

CHE UNDERGRADUATE EDUCATION: PATTERNS TODAY- EXTRAPOLATION TO TOMORROW

Symposium

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IN ORDER TO develop the most effective and efficient undergraduate educational programs it is necessary to pause occasionally and consider our present posture, evaluate what we see as the future needs and determine if we are proceeding in the proper direction. This type of analysis is particularly crucial in a rapidly expanding discipline such as chemical engineering which is increasing in scope and at the same time besieged with pressure both to reduce the required number of credit hours for graduation and expand the number of non-technical electives. Should our programs remain as general as possible or should each university develop its own special areas of emphasis? How should our instructional techniques be modified to take full advantages of new teaching aids such as "talk-back" T.V. systems and realtime computers? What modifications should be made in the tradi-

tional chemical engineering laboratories? Are we producing graduates which are in phase with the needs of industry?

THE FOLLOWING PAPERS were presented in a symposium on Chemical Engineering undergraduate education at the 68th Annual Meeting of the AIChE in Houston. Although there was insufficient time to review all of the aspects of our undergraduate educational structure, many of the important trends and projects were considered both from the standpoint of industry and its needs and the university and its goals.



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PREPARING THE ENGINEER FOR HIS UNIQUE ROLE

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I am not here today to speak as an expert in undergraduate engineering curriculum, but as a chemical engineer in industry who has a strong interest in his profession. I have observed many newly graduated engineers begin their careers in industry and have developed some ideas pertinent to the role and education of engineers that I wish to share with you.

I will discuss two basic areas: first, a concept of the unique role of the engineer, and second, using this concept, important areas in the engineer's education required to best prepare him for this unique role. I plan to deal with this subjective and complex subject in a very simple form in order to concentrate on a few basic concepts.

AN ENGINEER'S ACTIVITIES require him to work in three basic areas (Figure 1). These are economics, mathematics and the physical