EUR-ACE Standards as a Framework for Curriculum Design: ECDEAST Project

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Financed by TEMPUS grant ECDEAST project is aimed to ensure that Russian universities have advanced curricula for programmes in line with new development in the chosen engineering areas and according to the Bologna Process (EQF) and European standards for the quality of engineering education (EUR-ACE). The EUR-ACE Framework standards define programme outcomes for engineering degree programmes. The alignment of EQF & EUR-ACE Standards with Russian educational standards requirements to structure of programmes and graduates’ competencies is one of the challenging tasks for Russian universities and the project partners as well. The paper reviews the project state-of-art and outputs.

# THE PROJECT DESCRIPTION

The ECDEAST is a TEMPUS [1] aimed at development of master engineering programmes by Russian universities according to the Bologna Process (EQF) [2] and European standards for the quality of engineering education (EUR-ACE) [3]. Three Russian partners of the project are granted their rights to develop degree programmes beyond requirements of national educational standards.

The EUR-ACE Framework standards define programme outcomes for engineering degree programmes. These programme outcomes describe in general terms the capabilities required of graduates from accredited First Cycle (Bachelor) and Second Cycle (Master) engineering programmes as an entry route to the profession.

The alignment of EQF & EUR-ACE Standards with Russian educational standards requirements to structure of programmes and graduates’ competencies is one of the challenging tasks for Russian universities and the project partners as well.

## Objective

The ECDEAST project objective is to ensure that Russian universities have advanced curricula for programmes in line with new development in the chosen engineering areas and according to the Bologna Process and European standards for the quality of engineering education (EUR-ACE Standards [3]).

## Partners

The project consortium consists of following partners:

* TPU – Tomsk Polytechnic University (Russia)
* BMSTU – Bauman Moscow State Technical University (Russia)
* SPbSPU – Saint-Petersburg State Polytechnical University (Russia)
* HSW – Hochschule Wismar (Germany)
* KTU – Kaunas University of Technology (Lithuania)
* LBUS – Lucian Blaga University of Sibiu (Romania)
* SEFI – Société Européenne pour la Formation d'Ingénieurs
* ENAEE – European Network for Accreditation of Engineering Education

## Specific Project Objectives

Three Russian universities with help of European partners jointly will:

* develop a methodology for engineering curriculum design based on the alignment of EQF & EUR-ACE Standards with Russian educational standards requirements to structure of programmes and graduates’ competencies;
* train the faculty to design engineering curricula according to EUR-ACE requirements with using of ECTS;
* develop/update and implement 3 master engineering programmes and course modules materials at TPU, BMSTU and SPbSPU according to EUR-ACE requirements with using of ECTS and Dublin Descriptors;
* prepare the developed programmes for accreditation with awarding of the EUR-ACE label.

## Outputs

The project duration is three years. The following outputs are expected:

* Guidelines on engineering programme design;
* New curricula of 3 engineering programmes at TPU, BMSTU and SPbSPU (one in each);
* Updated syllabi and teaching materials of courses and modules with ECTS credits allocated to learning outcomes;
* Trained faculty of TPU, BMSTU and SPbSPU for curriculum design (at least 25 faculty staff in each );
* Experience gained through teacher exchange, then shared;
* New programmes implemented at TPU, BMSTU and SPbSPU (one in each);
* Programmes evaluated by peers against EUR-ACE Standards;
* Informative project website, promotional materials disseminated;
* Book on engineering curriculum design.

# PROJECT ACTIVITIES

Within the project duration several conferences and workshops are to be organized in Russia and Europe for the dissemination and discussion of the project outcomes among academic and professional communities. Interested parties are highly invited to share their experience in engineering curricula design and related topics.

The first year (2010-2011)

* Kick-Off Meeting, Wismar, Germany
* Workshop on European and national standards alignment, Kaunas, Lithuania
* Preparation of the draft of Guidelines on engineering programme design
* Annual project monitoring report
* Engineering faculty training workshops at TPU, BMSTU and SPbSPU
* Curricula design of selected programmes at TPU, BMSTU and SPbSPU

The second year (2011-2012)

* Workshop on developed curricula, Sibiu, Romania
* Preparation of syllabi, teaching materials, handbooks etc. for selected programmes
* Annual project monitoring report
* Quality meeting of Project Board and TEMPUS representatives, Moscow, Russia
* Conference and approval of developed programmes, St. Petersburg, Russia
* Finalization of the Guidelines on engineering programme design

The third year (2012-2013)

* Implementation of new/updated programmes at TPU, BMSTU and SPbSPU
* Evaluation of programmes by peers against EUR-ACE Standards
* Annual project monitoring report
* Final Dissemination Conference, Moscow, Russia
* Improvement plan for new/updated programmes at TPU, BMSTU and SPbSPU
* Report on project results to Ministry of Education and Science of RF
* Book on engineering curriculum design
* Project Closing Meeting, Wismar, Germany

The detailed information about project is available on its website [4].

# CONCLUSION

The programmes developed within the project are to meet the requirements of the third generation national standards and EUR-ACE Standards for engineering programmes both. The development and implementation of master programmes in engineering by leading Russian engineering schools will be an important step for Bologna process in Russia where the introduction of 3 cycle degree goes very slowly (about 7% students in 2009). The experience gained in the project by Russian universities will be distributed through the Educational and Methodological Association of Engineering Institutions of Russia, which being an entity of BMSTU responsible for framework standards of engineering study programmes and their dissemination among a great deal of technical universities of Russia.

During the project life time it is assumed to develop and publish the Guidelines on engineering curriculum design based on alignment of Russian and European requirements to engineering graduates’ competences. The Guidelines on engineering curriculum design being developed as methodological recommendations will be presented for academic staff of partner universities and after approval will be available through the project website in Russian and in English.

Finalizing the project the consortium will organize the conference in Moscow with broad participation of the Russian academic and professional community. The representatives of the Russian governmental structures (from the Ministry of Education and Science, the State Duma Committee on Education, the Federal Service for Supervision and Licensing in Higher Education) will be invited to attend. The project outcomes and the best practices are to be spread among the Russian engineering schools and the engineering community.

# REFERENCES

1. The Tempus Programme web-site. http://eacea.ec.europa.eu/tempus/index\_en.php (accessed 2012-07-23)
2. The European Qualifications Framework web-site. http://ec.europa.eu/education/lifelong-learning-policy/eqf\_en.htm (accessed 2012-07-23)
3. The EUR-ACE Framework Standards. http://www.enaee.eu/wp-content/uploads/2012/01/EUR-ACE\_Framework-Standards\_2008-11-0511.pdf (accessed 2012-07-23)
4. The ECDEAST project web-site. http://ecdeast.tpu.ru (accessed 2012-07-23)