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ORGANIZATION OF STUDENT CONTESTS IN MECHANICAL ENGINEERING SUBJECTS AS A FACTOR OF HUMAN POTENTIAL DEVELOPMENT

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ABSTRACT

There was discussed the problem of training the high-qualified specialists graduating from universities according to the current situation in the high education field. One of the solutions of the named problem was suggested. The experience of engineering mechanics contest organization of different levels by the Technical Physics and Engineering Mechanics Departments of the Belarusian State University of Transport was described.

Keywords: studying process, international engineering mechanics contest, human potential.

INTRODUCTION

The development of information technologies has led to a change in the nature of today's youth way of thinking. This fact can be associated with a significant increase in the volume of information received from various sources. On the other hand the system of school training in Belarus has remained almost unchanged since the last century. A variety of studied material has increased, but it has resulted, for example, in the failure in learning mathematics due to the refusal of considering the evidence of the theorems, creation processes of different ratios. At the same time students are taught to solve short problems that do not require a plurality of logical actions for their solution. The test system application as the university entrance exams also does not stimulate the development of logical thinking. In combination with the existing demographic situation in Belarus the competition for enrollees is significantly reduced, especially for the technical professions. As a result training of students is accompanied by considerable difficulties. For example, problem solution process for such mechanical subjects as engineering mechanics, mechanics of materials, theory of mechanisms and machines and etc. is usually connected with the use of long logic chains. The requirement to perform many actions puts the majority of students at an impasse. At the same time the solution consisting of 3-4 simple and medium actions do not cause the difficulties for the students. This begs the question of increasing the independence and creativity of students' thinking.

RESULTS AND CONCLUSIONS

One of the possible solutions of the mentioned problem is to attract students to participate in competitions in various subjects. Much experience in the contest realization of different levels the "Technical Physics and Engineering Mechanics" department of the Belarusian State University of Transport (BelSUT) has in the field of engineering mechanics.

After studying a complete part of the engineering mechanics course, for example, "Statics", it is organized the faculty-level contest, where students are offered to solve several number problems (usually eight) of almost the same difficulty level as they had studied in the classroom. It allows to find out the extraordinary minded students with a sufficiently high potential for a further development of their capabilities. The next step is the organized by the department additional unpaid training for one semester for the most distinguished students if they wish. These additional studies are carried out to instill the initial skills of the contest problems requiring nonstandard approaches for the students.

Once a year, the contest at the university level is held. Students of all courses are invited to take part in this competition. Here different students can show their level: the students previously demonstrated their abilities and those ones who could not participate in the competition of the faculty level for different reasons.

The results of the university-level competitions are the base for the selection of the BelSUT team members to present the university at the city level competition. According to its results the final team is completed for the annual national and international contests in engineering mechanics carried out by the "Technical Physics and Engineering Mechanics" department of BelSUT. The results of these competitions represent both the individual and team competition achievements. The team of our university is generally ranked first or second place in the national contest and it is among the 10 best teams in the international contest.

International Engineering Mechanics Contest has been held annually since 2004. It is attended by students from different countries and universities with different training systems. The detailed information about the peculiarities of this competitions and suggested problems to solve can be found in (Shimanovsky, 2013), (Shimanovsky, 2014) and on the <http://engmech.by> site.

Participation in contests and intellectual competitions is an excellent platform for the identification and further development of students with great potential not only in the field of theoretical mechanics, but also in other areas. As a rule, in the future such students behave as good researchers, professionals with creative thinking who can replenish the staff of high-qualified specialists in the field of research and innovation and as a result it will allow to improve the human potential not only of a single university, but also of the society as a whole.

REFERENCES

- [1]-Shimanovsky AO. The Holding of Contests in Engineering Mechanics. International Journal of Mechanical Engineering Education, 2013, 41, p. 107-114.
- [2]-Shimanovsky AO. International engineering mechanics contest 2013 results. Mechanics - Scientific Researches and Methodical Development, 2014, 8, p. 255-288.