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On the problems of teaching the higher mathematics in English

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In recent years, the National University “Zaporizhzhya Polytechnic” has been teaching a course of higher mathematics in English for Electrical Engineering students. The advantages of such a decision are absolutely obvious in the context of globalization, integration of the university and its graduates into the international educational system. But despite the obvious advantages, there are also disadvantages of such courses. Below we will formulate the most common, specific problems teachers of higher mathematics face when teaching the course in English, as well as possible ways to overcome them.

The first problem is related to the students’ English language entry level (because they are freshmen). From the very beginning, they start to listen to lectures in English, communicate in English in practical classes, use methodological recommendations written in English. This is a challenge for them due to the lack of similar learning experience in the past. This situation can force the teacher to simplify the explanation, to avoid considering some important, but difficult to understand details. And this can lead to insufficient and incomplete study of some aspects of the subject. This problem is solved by intensifying the study of English in the first year (students of “English” groups have additional hours of English compared to students of “regular” groups).

The second problem is that teaching a subject in a foreign language (as well as students’ perception of the material) inevitably takes place at a slow pace. The teacher must speak clearly, not quickly; quite often, it is necessary to repeat the phrase several times. Students’ perception and comprehension of information is also slower. It takes some time and effort of students. As a result, within the planned classroom hours of higher mathematics, students of “English-speaking” groups have time to master a smaller amount of material than those who study in their native language. This situation can affect the implementation of the curriculum. And here the teacher’s experience is of great importance, as it is experience that allows a critical approach to the information selection and the sequence of its processing. Thus, this problem is solved by the teacher’s methodological qualification.

The third problem is related to the following fact: in contrast to those

technical universities, where the English mathematics course is taught as an additional (optional) to the main course in the native language (in parallel), in “Zaporizhzhya Polytechnic” the English language course is the only higher mathematics course. As a result, the teacher is obliged to duplicate terminology in the native language. This is obviously necessary in order to have an adequate understanding of terminology and use it correctly in a professional context. Therefore, the teacher must give the exact equivalent for each term in the native language, explain the term in other words, give a definition or example, and compile a glossary for each topic.

Finally, another problem stems from differences in approaches to teaching higher mathematics to students in Ukraine and abroad. As you know, English-language mathematics is more focused on practical competencies and skills. There is a view that the main purpose of foreign mathematics education is to know how, and of domestic one – to know why. Therefore, Ukrainian pupils and students can easily operate with complex numbers, trigonometric and logarithmic transformations, solve non-trivial stereometric problems, systems of linear equations, but get lost when performing the simplest combinatorial, statistical, financial calculations, confused in graphical information, can not formalize the problem described in terms of a specific life situation. In foreign educational institutions, this is taught in secondary school, and in some places even in primary school. It should also be noted that in English-language mathematics tests, control works and exams are also presented in a slightly different way than our students are used to. All this does not allow using only English textbooks and manuals (foreign for our students), because they do not take into account our realities of learning. There is a need to create methodological support for the course, which would combine the principles of foreign mathematics education and the realities of our school education. Methodological manuals in English (lecture notes, materials for independent work, examples of solving practical and situational tasks, calculation and control works with samples of performance) should contain a list of special terms in English and native language. Thus, we consider it expedient to use both the original English-language textbooks and manuals created especially for such courses by the university teaching staff in order to bridge this gap between English-language and domestic higher mathematics.

Література

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