For many years, the analytical chemistry curriculum at Butler University consisted of traditional quantitative and instrumental analysis courses. The qualitative analysis course was typically taken by students in their sophomore year. Laboratory work focused on basic techniques, and students were exposed to the techniques and equipment used in analytical chemistry laboratories. However, this traditional approach to teaching analytical chemistry has been criticized for being too focused on rote memorization and not enough on critical thinking and problem-solving skills.

To address these concerns, a new approach to teaching analytical chemistry was developed at Butler University. This new approach, known as the "Theme-Based Modules" approach, focuses on developing students' critical thinking and problem-solving skills, as well as their ability to apply analytical chemistry to real-world problems. This approach is based on the premise that analytical chemistry is not just a set of techniques and instruments, but rather a way of thinking about the world around us.

The new approach to teaching analytical chemistry involves the following key components:

1. **Themes**: Topics are presented as themes rather than isolated courses. This allows students to see the connections between different aspects of analytical chemistry and to develop a deeper understanding of the subject.

2. **Modules**: The course is divided into modules based on the themes. Each module focuses on a specific aspect of analytical chemistry and is designed to help students develop specific skills and knowledge.

3. **Integrated Learning**: The course is designed to be integrated, with lectures and laboratory work connected to the same theme. This helps students see the relevance of the material they are learning and to develop a more holistic understanding of the subject.

4. **Active Learning**: The course is designed to be student-centered, with a focus on active learning. This includes group work, problem-solving exercises, and other activities that engage students and help them develop their critical thinking skills.

5. **Assessment**: Assessment is integrated into the course, with regular quizzes and exams designed to help students track their progress and to ensure that they are mastering the material.

The new approach to teaching analytical chemistry has been shown to be effective in improving students' critical thinking and problem-solving skills, as well as their ability to apply analytical chemistry to real-world problems. It has also been shown to improve student retention and success rates, as well as to increase student satisfaction with the course.

In conclusion, the Theme-Based Modules approach to teaching analytical chemistry is an innovative and effective way to prepare students for the challenges of the modern analytical chemistry workforce. It provides a framework for developing students' critical thinking and problem-solving skills, as well as their ability to apply analytical chemistry to real-world problems. By focusing on themes and modules, rather than isolated courses, students are better able to see the connections between different aspects of analytical chemistry and to develop a deeper understanding of the subject. This approach is designed to help students succeed in their future careers, whether in industry or in further academic study.