STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

KAUNO TECHNOLOGIJOS UNIVERSITETO

# STUDIJŲ PROGRAMOS *STATYBŲ TECHNOLOGIJOS* (612J80002) VERTINIMO IŠVADOS

---

# EVALUATION REPORT OF *BUILDING TECHNOLOGIES* (612J80002) STUDY PROGRAMME AT KAUNAS UNIVERSITY OF TECHNOLOGY

| | |
|---|---|
| Grupės vadovas:<br>Team leader: | Dr. Mark G. Richardson |
| Grupės nariai:<br>Team members: | Prof. Philippe Bouillard |
| | Prof. Juris Rihards Naudžuns |
| | Doc. dr. Vaidotas Šarka |
| | Tomas Pupinis |

Išvados parengtos anglų kalba
Report language – English

Vilnius
2014

## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

| | |
|---|---|
| Studijų programos pavadinimas | ***Statybų technologijos*** |
| Valstybinis kodas | 612J80002 |
| Studijų sritis | Technologijos mokslai |
| Studijų kryptis | Statybų technologijos |
| Studijų programos rūšis | Universitetinės studijos |
| Studijų pakopa | Pirmoji |
| Studijų forma (trukmė metais) | Nuolatinė (4 m.), ištęstinė (6 m.) |
| Studijų programos apimtis kreditais | 240 ECTS |
| Suteikiamas laipsnis ir (ar) profesinė kvalifikacija | Statybų technologijų bakalauras |
| Studijų programos įregistravimo data | Lietuvos Respublikos švietimo ir mokslo ministro 2011 m. kovo 10 d. įsakymu Nr. SR-990 |

---

## INFORMATION ON EVALUATED STUDY PROGRAMME

| | |
|---|---|
| Title of the study programme | ***Building Technologies*** |
| State code | 612J80002 |
| Study area | Technological Sciences |
| Study field | Building Technology |
| Kind of the study programme | University Studies |
| Study cycle | First |
| Study mode (length in years) | Full-time (4 years), part-time (6 years) |
| Volume of the study programme in credits | 240 ECTS |
| Degree and (or) professional qualifications awarded | Bachelor of Building Technology |
| Date of registration of the study programme | 10 of May 2011, under the order of the Minister of the Ministry for Education and Science of the Republic of Lithuania No. SR-990 |

© Studijų kokybės vertinimo centras
The Centre for Quality Assessment in Higher Education

# CONTENTS

# I. INTRODUCTION

This report presents the findings of an evaluation of the programme ***Statybų technologijos*** (state code 612J80002), ***Building Technologies*** at Kaunas University of Technology (hereafter – KTU). This four year full-time (6 years part-time) programme leads to a Bachelor of Building Technology qualification. The programme commenced on 01/09/2011 and therefore has not been previously reviewed. The programme is in the Building Technology (J800 series) study field and shares many study subjects with a first cycle study programme in the Civil Engineering (H200 series) study field at KTU. The first students were admitted in 2011 but there was not a sufficient intake in 2012 to form a viable class. Admission recommenced in 2013. Therefore at the time of the review there were no alumni of the programme, no employers with experience of the specific graduate attributes of the programme, no final year project coursework, and the student groups were limited to those currently in Year 1 and Year 3 of this four-year long programme. Nevertheless the 5-member international Review Group was furnished with sufficient evidence to make recommendations at this early stage of the programme‘s development.

The Review Group were furnished in advance with a Self-evaluation Report (hereafter – SER), dated 2013, which included comprehensive annexes. Some of the material in the report, by necessity, had to report on future intentions rather than existing facts (e.g. final project assessment). Further evidence was gathered during a site visit, which took place on 18 February 2014, including updates on changes to management structures since the SER was written. Discussions were held with the Dean, senior faculty administration staff, staff responsible for preparation of the SER, teaching staff, students (Year 1 and Year 3 only) and prospective employers. An evaluation was conducted of teaching premises and equipment including library, laboratories, auditoria and computing facilities (hardware and software). A limited amount of coursework was available for review, though this, of course, could not yet include final projects.

The review was conducted in accordance with current regulations and guidance furnished to the Review Group through documentation and training by SKVC. The Review Group was also expertly assisted by Ms. Eglė Grigonytė in discharging its responsibilities to SKVC.

## II. PROGRAMME ANALYSIS

### *1. Programme aims and learning outcomes*

The life cycle of a building involves three distinct phases: design, construction and maintenance. The KTU *Building Technologies* study programme aims appropriately address aspects of the graduate attributes required for the second phase. These aspects involve greater emphasis on the skills of a construction manager than those of a designer (as addressed in civil engineering programmes). This distinction has been recognised by the establishment of 'Building Technologies' as a distinct study field (J800 series) separate to the 'Civil Engineering' study field. The programme aims and the intended learning outcomes are publicly accessible on KTU website:http://uais.cr.ktu.lt/plsql/mod_dest/stp_report_ects.card_ml?p_valkod=612J80002&p_year=2014&p_lang=EN (both in Lithuanian and English languages). From the presented information the programme aims and intended learning outcomes are clear and well defined.

The studies of building technology are necessary in every country. The study programme in this field is therefore relevant to the market. The Review Group noted market needs presented within the SER and articulated during meetings with the social partners. Data was derived from the Lithuanian Labour Exchange and from surveys of construction sector employers. A regional context was also noted whereby graduates from Vilnius Gediminas Technical University building technology bachelors (*Building Technologies and Management* study programme) usually remain working in Vilnius region, but the majority of construction companies in Lithuania are concentrated in both Vilnius and Kaunas.

Statistical data presented in the SER demonstrates the cyclical nature of the construction industry, ranging from the highest growth level in 2008 to the deepest construction crises in 2010. Nevertheless current needs for the programme are verifiable in the context of the actual changes since then within the Lithuanian economy and construction sector growth through export of construction products. Furthermore, the programme addresses the national needs in respect of future infrastructure needs and, very importantly, upgrading of the existing building infrastructure stock (as it is stated in SER, around 90 percent of Lithuanian houses were built in 1990 or before, most of them are energy consuming and have to be renovated). As it can be seen from the provided documentation, the needs of the study programme are clear, well described and align with public pronouncements on societal and economic needs to expand training of professionals in the region.

The relevance of the programme was also confirmed by the main social partners, both through written material provided to the Review Group and comments from employers who attended during the site visit. In the meeting with social partners, one of the leaders within the Lithuanian industry prefabricated reinforced concrete industry expressed that a gap exists in the market for industry-based building technologists. These specialists should not only have a wide appreciation of site construction issues but also have skills appropriate to the construction products sector. This includes a need to understand factory technologies and processes. The programme helps to address this gap, to the benefit of the Lithuanian economy.

The study programme intended learning outcomes include a mix of theoretical knowledge and practical abilities, including the ability to think creatively and solve construction technologies problems in an original way, analyze and implement decisions based on constantly changing environmental conditions, which is really important. In overall, the intended learning outcomes are based on the academic and professional requirements, public needs and the needs of the labour market. It may be expected therefore that the students will be motivated and engaged in their education and that the intended learning outcomes should be guaranteed.

On a general note, the programme management may wish to consider if additional aims should be introduced given future development perspectives from the European Union and Lithuanian Government plans regarding, Horizon 2020‘ implementation plans. Issues including energy efficiency improvement, infrastructure development needs, environment protection, sustainable development, public-private-partnership projects, digital construction and other important topics are worthy of development as free selection study subjects, developed together with business company representatives.

***2. Curriculum design***

The *Building Technologies* Bachelor degree study programme is compiled in compliance with the regulations of the State and resolutions of the Senate of Kaunas University of Technology. The programme is structured around study subjects covering engineering fundamentals (30 ECTS), mathematical and physical sciences (39 ECTS), humanitarian education and communication (18 ECTS), economics, construction law (12 ECTS), training (15 ECTS), core (36 ECTS) and special study subjects in the field (66 ECTS), final project (12 ECTS) and optional study subjects (12 ECTS). In total 240 ECTS. A key issue for review by the programme management is that the engineering fundamentals, mathematical and physical sciences, communications and core subjects have significant overlap with the *Civil Engineering* Bachelor

study programme at KTU. This may lead to an undesirable situation whereby the programme could develop into a 'dumbed-down' civil engineering programme below the level of a distinct Bachelor study programme. Any possibility of this development must be arrested at this early stage to ensure that the programme has its own ethos at Bachelor study programme level.

Nevertheless, an analysis of the programme shows that, despite of the fact that more emphasis should be put on building technologies field, rather than civil engineering, it complies with the formal requirements set in the Order of the Minister for Education and Science of the Republic of Lithuania "General Requirements for First Degree and Integrated Study Programmes" (Order No. V-501, 9 April 2010). However, one issue with regard to legal requirements should be fixed – the 15 ECTS of practice is composed of a combination of internship (12 ECTS) and geodesy field work classes (3 ECTS). It is recommended that the full 15 ECTS of practice be conducted with industry. The practice components in geodesy are part of the related subject and should not be counted as internship (the provision of the Minister's for Education and Science Order "General Requirements for First Degree and Integrated Study Programmes": "10. Internship shall be considered one of the seven separate study subjects if it is not associated with any of the subjects studied, or, in case it is associated with one of the subjects, the programme providers have reason to consider it separable from the subject studied. In case practise is constituent part of the subject, it should not be included in the list of the subjects studied").

As previously indicated, the overlap with a curriculum for a *Civil Engineering* Bachelor programme is in excess of 50%. This close relationship with an existing *Civil Engineering* programme fails to fully exploit an opportunity. The curriculum needs strengthening to have its own ethos, independent of the *Civil Engineering* programme curriculum with which it currently has too much commonality. The curriculum especially needs more building technology study subjects earlier in the study programme, even if these can only be offered through electives. At present the students are typically not taking the subjects particular to their building technology field (as opposed to Civil Engineering study field) before Semester 5 and primarily from Semester 6. Greater emphasis could also be placed on timber as a significant construction material, given its greater importance in building than in civil engineering structures and the stated need for this by employers who attended during the site visit. Some of the general study subjects are scheduled early in the programme whereas students interested in technology might be more receptive to these laudable subjects (e.g. Philosophy) later in their studies, after they have fully transitioned to university level. This is an optimisation issue for the programme co-ordinators to consider in the wider context of a review of the structure of the programme.

The programme is well-informed by the current state-of-the-art and awareness of the current and future significance of Building Information Management systems. Appropriate reference is made to relevant international processes and procedures (e.g. FIDIC Form of Contract). Looking to the future key contribution of this programme to the Lithuanian economy, it may be hoped that graduates will assist in the development of Research and Development departments in Lithuanian building product companies. The two main departments in the University which support this programme are well-placed to support such developments through their accredited laboratories. This in turn would help inform future curriculum development. Meanwhile it is recommended that a study subject should be incorporated on innovation in building technologies and sustainability. Delivery of this study subject should be supported by industry practitioners.

### *3. Staff*

Evaluation of the study programme staff indicates that it meets the requirements of the Minister's for Education and Science of the Republic of Lithuania Order "General Requirements of First Degree and Integrated Study Programmes". A total of 49 different qualification and specialization teachers are engaged in the programme. The majority of teachers carry greater than half-time academic workload. The teaching staff of the programme is involved in research related to building, construction and specific specialisations of the teachers (in the case of general university subjects). The qualification of the teaching staff is adequate to ensure the achievement of the stated programme and study subjects intended learning outcomes. The allocation of duties on the programme by academic rank is: professors – 18%, associate professors – 49%, and lecturers – 33%. A total of 40 staff members have Ph.D., (professors and assoc. professors) and compose approximately 80% of staff – a high level. Approximately 10% of lecturers (5) have M.Sc. degree, while the remainder have B.Sc. degree or engineer‘s diploma. Many staff members are research active, leading to approximately 500 outputs including ISI, local, teaching books and patents.

The breakdown of teaching resources by staff academic rank has remained similar over the last couple of years. This relates to the fact that the new programme draws its staffing resource from established civil engineering and building materials staff cohorts involved in common study subjects from the *Civil Engineering* study programme. However this programme is targeted at a specific sector and therefore staff recruitment in the future should focus on those for whom building technology is their research strength, so that they may better support and champion the programme in an ever-changing market environment.

Regarding support for career development, the University is supportive and it is noted that during last 3 years, 21 staff members of the Faculty of Civil Engineering and Architecture have visited 13 different European Union countries, with many engaged in internships and traineeships. In the same period, 13 lecturers have arrived for academic and research work to the Faculty from 5 different countries (France, Poland, Turkey, United Kingdom, United States of America). Staff require opportunities for professional development to allow them achieve a positive outcome in the 5-yearly reviews. The system would be optimised if targets were more reflective of discipline norms for international researchers in the field. This is a matter for consideration at national level (see next paragraph) and it may be stated that the staff of this programme are supported within the context of the current system.

In a wider context than just this programme, the Review Group noted during the site visits to three study programme locations (3 study programmes were evaluated by the Review Group) that some contractual arrangements related to teaching in Lithuania involve a need for some individuals to undertake significant lecturing hours. This reduces their ability to establish their researcher profile in a planned, sustained and adequately mentored manner. Measures to enhance research support for staff, including more encouragement of international collaborations, should be addressed. As a general point such encouragement needs to be done through contractual arrangements at the level of the university but this is more fundamentally an issue for the Republic of Lithuania. The Ministry for Education and Science needs to consider how best resources can be directed at growing research capacity through revised contractual arrangements in respect of the percentage of workload devoted to teaching, for academic staff based in research-intensive universities.

***4. Facilities and learning resources***

The programme is hosted in excellent teaching facilities. The 14 available classrooms and laboratories are adequate both in size (30 to 200 workplaces) and quality with respect to the actual small number of students (most recent intake 11 full-time and 1 part-time). Students use auditoria, laboratories and computer clusters mainly in Faculty of Civil Engineering and Architecture. Premises designed for study and extra activities meet the safety and hygiene requirements and are provided with modern lighting, stationary multimedia equipment and sound recording system.

Joint group lectures and academic group lectures are taught in different size auditoria. This allows coordination of student flow rates in classrooms. Joint group lectures are conducted in

auditoria with higher number of workplaces (projector included, Internet connection), while auditoria with a lower number of workplaces are used for academic group lectures and training. Students can use free-access classrooms for their individual work.

Students are able to use the Faculty or University libraries reading rooms and self-study rooms for independent work. The library open hours are satisfactory and reading room access hours are generous, typically 8 am to 7 pm during the week and 9 am to 3 pm on Saturdays. The central library reading room is open during holidays. Internet connection, computers and a photocopy machine are installed in the library of the Faculty of Civil Engineering and Architecture. The library has an electronic catalogue of books and publications and an integral library information system. Students can use books in English and Russian. Adequate literature in respect of the topic of sustainability is provided. Building technology programme students have free access to many international databases (http://biblioteka.ktu.edu/db) which are available both in the library and via computer connection from home. Students can also connect to wireless internet and have free time activity zones.

The main laboratory tasks are carried out in the Civil Engineering and Architecture Faculty laboratories, but laboratory works are also performed in other faculties of KTU.

The facilities in the faculty include four computer classes. Computers are provided with the necessary software and special software for *Building Technologies* study programme. This includes THERM, STAAD Pro, ELEM, EMMA, BetoMIX, SES2004, PERI CAD 18 and Micosoft Project 2010. Current software meets the nature of study subjects taught in the study programme. Capacity is sufficient. All software used in the study process is updated regularly. Although the software situation is satisfactory the age of hardware could become an issue in the future when support is progressively withdrawn for older operating systems.

Looking at the volumes of practical training and laboratory work, the number of laboratories is sufficient. These include the main laboratories of 5 faculties and 1 institute, together with 10 specialist laboratories in the Faculty of Civil Engineering and Architecture. Laboratory equipment is updated constantly, the majority of premises are modern, provided with stands and posters. Students are given safety instructions before laboratory work and sign in the work safety register. Specialist laboratory equipment is also available during preparation of final project work, including climate chambers and imaging equipment. Although not a firm recommendation, the Review Group suggest that the programme co-ordinators would examine

the feasibility of providing more hands-on experimental work (rather than demonstrations) for students in laboratory work specifically related to the building technology field.

Students perform training practice and professional training practice. During the training students are able to use University equipment. The University has 32 agreements for students' professional practice in companies. This aspect of professional practice is valued at 12 ECTS. Students can self-select and organise placement locations in other companies themselves. It is recommended that the programme co-ordinator explores ways of extending the external mentoring of professional practice to 100% (15 ECTS), rather than the 80% (12 ECTS) which currently exists.

There is increasing investment in a virtual learning environment through „Moodle". This system has become popular with both teachers and students. Training and other materials of study subjects are placed in „Moodle" or other such virtual learning environments. The students indicated that all systems are useful and provides required information for studies and study process and they are happy with the resourses available.

***5. Study process and student assessment***

The admission to the *Building Technologies* study programme involves admitting students who have secondary education certificate. The calculation of competitive score is provided in KTU rules each year and is well-founded for engineering programmes. Considering the number of applications (201 in 2011, 140 in 2013 for full-time studies), there is a clear interest for the programme. Unfortunately, only a few candidates eventually enrolled and University even had to cancel the 2012 entry. Answering clear social and industrial needs, KTU is encouraged to promote this new programme and to better position it with respect to other programmes, like the Bachelor in *Civil Engineering*. Obviously, the promotion will be easier after 2015 when it could rely on alumni. The admission rate should be improved through the strengthening of measures to promote the programme and its role in the future Lithuanian economy. The sustainability of the programme is otherwise at risk.

The study process gives a reasonable provision of the programme and the achievement of the intended learning outcomes, but some students do not fully understand the specificity of their studies with respect to other closely related Civil Engineering field programmes. Significant attention has been properly paid by the programme management to interlink the learning activities with the intended learning outcomes, showing a reasonably balanced exposure to the latter. However a language course (6 ECTS targeting a C1 level), which is included in the

programme, is very unlikely to be sufficient to really develop students‘ language skills, particularly in their technical context. Students have expressed, for instance, their wish to be taught in English in some courses from Semester 5 and KTU is encouraged to address this request.

The programme timetable is produced by the Vice-Dean, adjusting them with study subjects leaders and taking into account students‘ requests. Prepared timetables are approved by the Faculty Dean. The Review Group did not find any problems regarding the timetable, as confirmed by the students during the meeting.

Some students, the brightest ones, are selected and encouraged to participate in research and are offered some laboratory internships. However, further attention should be paid to develop research skills (‘investigation’) for all the students during this Bachelor degree programme since the ability of conducting independent research is one of the intended learning outcomes.

There exist more than 30 ERASMUS student exchange partnerships. At the time of the evaluation, one student was selected for an outgoing exchange semester in the first cohort. The information on the mobility programmes is publicly available on the website, but the programme staff is encouraged to promote this opportunity to the students in order to be aligned with the institutional vision of internationalization and also to possibly expose them to the most recent developments in building technologies.

The University is providing an excellent level of academic and social support. Student representatives are in place and participating to the programme management. Surveys are organised, their results are discussed during the Study Programme Committee (hereafter – SPC) meetings and the programme is modified, if relevant. A quality round-table is organized every semester, attended by the students. During the interviews, the students particularly appreciated the staff openness and availability to discuss students’ matters. Students have the possibility to participate in many social activities organized or supported by the University. Social support and scholarships offered by the University is also appreciated by students regarding their free time, dormitory or cafeteria facilities and career days, organized once a year.

The assessment is based on a 10 points grading system. It is clear and publicly available (on the institutional website). In order to foster Erasmus mobility and mutual recognition, the University is encouraged to also produce the scores in the ECTS grading system and to develop the diploma supplement, as stated in the ECTS guide: http://ec.europa.eu/education/tools/docs/ects-guide_en.pdf. The criteria to assess the final degree project are clearly stated. The final grade is

the result of a well justified weighted average (final grade during final exam session is calculated by multiplying individual grades by a weighting factor and then adding them together).

Specific professional expectations towards building technology competences have been expressed by many stakeholders in supporting letters (annexed to the SER), but also during the interviews. Those expectations are high and many employers are ready to hire the future graduate students. However, it is too early to assess if the graduates will indeed meet the employer expectations.

The Review Group positively note the relationship developed between the University staff and industrial partners through research contracts, job offers, internships and the active participation to the qualification committee (even not implemented yet, the SER gives sufficient provision that it will). In order to demonstrate that the programme is well founded, the University is encouraged to already develop a system allowing them to trace their alumni.

***6. Programme management***

Two departments within KTU are significantly involved in the delivery of the programme. These are the Department of Civil Engineering Technologies and the Department of Building Materials. Programme co-ordination is carried out by the former, through the Head of the Department of Civil Engineering Technologies.

The University‘s Internal Study Quality Assurance System complies with the provisions and guidelines of the European Higher Education Quality Assurance regulations in addition to relevant legislations governing the Lithuanian Republic‘s higher education system.

Management and coordination of the internal quality assurance of the programme is assigned to the Vice-Rector, assisted by the Department of Academic Affairs. Changes to the programme must be approved by the Faculty’s Study Programme Committee. The SPC collaborates with the Senate Studies and Academic Culture Quality Committee. The SPC, under the chairmanship of the Dean, includes 10 co-ordinators of the faculty’s programmes together with industry and student representation. The SPC has a significant oversight function on study subjects, methodological literature, and assignment of assessors for the evaluation of educational and methodological materials. The SPC submits proposals to the Faculty Council – the highest academic institution of the faculty – for updating the study programme.

Ongoing contact between the University and employers of the programme‘s future graduates is being assured through a standard framework of external social stakeholder involvement in the SPC, the final thesis qualification committee and the Faculty Council.

The University uses an Academic Information System to provide key performance information to both teaching and management staff. This includes statistics from student surveys. As in many universities, usefulness of data from such online surveys is hampered by the low participation rate by students in general. Nevertheless during the site visit the Review Group learned more about the good practice whereby ‘round tables’ are held with students at the end of each semester, which provides effective opportunities for feedback and quality enhancement. Staff have access to survey results on their study subjects through the Academic Information System while relevant programme administrators have access to such information on all study subjects.

During the site visit the Review Group was briefed by the Dean on current restructuring of faculties and departments. The changes outlined seemed rational in respect of reducing the number of departments in the Faculty, while maintaining the integrity of the Faculty of Civil Engineering and Architecture. The Review Group does not envisage any detrimental aspects in respect of programme management and quality assurance from the changes to the departmental structures that were in place at the time of preparation of the SER.

There exists an effective quality assurance system, linking the Study Programme Committee with the Senate Studies and Academic Culture Quality Committee at one level and effective local quality assurance at faculty level, through student round tables and other measures.

Nevertheless the programme management needs to address the core issue of developing a distinct ethos for the programme, rather than one that is too strongly aligned with the existing *Civil Engineering* programme.

## III. RECOMMENDATIONS

1. The programme aims, intended learning outcomes and study field are appropriate, but the curriculum needs strengthening to have its own ethos, independent of the civil engineering programme curriculum, with which it currently has too much commonality. The curriculum especially needs more building technology study subjects earlier in the study programme, even if it is offered only through electives. In addition, a study subject needs to be incorporated on innovation in building technologies and sustainability, supported by industry practitioners.
2. It is noted that the 15 ECTS of practice is composed of a combination of internship (12 ECTS) and geodesy field work classes (3 ECTS). It is recommended that the full 15 ECTS of practice be conducted with industry. The practice components in geodesy are part of the related subject and should not be counted as internship.
3. The admission rate should be improved through the strengthening of measures to promote the programme and its role in the future Lithuanian economy. The sustainability of the programme is otherwise at risk.
4. Specifically staff recruitment in the future to support and champion the programme should focus on those for whom building technology is their research strength.
5. Measures to enhance research support for staff, including encouragement of international collaborations, should be addressed. This needs to be done at the level of the University but is also an issue for the Republic of Lithuania.

## IV. SUMMARY

A gap exists in the market for industry-based building technologists. The programme helps to address this gap to the benefit of the Lithuanian economy. The programme addresses the national needs in respect of future infrastructure needs and, very importantly, upgrading of the existing building infrastructure stock. The programme is quite well-structured. There is a logical development underpinning the programme structure. The mix of theory and practice is appropriate for a programme within the Building Technologies study field. The breadth of subjects is appropriate even though the programme shares many common modules with a *Civil Engineering* Bachelor study programme at the Kaunas University of Technology. The staff resource is good. The teaching staff of the programme is involved in research related to building, construction and specific specialisations of the teachers. The programme is hosted in excellent teaching facilities. There exists an effective quality assurance system, linking the Study Programme Committee with the Senate Studies and Academic Culture Quality Committee at one level and effective local quality assurance at faculty level.

The close relationship with an existing *Civil Engineering* Bachelor study programme fails to fully exploit an opportunity. The curriculum needs strengthening to have its own ethos, independent of the civil engineering programme curriculum with which it currently has too much commonality. The curriculum especially needs more building technology study subjects earlier in the study programme. Although staff resourcing is good, this programme is targeted at a specific sector and therefore staff recruitment in the future should focus on those for whom building technology is their research strength, so that they may better support and champion the programme. On a wider front, the Review Group note that some contractual arrangements related to teaching in Lithuania involve a need for some individuals to undertake significant lecturing hours. This reduces their ability to establish their researcher profile in a planned, sustained and adequately mentored manner. The Ministry for Education and Science of the Republic of Lithuania needs to consider how best resources can be directed at growing research capacity through revised contractual arrangements in respect of the percentage of workload devoted to teaching, for academic staff based in research-intensive universities. The admission rate should be improved through the strengthening of measures to promote the programme and its role in the future Lithuanian economy. The sustainability of the programme is otherwise at risk. Professional expectations towards building technology skills are high and many employers are ready to hire the future graduate students. However, it is too early to assess if the graduates will indeed meet the employer expectations.

## V. GENERAL ASSESSMENT

The study programme *Building Technologies* (state code – 612J80002) at Kaunas University of Technology is given **positive** evaluation.

*Study programme assessment in points by evaluation areas*.

| No. | Evaluation Area | Evaluation Area in Points* |
|---|---|---|
| 1. | Programme aims and learning outcomes | 3 |
| 2. | Curriculum design | 2 |
| 3. | Staff | 3 |
| 4. | Material resources | 4 |
| 5. | Study process and assessment (student admission, study process student support, achievement assessment) | 3 |
| 6. | Programme management (programme administration, internal quality assurance) | 3 |
| | **Total:** | **18** |

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is exceptionally good.

| | |
|---|---|
| Grupės vadovas:<br>Team leader: | Dr. Mark G. Richardson |
| Grupės nariai:<br>Team members: | Prof. Philippe Bouillard |
| | Prof. Juris Rihards Naudžuns |
| | Doc. dr. Vaidotas Šarka |
| | Tomas Pupinis |

**KAUNO TECHNOLOGIJOS UNIVERSITETO PIRMOSIOS PAKOPOS STUDIJŲ PROGRAMOS *STATYBŲ TECHNOLOGIJOS* (VALSTYBINIS KODAS – 612J80002) 2014-05-15 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-237 IŠRAŠAS**

<...>

# V. APIBENDRINAMASIS ĮVERTINIMAS

Kauno technologijos universiteto studijų programa *Statybų technologijos* (valstybinis kodas – 612J80002) vertinama **teigiamai**.

| Eil. Nr. | Vertinimo sritis | Srities įvertinimas, balais* |
|---|---|---|
| 1. | Programos tikslai ir numatomi studijų rezultatai | 3 |
| 2. | Programos sandara | 2 |
| 3. | Personalas | 3 |
| 4. | Materialieji ištekliai | 4 |
| 5. | Studijų eiga ir jos vertinimas | 3 |
| 6. | Programos vadyba | 3 |
| | **Iš viso:** | **18** |

* 1 - Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)
2 - Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)
3 - Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)
4 - Labai gerai (sritis yra išskirtinė)

# IV. SANTRAUKA

Lietuvos darbo rinkoje trūksta pramoninės statybų technologijos specialistų. Ši *Statybų technologijų* studijų programa padeda užpildyti minėtąją spragą Lietuvos ekonomikoje. Programa tenkina ne tik esamus nacionalinius darbo rinkos, tačiau kartu ir būsimos šalies infrastruktūros poreikius ir, kas yra labai svarbu, padeda modernizuoti dabartinius statybos infrastruktūros išteklius. Programa yra tinkamai sudaryta ir logiškai pagrįsta. Teorijos ir praktikos santykiui studijų programoje yra būdingas balansas. Studijų dalykų apimtis yra pakankama, nors daugelis šios programos studijų dalykų yra bendri su Kauno technologijos universitete vykdomos *Statybos inžinerijos* bakalauro studijų programos studijų dalykais. Personalo ištekliai geri. Programą vykdantis akademinis personalas dalyvauja moksliniuose tyrimuose, susijusiuose su statyba, konstrukcijomis, taip pat ir kituose tyrimuose, kurie siejasi su specifinėmis dėstytojų specializacijomis. Studijų programos vykdymui skirtos patalpos ir įranga yra išskirtinai geros. Programoje efektyviai veikia vidinė studijų kokybės užtikrinimo sistema,

susiejanti Studijų programos komitetą bei Senato Studijų ir akademinės kokybės kultūros komitetą universiteto lygmenyje ir veiksmingą studijų kokybės užtikrinimą fakulteto lygmeniu.

Pernelyg glaudus studijų programos ryšys su šiuo metu Kauno technologijos universitete vykdoma *Statybos inžinerijos* bakalauro studijų programa nesukuria prielaidų išnaudoti visų galimybių. Studijų programos sandarą reikėtų peržiūrėti siekiant užtikrinti aiškaus programos profilio nustatymą. *Statybų technologijų* studijų programos profilis turėtų nepriklausyti nuo statybos inžinerijos programos sandaros, su kuria šiuo metu esama per daug bendrumo. Į studijų planą kuo anksčiau reikėtų įtraukti statybų technologijų studijų dalykus. Nors personalo ištekliai geri, ši programa yra skirta konkrečiam sektoriui, todėl ateityje personalo įdarbinimas turėtų būti orientuotas į akademinio personalo mokslinių tyrimų vykdymo srities sutapimą su statybų technologijomis, siekiant tolesnio sėkmingo studijų programos vykdymo. Ekspertų grupė atkreipė dėmesį į tai, kad Lietuvoje kai kurių darbo susitarimų pagrindu iš dėstytojų reikalaujama dėstymui skirti didžiąją darbo laiko dalį, o tai atitinkamai mažina jų galimybę planingai, nuolat ir tinkamai vykdyti mokslo tiriamąją veiklą. Lietuvos Respublikos švietimo ir mokslo ministerija turėtų apsvarstyti kaip geriausia būtų skirstyti išteklius, skirtus mokslinių tyrimų vykdymo pajėgumų didinimui, peržiūrint minėtosiose sutartyse nurodytą akademinio personalo, dirbančio į mokslo tiriamąją veiklą orientuotose aukštosiose mokyklose, dėstymo krūvį. Priimamų į studijų programą studentų skaičius turėtų būti didinamas aktyviau panaudojant programos populiarinimo priemones, taip pat akcentuojant programos svarbą Lietuvos ekonomikai. Kitu atveju, gali iškilti grėsmė tolesniam programos vykdymui. Profesiniai lūkesčiai, susiję su statybų technologijų įgūdžiais, yra dideli – daugelis darbdavių yra pasirengę įdarbinti būsimus programos absolventus. Vis dėlto, kol kas dar per anksti vertinti, ar absolventai iš tikrųjų atitiks darbdavių lūkesčius.

## III. REKOMENDACIJOS

1. Programos tikslai, numatomi studijų rezultatai ir studijų kryptis yra tinkamai apibrėžti ir dera tarpusavyje, tačiau programos sandarą reikėtų peržiūrėti siekiant nustatyti aiškų jos profilį, nepriklausomą nuo statybos inžinerijos studijų programos turinio, su kuriuo šiuo metu esama pernelyg daug panašumų. Taip pat reikėtų kuo anksčiau į studijų planą įtraukti daugiau su statybų technologijomis susijusių studijų dalykų, net jeigu jie būtų tik pasirenkamieji. Be to, reikėtų į studijų programą įtraukti studijų dalyką orientuotą į statybų technologijų inovacijas ir tvarumą, kurio dėstymui galima būtų pasitelkti praktikus darbo rinkoje.

2. Pažymėtina, kad 15 ECTS praktiką sudaro praktika įmonėje (12 ECTS) ir geodezijos (mokomieji) lauko praktiniai užsiėmimai (3 ECTS). Rekomenduojama, kad visa praktika, kuriai skiriama 15 ECTS, būtų atliekama įmonėse. Geodezijos (mokomieji) praktiniai užsiėmimai yra susijusio studijų dalyko dalis, ir jų nereikėtų priskirti atskiroms praktikoms.
3. Reikėtų didinti priimamų studentų skaičių, aktyviau populiarinant studijų programą ir pabrėžiant jos svarbą Lietuvos ekonomikai. Priešingu atveju, tolesniam programos vykdymui iškyla grėsmė.
4. Siekiant tolesnio studijų programos vykdymo, reikėtų įdarbinti akademinį personalą, kurio mokslinių tyrimų interesų sritis yra susijusi su statybų technologijomis.
5. Reikėtų imtis priemonių, užtikrinančių didesnę paramą akademiniam personalui, atliekančiam mokslinius tyrimus, taip pat skatinti tarptautinį bendradarbiavimą. Tai turėtų būti atliekama universiteto lygmeniu, kartu tai yra ir Lietuvos Respublikos turimos teikti pagalbos objektas.

<…>

Paslaugos teikėjas patvirtina, jog yra susipažinęs su Lietuvos Respublikos baudžiamojo kodekso[1] 235 straipsnio, numatančio atsakomybę už melagingą ar žinomai neteisingai atliktą vertimą, reikalavimais.

[1] Žin., 2002, Nr.37-1341.