IV.ИНФОРМАЦИОННЫЕ СООБЩЕНИЯ, СОБЫТИЯ В МИРЕ ВЫСШЕГО ОБРАЗОВАНИЯ

MODERNIZATION AND DEVELOPING OF CHEMICAL ENGINEERING CURRICULA

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Abstract. Since a curricula is one of the main document in education its modernization and development are key factor that provides targeting specific knowledge and behaviour to both instructors and student. In this paper, we conducted comparative analysis to identify courses that are taught in chemical engineering. It is suggested to include some “heart courses” to chemical engineering curricular

Key words: chemical engineering curricula, development

Introduction

The word “curriculum” has roots in Latin that means “racing chariot” and came from the verb *currere*, “to run”. The term curriculum emerged in the 1930s to designate a field to facilitate curriculum (course of study) for schools [1]. There exist numerous definitions for curriculum by many authors in different contexts. However, all definitions concern educational context. It is highlighted that curriculum development is the heart and soul of all educational institutions regardless of sizes and types [2]. Boschee thinks that a useful definition of the curriculum should meet two criteria: It should reflect the general understanding of the term as used by educators, and it should be useful to educators in making operational distinctions [3]. To know meaning of curricula helps to better understand staff who works with the development of curricula.

Why curriculum studies?

To meet global standards in chemical engineering teaching, curriculum studies are considered an initial and important process. Hence development and modernization of curricula are crucial for all institutions as well as Tashkent Chemical-Technological Institute. As Khan and Law define curriculum development as a process and system, as well as a science and art [4], curriculum development studies require gradual alignments and enhancement in terms of professional applications which leads to better personnel industry for the chemical engineering context. Further there emphasized to answer the following questions of the subject matter: How can we reach our agenda step-by-step? What are the key components of curriculum development?

These are focus areas to deal with before starting curriculum development. Comparison of existing courses of TCTI to the courses which have been trialed by best institutions and conduct surveys to find out what skills of personnel are required for the chemical industry might be the initial base to enhance chemical engineering curriculum. Darwish and Qasim [2] mentioned that academic performance does not solely depend on the student characteristics but also depends on the organization of the curriculum.

Changes in the chemical engineering curriculum

As we all know, chemical engineering is one of the most important branches of engineering. In this field of study there produced chemical products through various physicochemical processes. This area includes the processing of raw materials, the development of new products, equipment and tools used in these processes. Every year, many chemical engineering specialists are trained at various institutes around the world. Most of the academic courses taught in the engineering departments of these universities are almost identical. Because these sciences are the basis of the processes that take place in the chemical industry. The presence of these courses in the chemical department are basis for the training of promising personnel in the future.

The study provides a comparative analysis of the curricula of the Tashkent Institute of Chemical Technology with four leading international universities (Massachusetts Institute of Technology (USA) #=1 QS, The University of Kansas (USA) #=372 QS, Queen's University Belfast (United Kingdom) #=173 QS, Yeungan university South Korea) #=801 QS). The results showed that the curricula of these universities include the following main courses: Mass and heat transfer, Thermodynamics, Kinetics and reactor design, Mass and energy balance, Numerical methods and their names are partially changed.

Moreover, the research has been conducted working with the staff and faculty of chemical engineering of the University of Kansas (KU) by a specific questionnaire which included researching questions related to curriculum development. One of the main topic areas was “Which courses should be taught in chemical engineering?” Many of the staff and faculty have chosen Mass and heat transfer, Thermodynamics, Kinetics and reactor design, Mass and energy balance, Numerical methods courses.

Discussion

According to the investigation of the research, the following academic courses such as Mass and heat transfer, Thermodynamics, Kinetics and reactor design, Mass and energy balance, numerical methods taught in the field of chemical engineering of all institutes are not included in the curricula of the departments of

the Tashkent Chemical-Technological Institute. Therefore, there is an immediate need for the revision of the curricula of the departments dealing with chemical engineering and the application of these “heart courses” to make improvements in the field. To gain above mentioned alteration and enhancement it is necessary to prepare teaching materials and academic professional resources on respective academic courses that meet international standards, to improve the skills of teachers of the academic courses.

Conclusion

The study discusses a comprehensive up-to-date overview of the findings taken from analysis of different institutions’ chemical engineering curricula. There numerous differences between the chemical engineering courses of Tashkent Chemical-Technological Institute with other top institutions. The authors make suggestions that these courses should be included in the chemical engineering curriculum to meet global frameworks of higher education.

References

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