Summary

SUPPORT FOR ELITE ENGINEERING EDUCATION: STUDENT CREATIVE WORKSHOPS

O.V. Solnyshkova
Novosibirsk State University of Architecture and Civil Engineering (Sibstrin)

E.V. Dudysheva
Shukshin Altai State Humanities Pedagogical University

The paper considers elite engineering education provided at the higher education institution of architecture and civil engineering. The elements of the educational process have been described. The regional employers are supposed to play an important role in setting learning outcomes, therefore, the questionnaires filled out by the representatives of civil engineering enterprises have been analyzed. The paper also describes the results of the poll held among the institution graduates. The authors of the paper have analyzed the poll data with due regard to the fact whether the respondent participated in the student creative workshop for designing and developing e-learning resources on geodetics engineering at Novosibirsk State University of Architecture and Civil Engineering (Sibstrin). The authors suggest that student professional creative workshops play a significant part in providing elite engineering education at the higher education institution of architecture and civil engineering.

THOUGHT PROCESS OF ENGINEERING “ELITE FORCE”: RUSSIAN DEVELOPMENT TECHNOLOGIES

A.V. Kozlov
Siberian Federal University

The paper studies potential of Russian cognitive technologies of creative engineering thinking. The technologies are based on applied dialectics or the Theory of Inventive Problem-Solving (TRIZ) and can be applied in the elite engineering education. The author suggests using tested didactic technologies.

PROJECT OF INNOVATIVE ENGINEERING EDUCATION

V.A. Prokhoro
North-Eastern Federal University in Yakutsk

The paper provides the analysis of engineering education and proves the necessity to develop an innovative engineering education programme. Basic principles of the innovative education programme as well as qualifications of engineering Bachelor’s degree programmes are suggested. Education modules of the suggested programme are described.

HUMANITIES AND SOCIAL TECHNOLOGIES TO DEVELOP ENGINEER’S PERSONAL POTENTIAL IN SELF-DEVELOPING UNIVERSITY ENVIRONMENT

E.A. Evstifeeva, A.A. Tyagunov, S.V. Rassadin, S.I. Filippchenkova
Tver state technical university

Techno-humanitarian balance conditions the prospects of human survival as well as competitiveness of Russian industry on the global market. This balance depends strongly on such engineers’ qualities as way of thinking, ethical priorities and reflexive positioning. The article describes a practice-oriented approach to study personal potential of modern engineers, development of their personal qualities by means of socio-humanitarian technologies and reflexive approach used in educational process.
ISSUES OF FOSTERING STUDENTS’ ARTISTIC TASTE IN THE PROCESS OF ENGINEERING

K.B. Danilenko
Bauman Moscow State Technical University

The article justifies the need to develop such personal skills of future engineers, as the artistic taste, the sense of beauty, and the inner personal culture. The basic requirements towards mechanical components, connection joints and structures are addressed allowing the creation of not only technically ingenious, but also eye-catching products that would be notable for their harmonic configuration and beauty. Special emphases are put on the phenomenon of golden ratio, inherent to the most attractive and beautiful items created by nature or by human.

PREPARATION AND CONDUCT OF WORLDSKILLS COMPETITION AS AN INNOVATIVE METHOD OF TECHNICAL STUDENT TRAINING IN VOCATIONAL EDUCATION SYSTEM

V.G. Doronkin, V.V. Eltsov, E.M. Chertakova
Tolyatti State University

The paper examines the issues concerning preparation and holding of professional skill competitions between experts in automotive repair. It also provides the skill competitions between experts in preparation and holding of professional programmes.

UNIFICATION OF ENGINEERING EDUCATION PROGRAMMES

V.S. Gryzlov
Cherepovets state University

The article deals with the unification of engineering academic programmes. It provides a professional functional map and generalized analysis of the competencies included in FSE5 in engineering. The author suggests a unified engineering education model developed in terms of the structure of basic competencies and including competency-based modules.

ELECTRONIC PRESENTATION AS A FACTOR TO IMPROVE LEARNING OUTCOMES IN MATHEMATICS: THE CASE OF ELITE ENGINEERING EDUCATION

O.V. Yanuschk, E.G. Pahomova
National Research Tomsk Polytechnic University

The paper describes the dependence of the quality of mathematics education on the methods applied at lectures delivered for elite engineering students. Two approaches to giving lectures, conventional and presentation-based, are compared. The academic progress performed by students within the frameworks of these two approaches is assessed. The assessment is based on the comparative analysis of the results achieved by students doing theoretical tasks in different sections of the course.

COMPETENCY-BASED APPROACH TO EDUCATION PROGRAMME DEVELOPMENT: THE CASE OF TECHNOLOGY AND ENGINEERING TEACHER QUALIFICATION (TECHNOLOGY OF LIGHT INDUSTRY)

O.V. Zhovka
Kirovohrad Volodymyr Vynnychenko State Pedagogical University

The article is devoted to development of competency-based education programme to train technology and engineering teachers with regard to prospects of light industry development. The developed model includes general and professional competences. The general competences comprise instrumental, interpersonal, systemic, informational, communicative, and legal ones. Professional competences include professional, pedagogical and special competences: engineering and production technology.

ANALYSIS OF THE CURRICULUM SUBJECTS CORRELATION

A.A. Mittel
Tomsk State University of Control Systems and Radioelectronics, Urga State Technological Institute, National Research Tomsk Polytechnic University

The methodological foundation for the analysis of courses dependencies within the university curriculum has been studied. To build an effective curriculum, a model of disciplines correlation analysis based on Spearman’s rank correlation using students’ assessment as input information was proposed.

INNOVATIVENESS IN FUTURE ENGINEERS: VALUE AND MOTIVATIONAL CHARACTERISTICS

O.B. Nikiforova
Peoples’ Friendship University of Russia

The article presents the results of research concerning the peculiarities of value-motivational structure of engineer-
The article discusses the features of implementing the network forms of educational programmes, a functional model of interaction using the network forms of learning, the basic characteristics of the training network forms, their components and tasks are presented. The sequence of training process on the basis of the network of educational programmes and the possibilities of their implementation at the profile departments are considered.

**FUNDAMENTALISATION OF TRANSPORT BACHELORS’ EDUCATION WITH THE FORMATION OF NATURE-CENTERED CONSCIOUSNESS**

V.A. Korchagin, S.A. Lypnin, Y.N. Rizaeva
Lipetsk State Technical University

The necessity of transforming the entire system of knowledge about the universe, man, society, and the role of the fundamental base in the formation of an organic unity of its natural-science and humanitarian components is considered. The educational paradigm of forming nature-centered ecological consciousness of transport bachelors developed in LSTU is briefly analyzed, the results of its implementation are presented.

**FORMATION AND IMPLEMENTATION OF UNIVERSITY DEVELOPMENT STRATEGY AS A FACTOR OF ECONOMIC STABILITY AND THE EDUCATION QUALITY**

M.M. Krishatal, V.V. Eltsov
Togliatti State University

Long-term planning of higher educational institutions’ activities on the basis of the results of the SWOT analysis is an integral part of the management system and higher education development. Formation and implementation of the development strategy of a university in all spheres of its activities provides the predicted results, both in economics and in the field of education quality. In Togliatti State University “Strategy-2020” was developed and implemented based on five principal parts of its functioning.

**VAZ AND HIGHER EDUCATION INSTITUTION: HISTORICAL PARALLELS**

O.I. Rebrin, I.I. Sholina
Ural Federal University

The paper deals with humanization of today’s engineering education and analyzes interconnection between science and education in philosophical perspective. The author investigates different methodological approaches to engineering education, which were applied in Russia before and after the Revolution, in terms of humanization and dehumanization of the society.

**BEST PRACTICES OF SIMULATING NEW APPROACHES AND TOOLS FOR ASSESSING REGIONAL DEMAND FOR NEW-GENERATION ENGINEERING WORKFORCE**

L.N. Bannikova, L.N. Boronina, I.I. Sholina
Ural Federal University

In the context of a new paradigm of planning the demand for engineering workforce, the prediction should be formed by each constituent entity of the Russian Federation from the points of view of employers and the system of professional education. This stipulates the transition from strict calculation algorithms to a variety of approaches and tools and their free choice. The article describes the assessment models for evaluation of engineering labor market demand.

**HUMANIZATION OF ENGINEERING EDUCATION: CURRENT CHALLENGES IN RUSSIA**

T.A. Rubantsova
Siberian Transport University

The paper deals with humanization of today’s engineering education and analyzes interconnection between science and education in philosophical perspective. The author investigates different methodological approaches to engineering education, which were applied in Russia before and after the Revolution, in terms of humanization and dehumanization of the society.

**AUTOMOTIVE ENGINEER TRAINING: CHALLENGES AND SOLUTIONS**

A.M. Ushenin, D.Kh. Valeev, V.S. Karabtsev
KAMAZ PTC

The paper proves the necessity for using a specific tool in engineer training, namely, mobile training laboratory equipped with all necessary facilities and provided with educational and methodological support. This mobile class will allow solidifying theoretical knowledge and developing the team work skills effective at each stage of product life cycle.

**INTERNATIONALISATION OF HIGHER EDUCATION**

National Research Tomsk Polytechnic University

The paper considers internationalization of higher education associated with the increased number of foreign students in Russian higher education institutions. Education internationalization is proven to be important through the case study of Tomsk Polytechnic University, which is one of the global leaders in the sphere of resource-efficient technologies. The authors have analyzed the specialties mostly chosen by foreign TPU students studying in Russian language.

**INSTITUTE OF ENGINEERING, TECHNOLOGY AND TECHNICAL SCIENCES FOR NEW INDUSTRY**

O.I. Rebrin, L.I. Sholina
Ural Federal University

The present paper considers the Institute of Engineering, Technology and Technical Sciences as an efficient model of university structure to provide engineering education of a new format [1] and develop the education programmes for the next generation engineering and technical professionals.
Профессионально-общественная аккредитация образовательных программ (результаты)


Профессионально-общественная аккредитация инженерных образовательных программ, проводимая АИОР, признана в большинстве развитых стран мира и является международной.

По результатам на 01.06.2016 процедуру профессионально-общественной аккредитации АИОР прошли 424 образовательные программы (первого и второго циклов) 67 ведущих вузов России, Казахстана, Киргизии, Таджикистана, Узбекистана. Европейский знак качества EUR-ACE label присвоен 343 программе. Кроме того, аккредитовано 3 образовательных программы среднего профессионального образования 3 российских техникумов. Списки аккредитованных АИОР программ регулярно направляются в Рособрнадзор и аккредитационным организациям стран-участниц Вашингтонского соглашения и ENAEE.

Наличие у вуза образовательных программ, имеющих международную аккредитацию, способствует укреплению престижа вуза в России и в мире, привлечению российских и иностранных студентов, расширению академической мобильности студентов, разработке совместных с зарубежными университетами образовательных программ, дает возможность выпускникам вуза претендовать на получение статуса профессионального инженера в международных регистрах APEC, FEANI.

Реестр образовательных программ, успешно прошедших процедуру профессионально-общественной аккредитации в АИОР, приводится далее.