## Improvement of educational process within carrying out the Olympiad in descriptive geometry

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The trend toward tier system of education and reducing academic hours for descriptive geometry learning has escalated quickly during the past years. Consequently, there appears a necessity of implementing new forms of improving students' knowledge and skills and helping students discover and develop their creative abilities within solving practical tasks. We assume that one of these preferred forms is the Olympiad in the subject. The objective of this research is to examine the ways of improving the educational process in the course "Descriptive geometry" within preparing the Olympiad and carrying it out. The study presents the statistical analysis of contest works and methods students used for participation in the Olympiads. The findings of the research illustrate a growing trend of total decreasing the tasks solvability, as well as deteriorating the total intellectual level and students' preparation level. We offer a new form of preparation for the Olympiad. It consists of innovation methods for classroom preparation and organization of students' independent work. Moreover, within implementing this competence approach we developed criteria for creating Olympiad tasks and their structure. It includes 4 tasks: a standard position task with elements of metrics, two complex tasks and a task focused on practice. We suggest using the 100-grade system of assessing competitive works.

Ключевые слова: descriptive geometry, Olympiad, practice-focused task, complex task, competence.

## REFERENCES

- [1] Naumkin N.I. Metodicheskaya sistema formirovaniya u studentov tekhnicheskikh vuzov sposobnostey k innovatsionnoy inzhenernoy deyatelnosti v protsesse obucheniya obschetekhnicheskim distsiplinam. Dis. ... dokt. pedagogicheskikh nauk [Methodical system of forming the abilities for innovative engineering activity among students in the course of training for general technical disciplines. Dr. pedagogic sci. diss.]. Saransk, 2009, 499 p.
- [2] Vyshnepolsky V.I. *Metodicheskie osnovy podgotovki i provedeniya olimpiad po graficheskim distsiplinam v vysshey shkole*. Dis. ... kand. pedagogicheskikh nauk [Methodical fundamentals of preparing and carrying out the Olympiad on graphic disciplines at universities. Cand. pedagogic sci. dis.]. Moscow, 2000, 250 p.
- [3] Pushkareva L.A. Formirovanie stilya tvorcheskoy deyatelnosti budushchikh spetsialistov olimpiadnymi metodami i sredstvami: na primere obscheprofessionalnoy podgotovki v tekhnicheskom vuze. Dis. ... kand. pedagogicheskikh nauk [Forming the creative activity style for future specialists with Olympiad methods and means: on the example of general vocational training in a technical university. Cand. pedagogic sci. dis.]. Izhevsk, 2009, 178 p.
- [4] Stolyarenko L.D. *Psikhologiya i pedagogika vysshey shkoly* [Psychology and pedagogy of higher educational institution]. Rostov-on-Don, Phoenix Publ., 2014, 624 p.
- [5] Pidkasistyy P.N. *Psikhologiya i pedagogika* [Psychology and pedagogy]. Moscow, Urait Publ., 2011, 720 p.
- [6] Obrazovatelnye standarty MGTU im. N.E. Baumana [Bauman Moscow State Technical University educational standards]. *Kaluzhskiy filial MGTU*

- *im. N.E. Baumana* [Kaluga branch of BMSTU]. Available at: http://bmstu-kaluga.ru/uchebnyj-protsess/metodicheskoe-obespechenie-uchebnogo-protsessa/obrazovatelnye-standarty (accessed May 18, 2015).
- [7] Bushmakina N.S., Shikhova O.F. *Obrazovanie i nauka The education and Science Journal*, 2013, no. 2 (101), pp. 60–73.
- [8] Popov A.I. *Istoriya stanovleniya i tendentsii razvitiya olimpiadnogo dvizheniya po teoreticheskoy mekhanike* [History of formation and development trends in Olympiads on theoretical mechanics]. Tambov, Tambov State Technical University Publ., 2010, 136 p.
- [9] Kalinovskaya T.G., Kosolapova S.A., Proshkin A.V. *Mezhdunarodnyy zhurnal prikladnykh i fundamentalnykh issledovaniy International Journal of Applied and Fundamental Research*, 2010, no. 1, pp. 75–78. Available at: http://www.rae.ru/upfs/?section=content&op=show\_article&article\_id=491 (accessed May 12, 2015).

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