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**REVIEW on Educational master programs Computer and Mathematical Modelling in Applied Mathematics (for both research and professional orientation), at National Technical University "Kharkiv Polytechnic Institute"**

This review evaluates the educational master program in Computer and Mathematical Modeling, focusing on its suitability for both research and professional orientations within the field of Applied Mathematics. The program aims to equip students with theoretical knowledge and practical skills essential for conducting mathematical and computer simulations with real-world applications, particularly in engineering analysis and synthesis. Against the backdrop of contemporary challenges, including the conflict in Ukraine and the imperative for post-conflict reconstruction, the significance of such programs in preparing specialists capable of contributing to rebuilding efforts cannot be overstated.

**Key Features and Objectives:**

The objectives of the program is to develop a comprehensive set of skills in mathematical modeling and computational analysis with emphasis on both theoretical understanding and practical application. By focusing on the creation, adaptation, and justification of mathematical models, alongside the development and modernization of computational methods and algorithms, the program prepares students for the complexities of real-world problem-solving in engineering and related fields.

A notable aspect of the program is its commitment to project-based learning, providing students with hands-on experience and opportunities to apply theoretical knowledge to practical scenarios. Through individual and team projects, students gain valuable skills in problem-solving, collaboration, and innovation, essential for success in both research and professional environments. The participation in international academic exchange programs, such as the Leonhard Euler Scholarship program supported by DAAD (German Academic Exchange Service), offers unique opportunities for academic mobility of students and provides exposure to diverse perspectives. Collaboration with universities like Otto-von-Guericke University in Germany enhances global outlook for students and enriches their educational experience, fostering cross-cultural understanding and preparing them for the challenges of a globalized world.

**Recommendations for Improvement:**

To enhance the program effectiveness in the future, it is recommended to expand the compulsory curriculum to include more theoretical mechanical disciplines, thereby providing students with a broader foundation in relevant areas. Additionally, incorporating more self-study-oriented activities within practical components, such as computer labs focused on CAE software, can empower students to explore advanced topics independently and reinforce their learning through project-based activities.

In light of the program strengths and potential, it is recommended to actively seek international student enrollments. By attracting students from diverse backgrounds, the program can further enhance its educational environment and promote cross-cultural exchange. Furthermore, expanding recruitment efforts to include international students can contribute to the program's growth and stature on the global stage, enriching the learning experience for all participants.

**In conclusion**, the educational master program in Computer and Mathematical Modeling offers a comprehensive education in applied mathematics, preparing students for both research and professional roles in engineering analysis and synthesis. Its emphasis on theoretical foundations, practical skills, and international collaboration positions it as a leader in the field. By actively recruiting international students, the program can further enhance its global reach and impact, fostering a diverse and dynamic learning community that is well-equipped to tackle the challenges of the future.



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