III Міжнародна конференція
на честь 105-річчя О. В. Погорелова
ПРОБЛЕМИ ВИКЛАДАННЯ МАТЕМАТИКИ У ЗАКЛАДАХ ОСВІТИ: ТЕОРІЯ, МЕТОДИКА, ПРАКТИКА

Тези доповідей

III International Conference
PROBLEMS OF TEACHING MATHEMATICS IN EDUCATIONAL INSTITUTIONS: THEORY, METHODOLOGY, PRACTICE
(in honor of the 105-th anniversary of O.V. Pogorelov)

Theses

March 26 – 28, 2024
Kharkiv, Ukraine

APPLICATION OF SOFTWARE COMPLEXES IN TEACHING MATHEMATICS IN DISTANCE EDUCATION

Natalia Smetankina

Anatolii Pidgornyi Institute of Mechanical Engineering Problems of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine

Ievgeniia Misiura

Simon Kuznets Kharkiv National University of Economics, Kharkiv, Ukraine

Serhii Misiura

NTU "KhPI", Anatolii Pidgornyi Institute of Mechanical Engineering Problems of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine

The issue of organizing the process of teaching mathematics in educational institutions in the conditions of distance learning has been studied. Extended use of mathematical services is proposed.

Keywords: distance learning, mathematical software environments, educational process.

Modern students belong to a special digital generation. They have new information processing skills, but may have difficulties with verbal perception. In order to meet the needs of today's students, teachers must use innovative approaches that allow them to be actively involved in learning.

One of these approaches in learning mathematics is the use of mathematical services in the process of teaching mathematics. This allows teachers to present the material in a clear and accessible way, taking into account the characteristics of this generation. The use of such services will contribute to interesting and effective classes that stimulate the active participation of students in the learning process and contribute to the development of their mathematical skills. Software environments such as math packages, dedicated math programs, or cloud-based math tutoring services can be extremely useful tools for educators. They allow you to visualize complex mathematical concepts, create interactive tasks, and demonstrate different solution methods. Thanks to these tools, students can better understand the material, improve their problem-solving skills and improve the success rate in the educational process.

The use of such software environments helps to improve the quality of mathematics teaching, creating interesting and exciting lessons. Taking into account the current situation, educational institutions work remotely. The organization of a continuous and high-quality educational process in the format of distance learning requires new methods, means and approaches. Therefore, the use of mathematical services and interactive devices is a necessary condition for high-quality teaching of mathematics.

The purpose of the work is to study the issue of qualitative organization of the process of teaching mathematics in educational institutions in the context of adaptation of mathematical services.

Mathematical software packages MATLAB, Mathcad, Mathematica are used to solve practical problems and scientific work of students [1]. Mathcad was used to solve complex mathematical problems that required integration, differentiation or numerical calculations [2]. MATLAB and Mathematica have been used in scientific research because they have powerful tools for numerical calculations and data processing [3].

Taking into account the need to use these products for studying mathematics at different levels of education, the process of their adaptation when teaching mathematics separately in educational institutions of higher education, such as the State Biotechnology University, KhNEU, NTU “KhPI” [4].

REFERENCES

1. A.I. Malykhina, D.O. Merkulov, O.V. Postnyi, N.V. Smetankina, “Stationary problem of heat conductivity for complex-shape multilayer plates”, **Bulletin of V.N. Karazin Kharkiv National University. Series “Mathematical modeling. Information technology. Automated control system”**, Vol. 41. pp. 46–54, 2019.

2. N.V. Smetankina, O.V. Postnyi, S.Yu. Misura, A.I. Merkulova, D.O. Merkulov, **Optimal design of layered cylindrical shells with minimum weight under impulse loading**. In the book: “2021 IEEE 2nd KhPI Week on Advanced Technology (KhPIWeek)”. Rharkiv, Ukraine, pp. 506–509, 2021.

3. N.V. Smetankina. **Non-stationary deformation, thermal elasticity and optimisation of laminated plates and cylindrical shells** / Kharkiv: " Miskdruk Publishers ", 2011.

4. N. Smetankina, A. Merkulova, D. Merkulov, S. Misura, Ie. Misiura, **“Modelling thermal stresses in laminated aircraft elements of a complex form with account of heat sources”**, Lecture Notes in Networks and Systems, Vol. 534, pp. 233–246, 2023.