

# Teaching Reform and Practical Exploration of Spectrum Analysis Course for Applied Chemistry Specialty in Colleges and Universities

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**Abstract** : “Spectrum analysis course” is an important basic course. Unreasonable factors in the course may affect the learning interest and final effect of college students. Continuously strengthening the teaching quality of spectrum analysis is one of the important topics in the construction and development of applied chemistry specialty in colleges and universities. From the perspectives of “problems existing in the spectrum analysis course of applied chemistry specialty in colleges and universities” and “teaching reform and practice path of spectrum analysis course of applied chemistry specialty in colleges and universities”, this paper deeply explores the teaching reform and practice path of spectrum analysis course of applied chemistry specialty, in order to further improve the teaching quality of spectrum analysis course in colleges and universities, and cultivate students' interest in the course.

**Keywords** : Applied Chemistry; Spectral Analysis; Reform in Education; Practice Path

In recent years, with the continuous development of applied chemistry, the demand for high-tech talents is higher and higher. As one of the important courses in applied chemistry, the construction and development of “spectrum analysis course” has attracted the attention of many college teachers. In the traditional spectrum analysis course, the problems worthy of attention mainly include: “low enthusiasm of students”, “lack of example explanation”, “unreasonable evaluation system” and so on. The existence of these problems shows that the course of spectrum analysis in colleges and universities still needs to continue to deepen the reform and constantly improve the details. In this process, college teachers can pay close attention to the teaching reform of spectral analysis course of applied chemistry from the aspects of “student enthusiasm”, “example explanation” and “evaluation system”, so as to cultivate more applied talents for the country.

## 1. Problems in the course of spectrum analysis for applied chemistry majors in colleges and universities

### 1.1 Students' enthusiasm is not high

In the practical teaching of spectrum analysis course of applied chemistry in colleges and universities, some students are difficult to have much interest in learning. The reason is that in order to grasp the limited time in the classroom, some teachers will directly cut into the topic without elaborating the “introduction link”, and most students' attention is not attracted by the teaching and is still in a “free” state. Moreover, when analyzing the relevant knowledge of spectrum analysis, some teachers are too serious, which makes students feel depressed and difficult to spread their own thinking. In such a classroom situation, most students are more willing to obey rather than actively explore. How to create a suitable learning situation for college students is a problem that spectrum analysis teachers should think carefully.

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## **1.2 Lack of example explanation**

There are many knowledge systems involved in the spectrum analysis course of applied chemistry in colleges and universities. Some knowledge systems are based on abstract characteristics, and there are still high difficulties in understanding. In this case, vivid examples can often play a better guiding role. However, in the practical teaching of spectrum analysis course, some teachers do not pay attention to case analysis. Specifically: On the one hand, there are insufficient examples. For the analysis of knowledge related to spectrum analysis, some teachers focus on subjective narration without introducing some appropriate examples. In daily lesson preparation, these teachers do not pay attention to observation and research, and lack effective example resources; On the other hand, the example is simple. The examples of spectrum analysis introduced by some teachers are too simple to guide and lack basic speculation. Such examples may be more interesting than knowledge, and it is difficult to really help students make progress.

## **1.3 Unreasonable evaluation system**

At present, the evaluation system of spectrum analysis course of applied chemistry in colleges and universities is unreasonable, which puzzles many students and seriously affects their learning enthusiasm. Specifically, the evaluation system of spectrum analysis course set up by some colleges and universities only evaluates students' "test scores", with narrow perspective and single guidance. In the new era, the educational goal of spectrum analysis course for applied chemistry majors in colleges and universities not only includes examination results, but also involves students' personal ability. The evaluation system that emphasizes too much on "examination results" cannot keep up with the development trend of spectrum analysis course of applied chemistry in colleges and universities in the new era. In addition, in the systematic evaluation of college students, some college leaders give too much power to the teaching team. The opinions of the teaching team can almost determine the whole performance of a student. This will appear too subjective and lose the objectivity of the evaluation system. How to enrich the evaluation dimensions of the spectrum analysis course evaluation system for applied chemistry and set up a multi-agent evaluation mechanism is the direction and goal of colleges and universities in the future.

## **2. Teaching reform and practice path of spectrum analysis course for applied chemistry specialty in colleges and universities**

### **2.1 Arousing students' enthusiasm**

In the course of spectrum analysis of applied chemistry in colleges and universities, fully mobilizing students' enthusiasm can improve the final course effect. So, how to effectively mobilize the enthusiasm of most students? From the perspective of "curriculum introduction", college teachers should carefully design the introduction link. For example, according to the social application of spectrum analysis knowledge, we should throw out some representative questions to inspire students to think independently, focus students' attention and improve their enthusiasm for spectrum analysis course. From the perspective of "classroom situation", college teachers should avoid being too serious and interact with students as "friends". For example, open "question and answer of interesting knowledge of spectrum analysis", "simulation of spectrum analysis application situation", "sharing of spectrum analysis life examples" and so on, students can enjoy a relaxed and active classroom situation, think independently, and actively explore relevant knowledge of spectrum analysis.

### **2.2 Adding example analysis**

In the study of spectrum analysis course of applied chemistry specialty in colleges and universities, adding some qualitative case analysis can exercise college students' thinking and improve their ability to deal with and solve problems. Specifically: On the one hand, add example analysis. When analyzing the relevant knowledge of spectrum analysis, college teachers can combine some representative examples to analyze the examples. In this process, college teachers should actively strengthen daily accumulation, be good at integrating accurate spectrum analysis examples, and prepare for formal teaching; On the other hand, the instance quality is guaranteed. When introducing the example of spectrum analysis, college teachers should pay attention to the quality problem. They should not give examples for the sake of examples. They should give college students some thinking space and cultivate their speculative consciousness through qualitative example analysis. Generally speaking, in the high-quality case analysis of spectrum analysis, students can get more inspiration, no longer fear the abstraction of the course and reshape their learning confidence.

### **2.3 Reforming the evaluation system**

In view of some unreasonable factors existing in the evaluation system of spectrum analysis course of applied chemistry specialty in colleges and universities, colleges and universities should actively optimize, make the evaluation system more and more

perfect, and obtain the recognition of more college students to play a leading role. Specifically, when setting up the spectrum analysis curriculum evaluation system, colleges and universities should open the perspective, not only evaluate the students' "examination results", but also evaluate the students' "comprehensive ability". For example, how about the students' ability in practical application? What are the students' abilities in teamwork? How about students' ability in knowledge innovation. The multi-dimensional evaluation system is more in line with the spirit of higher education and teaching reform and can better motivate the majority of students. In addition, with regard to the evaluation of college students, college leaders should not only pay attention to the participation of teaching teams, but also grasp the scope of power of teaching teams, and avoid excessive concentration of power. For example, colleges and universities can establish a "multi-agent evaluation mechanism for spectrum analysis course" and invite counselors and student representatives to participate in the evaluation work together, highlighting the objectivity and impartiality of the evaluation system. With the formation of multi-agent evaluation mechanism, college students' unions have a more comprehensive understanding of their learning situation and carry out accurate leak detection and vacancy filling.

### 3. Conclusion

To sum up, although some difficulties will be encountered in the teaching reform of spectral analysis course of applied chemistry specialty in colleges and universities, relevant teachers should be good at analysis and summary, and carry out all reform work to the end with the craftsman spirit of excellence. In the future, in order to better promote the teaching reform of spectrum analysis, colleges and universities should grasp important work links. Specifically: ① Arouse students' enthusiasm; ② Add case analysis; ③ Reform the evaluation system. In addition, starting from the internal construction of teaching team, colleges and universities should formulate practical "teacher training scheme" and "teacher incentive scheme", encourage relevant teachers to study independently, explore and innovate, so as to export more excellent applied talents for the field of applied chemistry in China.

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