



OVERVIEW REPORT FOR *ENVIRONMENTAL ENGINEERING* STUDY FIELD

2016

INTRODUCTION

This report is based on the external quality evaluation of the following study programmes in the study field of *General engineering* (branch of the study field – *Environmental engineering*) in Lithuanian Higher Education Institutions: at Klaipėda University – *Marine Environment Engineering*; Vilnius Gediminas Technical University – *Environmental Protection Engineering*; Panevezys College – *Environment Protection*; Kaunas University of Technology – *Environmental Engineering* first and second cycle; Kaunas Forestry and Environmental Engineering University of Applied Sciences – *Hydraulic Engineering*.

The external evaluations were organised by the Lithuanian Centre for Quality Assessment in Higher Education (SKVC), and performed according to the evaluation areas and criteria: (1) Programme aims and learning outcomes, (2) Curriculum design, (3) Teaching staff, (4) Facilities and learning resources, (5) Study process and students' performance assessment, and (6) Programme management.

Comprehensive external evaluation reports including strengths and weaknesses and concluding with some recommendations were prepared for each evaluated programme and included evaluation marks. This overview focuses on the main findings of the external evaluation of the *Environmental Engineering* study field from a general point of view.

All programmes received *positive* evaluation.

OVERVIEW BY EVALUATION AREAS

The most positive aspects and areas for improvement in the aforementioned six evaluation areas can be summarised as follows:

1. Programme aims and learning outcomes

Positive aspects:

The programme aims and learning outcomes (LOs) are in general consistent with the type and level of studies and the qualification offered. The aims and LOs are clearly defined, publicly available, and focussed on academic and professional requirements, public needs, incl. labour market needs and the for lifelong learning. The programmes have been improved following the recommendations of the previous evaluation in 2012 and 2013. In general, the programme LOs are formulated following the requirements of *General Regulation of Technological Sciences (Engineering) Study Field*, compatible with the *EUR-ACE Framework Standards for the Accreditation of Engineering Programmes*, and referring to the environmental engineering context.

Areas for improvement:

An important aspect needing revision is linking the programme LOs with subjects. The tendency is to cover the programme LOs with maximum number of subjects, while having forgotten that all these LOs need to be assessed properly. The subject LOs are fairly detailed, but teaching and assessment methods are almost the same for different LOs. The programme LOs are not always formulated in such a way that during an assessment process it can be determined whether the student has achieved the LOs. The assessment criteria used are not contextualised, i.e. it is not explained, what a particular grade means in the context of the subject course. Therefore, it is recommended to be more consistent and critical in implementing the constructive alignment of the programme aim, LOs, subject LOs, teaching and learning, and student assessment.

2. Curriculum design

Positive aspects:

The curriculum design follows the *General Requirements for the First Degree and Integrated Study Programmes*, and is sufficient to ensure the programme LOs. In general, the content of the subject courses ensures a good coverage of topics in Environmental Engineering, while maintaining consistency with the type and level of the respective cycle of studies. Often the curriculum design is adjusted to the needs of full-time and part-time students.

Areas for improvement:

Modularised approach to curriculum design with larger modules of standard size (e.g. 6 ECTS) would increase the flexibility of programme implementation and support students' mobility. The development of foreign language competence and other transversal competences (e.g. teamwork, entrepreneurship, management) needs to be reconsidered, not just relying on special subject courses, but also by incorporating them in other subjects. The principles of constructive alignment of the programme aims and LOs, module or subject LOs, and students' assessment needs to be fully implemented.

3. Teaching staff

Positive aspects:

The programmes have dedicated and motivated teaching staff meeting the legal requirements. Supportive and friendly relations with students.

Areas for improvement:

Though the qualification of the teaching staff is adequate to ensure achievement of intended LOs, they need systematic training in implementing the principles of constructive alignment and LOs based approach. In general, the foreign language competence of teachers is quite poor, which has a cascading effect to other fields of teachers' activity (research, international mobility, teaching international students, participation at international scientific events and in international R&D projects). Teaching staff should also be trained and encouraged adopting and developing new methods of

course delivery (e.g. active learning or “flip learning”).

4. Facilities and learning resources

Positive aspects:

In general, classrooms, laboratories, equipment, library facilities, computers and software are adequate and sufficient to deliver the Environmental Engineering programmes. The institutions provide students with adequate and accessible teaching materials (textbooks, methodical support materials scientific periodicals, databases etc.).

Areas for improvement:

The Moodle-based Course Management System could be utilised more, not only in terms of expanding list of courses available but also in terms of more interactive delivery of tasks.

5. Study process and students’ performance assessment

Positive aspects:

The student admission requirements and procedures are well formulated, publicly available and correspond to legal regulations. The institutions have well developed academic and social support system for students. Supportive and friendly relations of students with teachers and administration have been established.

Areas for improvement:

International mobility of students and staff needs to be promoted. High drop-out rate of students must be tackled not only as a technical issue, but also with respect to curriculum design. Improving practical skills of students according to the labour market’s needs is a universal requirement for all types of programmes. The assessment system (methods and criteria) have to be constructively aligned to the programme and subject LOs. The assessment criteria must be contextualised, i.e. explained, what a particular grade means in the context of the subject course. International learning environment, incl. possibilities for Lithuanian and English speaking students to study together need further development.

6. Programme management

Positive aspects:

The institutions increasingly concentrate on programme quality assurance. Involvement of all stakeholder groups in programme management has improved. Separate Programme Committees for each programme have been established in several institutions.

Areas for improvement:

The programmes need clear ownership by a Programme Committee involving representatives of students and employers, and a Programme Director. The programme management and quality assurance processes need better formalisation. The Programme Committees have to assume the leading role in implementing the principles of constructive alignment in the programme design and implementation, and develop students' and other stakeholders' understanding of LOs based approach.

MAIN STRATEGIC RECOMMENDATIONS FOR THE IMPROVEMENT OF STUDY PROGRAMMES IN *ENVIRONMENTAL ENGINEERING* STUDY FIELD

➤ Strategic recommendations at institutional level (for Higher Education Institutions):

- Organise institution-wide systematic training and support of teaching staff in implementing the principles of constructive alignment in programme design and delivery;
- Operationalise the development of transversal competences (teamwork, foreign language competence etc.) throughout the programmes using different learning methods;
- Strengthen ownership of study programmes.

➤ Strategic recommendations at national level (for the Ministry of Education and Science):

The *General Regulation of Technological Sciences (Engineering) Study Field*, compatible with the *EUR-ACE Framework Standards for the Accreditation of Engineering Programmes* is valid since September 2016. This is an important step towards full implementation of LOs based approach in the field of engineering higher education. The institutions have reportedly already revised their study programmes following the new regulation. However, full implementation of the LOs based approach needs following the principles of constructive alignment throughout all programme design and implementation processes. In this respect, the LOs based assessment of students is the most critical aspect. This involves also revising the existing grading system in the context of generalised assessment criteria defined on three levels (pass, medium, excellent) in the new regulation.

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