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Dear readers,

The issues of interdisciplinarity (transdisciplinarity, multidisciplinarity) are always relevant and topical in scientific and educational field when searching for the ways hot to improve the effectiveness of different types of intellectual activity, like learning and teaching, basic and applied research or real engineering problems solving. First of all, we expect to get new synergetic effect or unexpected results at the intersection of disciplines (scientific fields). This approach results in emergence of new areas of research and training at the intersection of sciences. Today there are a lot of examples to prove that: biochemistry and biophysics, bionics and medical electronics, chemical cybernetics, system engineering and many others. However the benefits of implementing such interdisciplinary projects become aware after quite a long time, and that is unacceptable nowadays. Delay in benefits to appear mainly depends on the methods how interdisciplinary projects are organized and managed on the early stage. Involvement of experts in various fields to solve complex problems in any field of engineering activity does not assure such effects as novelty and synergy. By the form how project is organized it is often called an interdisciplinary one but in fact the final results of such projects represent just the sum of contributions to the cause made by experts in various fields. A striking example of such kind of projects is the curricula of engineering educational program. From the very beginning development of such program is based on recommendations or even mandatory requirements to the ratio and volume of various disciplines in different cycles of training: humanities, natural sciences, mathematics, sociology and economics, general engineering. Then each member of the project

develops curricula of his/her discipline (course), and often prefers to use the previously developed programs. Among the best but unfortunately not so frequent cases, examples of the scope of the future specialist are included in the contents. And of course lack of such good cases leads to an abstract perception and poor understanding of these disciplines by future engineers. It results in approach with "little about everything and nothing about the main point". This way of training "motivates" to study only already motivated students. Of course, it helps to help develop the students' ability, so to say, to work out "intellectual muscle", which will be helpful to the university graduate for engineering problems solving. But in order to get this he has to switch on his own from abstract mathematical theorems to mathematical modeling in engineering, technology and other practical issues. And if afterwards such abstract knowledge will be required within special disciplines, it is not easy to "extract" and apply them from memory even for a diligent student. And the picture becomes more depressing when talking about interaction of humanities, social and economic disciplines with special disciplines. The probability to achieve synergetic effect by introducing such program is extremely small. However some positive implications of such educational programs may still appear in new engineering solutions and developments, but it will take years while all these disparate courses are lined up in the head engineer in a comprehensive way, allowing him/her to solve complex (and may be multidisciplinary) problems.

It seems that positive changes could be made if outcome-based (competency based) approach is implemented when designing educational programs. However, the current high level of bureaucracy of the proc-

ess, leads to the formal execution of the document, rather than to creating real conditions for synergetic effect, conditions for improving the quality of engineering training.

The same covers research and engineering interdisciplinary projects that should be laboratory and production base for future engineers training. As a rule, such projects arise spontaneously at engineering universities; this activity is not encouraged nor controlled by university management. In our opinion, one of the main and common obstacles to the development of Interdisciplinarity in engineering education is the lack of methodological tools for development and implementation of interdisciplinary projects.

Association for Engineering Education of Russia, following its main objective to improve engineering education, held an International Conference “Interdisciplinary Projects Management in Engineering Education: Planning and Executing” in Portugal in May 2014. The co-organizers of the conference were: International Federation of Engineering Education Societies (IFEES), Instituto Superior de Engenharia de Lisboa (ISEL), Instituto Superior de Engenharia do Porto (ISEP), Gubkin Russian State University of Oil and Gas, Don State Technical University (DSTU).

Representatives of 10 Russian universities, foreign experts in development and implementation of interdisciplinary projects from Denmark, Italy, USA and Portugal took part in the Conference. Participants learnt more about the methodology and international best practices of interdisciplinary projects management in engineering education. Within the conference, aimed at advancing skills of scientific and pedagogical staff and managers of engineering universities, participants completed practical tasks on the development of interdiscipli-

nary projects in engineering education by themselves. At the “Round Table” participants together with the experts identified the main obstacles of developing and implementing interdisciplinary projects in engineering education and outlined ways how to meet the challenges.

The current issue of the journal “Engineering Education” is dedicated to the important and topical issue: “Interdisciplinary projects in engineering education.” Some of the published papers were discussed at the conference and were noted as deserving attention of a wider academic community. Articles submitted to this issue may become the starting point for discussion of a wider topic in the engineering educational community – searching for the ways how to improve the quality of engineering education in Russian universities, and development and implementation of interdisciplinary projects as one of the major tools for success.

Sincerely,  
Editor-in-Chief,  
Prof. Yury Pokholkov

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