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ADVANCED EDUCATION OF ELITE SPECIALISTS AND HIGHLY QUALIFIED TEAMS OF ENGINEERING EXPERTS

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The paper shows that at the current stage of the Russian education development, advanced education of elite specialists and highly qualified teams of engineering experts is considered to be the most efficient tool for enhancing competitiveness of engineering and technology. The paper studies the principles and technologies of advanced elite education.

ON THE PROBLEM OF FORMING PRODUCTIVE ACTIVITY IN ADVANCED INNOVATIVE EDUCATION

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The paper presents the concept of the pedagogical system used in supportive and innovative types of education. It is shown that advanced innovative education may form sustainable transforming intelligence. The structural model of education types is constructed.

The knowledge-based education model which can provide the basis for advanced innovative education is

developed. Besides, the model of goal-oriented work of the teacher is presented which can facilitate developing productive activity within the system of advanced innovative education.

INNOVATION MODEL OF TRAINING HIGHLY DEMANDED SPECIALISTS

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Training of specialists' capable of efficient implementation of innovative projects is among Russia's national priorities. Selection of adequate education models is one of the key issues in this field. Penza State Academy of Technology is carrying out Specialist and Enterprise Innovation Educational. The multi level approach serves as a basis for this model aimed at advanced training of highly demanded specialists.

ALTERNATIVE APPROACHES AIMED AT DEFINING CUSTOMERS' VALUES OF ADVANCED INNOVATION EDUCATION

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To define customer's value of advanced innovation education we consider the following alternative approaches:

cost-plus price, normative, market and comparative. The amount of money paid to future innovative specialists is defined in accordance with the capitalisation method in respect to all the approaches but the last one. The algorithm of its application is given below. Possibilities are evaluated and some spheres where each approach can be implemented are recommended. Being more exact and reliable the comparative approach is given preference to.

AUTOTROPHIC FORMULA OF INVENTION AND THE PROBLEMS OF ENGINEERING TECHNICAL INNOVATIVE EDUCATION

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The paper describes supplement the technical formula of invention (novelty feature, inventive level, applicability) with technospherical (material, produce, wastes) and autotrophic (autonomy, optimality, harmonicity) criteria. The definite technical material is analyzed which is related to the present and the future of atomic power engineering. The idea of technospherical and autotrophic reorganisation of the contemporary engineering and technical education is introduced.

TECHNOLOGY OF THE SCIENTIFIC INNOVATION EDUCATION PROGRAM DESIDNING OF TRAINING TECHNICAL ENGINEERING STAFF

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Present-day theoretical approach and the main kinds of innovations are considered in this article. The authors of this article highlight the importance of enterprise and country's development and concentrate their attention on the essence of specialists' training in the field of engineering innovation activity. The necessity of innovations in academic programs and education methods of HEIs is described. Some organisational schemes that form systems thinking and innovation ability of graduate are offered.

DEVELOPMENT OF AN INNOVATIVE PERSONALITY AS ONE OF THE PROBLEMS FACING ADVANCED INNOVATIVE EDUCATION

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Design and implementation of new innovative technologies is a prerequisite of modern Russia development. In order to create the innovative environment, specialists are required who are not only capable of productive creation and have very good communicative and managerial skills; there should be people who have been taught how to implement innovative approaches in various fields of human activity. Development of the human potential prepared for innovative activity is only possible provided that the learner-centred approaches are applied at all levels of the educational process. The learner-centred education should imply development of educational programmes for project education. This means that natural creative abilities of learners are taken into account, and during the process of education they can apply these abilities in various fields of activity (creative-innovative, innovative-creative, organizational-creative and public-innovative).

NEW APPROACHES TO ENGINEERING EDUCATION

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The new approaches to natural, humanitarian and economic education, as well as their interrelation and interdependence are viewed in this article. The innovation approach focuses on the problems existing in engineering education and implies development of technologies for educating specialists of higher qualification who will be capable of carrying out research in their major subject, as well as in marketing, management and economics.

ASSESSING PREPAREDNESS OF ENGINEERING UNIVERSITIES' GRADUATES TO INNOVATION ACTIVITY

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The paper considers the structure of innovation activity of graduates of technical universities with regard to different levels and fields of education. The mechanism for developing criteria and indices for assessing the preparedness of bachelors, degreed specialists and masters in engineering and technology to different forms of innovative activity is proposed. The results of assessing the preparedness of master students studying in accordance with the programme line Processing Equipment and Devices to scientific, research and teaching activity are given.

THE MODEL OF ENGINEERING EDUCATION AND STATE EDUCATIONAL

STANDARDS OF THE NEW GENERATION

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The paper considers the issues related to the choice of the training model in the present-day Russian engineering education. Such tendency in global education as competence approach to the description of training and education results is discussed. On the basis of this approach an attempt of building the structure of vocational training in engineering education is made.

INNOVATICS IN ENGINEERING EDUCATIONAL STANDARDS AND PROGRAMS

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This article analyses the problems of development of Russian innovative engineering education system, harmonization of professional and educational standards. The criteria of educational programs with an innovational component, the competence connected with innovative activity are considered as well.

TRAINING BY CREATIVITY IN PROFESSIONAL EDUCATION

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Various aspects of using Campus Media of Far Eastern Technical University in the educational process are discussed in the article. The six-year experience of running the scientific-training station of the telecommunication department of the university and working with the students of different majors is analysed.

USING RESOURCES OF INTERNATIONAL PROFESSIONAL SOCIETIES FOR DEVELOPMENT OF EDUCATION INNOVATIVE TECHNOLOGIES

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The paper reviews the possibilities of the international professional scientific societies concerning the use of their informational and other resources for enhancing engineering educational programmes. The work of the Institute of Electrical and Electronics Engineers is discussed and the advantages of individual membership in this professional society are considered. The paper shows the necessity of taking part in the work of regional branches of such societies both for teachers and students who are interested in efficient obtaining information, investing funds of international foundations into scientific and educational activity and using new educational technologies.

INNOVATIVE RESOURCE OF ENGINEERING EDUCATION HUMANITARIZATION

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The innovative type of the modern world development regards educational activity as a key factor for getting the social status; thus, higher professional education is viewed as a so-called social lift. This situation is paradoxical in nature since higher education is gradually losing its professionalisation function due to the increase in socialisation significance. The authors of this paper believe that this problem could be solved by adopting an educational policy which places the emphasis on the very existence of education and not only on the cognitive aspect of human existence.

ABOUT ORGANISATION OF EDUCATION PROCESS IN THE VIEW OF BOLOGNA DECLARATION

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The paper considers some aspects of continuous specialists' training according to the following scheme: bachelor – master – candidate of science. New approaches to the educational process organisation are analysed. Many years' experience of specialists training in accordance with the given above scheme is offered. The results of education process organisation aimed at higher degree specialist training are showed.

DIAGNOSING STUDENTS' ACADEMIC ACHIEVEMENTS IN THE CONDITIONS OF CREDIT EDUCATION

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Integration into the world educational space requires implementation of modern pedagogical technologies that allow to enhance the quality of knowledge. However, the assessment system remains unchanged and sometimes it fails to comply with the modern requirements. Tomsk Polytechnic University has established the independent expert system of assessing students' academic achievements in natural- scientific disciplines within the system of credit education.

APPLICATION OF INFORMATION TECHNOLOGIES IN FRONT END ENGINEERING DESIGN AND PARAMETERS OPTIMISATION OF CYLINDRICAL GEAR REDUCERS: PEDAGOGICAL E-LEARNING TOOLS

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The article deals with the programme "Application of information technologies in front end engineering design and parameters optimisation of cylindrical gear reducers" for project in machine design, machine design and fundamentals of designing, applied mechanics and mechanics which can be widely applied in education [1,2]. The modular approach which constitutes the basis for the programme makes it

possible to use it in a broad educational range including computer calculation, computer engineering, and other pivotal subjects in the engineering field.

UNIVERSITY INTERNAL DOCUMENTATION IN EDUCATION QUALITY MANAGEMENT

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The experience of public and professional accreditation of higher educational institutions and the outcomes of interviewing HEIs' senior management show that proper and competent drawing up of documents not only ensures consistency in education quality management but also allows to point out the positive results of the HEI's performance. Therefore, an efficient technology of documentation management is to be used for modernisation of educational practice. This can be achieved by unifying the university's document turnover and standardising its accounting documents.

THE MODEL OF VOCATIONAL TRAINING OF AN ENGINEER IN THE CONDITIONS OF THE INTEGRATED EDUCATIONAL SYSTEM (EDUCATIONAL-INDUSTRIAL ENVIRONMENT)

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The paper presents the model of organizing the educational process which involves both academic and practical

training at an industrial enterprise. This model allows to smoothen the discrepancies between the requirements of the contemporary labour market to the level of the university graduate's professional education and the conditions of education. Educational-industrial environment contains all the resources of the university's laboratories, including information and communicative means. The role play is used as a leading pedagogical technology.

IMPLEMENTATION MODELS OF JOINT EDUCATION PROGRAMMES AT BAUMAN MOSCOW STATE TECHNICAL UNIVERSITY

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The paper presents the description of models of implementation of joint international programmes at Bauman MSTU. These models are aimed at improvement of specialists' training and developing the graduates' skills required in the labor market, elaboration of education documentation, and curriculum management. besides, the article deals with procedure of design and appraisal of international education programmes.

FORMATION OF INTEGRATIVE CULTURE OF SPECIALISTS IN THE PROCESS OF TRAINING STUDENTS OF ECONOMICS AND MANAGEMENT FACULTY

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The article considers the issues connected with possibilities of forming integrated professional skills of managers

on the basis of integrative curriculum of the course Conflict Studies. The authors suggest the algorithm of the course development is and a system of interdisciplinary course and case-study tasks to form complex specialists' skills.

STRATEGY AND TACTICS OF QUALITY MANAGEMENT SYSTEM IN TYUMEN STATE OIL AND GAS UNIVERSITY

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The article presents the concept of strategy and tactics of quality management system in Tyumen State Oil and Gas University. The results of its efficiency as well as goals contributing to its effective development within the period of 2006–2010 academic years are described.

MANAGEMENT OF HEI'S INFORMATION FLOWS AS A SUBSYSTEM OF INNOVATION EDUCATION

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The paper considers the issue of providing access to information being regarded as one of the most crucial problems in the development of open education. The solution to this problem is discussed from the point of view of creating the uniform information space of a higher educational institution. The system of managing university's information flows is presented as a subsystem of innovative education.

ROCKET-AND-SPACE EQUIPMENT AND TECHNOLOGIES AS THE BASE FOR MODELS OF

INNOVATIVE PROFESSIONAL EDUCATION

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Today, successful activity of Krasnoyarsk aerospace complex should go along with the development of effective system of education. When elaborating the innovative models of professional education, a special emphasis is placed on rocket-and-space advanced technologies. Application of such models requires new approaches aimed at formation of new state educational standards.

ON EVOLUTION OF THE REGIONAL UNIVERSITY

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The paper considers the conceptual models of planning, organising, managing and improving the educational process of the regional university. By implementing these models a higher educational institution will acquire the properties of the innovative university which will enable to provide quality education to practical-skill oriented specialists with differentiated or integrated professional traits.

TRIUNE MISSION OF A PEDAGOGICAL EXPERIMENT IN IT-EDUCATION

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This article considers the results of a pedagogical experiment in IT education. This experiment is meant to solve

three problems: increasing quality of the education, carrying out a scientific research, and developing the new programming technology based on finite state machines.

MANAGEMENT SYSTEM MODELLING AIMED AT PERSONNEL PROVISION

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Nowadays it is essential to set new priorities in the field of education as this system is considered to be a regulation instrument concerning personnel maintenance issues. Business model of personnel maintenance system, which describes personnel maintenance as well as strategic and calculating charts corresponding to this business-model are considered in this article. These charts allow us to carry out both monitoring and adjustment of the processes on regular bases.

ENGINEERING EDUCATION AND INFORMATION MANAGEMENT SYSTEMS

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Management information systems provide new opportunities to enhance society's economic and social performance. However, the potential for the new technologies cannot be fully satisfied on account of certain weaknesses of the existing education system. The paper focuses on environment requirements and existing positive experience of MIS education and proposes an advanced innovative education approach for MIS curricula development.