

Research on Teaching Reform and Innovation of Computer-aided Process Planning Courses

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Abstract: The innovative research on the teaching reform of computer-aided process design course aims to improve the quality and effectiveness of teaching, and cultivate talents who are more in line with social needs. By introducing the latest technology and theories in the industry, adopting various teaching methods, and strengthening practical teaching, measures are taken to stimulate students' interest and enthusiasm in learning, and improve their practical ability and comprehensive quality.

Keywords: Computer-aided; Technological Design; Teaching Reform; Innovation Research.

1. Introduction

Computer-Aided Process Planning (CAPP) is an important part of the modern engineering design field and plays a key role in improving production efficiency, reducing costs, and improving product quality. With the development of technology, traditional teaching methods can no longer meet the needs of modern process design talents. Therefore, it is of great significance to carry out teaching reform and innovation in computer-aided process design courses. This article will discuss the current teaching status of computer-aided process design courses and propose targeted reform and innovation strategies.

2. Current Teaching Status of Computer-aided Process Design Courses

Currently, computer-aided process design courses have the following problems:

1. Single teaching content: Existing teaching content often only focuses on the operation and basic theory of software and lacks integration with actual production cases, making it difficult for students to understand and master the real application of CAPP.

2. Outdated teaching methods: The traditional teaching method of teachers explaining and students listening cannot stimulate students' interest and initiative in learning, nor can it cultivate students' practical ability.

3. Insufficient practice links: Due to equipment, venue and other limitations, the practice links are often ignored, resulting in students being unable to truly master the practical application of CAPP.

4. Lack of connection with industry: The existing teaching system fails to be closely connected with the development of modern manufacturing, resulting in students being unable to apply the knowledge they have learned to practical work.

3. Teaching Reform and Innovation Strategies for Computer-Aided Process Design Courses

In response to the above problems, this article proposes the following reform and innovation strategies:

1. Enrich teaching content: Based on the original theoretical knowledge, add actual production cases so that students can better understand and master the application of CAPP. At the same time, the latest technological developments and trends in the industry are integrated into teaching to cultivate talents that meet market needs.

2. Diversified teaching methods: Using various teaching methods such as project-based teaching method, case analysis method, flipped classroom, etc., students become the main body of teaching and improve their initiative and innovation ability. At the same time, we develop a combination of online and offline teaching methods to meet the learning needs of different students.

3. Strengthen the practical link: Establish a dedicated CAPP laboratory to provide sufficient practical opportunities. By simulating the actual production environment, students can experience the application of CAPP first-hand and improve their practical ability and problem-solving ability.

4. Establish a teaching system that is connected with industry: Strengthen cooperation with enterprises and jointly develop talent training plans and curriculum systems. By introducing corporate mentors and conducting school-enterprise cooperation projects, students can better understand industry trends and market demands, and improve their overall quality and employment competitiveness.

5. Cultivate students' innovative consciousness and entrepreneurial spirit: Introduce innovative design and entrepreneurial plans into the curriculum, and encourage students to conduct independent inquiry and innovative practice. By participating in various innovation competitions and entrepreneurial projects and other activities, students' comprehensive quality and innovative and entrepreneurial abilities are improved.

6. Establish a complete evaluation system: adopt diversified evaluation methods, including theoretical examinations, practical operations, project reports, teamwork and other aspects for comprehensive evaluation. At the same time, industry experts and business mentors are introduced to participate in the evaluation to ensure the objectivity and fairness of the evaluation results.

7. Strengthen the construction of teaching staff: Establish a high-quality teaching team by introducing teachers with rich practical experience and academic background. At the same time, teachers are encouraged to participate in various

training and academic exchange activities to improve their teaching level and professional quality.

8. Promote modern educational technology: Use modern information technology means, such as online teaching platforms, virtual simulation technology and other auxiliary teaching. Through online Q&A, video tutorials, etc., we provide students with more convenient learning methods and rich learning resources.

4. Conclusion

Computer-aided process design course is one of the important courses in the field of engineering design. Its teaching quality is directly related to students' comprehensive quality and employment competitiveness. Therefore, this article proposes a series of reform and innovation strategies from the aspects of teaching content, teaching methods, practical links, and industry docking. The implementation of

these strategies will help improve the teaching quality of computer-aided process design courses and cultivate more high-quality talents to meet the needs of social development.

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