DEVELOPMENT AND IMPLEMENTATION OF THE CURRICULUM "PROCESSES OF SELF-ORGANIZATION IN CHEMISTRY"

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Currently, there is an active development of interdisciplinary approaches to the preparation of bachelors and masters. Not only scientific interrelations are discussed, but also ways of their inclusion in educational programs. Issues of synergetics, self-organization, self-Assembly become in some cases key in the study of physical, chemical, biological, technological processes, nonlinear thinking is formed [1, 2]. In this paper, we presented the developed work program of the discipline (RPD) of the variable part of the direction 01.04.02 on the profile "Chemobiodynamics and bioinformatics", implemented in the course of lectures for masters of the Department of applied physics. In contrast to a number of educational and methodical complexes, this program considers a fairly wide range of issues and scenarios for the development of self-organization processes. The program includes examples of dissipative, conservative and continuous (evolutionary catalysis) self-organization. Considerable attention is paid to colloidal systems, issues of dehydration self-organization [3], structuring of composites, including biological ones. The program is based on the previous courses: physics, introduction to synergetics, modeling of complex systems and provides the possibility of a logical transition to the disciplines: basics of biology and Biophysics, basics of genomics and bioinformatics.

It is also important that the program provides for in-situ observations and experimental research works (chemical oscillations, study and modeling of sediments and structure of minerals, rheology and texturing of polymers, formation of composite film patterns). The result of the implementation of these materials is the formation of students ' knowledge, skills and techniques to analyze phenomena and models, to see the patterns of processes and understand their practical significance.

References.

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