



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Šiaulių universiteto

STATYBOS INŽINERIJOS (61202T109, 612H20003)

STUDIJŲ PROGRAMOS

VERTINIMO IŠVADOS

EVALUATION REPORT

OF CIVIL ENGINEERING (61202T109, 612H20003)

STUDY PROGRAMME

At Šiauliai University

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	Statybos inžinerija
Valstybinis kodas	61202T109, 612H20003
Studijų sritis	Technologijos mokslų studijų sritis
Studijų kryptis	Statybos inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Dieninė (4) ¹ , vakarinė (5) ² , neakivaizdinė (5) ³ , nuolatinė (4) ⁴ , iššęstinė (5) ⁵ , iššęstinė (5,5) ⁶
Studijų programos apimtis kreditais	240
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Statybos inžinerijos bakalauras
Studijų programos įregistravimo data	2002-04-30 (Švietimo ir mokslo ministro įsakymas Nr. 785)

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	Civil Engineering
State code	61202T109, 612H20003
Study area	Technological Sciences
Study field	Civil Engineering
Kind of the study programme	University studies
Cycle of studies	First
Study mode (length in years)	Day (full-time) (4) ⁷ , evening (part-time) (5) ⁸ , correspondence (5) ⁹ , full-time (4) ¹⁰ , part-time (5) ¹¹ , part-time (5,5) ¹² .

¹ Nuo 2009 m. priėmimas studijuoti nebevykdomas.

² Nuo 2009 m. priėmimas studijuoti nebevykdomas.

³ Nuo 2009 m. priėmimas studijuoti nebevykdomas.

⁴ Priėmimas vykdomas nuo 2009 m.

⁵ Priėmimas vykdomas nuo 2009 m.

⁶ Priėmimas vykdomas nuo 2010 m.

⁷ Since 2009 admission is not carried.

⁸ Since 2009 admission is not carried.

⁹ Since 2009 admission is not carried.

¹⁰ Admission is carried out since 2009.

¹¹ Admission is carried out since 2009.

¹² Admission is carried out since 2010.

Scope of the study programme in credits	240
Degree and (or) professional qualifications awarded	Bachelor in civil engineering
Date of registration of the study programme	April 30, 2002. (Order of Minister of Education and Science No. 785)

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I. INTRODUCTION

This report presents the findings of an evaluation of the programme *Statybos inžinerija* (61202T109, 612H20003), referred to in English as the programme **Civil Engineering**. The report is based on an analysis of the document “Šiaulių University, Civil Engineering Bachelor Degree Study Programme, Self-Evaluation Report, June 2012”, associated annexes and information gathered by the Review Team during a site visit to Šiaulių University on 9 October 2012.

The site visit included:

- discussions with senior faculty administration staff,
- discussions with staff responsible for preparation of Self-Assessment Reports (SAR),
- discussions with teaching staff,
- discussions with students,
- discussions with alumni,
- discussions with employers of recent graduates of the programme,
- inspection of student coursework including final year projects,
- inspection of teaching premises and equipment including library, laboratories, auditoria, and computing.

The four year full-time (5.5 years part-time) Bachelor in Civil Engineering programme is designed to provide an opportunity for talented students in Northern Lithuania to graduate with a broad knowledge of civil engineering through first cycle studies. The objective is that they would then contribute to the economic development of Northern Lithuania, either by entering the workforce immediately after graduation or following second cycle studies in another university.

The programme was externally assessed in 2003 and was given a positive evaluation. Nevertheless it was stated at the time that it would be advisable to do the following:

- improve the quality of the study programme;
- encourage the teaching staff to carry out scientific research work more actively and thus improve the qualifications, to bring research work nearer to the subjects that are taught, to pay more attention to scientific research work during certification;
- allocate greater financial subsidies for renewal of laboratory equipment;
- encourage more young people to join the teaching staff;
- use more specialist literature in foreign languages;
- send graduates to other higher schools to study for master`s and doctor`s degrees.

The Expert Review Group members were particularly mindful of these earlier advisory comments during their assessment.

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

1.1. Clarity of programme aims and outcomes

The declared purpose of the programme is to provide civil engineering bachelor degree graduates of broad specialisation to fill the market needs of the Šiaulių region. The concept of a broad first cycle education in ‘civil engineering’ is well established internationally. It involves development of fundamental knowledge and some practical skills in a wide range of civil engineering topics. However a detailed examination of the curriculum, learning outcomes, staff expertise and laboratory facilities indicate that this programme is limited to a branch of the study field of civil engineering. The programme itself is not deep enough to provide adequate coverage of ‘civil engineering’ in its entirety at first cycle but is somewhat biased to building-related branches of the study field. This would point towards ‘Structural Engineering’, a recognised branch of the study field of civil engineering. However the programme does not have sufficient coverage of structural analysis to be recognised as ‘Structural Engineering’. Thus while the programme aims are laudable, the learning outcomes are somewhat more limiting than desirable, although if more depth in structural analysis and design was added it could aspire to being ‘Structural Engineering’.

A more detailed analysis of the situation reveals that the reasons for the narrow programmes aims and learning outcomes are due to the limited resources available to the programme. Furthermore it is stated that one of the aims is to prepare bachelor degree graduates for continuing their studies “at other higher schools”. This indicates a lack of ambition on the part of the University to provide a master’s degree course and doctoral study opportunities to complement this bachelor’s degree programme. This has a negative collateral effect on the resources committed to this programme and limits the ambitions of the programme. This is further alluded to in Sections 3.5, 4.2 and 6.1.

Specifically on aims and learning outcomes, it may be stated that the aims are clear, though lacking in sufficient ambition. The learning outcomes are clearly grouped into knowledge and skills. The learning outcomes are clearly set out in the descriptors and the intended outcomes would be well understood by those familiar with engineering education. However they could be enhanced, from the students’ perspective, by setting out more clearly what the student will be able to do at the end of the module and how this fits into their overall education in civil engineering.

1.2. Rationale of the need for the programme

A key driver of the programme is the regional aspect: training locally to fulfil local market needs. Recently the critical mass of students has fallen from a peak of about 80 graduates per annum to less than half this number, in line with European and national economic trends which have drastically reduced construction activity. The self-evaluation report indicates that 20-40 graduates per annum would satisfy future regional needs. While the numbers at the lower end of this range could give cause for concern in respect of the viability of the programme, the number should stabilise at a higher value when global economic conditions improve. The existence of this programme in the Šiaulių region, as a first step for talented students from the region who

have ambitions to one day become an engineer, is an important asset to the region. Therefore continued existence of the programme is very important.

The demand for the programme may be capable of further stimulation by the University itself. A clear commitment in the University's Strategic Plan to provide the region with a strong suite of well-resourced civil engineering programmes at both bachelor's and master's degree could stimulate entrepreneurship in the region. Increasingly there is a global demand for civil engineering consultancy which can be provided through a mix of staff working for the same company but based in different locations. Northern Lithuania could provide a competitive base from which to bid for civil engineering projects in other countries, if there is a steady supply of appropriately qualified graduates.

1.3. Appropriateness of level of studies and the level of qualifications

The aims and learning outcomes are consistent with a bachelor's degree in a branch of the Civil Engineering study field. That branch could best be described as 'structural design and construction' although if more depth in structural analysis and design was added it could aspire to being 'Structural Engineering', which would make it more internationally comparable in respect of the graduate attributes and competences.

1.4. Compatibility of programme outcomes, content and qualifications

The aims and learning outcomes are compatible with a bachelors degree programme in a 'structural design and construction' branch of the Civil Engineering study field. Therefore the title of the programme, presented as 'Civil Engineering' in the English translation, is not appropriate. There is little evidence in the curriculum of adequate mandatory coverage of subjects such as structural analysis, geotechnics, transportation planning, water supply and water treatment at a level normally associated internationally with a broad specialisation degree programme leading to a 'Civil Engineering' degree. The learning outcomes, content and qualification offered would however be compatible with a programme which indicates a degree of specialisation. The programme at present is biased towards 'structural design and construction' but if more depth in structural analysis and design was added it could aspire to being 'Structural Engineering', which would have greater international comparability. One way or another, the name of the programme should be changed to reflect the fact that it covers a branch of the study field and not the broad field of civil engineering.

2. Curriculum design

2.1. Compatibility with legal requirements

The programme meets the legal requirements for a programme totalling 240 credits. There is not less than 24 credits for fundamental sciences, not less than 30 credits for general engineering sciences, not less than 36 credits for subjects of specialization. The curriculum includes not less than 30% for practical training and final project and not less than 5% for optional subjects. The full-time programme includes 2750 hours of lectures, practicals, laboratory work and tutorials.

The equivalent figure for part-time studies is 1414 hours. These figures are appropriate and exceed the minimum requirements.

The Review Group noted that there have been recent changes (2009) to the curriculum, which have diminished its international comparability with other such engineering programmes. In 2002 the programme was changed (through reference to a uniform plan recommended by Kaunas Technological University) to strengthen the academic attributes of its graduates in the context of internationally comparable first cycle civil engineering programmes. However the recent changes seem to have reversed that laudable change. The reason for the change is reportedly due to a demand for more specific training by employers. The balance in first cycle civil engineering courses between 'education' and 'training' needs to be carefully balanced. Any further pressure to emphasise job specific 'training' at the expense of reintroducing more fundamental engineering core knowledge should be resisted. The curriculum is compatible with a 240 credit course in some form of 'structural design and construction' but can be greatly strengthened if it is tailored to a recognised branch of the study field. If more courses on structural analysis and design are introduced it could aspire to recognition as a good 'Structural Engineering' curriculum.

2.2. Consistency of the study programme layout

The distribution of subjects across the four years of the programme is such that the students' workload is well balanced. Typically the students take 6 examinations per semester, except in the final semester, where this drops to 3. In the final semester the expectation in respect of independent learning hours rises from approximately 50% in earlier years to 80%. The expectation in respect of self-directed learning in Year 4, through major project work, is appropriate.

2.3. Consistency of the subjects/modules with level of study

The self assessment report (Paragraph 23) indicates that the design of the curriculum has been significantly influenced by the available staff resources. This has resulted in a significant curriculum design constraint, with more consideration being given to what can be delivered rather than what should be delivered in a typical civil engineering programme. In practice this has led to a narrow range of topics - see also comments on this aspect in Section 2.1. While acknowledging that the curriculum is now designed more towards a specialisation in 'structural design and construction', the programme would benefit from further change or reversal to where it was going in the period 2002 to 2009. The Faculty needs to commit more resources to the programme so that certain construction-specific subjects can be covered in more depth while expansion of coverage of structural engineering is also desirable.

Specifically the subject 'Law on Construction' needs to increase from 3 to 5 or 6 credits. There needs to be more coverage of acoustic design in buildings. The programme should aspire to being a 'Structural Engineering' programme and this would involve expansion of structural analysis and design subject coverage.

Such changes require a reduction of credit value in other areas. This begs the question: what can be left out? The Review Group note the current high workload of academic staff and recommend that a review be made of topics that could be transferred from classroom-based subjects to the learning outcomes on student practice (internships). If necessary, consideration

could be given to expanding the scope of learning outcomes delivered and assessed through internships.

2.4. Consistency of the subjects/modules with learning outcomes

The contents of the subjects are appropriate for the achievement of the intended learning outcomes of a programme in the 'structural design and construction' branch of civil engineering. However the phrasing of the learning outcomes themselves could be improved by including clearer statements of what the students will be capable of doing on successful conclusion of the module.

2.5. Scope of programme

The scope of the programme is sufficient for the education of those who aspire to become engineers in the study branch of 'structural design and construction'. The scope is not sufficient for the broad field of 'Civil Engineering', in respect of the wider international use of the term. This can be addressed through the change in name referred to in Section 1.4.

2.6. Currency of programme content

In general the programme content is current but measures should be taken to renew the content as much as possible through engagement of staff conversant with recent and on-going developments in science and technologies applied to practice. This is particularly important in respect of maintaining currency in current building regulations, standards and rules (Lithuanian and EU).

3. Staff

3.1. Staffing and legal requirements

The staffing exceeds the minimum requirements of ISAK-1717 of the Ministry of Education and Science. The programme is staffed by those with at least a masters degree and over 65% have a doctoral degrees. The minimum number of classroom hours of professors is adequate.

3.2. Staff qualifications

The members of the teaching staff are qualified appropriately in respect of the learning outcomes of a construction engineering bachelor's degree programme. In addition their teaching competence is formally certified every 5 years. The programme is delivered by a very dedicated small group of staff members, some of whom have recently enhanced their qualifications to doctoral level or are in the process of doing so.

3.3. Adequacy of staff resources

The student: full-time teaching staff ratio is 25:1. This is relatively high but not uncommon in many universities. Of greater concern is the teaching workload hours allocated to staff, due to the low number of fulltime staff. The annual classroom work pedagogical load averages about 1100 hours for non-professorial staff. These high workloads do not fully reflect the true workload, because the official workload time for out of classroom work is only 12 hours for 3 credit modules and 36 hours for 6 credit modules. Staff must work longer hours than scheduled to deal with the volume of work.

This ongoing systematic problem has a number of negative effects. The first effect is that staff members are being allocated the teaching of subjects outside their specialisation, expertise or research field. While this is unavoidable in many schools of engineering it is more prevalent in this case. Secondly the time that staff members have for research and development of their international research profile is effectively non-existent. Staff members are therefore not pursuing any opportunities to partner through international collaboration with other institutions or companies to participate in funded research projects. Since teaching is informed by research this will negatively impact on the quality of the taught programme. The high teaching loads restrict the opportunities for individual consultations, which inhibits the ability of staff to provide sufficient contact time to support average ability students, who might otherwise succeed if they could be retained on the programme, especially through their first year of studies.

Additionally there is no time being devoted to development of postgraduate research programmes, due to these limited staff resources. Ultimately the absence of a master's degree programme and doctoral research in tandem with the undergraduate bachelor's degree programme diminishes the development of the teaching staff.

The ratio of full-time to invited teachers is 6:1. This ratio is an indication of the under-resourcing of the programme by full-time staff members, who could provide a critical mass from which to grow the student numbers and introduce a master's degree programme.

The programme is resourced by 3.5 members of the support staff (administrative and laboratory assistants).

3.4. Staff turnover

An external assessment carried out in 2003 recommended renewal of staff resources to encourage a reduction in the average age of staff. Since then there has been limited development of the staff resource. Thus the age profile remains high. The University should consider if recruitment of staff may be hampered by limited opportunities for career development, due to inadequate research facilities, and possibly due to high teaching loads as well. Attraction of new staff to the programme is negatively affected by low starting salaries and the fear of job insecurity relating to falling student numbers. The Faculty need to be more supportive of the Civil Engineering Department in growing the programme. A clear strategic plan involving investment in staff and facilities is required. Meanwhile the programme is staffed by a dedicated and stable staff resource. Future reliance on the goodwill of the current dedicated staff to adequately resource an improved programme is not sustainable.

3.5. Staff professional development

Large pedagogic loads and staff age profile has negatively influenced opportunities for staff development. Despite this the small but dedicated staff are continuing to enhance their qualifications to doctoral level.

The Civil Engineering Department is one of 6 departments in the Faculty of Technology. The Faculty educates students at bachelor's (95%) and master's (5%) degree levels in technological sciences. However the Expert Group did not detect a clear vision at Faculty level for the development of a strong suite of civil engineering programmes at both cycles. Staff professional development will require provision of adequate research facilities and a cohort of master's degree students who can prepare joint research publications with staff as part of their final thesis. The last external evaluation (2003) recommended, *inter alia*, that the University:

- encourage the teaching staff to carry out scientific research work more actively and thus improve the qualifications,
- to bring research work nearer to the subjects that are taught,
- to pay more attention to scientific research work during certification,
- allocate greater financial subsidies for renewal of laboratory equipment.

All of these issues impact on staff development and thereby on the future quality of the programme. The Expert Review Group is not satisfied that the Faculty has demonstrated sufficient commitment to addressing these issues. The programme continues to be adequate but it requires greater ambition and support if it is to survive. The self-evaluation report records that the programme is one of the most popular at the University – 4% of all applicants and 22% of applicants to study one of the six technological sciences programmes – yet the resources committed to staff development (through research facilities) since the 2003 recommendations do not seem to be adequate.

3.6. Research profile of staff

An external assessment carried out in 2003 recommended greater involvement by staff in research. However the facilities for laboratory-based research remain inadequate and the absence of a postgraduate course reduces the opportunities to take on research through international collaborations or applied research from local enterprises. Meanwhile staff members engage in technical and pedagogical research and publication. In the period under review the teachers on the programme produced a total of 37 textbooks, methodological aids and other learning aids.

4. Facilities and learning resources

4.1. Premises

The programme is hosted by the Department of Civil Engineering, which is one of six departments/divisions in a Faculty of Technology that also includes three Centres. In respect of the Department of Civil Engineering the dedicated laboratory facilities comprise just two laboratories dedicated to strength of materials and construction. The combined area is only 108

m². It is barely adequate for a programme which aims to offer a first cycle engineering qualification. A development plan to enhance laboratory teaching facilities must be put in place, with firm commitment of support from the Faculty. This plan could also embrace the research needs of staff (see Section 3.5). Classrooms dedicated to the programme require investment in modern equipment. The library facilities provided through the Faculty and the Central University library are excellent. Computer facilities are good.

4.2. Teaching and learning equipment

An external assessment carried out in 2003 recommended greater investment in renewal of laboratory equipment. Since then greater investment has taken place, for example 230,000 Lt in the period 2006-2010. However this pace of investment is inadequate to address the scale of the needs. Laboratory facilities dedicated to the programme remain extremely limited and much of the equipment used is still old.

The Expert Group is not satisfied that the Faculty have addressed the 2003 recommendation with sufficient resources. In 2011 the enrolment to the programme represented 45% of the enrolment to the Faculty. It is a popular programme which needs to be adequately resourced for the benefit of the University and the economic development of northern Lithuania.

4.3. Arrangements for students' practice

Student exposure to practical aspects of construction is served by both formal co-operation agreements with local civil engineering enterprises and internships organised by the students themselves. An agreement is in place with the Šiaulių municipality. The internship is rated at 12 credits.

4.4. Teaching materials

An external assessment carried out in 2003 recommended greater use of more specialist literature in foreign languages. A review of teaching resources indicates that the available literature is well-resourced through subscription to e-resources. The pedagogical aids have been supplemented by material produced by teachers on the programme, who have produced a total of 37 textbooks, methodological aids and other learning aids in the last five years. Provision of a greater number of copies of core textbooks in the library would be welcomed.

5. Study process and student assessment

5.1. Admission requirements

Admission scores are based on three components: the weighted school leaving marks in mathematics, physics and Lithuanian; the weighted school leaving marks in a foreign language; and additional marks for high achievement in sport or other competitive activities. The competition for state-funded (VF) places on the programme is high leading to excellent highest scores (*circa* 18 ex 20.80) and good average scores (*circa* 15 ex 20.80). However the average

scores of self-funded students (VNF) is low (*circa* 10 ex 20.80). Some students enter the course ill-prepared for a university education and drop out in the first year. This could become more of an issue if the downward trend in interest in construction-related courses is not arrested.

5.2. Organisation of the study process

Admittance to the programme from 1998 has included up to three modes of delivery: day (full-time); evening (part-time) and, since 2006, correspondence studies (classes are held on Saturdays). In 2009 admittance to study in the evening was stopped and from 2010 the correspondence studies was reorganised to part-time studies. The combination of lectures, practicals and internships is adequate but the achievement of the learning outcomes would be greatly strengthened by greater emphasis on monitoring achievement of learning outcomes during internships by a combination of academic staff and internship supervisors.

5.3. Participation in research, artistic and applied research activities

There is no noticeable participation in applied research activities. This is related to the comments in Section 3.6 (staff) and Section 4.1 (research facilities).

5.4. Participation in student mobility programmes

Arrangements exist for student international mobility with VIA University College (Denmark). This has afforded opportunities for typically 3 to 5 students per year but economic circumstances limit the take-up. An expansion of the range of opportunities would assist in growing the numbers, especially if these new agreements were with institutions in countries with comparable costs of living to Lithuania.

5.5. Academic and social support

Adequate sports clubs and student societies exist. Student accommodation is appropriate to meet the needs. Psychological assistance is available through the University chaplain. The University dispensary provides free medical aid. A career centre provides support to graduating classes.

A significant service to students is the facility to seek the Dean's permission to follow individual study programmes, subject to approval by faculty council. Scholarships are available covering both reward for achievement and recognition of social need. This is a significant aid to students with non-traditional circumstances at time of enrolment. In addition part-time students are afforded more generous opportunities to repeat failed modules than full-time students.

It was noted that drop-out rates are influenced by poor academic performance in mathematics. More tutorial support for first year students who are weak in mathematics would be advantageous increasing retention rates but this requires staff resourcing.

5.6. Assessment system

A clear grade criterion scale with ten divisions and summative evaluation scheme is applied. Feedback is provided to students on their results. The staff are rigorous in their implementation

of high standards. A fall in completion rates from 96% to 69% is indicative of standards being maintained at a time when motivation of students on construction courses is waning.

5.7. Graduate attributes and professional activities

The views of graduates and social partners indicate that the graduate attributes are generally good. However further studies in law, acoustics and exposure to case studies from visiting lecturers and construction site visits would enhance their knowledge and understanding. The site visits should be incorporated in relevant subjects with appropriate assessment and credit allocation.

6. Programme management

6.1. Programme management structure

The programme is overseen by the Dean, Head of Department of Civil Engineering, and Study Programme quality monitoring team. Although the day-to-day oversight of the programme is adequate, the Expert Review Group recommends that the Faculty Council needs to take a longer term strategic focus to the development of the programme and the resourcing of its staff and laboratory teaching/research facilities.

6.2. Ongoing programme review

In common with all other study programmes at the University, there is a Study Programme quality monitoring team in place. The team ensures ongoing programme review. The Study Programme Committee comprises 5 people, including the tutor, a student representative, academic and social partners.

6.3. Quality improvement implementation

See Section 6.2 in respect of the monitoring team. The programme is reviewed twice per year and recommendations are made as appropriate. For example the period allowed for completion of the final thesis has been extended on foot of quality improvement feedback.

6.4. Stakeholder involvement

Stakeholders are engaged in several ways. The final thesis is defended at a public qualifications commission comprising six members, of whom two are from the social partners. The Study Programme quality monitoring team ensures ongoing programme review involvement by stakeholders. Social partners are occasionally invited to meetings of the Department or Faculty. Several teachers are in practice, which also helps to feed industry views into the programme.

6.5. Effectiveness of internal quality assurance measures

Quality assurance is in place and results of the internal monitoring of quality are communicated to the Dean. The Study Programme Committee examines detailed aspects of the programme. Equally, student questionnaires at the end of each semester capture data to inform the Committee, Department and Faculty on a wide-range of issues impacting on the detail of the programme and its subjects. Nevertheless the continued deficiencies in adequately resourcing the programme indicate that these quality assurance measures are less than effective in promoting timely change. The Study Programme Committee needs to partner with the Department in monitoring the implementation of a Departmental Strategic Plan, the vision of which is clearly communicated to all stakeholders.

III. RECOMMENDATIONS

1. It is recommended that the programme aims be refined to recognise the reality that the programme offered is not covering civil engineering subjects in sufficient breadth and depth to claim that it is a first cycle 'civil engineering' degree programme, in respect of the wider international use of the term. A recognised branch of civil engineering should be chosen, related to structural design and construction, and the aims and learning outcomes should be tailored more closely to this. One such branch, for example, is 'Structural Engineering' if Recommendation 2 is taken into account.
2. It is recommended that the curriculum be modified in a general and specific way. In relation to general modification, any refinement to aims - see Recommendation 1 – will have a knock-on effect. For example if the aims change to a 'Structural Engineering' programme then subjects with more depth in structural analysis will be required. Regarding specific changes, greater coverage of 'Law on Construction' (increase from 3 to 6 credits) and Acoustic Design is recommended.
3. It is recommended that the review be made of topics that could be transferred from classroom-based subjects to the learning outcomes on student practice (internships) to both reduce staff workload and to ensure that the students' learning process is underpinned by more focussed exposure to practice in areas directly related to the learning outcomes.
4. It is recommended that a clearer vision be articulated by the University of its contribution to civil engineering education and research in Lithuania and that this vision be appropriately resourced by increased investment in staff numbers, staff development and facilities to the benefit of this programme.
5. It is recommended that the staff resource be increased to allow more appropriate teaching workloads, so that the staff may both develop their research profiles and be allocated teaching duties closely aligned with their expertise.
6. It is recommended that the staff identify a research area relevant to the future engineering needs of the region and that the Faculty build up research facilities in this strategic area, with synergistic impact on the final thesis work topics of the students on the programme.
7. It is recommended that a development plan to enhance laboratory teaching facilities should be put in place, with firm commitment of support from the Faculty. This plan should also embrace the research needs of staff in respect of facilities, which would ultimately benefit the programme.
8. Although the day-to-day oversight of the programme is adequate, the Expert Review Group recommends that the Faculty Council needs to take a longer term strategic focus to the development of the programme and the resourcing of its staff and laboratory teaching/research facilities.

IV. SUMMARY

1. Programme aims and learning outcomes

The purpose of the programme is to provide civil engineering bachelor degree graduates of broad specialisation to fill the market needs of the Šiaulių region. Furthermore a stated aim is to prepare bachelor degree graduates for continuing their studies “at other higher schools”. This indicates a lack of ambition on the part of the University to provide a master’s degree course and doctoral study opportunities to complement this bachelor’s degree programme. This has had a negative collateral effect on the resources committed to this programme.

The programme itself is not deep enough to provide adequate coverage of ‘civil engineering’ in its entirety at first cycle but is somewhat biased to building-related branches of the study field. This would point towards ‘Structural Engineering’, a recognised branch of the study field of civil engineering. However the programme does not have sufficient coverage of structural analysis to be recognised as ‘Structural Engineering’. Thus while the programme aims are laudable, the learning outcomes are somewhat more limiting than desirable.

The reason for the narrow learning outcomes is due to the limited resources available to the programme. The existence of this programme in the Šiaulių region is an important asset to the region, as a first step for talented students from the region who have ambitions to one day become an engineer. The aims and learning outcomes are consistent with a bachelor’s degree in the area of ‘structural design and construction’ although if more depth in structural analysis and design was added it could aspire to being ‘Structural Engineering’, which would make it more internationally comparable in respect of the graduate attributes and competences. The name of the programme should be changed to reflect the fact that the learning outcomes and curriculum represent a degree of specialisation within the broad field of civil engineering, such as ‘structural design and construction’ or, with appropriate curriculum modifications it could potentially be ‘Structural Engineering’.

2. Curriculum design

The programme meets the legal requirements. The curriculum is compatible with a 240 credit course in ‘structural design and construction’ but can be greatly strengthened if it is tailored to a recognised branch of the study field. If more courses on structural analysis and design are introduced it could aspire to recognition as a ‘Structural Engineering’ curriculum.

The design of the curriculum has been significantly influenced by the available staff resources. This has resulted in a significant curriculum design constraint. Recent changes to the curriculum have diminished its international comparability with other such engineering programmes. In 2002 the programme was changed to strengthen the academic attributes of its graduates. However the recent changes seem to have reversed that laudable change. The reason for the change is reportedly due to a demand for more specific training by employers but may have been influenced by the limited resources committed to the programme. The balance in first cycle civil engineering courses between ‘education’ and ‘training’ needs to be carefully balanced. Any further pressure to emphasise job specific ‘training’ at the expense of reintroducing more fundamental engineering core knowledge should be resisted.

In respect of specific changes, greater coverage of ‘Law on Construction’ (increase from 3 to 6 credits) and Acoustic Design is recommended.

3. *Teaching staff*

The teaching staff resource meets the legal requirements and is qualified to teach.

The student: full-time teaching staff ratio is high, at 25:1. The ratio of full-time to invited teachers is 6:1, which is an indication of the under-resourcing of the programme by full-time staff members. This is reflected in the high teaching workload hours allocated to staff. An external assessment carried out in 2003 recommended renewal of staff resources to encourage reduction in average age of staff. Since then there has been limited development of the staff resource. Staff must work longer hours than scheduled to deal with the volume of work. This is related to a systematic problem of under-estimating the required out-of-classroom hours. The lack of sufficient resources has a number of negative effects. Staff are being allocated the teaching of subjects outside their specialisation, expertise or research field. The time that staff have for research and development of their international research profile is effectively non-existent. Since teaching is informed by research this will negatively impact on the quality of the taught programme.

There is no time being devoted to development of postgraduate research programmes, presumably due to the limited staff resources. Ultimately the absence of a master's degree programme and doctoral research in tandem with the undergraduate bachelor's degree programme diminishes the research profile development of the teaching staff. Ultimately this has a negative effect on the quality of this programme.

4. *Facilities and learning resources*

The library facilities provided through the Faculty and the Central University library are excellent. Computer facilities are good. Classrooms dedicated to the programme require investment in modern equipment.

An external assessment carried out in 2003 recommended greater investment in renewal of laboratory equipment. Investment has taken place but the pace of investment is inadequate to address the scale of the needs. Laboratory facilities dedicated to the programme remain extremely limited and much of the equipment used is still old. The dedicated laboratory facilities comprise just two laboratories dedicated to strength of materials and construction. The combined area is only 108 m². It is barely adequate for a programme which aims to offer a first cycle engineering qualification. A development plan to enhance laboratory teaching facilities must be put in place, with firm commitment of support from the Faculty. This plan could also embrace the research needs of staff, in respect of research facilities that could also benefit the programme.

5. *Study process and students' performance assessment*

The views of graduates and social partners indicate that the graduate attributes are generally good. The combination of lectures, practicals and internships is adequate. Arrangements exist for student international mobility. Adequate sports clubs and student societies exist. Student accommodation is appropriate to meet the needs. Psychological assistance is available through the University chaplain. The University dispensary provides free medical aid. A career centre provides support to graduating classes. Students may seek the Dean's permission to follow individual study programmes. Scholarships are available covering both reward for achievement and recognition of social need. A clear grade criterion scale with ten divisions and summative evaluation scheme is applied. Feedback is provided to students on their results.

There is no noticeable student participation in applied research activities. This is presumably related to the absence of adequate laboratory facilities for research.

6. *Programme management*

There is a Study Programme quality monitoring team in place, ensuring ongoing programme review. The Study Programme Committee includes student and social partner representation. Although the day-to-day oversight of the programme is adequate, the Expert Review Group recommends that the Faculty Council needs to take a longer term strategic focus to the development of the programme and the resourcing of its staff and laboratory teaching/research facilities.

V. GENERAL ASSESSMENT

The study programme Civil Engineering (state code – 61202T109, 612H20003) of Siauliai University 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	2
2.	Curriculum design	3
3.	Teaching staff	2
4.	Facilities and learning resources	2
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	15

*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:

Team leader:

Dr.Mark Gerard Richardson

Grupės nariai:

Team members:

Prof.dr.Roger Frank

Mr. Salvijus Juodikis

Mr. Dionis Martsinkevichus

Assoc.prof.dr.Vincentas Vytis Stragys

**ŠIAULIŲ UNIVERSITETO PIRMOSIOS PAKOPOS STUDIJŲ PROGRAMOS STATYBOS
INŽINERIJA (VALSTYBINIS KODAS – 612H20003, 61202T109) 2012-12-06
EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-132 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Šiaulių universiteto studijų programa *Statybos inžinerija* (valstybinis kodas – 612H20003, 61202T109) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	2
2.	Programos sandara	3
3.	Personalas	2
4.	Materialieji ištekliai	2
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	Iš viso:	15

* 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

1. Programos tikslai ir numatomi studijų rezultatai

Programos tikslas – parengti statybos inžinerijos bakalauro laipsnį turinčius plačios specializacijos specialistus, siekiant patenkinti Šiaulių regiono poreikius. Be to, siekiama, kad bakalauro laipsnį įgiję asmenys galėtų tęsti studijas kitose aukštosiose mokyklose. Tai rodo, kad universitetui trūksta ambicingumo papildyti bakalauro studijų programą magistrantūros studijų

programa ir galimybė studijuoti doktorantūroje. Tai daro neigiamą šalutinį poveikį šiai programai skirtiems ištekliams.

Pati programa nėra pakankamai gili, kad adekvačiai aprėptų statybos inžinerijos sritį pirmosios pakopos studijose, tačiau yra orientuota į su pastatais susijusias studijų krypties šakas. Pavyzdžiui, Konstrukcijų inžinerija – pripažįstama statybos inžinerijos studijų krypties šaka. Tačiau programoje nepakankamai aprėpiama konstrukcijų analizė, kad ji galėtų vadintis Konstrukcijų inžinerijos studijų programa. Taigi, nors programos tikslai pagirtini, numatomi studijų rezultatai yra riboti.

Siaurų studijų rezultatų priežastis yra riboti programai skirti ištekliai. Ši programa yra didelė Šiaulių regiono vertybė, nes tai yra pirmasis žingsnis gabiems regiono studentams, kurie siekia vieną dieną tapti inžinieriais. Tikslai ir numatomi studijų rezultatai atitinka konstrukcijų projektavimo ir statybos srities bakalauro laipsnio reikalavimus, nors jei būtų pagilinti konstrukcijų analizės ir projektavimo aspektai, programą būtų galima pavadinti Konstrukcijų inžinerija ir taip būtų galima ją lengviau palyginti tarptautiniu mastu, kalbant apie absolventų gebėjimus ir kompetencijas.

Programos pavadinimą reikėtų pakeisti, kad studijų rezultatai ir programos sandara atitiktų plačios statybos inžinerijos srities specializaciją, pvz., konstrukcijų projektavimą ir statybą, arba atitinkamai pakeitus sandarą, ji galėtų vadintis Konstrukcijų inžinerija.

2. Programos sandara

Programa atitinka teisinius reikalavimus. Programa atitinka 240 kreditų apimties konstrukcijų projektavimo ir statybos kursą, tačiau galėtų būti žymiai sustiprinta, jei bus pritaikyta pripažinti studijų krypties šakai. Įtraukus daugiau konstrukcijų analizės ir projektavimo dalykų, programa galėtų siekti vadintis Konstrukcijų inžinerija.

Programos sandarai didelės įtakos turi turimi žmogiškieji ištekliai. Būtent dėl to programos sandara yra stipriai apribota. Neseni programos pakeitimai sumažino jos tarptautinį palyginamumą su kitomis panašiomis inžinerijos programomis. 2002 m. programa buvo pakeista, siekiant sustiprinti akademinis absolventų gebėjimus. Tačiau paskutiniai pokyčiai panaikino ankstesnį pagirtiną keitimą. Turimais duomenimis, pokyčiai buvo reikalingi dėl darbdavių išreikšto specifiškesnio mokymo poreikio, tačiau juos galėjo lemti ir riboti programai skirti ištekliai. Reikėtų atrasti pusiausvyrą tarp „švietimo“ ir „mokymo“, kalbant apie pirmosios pakopos statybos inžinerijos dalykus. Reikėtų atsispirti bet kokiam tolesniam spaudimui pabrėžti į darbą orientuotą „mokymą“ vietoj to, kad būtų vėl įtraukta daugiau fundamentaliųjų inžinerijos pagrindų žinių.

Kalbant apie konkrečius pokyčius, rekomenduojama išplėsti Statybos teisės (nuo 3 iki 6 kreditų) ir Akustinio projektavimo dalykus.

3. *Personalas*

Dėstytojai atitinka teisinius reikalavimus ir turi reikiamą kvalifikaciją. Studentų ir etatinių dėstytojų santykis yra aukštas – 25:1. Etatinių ir kviestinių dėstytojų santykis yra 6:1, o tai rodo, kad programos etatinių dėstytojų skaičius nepakankamas. Tai atsispindi darbo krūvio paskirstyme – darbuotojams tenka didelis krūvis. 2003 m. atlikus išorinį vertinimą, buvo rekomenduota atnaujinti dėstytojų kolektyvą, taip sumažinant jų amžiaus vidurkį. Nuo tada žmogiškieji ištekliai vystyti ribotai. Norėdami susidoroti su darbo kiekiu, darbuotojai turi dirbti viršvalandžius. Tai sisteminė problema, kai nepakankamai įvertinamas privalomų neauditorinių valandų kiekis. Nepakankamas išteklių kiekis turi neigiamų padarinių. Dėstytojams tenka dėstyti ne savo specializacijos dalykus, kurių praktinės ar tyrimų patirties jie neturi. Laikas, skirtas dėstytojų tyrimams ir tarptautinei tyrimų patirčiai kaupti, iš tiesų neegzistuoja. Kadangi tyrimai duoda medžiagos dėstymui, tai neigiamai veikia dėstomos programos kokybę.

Greičiausiai dėl ribotų žmogiškųjų išteklių nėra kada rengti doktorantūros programų. Galiausiai, magistrantūros ir doktorantūros studijų programų nebuvimas neleidžia dėstytojams kaupti tiriamosios veiklos patirties. Tai neigiamai veikia programos kokybę.

4. *Materialieji ištekliai*

Bibliotekos ištekliai, kuriuos teikia fakultetas ir centrinė universiteto biblioteka, yra puikūs. Kompiuteriniai ištekliai geri. Auditorijas reikėtų aprūpinti modernia įranga.

2003 m. atlikus išorinį vertinimą, buvo rekomenduota daugiau investuoti į laboratorijų įrangos atnaujinimą. Investicijos buvo skirtos, tačiau jų skyrimo tempas nepakankamas, kad būtų patenkinti visi poreikiai. Programai skirtų laboratorijų ištekliai išlieka ypač riboti; dauguma naudojamų įrangos pasenusi. Yra tik dvi laboratorijos, skirtos medžiagų stipriui ir konstrukcijoms. Bendras jų plotas – vos 108 m². Ši bazė vos tinkama programai, kuri suteikia pirmosios pakopos inžinieriaus kvalifikaciją. Reikia parengti plėtos planą, kaip sustiprinti laboratorinę mokymo bazę, ir gauti tvirtą fakulteto įsipareigojimą ją remti. Šis planas taip pat turėtų apimti darbuotojų tiriamosios veiklos poreikius, kalbant apie materialiuosius išteklius, ir tai galiausiai atneštų naudos programai.

5. *Studijų eiga ir jos vertinimas*

Remiantis absolventų ir socialinių partnerių nuomonėmis, bendrieji absolventų gebėjimai yra geri. Paskaitos, praktikumai ir praktika yra tinkamai suderinti. Veikia studentų tarptautinio judumo susitarimai. Taip pat veikia sporto klubai ir studentų draugijos. Studentų apgyvendinimo sąlygos tenkina jų poreikius. Universiteto kapelionas teikia psichologinę pagalbą. Universiteto

ambulatorijoje teikiama nemokama medicinos pagalba. Karjeros centras teikia paramą paskutinio kurso studentams. Studentai gali gauti dekaną leidimą studijuoti pagal individualią programą. Skiriamos stipendijos – tiek už pasiekimus, tiek kaip socialinė parama. Taikoma aiški dešimtbalė vertinimo kriterijų sistema ir apibendrinamasis vertinimas. Studentai gauna grįžtamąjį ryšį apie savo rezultatus.

Studentai nedalyvauja taikomųjų tyrimų veikloje. Tai greičiausiai susiję su tinkamos laboratorinės tyrimų bazės nebuvimu.

6. Programos vadyba

Veikia Studijų programos kokybės stebėsenos grupė, kuri nuolat peržiūri programą. Į Studijų programos komiteto sudėtį įtraukti studentų ir socialinių partnerių atstovai. Nors kasdienė programos priežiūra yra adekvati, ekspertų grupė rekomenduoja fakulteto tarybai nustatyti ilgalaikę strateginę tikslą tobulinti programą, didinti darbuotojų skaičių ir plėtoti laboratorinę mokymo / tyrimų bazę.

III. REKOMENDACIJOS

1. Rekomenduojama patobulinti programos tikslus, pripažįstant faktą, kad siūloma programa nepakankamai plačiai ir giliai apima statybos inžinerijos dalykus, kad galėtų vadintis pirmosios pakopos statybos inžinerijos studijų programa, kalbant apie platesnį tarptautinį termino naudojimą. Turėtų būti pasirinkta pripažįstama statybos inžinerijos šaka, susijusi su konstrukcijų projektavimu ir statybomis, ir atitinkamai turėtų būti suformuluoti tikslai ir studijų rezultatai. Tokia šaka galėtų būti, pvz., Konstrukcijų inžinerija, jei bus atsižvelgta į 2 rekomendaciją.

2. Rekomenduojama pakoreguoti programą bendruoju ir konkrečiu aspektais. Kalbant apie bendrąsias korekcijas, bet koks tikslų patobulinimas (žr. 1 rekomendaciją) turės poveikį. Pavyzdžiui, jei tikslai bus pakeisti pagal Konstrukcijų inžinerijos programą, reikės įtraukti dalykus su gilesne konstrukcijų analize. Kalbant apie konkrečius pokyčius, rekomenduojama išplėsti Statybos teisės (nuo 3 iki 6 kreditų) ir Akustinio projektavimo dalykus.

3. Rekomenduojama peržiūrėti temas, kurios galėtų būti perkeltos iš dalykų, dėstomų auditorijose, į studentų praktikos numatomus studijų rezultatus, siekiant sumažinti dėstytojų darbo krūvį ir užtikrinti, kad studentų mokymosi procesą palaikytų labiau į su studijų rezultatais tiesiogiai susijusias sritis sutelkta praktika.

4. Rekomenduojama aiškiau suformuluoti universiteto viziją apie jo indėlį į statybos

inžinerijos švietimą ir tyrimus Lietuvoje ir ši vizija turėtų būti atitinkamai įgyvendinama didinant darbuotojų skaičių, taip pat investicijas į darbuotojų kvalifikacijos kėlimą, materialiuosius išteklius, siekiant kuo geriausios naudos programai.

5. Rekomenduojama didinti dėstytojų skaičių, kad būtų tinkamiau paskirstytas dėstytojų krūvis ir jie galėtų daugiau laiko skirti tyrimams, o dėstomieji dalykai atitiktų jų patirtį.

6. Rekomenduojama, kad darbuotojai nustatytų tyrimų sritį, aktualią būsimiems regiono inžinerijos poreikiams, ir kad fakultetas įkurtų šios strateginės srities mokslinių tyrimų bazę su sinerginiu poveikiu programos studentų baigiamųjų darbų temoms.

7. Rekomenduojama parengti plėtros planą, kaip sustiprinti laboratorinę mokymo bazę, ir gauti tvirtą fakulteto įsipareigojimą ją remti. Šis planas taip pat turėtų apimti dėstytojų tiriamosios veiklos poreikius, kalbant apie materialiuosius išteklius, ir tai galiausiai duotų naudos programai.

8. Nors kasdienė programos priežiūra yra adekvati, ekspertų grupė rekomenduoja fakulteto tarybai nustatyti ilgalaikį strateginį tikslą tobulinti programą, didinti darbuotojų skaičių ir plėtoti laboratorinę mokymo / tyrimų bazę.

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