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RECENT TRENDS FOR HIGHER TECHNICAL EDUCATION

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Анотація.

В статті окреслено пріоритетні напрямки розвитку вищої технічної освіти. Також проаналізовано основні функції технічної освіти і їхній вплив на майбутнього фахівця.

Ключові слова: технічна освіта, математична освіта, професійна підготовка

Abstract.

Priorities for the development of higher technical education are outlined. The main functions of engineering education and their impact on the future specialist are analyzed.

Keywords: engineering education, mathematical education, professional training.

There are many trends in education today. This article will highlight a few of the latest trends in higher technical education. Unlike the latest fashion crazes, which are commonly called trends, in this sense, **trend** means a general course of development and change. Trends in higher education change yearly and affect almost every facet of higher education.

Socio-economic development of modern society, market economy system established a new social order to form a complete creative personality, to meet the needs of the individual in obtaining a *fundamental*, universal knowledge, to be mobile in their careers.

Among the priorities in the development of higher technical education we mark out the following:
- ensuing of modern quality of education based on the preservation of its fundamental nature;
- implementation of continuous professional education;
- development of all educational subjects according to their actual and potential needs.

The unity of these three tasks characterizes professional education as a major factor in the development of economy and social sphere [91.P.12].

Modern Higher Engineering Education has many important functions: [9,14, 30, 33, 60,287,288, and others.]
- training (as knowledge accumulated by mankind, that is passed in the learning process);
- research (as studies related to the process of the study);
- professional (as any university, especially technical, is a scientific and educational center for training specialists);
- service (higher education institution is an organized multilateral activity);
- humanitarian (it involves highly intellectual competitive specialists training).

The educational function of engineering education system ranks a special place. Through means, forms and methods, it allows you to create many-sided personality of the future engineer. One of the means is the study of mathematics as a universal tool for constructing and analyzing mathematical models of processes of different nature.

For centuries, mathematics is an integral part of the general education system around the world. Mathematics is powerful means of solving various kinds of applications. This is the universal language of science.

Modern Higher Education has a special need for mathematical concepts, mathematical apparatus, which belongs to the modern period of mathematics. Mathematical education of higher vocational technical schools contains elements belonging to all periods of mathematics as a science [79].

Major trends in mathematics education in a technical university are:

- convergence of mathematics as a science with academic disciplines of mathematical cycle;

- strengthening of the applied trend in learning mathematics;

- modernization of methods, techniques and training aids;

- changing the goals and objectives of mathematics education at the present stage;

- changing structural-intensional and procedural components;

- individualization of the educational process, implementation of individual-centered approach to learning;

- use of variable approach to education as integrative approach to the construction of mathematical education [... .P. 49**Ol**].

Modernisation of higher technical education poses new questions of vocational education with the dominant mathematical one.

Vocational training of students in technical high school sets the following main objectives to the mathematical education:

- develop students intellectually, forming such characteristics of thinking that are inherent to mathematical activity in their chosen specialty and necessary for man to live full life in society;

- provide mathematical knowledge, build skills that are needed to study related subjects, for use in professional activities to continue lifelong education;

- form a notion of the ideas and techniques of mathematics as a form of the description and the method of understanding of the reality;

- educate a person in the process of learning mathematics.

Studying the experience of using mathematical education in the overall education system allowed to distinguish the three main trends:

a) understanding of the need for mathematical knowledge for all students

b) including comprehensive courses in mathematics curricula at all levels and stages of education;

c) differentiation of mathematical training.

The main purpose of mathematics education must be creating mathematical skills to investigate phenomena of the real world, to make mathematical models, the ability to use them in any professional activity. The art to draw and explore mathematical models of real situations is the part of this skill [8.P.31].

If the main goals facing the modern mathematical education at the Technical university are solved, the graduates of these schools can build mathematical models within their speciality, to put mathematical problems, to choose suitable mathematical method and **algorithm** for deciding professional tasks used to solve the problem of numerical methods using modern computer technology, apply qualitative mathematical research methods, make practical conclusions on the basis of mathematical analysis.

Despite of the significant amount of research on mathematics teaching at technical universities, the problems of mathematical training of future specialists-graduates of technical universities remain to be resolved.

Mathematics occupies *two positions* in technical universities. On the one hand, it is a special general subject, as well as knowledge gained in mathematics is the foundation for learning different comprehensive, general engineering and special disciplines. On the other hand, mathematics is not the main subject for most specialities of technical universities, and students, especially the undergraduates, take it as some abstract subject.

To change this situation it is necessary to show the relationship of mathematics to solve professional tasks in chosen direction as junior students still do not have a sufficient knowledge of the special subjects and can not appreciate their importance and the possibility of applying mathematical methods for solving these tasks. This points to the need of a mathematics integration with the cycle of professional disciplines, which will use mathematical methods in engineering and technology activities. This is important because students compare feasibility of subjects study primarily to their professional importance and increase of their competitiveness in the labour market.

Theoretical analysis, experience and carried out work have led to the conclusions about the peculiarities of the mathematical training of future specialists of engineering profile. Compulsory components of the mathematical education are:

- continuity of studying the application of mathematics;

- fundamentality of mathematical training;

- focus on the mathematics practice;

- mathematical training equivalence for all forms of education in the same specialty.

Conclusions:

In the technological, information-based economy, workers must be able to apply high-level, integrated academic skills on the job. As career and technical education programs redesign curriculum to embed academic standards, their students have an advantage over other students because career and technical education students also learn how to apply these skills.

1. Mathematical education should be seen as the main component of modern training of the future engineer.

2. Technical higher education today requires the study of new effective approaches of the higher mathematics, educational technologies, optimization of teaching methods that would ensure high-quality education.

3. The main areas of higher technical education suggest mathematical training of a student as a necessary component in the training of the future engineers.

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