



CENTER FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

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**OVERVIEW REPORT FOR Energy Engineering STUDY FIELD**

2021 year of the evaluation

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## I. INTRODUCTION

The overview is based on the external quality evaluation of the Energy Engineering study field in the following Lithuanian Higher Education Institutions (HEIs): Kaunas University of Technology, Vilnius College of Technology and Design, Vilnius Gediminas Technology University and Vytautas Magnus University.

The external evaluations were/were organised by the Lithuanian Centre for Quality Assessment in Higher Education (SKVC).

Comprehensive external evaluation reports including strengths and weaknesses and concluding with recommendations were prepared separately for first and second cycle fields of study and included evaluation marks. This overview focuses on the main findings of the external evaluation of the Energy Engineering study field from a general point of view.

Based on the findings of Energy Engineering study field evaluation, the expert panel has come to a decision to give **positive** evaluation to the following HEIs: Kaunas University of Technology for the first and second study cycles, Vilnius College of Technology and Design for the first study cycle, Vilnius College of Technology and Design for the first and second study cycles and Vytautas Magnus University for the second study cycles

Based on the findings of Energy Engineering study evaluation, expert panel have come to a decision to not to give **negative** evaluation to any of the four HEIs visited in either first or second study cycles.

On the basis of external evaluation report of the study field SKVC takes a decision to accredit study field and cycle either for 7 years or for 3 years. If the field evaluation is negative such study field is not accredited.

## II. STUDY FIELD OVERVIEW BY EVALUATION AREAS

Overall observations by the expert panel regarding the most positive aspects of the study field in Lithuanian HEIs as well as areas in need of improvement. The analysis covers all 7 evaluation areas.

### 3.1. Intended and achieved learning outcomes and curriculum

The expert panel found that all the institutions visited put a great effort in ensuring that their study programmes conform with the mission of the university and are designed to meet the needs of the society and labour market. They achieve this through extensive engagement with social partners and alumni and looking into government policies and future directions of the energy market in the country. This helps develop programmes that prepare students to meet the current needs in the employment market, but also to be prepared to adapt to the fast-changing landscape with increased local generation of power using renewables, digitalisation and automation among other important developments.

The institutions make efforts to create external cooperation and partnerships in relation to their programmes. The aims of the study programmes are appropriate to the level of study and are usually in line with the expected learning outcomes and they are structured to ensure consistent development of the competences of students. All institutions offer optional courses

allowing students to personalise their studies and students usually make use of the opportunities to choose topics according to their personal learning objectives.

The study aims and learning outcomes reflect the areas of strength in education and research as well as the background of each of the four institutions visited. Some intuitions are involved with national and international research project that are used to support student's education, in particular at the Master level.

### **3.2. Links between science (art) and studies**

It is important for high education institutions to get engaged in scientific research, in particular in areas related to their fields of study. Other than conducting research that impacts society, it has the advantage that this research underpins education of students, particularly for the first and second study cycles through at least two ways; firstly, it keeps the teachers at the forefront of the developments in their areas of specialisation enabling them to deliver high quality and up to date education; secondly, it enables providing students with projects that are related to research and hence of direct relevance to latest developments.

Though to a varying degree, depending on the level of research activity in the institutions evaluated, the expert panel has found that there is awareness and drive in all institutions of the importance of the engagement of their teaching staff in research. Support to this was manifested in several forms that are varied from encouragement and financial support to research activities to financial incentives. Interviews with students showed that many of them have been engaged in research related projects in relation to their thesis, particularly those in the second cycle of study, and that they found this very interesting. They also expressed that the university provides the necessary support for them to get engaged in research projects.

### **3.3. Student admission and support**

Student admissions for undergraduate studies in Lithuania is regulated by government by setting minimum competitive admissions score and hence only capable students are accepted into the state-funded studies. For Masters, studies, the institutions apply a more flexible approach and, in some cases, admit foreign students into the programmes. The main factors in this case are related to the scientific background of the students.

The reviewed institutions have shown to recognise previous qualifications and experience of potential students as well as having a clear system to recognise modules from foreign studies, thus paving the way for widening participation.

The flexibility of the admissions system, could in principle lead to attracting a wide range of students, particularly in an important and growing energy market. This has led to relatively stable, but somehow gradually decreasing numbers of students undertaking the Energy Engineering study programmes, which poses a major challenge student admission.

The institutions reviewed have recognised this issue and identified the main causes to be related to the decreasing numbers of students undertaking science subjects at the schools. To rectify this issue in the long term, the institutions have embarked on campaigns of visiting schools and publicising the importance of science education among school children. For the short term, however, it is important to work on further measures to improve admissions. All institutions have recognition of the importance of student's mobility and put in place processes to support it. The low level of outgoing mobility however is recognised and it is understood to be related to economic factors beyond the institutions ability to resolve.

All evaluated institutions have put in place effective processes for academic, social and personal support for students including counselling services and these are communicated to students effectively using multiple channels.

### **3.4. Teaching and learning, student performance and graduate employment**

The study processes and learning methods are generally clearly described and communicated to students. It was found that there is a wide selection of active teaching methods allowing students to experience a variety of learning approaches.

Students that are socially vulnerable and those with special needs receive particular attention from all the reviewed institutions and provision to enable such students to undertake their studies without difficulty. The institutions also organise events to publicise these provisions.

The progress of the students is monitored using clear and well-defined processes which is combined with a clear review procedure by the institutions to ensure adequacy of the monitoring methods.

All institutions ensure that students are given feedback on their assessed work to ensure continuous improvement. It is found however that there is no general guidance or training on providing effective feedback leading variability in quality and effectiveness.

There is generally a strong relationship between the institutions and social partners, including employers who participate in assessments of thesis and provide institutions with regular feedback through surveys and discussions to ensure continuous improvements, particularly in relation of the relevance to the job market.

### **3.5. Teaching staff**

Generally, staff in the reviewed institutions have a variety of qualifications and competencies that are sufficient for effective delivery of the study programmes. Though to a varying degree, many staff are engaged in relevant research that underpins the education of both cycles of study. The institutions provide adequate support and training and make it compulsory for teachers to undertake continuous professional development to ensure improvements in the delivery of the study programmes. It is however necessary to expand the range of courses offered to staff to improve their competencies.

Academic mobility however requires attention and improvement for both outgoing and incoming visitors. There is no clear encouragement from the institutions. Actions to encourage higher mobility in the staff is needed, especially in attracting researchers from abroad to participate in the study field, both in lectures and in research collaboration.

### **3.6. Learning facilities and resources**

The expert panel evaluated the facilities remotely due to Covid-19 pandemic. It was not possible to physically visit the classrooms and laboratories and hence the review relied on the Self-Assessment Report, Videos prepared by the institutions and video interviews of relevant staff and students. The Expert panel took the view to review the facilities as used in a normal time rather than remote teaching during the pandemic as this is considered a short-term process. It was generally found that all institutions have suitable classrooms, laboratories and library provisions to enable effective delivery of the study programmes. Generally, there is some investment in the maintenance and upgrade of equipment, particularly in laboratories. However, it was found that there is significant under-investment in the long term for modernisation or maintenance of lab facilities and in some cases, there is a large reliance on

research project funding to provide new equipment which is not meant to provide equipment for undergraduate and MSc education.

### **3.7. Study quality management and public information**

The institutions assessed take great effort to provide adequate procedures of quality management. They provide documents outlining procedures and guidelines to enable effective management of their programmes. Expert panel is satisfied of the level of involvement of students and other stakeholders in the evaluation process of the programmes and of the effectiveness of the process.

It was found that the process of collecting and use of data from stakeholders; students and social partners, about the study programmes and their improvements are adequate. The quality management process regarding the social partners is also a mixture of formal procedures and informal, individual networks. Both approaches complement each other, however, there is some variation between the institutions in terms of the institutions and effectiveness of engagement with social partners.

## **III. EXAMPLES OF EXCELLENCE**

A good example of excellence was found in Kaunas University of Technology (KTU). The institution has a strong research culture where the institution put in place measures to support teaching staff to conduct research relevant to the study fields. It was also found that students are encouraged to get involved in research projects during their thesis projects. It was also found that a significant number of staff have part time jobs in industry relevant to the study field and that they feed the industrial experience to students and form strong links between the institution and industry. It was also found that KTU puts great emphasis on creating external cooperation and partnerships in relation to the Energy Engineering study programmes.

## **IV. RECOMMENDATIONS**

### **MAIN STRATEGIC RECOMMENDATIONS FOR THE IMPROVEMENT IN ENERGY ENGINEERING STUDY FIELD**

- **Strategic recommendations for the Higher Education Institutions (at institutional level):**
  1. While in some institutions, the expert panel found that there is a strong research culture that supports the Energy Engineering study programmes, this was found to be at a much lower level in some of the intuitions and those need to put more effort in supporting and encouraging research.
  2. The expert panel found invariably that there is no coherent plan for long term investment in laboratory facilities and this is required to be addressed to ensure long term suitability of labs to support the fast-changing Energy Engineering study field.

3. There should be a more rigorous and consistent process of providing feedback to students on their assessed work to ensure that it supports the students learning effectively.

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

1. Student admissions to the Energy Engineering programmes has been declining for several years in all institutions reviewed. This reflects the national nature of the problem. Institutions reviewed pointed out that this is related to the reducing of interest of school children in science and mathematics topics. There may be further factors behind this problem. It is recommended that this issue attracts more attention and eventually specific actions from the Ministry of Education and Science.
2. It seems that institutions rely on their own sources, through contacts with social partners in identifying the needs of the job market in Energy Engineering in the country, and hence they make their own judgement in the specifics in the study field. The Ministry of Education should consider this to be a national issue and commission studies to support the institutions in decisions on the future direction of their programmes.