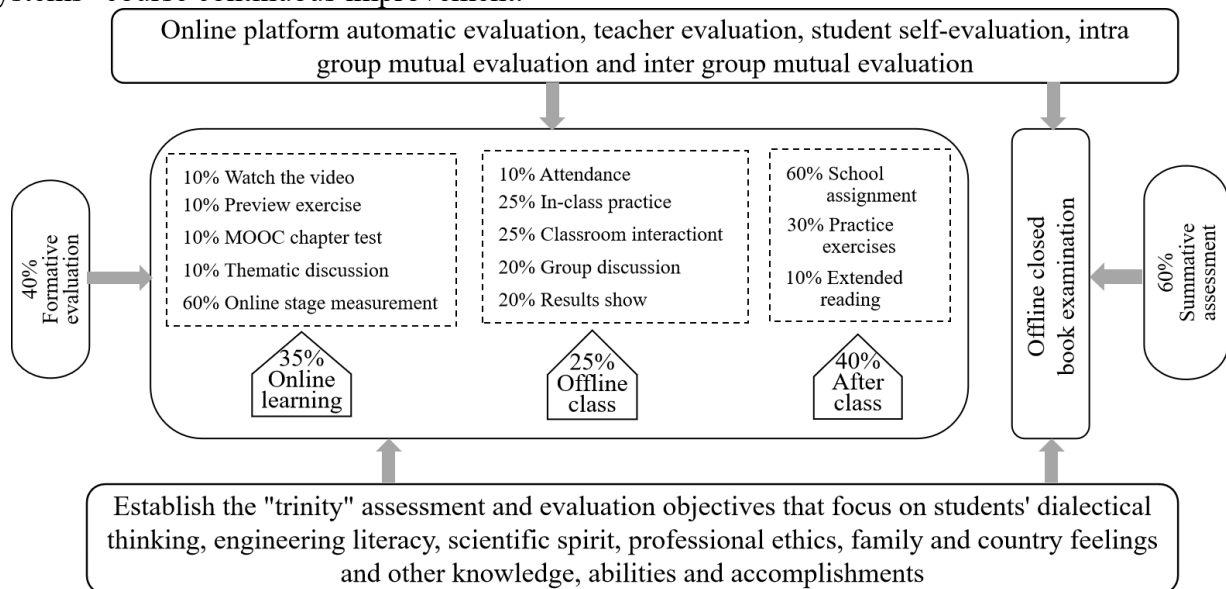


Figure 2 "Signals and Systems" course "Trinity" evaluation system

4. Conclusion

"Signals and Systems" is an important basic course for electronic information majors. It has the characteristics of "profound principles, diverse methods and wide application", and contains rich ideological and political elements. Combined with the characteristics of electronic information major in teaching practice, the course group has defined the teaching objective of integrating knowledge, ability and accomplishment, deeply explored the ideological and political elements of the course, optimized the course content, improved teaching methods and means, and explored the comprehensive education mode of online and offline mixture. Attach importance to "patriotism education" and build patriotic consensus. During the introduction before class and the expansion after class, the development achievements of the national electronic information industry will be displayed to help students witness the speed of China, increase students' national pride and patriotic feelings, establish professional ideals, and stimulate students' mission awareness of national development. Attach importance to "scientific method education" and master scientific theory. Guide students to master Marxist scientific theory, learn to think dialectically from multiple angles,

master the law of cognitive development, enhance the ability of logical thinking. Attach importance to "practice and innovation education" and deepen scientific research ability. Through engineering cases, group collaboration, flipped classroom, high-level homework and other practical links, let the ideological and political carrier of the course play the maximum role, cultivate the spirit of hard work, exploration and innovation of students.

Acknowledgement

This article is in the Teaching research project "First class course construction of 'Signals and Systems Analysis' for national first-class Majors Design practice" (No. JG21113) and "Ideological and Political Cases of the 'Signals and Systems Analysis' Course -- Exploration on the cultivation of talents with 'engineering quality, innovation spirit and serving the country'".

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