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THE UNDERGRADUATE CURRICULUM IN CHEMISTRY

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Until very recently the undergraduate curriculum in sciences was quite uniform from college to college and was quite stable with respect to time. Currently these curricula are receiving a great deal of attention. This interest is stimulated not only by the rapidly growing enrollment but also by a variety of other factors. One of these is the rapid developments being made in the sciences today. The amount of time, energy and money being spent on scientific research is greater than ever before in the history of man and new knowledge is being developed at an unprecedented rate. Another factor is the recent improvement in high school training in the sciences and mathematics. Within the past decade there has been a tremendous effort by the high schools in Arkansas to improve and update their science offerings with the result that the colleges now bear the responsibility for providing the students with a challenging and rewarding program which utilizes this preparation. Finally, graduate schools and employers have come to expect a much higher level of training than was previously possessed by the graduating senior.

We who are engaged in college level teaching in Arkansas are particularly affected by the changes made elsewhere in Chemistry curricula. It is no longer true, if it ever was, that our students must meet the educational level of the surrounding geographical area. In this age of increased citizen mobility our students must be prepared to compete with graduates from any state in the union. When they apply for a job or a graduate position they are compared with all possible candidates regardless of geographical areas of origin. If we fail to prepare these young people for this competition then we have failed in our primary responsibilities as teachers.

Thus, our goal is before us but it is a goal that is rapidly moving forward. In a recent article (1) Professor Robert I. Walker reports that over sixty percent of the institutions in the United States which grant Bachelor's degrees with a major in chemistry have revised their course sequences with accompanying changes in course content during the past five years. A series of articles (2-4) in the March issue of the *Journal of Chemical Education* reports on a special symposium held at the American Chemical Society national meeting in Atlantic City entitled "The Changing Chemistry Curriculum." From these articles and from other publications and papers presented at meetings one is led to the conclusion that any curriculum which has not undergone significant modification since 1960 is probably out of touch with modern advances in chemical knowledge and that students passing through these programs will probably be greatly handicapped at the end of their undergraduate training.

In an attempt to better prepare our students for this competition, the University of Arkansas instituted in the fall of 1965 a new curriculum

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leading to the B.S. degree in chemistry. This program is specifically designed for the well qualified entering student. It recognizes his background by encouraging him to complete the elementary material through physical chemistry as rapidly as possible so as to proceed to courses of greater content. The science and mathematics portions of this program and the semester hours credit for each are shown in the following table.

University of Arkansas
B. S. Chemistry Curriculum

Fall Semester		Spring Semester
1st Year		
5 General Chemistry		4 Analytical Chemistry I
5 Calculus I		5 Calculus II
4 Biology		4 Biology
2nd Year		
4 Organic Chemistry		5 Organic Chemistry
4 Physics		4 Physics
3 Calculus III		
3rd Year		
4 Physical Chemistry		6 Physical Chemistry
		4 Analytical Chemistry II
4th Year		
2 Modern Organic Analysis		Research
3 Advanced Inorganic		
3 Elective Advanced Chemistry Lecture Research		
Minimum Total Hours:		
40 Chemistry		
136 All courses.		

While strongly believing that this course sequence is well designed to prepare the qualified student for graduate work or industrial employment we also recognize that not all of the high schools are giving this level of preparation and alternative sequences are available which begin at a lower level but sacrifice flexibility in the final year to still achieve the same coverage.

Finally, it should be strongly emphasized that a simple list of such courses does not adequately reflect the greatest changes which are taking place. These are changes in the content of the individual courses. In many cases while the titles employed are the classical titles, the courses themselves bear little resemblance to those taught only ten years ago. In this respect even the most current of textbooks are too old for they are outdated before they see print and a great responsibility resolves upon the teaching faculty for the rapid and effective incorporation of current developments into the ever changing undergraduate curriculum.

Arkansas Academy of Science Proceedings

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