Summary

SYSTEMATICITY AS A POINT OF FORCE OF ENGINEERING EDUCATION

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The author focuses on reform of Russian Engineering Education and underlines the importance of systematicity in engineering education management, in particular in professional paradigm of future engineers. Possible provisions of the Engineering Education Doctrine which is being developed are suggested. These provisions are focused on systematicity in some aspects of engineering university's activities.

ENGINEERING EDUCATION CONCEPT IN MODERN RUSSIA (PHILOSOPHIC, SCIENTIFIC AND PEDAGOGICAL ASPECTS)

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The problems of engineering education are presented in terms of modern philosophy. The importance of creative thinking in innovative activities is emphasized. The ways to develop creative skills of future engineers are discussed.

ENGINEERING EDUCATION AND ENGINEERING ACTIVITY IN RUSSIA: PROBLEMS AND SOLUTIONS

L.M. Ogorodova, the deputy of State Duma of the Federal Assembly of Russian Federation
V.M. Kress, the member of the Federal Council
Yu.P. Pokholkov, National Research
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The article analyzes the global challenges that influence Russian engineering education and industry. The information on current situation of engineering education and industry in Russia provided by the experts of the Russian Association for Engineering Education is presented. The authors suggest measures that can contribute to positive changes in Russian engineering education and industry.

ENGINEERING MASTER'S GRADUATES AS FUTURE MANAGERS IN NEW ECONOMY

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The article deals with the problems of engineering Master's Degree student training. It describes Masters' student managerial competencies, requirements for Master's student training, tasks and objectives of Master's Degree programs. The need of business and education interaction to improve engineering Master's student training is emphasized.

DESIGN AND EVALUATION OF ENGINEERING EDUCATIONAL PROGRAM LEARNING OUTCOMES

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The authors consider the design technology of engineering education programs (EEP) based on the upgraded ABET dual-level models. In its framework the proposals for the design and assessment of learning outcomes in compliance with international standards are made.

COMPETENCE-BASED APPROACH AND THIRD GENERATION FEDERAL STATE EDUCATIONAL STANDARDS

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The questions related to the introduction of Federal State Educational Standards of Higher Professional Education to the sphere of engineering training are considered in the article. The authors note the necessity of their improvement and, in particular, systematization of cultural competencies within the basic learning modules. Attention is drawn to the fact that in comparison with the second generation standards training hours in engineering Bachelor's programs have decreased.

BLOCK/MODULAR CURRICULUM – EFFECTIVE RESPONSE MECHANISM TO EMPLOYER'S CHANGING DEMANDS IN HIGHER ENGINEERING EDUCATION

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Effective training of specialists in different spheres of economics and social services can be provided by the implementation of such an education program which is focused not only on developing the competencies enlisted in the Federal State Educational Standard but also on constant revision of the content to match it with employer's changing demands. The basis of any education program is its curriculum. Traditional curricula can hardly provide students with possibility of following their own pathways which in its turn prevents them to meet the employer's changing needs. Unlike traditional one, block/modular curriculum allows students to build their study pathways like in "LEGO" constructor and at the same time to achieve the learning outcomes stated in the Federal State Educational Standard.

COMPETENCE-ORIENTED TEACHER TRAINING SYSTEM IN ENGINEERING UNIVERSITIES

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The article focuses on continuous development of teacher's pedagogical competencies within the current state of higher engineering education. The necessity to reform the existing teacher retraining system is stated. Competency-oriented and modular-based system is discussed. The experience in implementation of modular-based teacher retraining system is described.

TOWARDS THE IMPROVEMENT OF IT EDUCATIONAL PROGRAMS

S.M. Verteshev, J.V. Bruttan,
I.V. Antonov
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The article highlights inadequacy of IT educational programs with the industry requirements. Interaction patterns between Russian universities and the leading IT companies in order to revise IT educational programs are suggested.

SPECIALISTS TRAINING IN INNOVATIVE BUSINESS SAFETY ACCORDING TO NEWLY DEVELOPED DOCTRINE OF ENGINEERING EDUCATION IN RUSSIA

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The article deals with the problems of safety insurance of innovative business in compliance with the new Doctrine of Engineering Education in Russia. The necessity of systematic knowledge in technical science, economy and law is underlined. Master's degree program in "Safety Management in Innovative Business" is considered to be the most preferable. The article highlights the basic problems and objectives in training the Master's degree students in "Safety Management in Innovative Business".

SPECIALIST TRAINING AND RETRAINING IN BUILDING RECONSTRUCTION

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The article deals with the main problems of modern construction quality as well as the quality of restoration and strengthening of buildings and constructions. It underlines the urgency to train and retrain engineers for building reconstruction. The study materials developed by the Department of Ferroconcrete and Stone Designs of TSUAB are presented. They provide a methodical basis for training highly qualified specialists for civil engineering.

REQUIREMENTS FOR STUDENT RESEARCH ACTIVITY IN ACCORDANCE WITH THE STATE EDUCATIONAL STANDARDS OF THE THIRD GENERATION

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According to the State educational standards of the third generation student's research work management should be focused on the development of both general and professional competences. However, student research skills are developed at the final stage of training, particularly, while preparing graduating paper.

THE ROLE AND PLACE OF THEORETICAL MECHANICS COURSE IN MODERN MECHANICAL ENGINEERING TRAINING

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The paper deals with organizational and methodological issues related to the current teaching of theoretical mechanics course. Attention is paid to the fundamental importance of this course. Learning methods and techniques are discussed.

Public-Professional Accreditation of Curricula (Results)

Russian Association of Engineering Education (AEER) has been involved in the development and progression of public-professional accreditation system of engineering and technology programs within Russia during the last 10 years. The following issues embraces: the study of international experience history and the development of assessment criteria and requirements for engineering and technology programs, pursuant to existing international requirements. Further, Russia, represented by AEER, was admitted to the international Alliance ENA EE (European Network for Accreditation of Engineering Education). AEER was entitled to assigning the international certification label (EUR -AC E label) for accredited programs. In view of this fact, the existing quality assessment system of education programs in Russia has been acknowledged in 14 EU countries, such as Germany, France, Great Britain, Ireland, Portugal, Turkey and others.

At the same time AEER had been taking insistent measures in entering the International Engineering Alliance Washington Accord and in 2007 AEER was included in the Alliance as associated member with Provisional signatory (website WA).

In 2012 (June 14) the International Engineering Alliance Meeting (Interim Meeting 2012, Sidney, Australia) was held, where Russia, represented by AEER, was admitted to Washington Accord (Washington Agreement) as authorized Signatory member (website WA).

Russia became the 15th Signatory- country of the Washington Agreement. This implies that all engineering education programs accredited by AEER are acknowledged by other Signatories as equivalent analogue accredited programs, including such countries as USA, Canada, Great Britain, Japan, Korea, Singapore, Ireland, Australia, South Africa and other countries.

Thus, the quality assessment system for engineering education programs developed by AEER has been acknowledged by the majority of developed countries. It can be stated that a well-developed national public-professional accreditation system for engineering education programs has been established in Russia and AEER accreditation has been internationally accepted.

Based on the results (30.06.2012) 78 EUR -AC E labels were awarded to 159 accredited education programs from 30 Russian universities; while in Kazakhastan, 34 education programs from 7 universities were awarded EUR - AC E label due to international AEER accreditation.

The following Register shows the successfully accredited education programs by AEER.