



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus Gedimino technikos universiteto

STUDIJŲ PROGRAMOS

CIVILINĖ INŽINERIJA (621H20002)

VERTINIMO IŠVADOS

EVALUATION REPORT

OF URBAN PLANNING AND ENGINEERING (621H20002)

STUDY PROGRAMME

at Vilnius Gediminas technical University

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Išvados parengtos anglų kalba
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Vilnius
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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Civilinė inžinerija</i>
Valstybinis kodas	621H20002
Studijų sritis	Technologiniai mokslai
Studijų kryptis	Statybų inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antra
Studijų forma (trukmė metais)	Nuolatinė (2)
Studijų programos apimtis kreditais	120
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Civilinės inžinerijos magistro laipsnis
Studijų programos įregistravimo data	2004-09-01

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Civil engineering</i>
State code	621H20002
Study area	Technological sciences
Study field	Construction Engineering
Type of the study programme	University studies
Study cycle	Second
Study mode (length in years)	Full time (2)
Volume of the study programme in credits	120
Degree and (or) professional qualifications awarded	Master's Degree in Civil Engineering
Date of registration of the study programme	September 1st 2004

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I. INTRODUCTION

1.1. Background of the evaluation process

The evaluation of on-going study programmes is based on the **Methodology for evaluation of Higher Education study programmes**, approved by Order No 1-01-162 of 20 December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC).

The evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: *1) self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI); 2) visit of the review team at the higher education institution; 3) production of the evaluation report by the review team and its publication; 4) follow-up activities.*

On the basis of external evaluation report of the study programme SKVC takes a decision to accredit study programme either for 6 years or for 3 years. If the programme evaluation is negative such a programme is not accredited.

The programme is **accredited for 6 years** if all evaluation areas are evaluated as “very good” (4 points) or “good” (3 points).

The programme is **accredited for 3 years** if none of the areas was evaluated as “unsatisfactory” (1 point) and at least one evaluation area was evaluated as “satisfactory” (2 points).

The programme **is not accredited** if at least one of evaluation areas was evaluated as "unsatisfactory" (1 point).

1.2. General

The Application documentation submitted by the HEI follows the outline recommended by the SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI before, during and/or after the site-visit:

No.	Name of the document
1.	Examples of student questionnaires
2.	Timetable of students
3.	Department action plans
4.	List of incoming/visiting teachers

1.3. Background of the HEI/Faculty/Study field/ Additional information

This report presents the findings of an evaluation of the master programme *Civilinė inžinerija* (621H20002). This two year full-time (3 years part-time) programme leads to a Master of Civil Engineering qualification.

This report is based on an analysis of the document “Civil Engineering Study Programmes. Civil Engineering (State Code 621H20002). Summary of Self-Assessment, Vilnius, 2016” (consisting of 33 pages main text, excluding annexes) and information gathered by the Review Team during a site visit to Vilnius Gediminas Technical University on 17 November 2016.

The site visit included:

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

The Review Team found it necessary to get clarification of some issues reported in the SER and was satisfied with the clarifications provided during the site visit.

It is worth mentioning that the same Review Team also evaluated the bachelor and master of Construction Technologies and Management (612J80003, 621J80003 resp.), the bachelor of Urban Engineering (612H27001) and the masters of Urban Planning and Engineering (621H27001) and Road Safety Engineering (621H22001). Many common aspects were present in these programmes. Therefore, the corresponding evaluation reports may contain some duplicate comments due to identical data, situation or concerns in order to be read independently.

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 Mr. Pranas Stankus in discharging its responsibilities to SKVC.

1.4. The Review Team

The review team was completed according *Description of experts' recruitment*, approved by order No. 1-01-151 of Acting Director of the Centre for Quality Assessment in Higher Education. The Review Visit to HEI was conducted by the team on 17/11/2016.

- 1. Prof. Philippe Bouillard (team leader)** Head of BATir (Civil, Architectural and Urban Engineering) department at Université Libre de Bruxelles, (Belgium);
- 2. Prof. Alfred Strauss**, Head of the Institute of Structural Engineering at University of Natural Resources and Life Sciences (Austria);
- 3. Prof. Tõnu Meidla**, Head of Department of Geology at Faculty of Science and Technology in University of Tartu (Estonia);
- 4. Prof. Juan Martinez**, Professor of Civil Engineering at (Institut National des Sciences Appliquées (INSA) of Rennes (France);
- 5. Dr. Mindaugas Gikys**, Director of joint stock company AIF (Lithuania);
- 6. Mr. Simonas Bulota**, Phd Student in Material Science at Kaunas University of Technology (Lithuania).

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The aims of the programme are well defined and clear, indicating that VGTU is running a strong civil engineering programme overall. The aims of the programme are made public on the VGTU website and the programme is compiled in compliance with Lithuanian qualifications framework 7th and level 7 of European qualifications framework and European higher education qualifications framework.

Several specialisations are distinguished within the programme (Road, Urban Engineering Information Systems, and Urban Transport Systems) and student choose different track already from the very beginning of studies. Such an early choice of specialisation is questioning the comprehensiveness of this programme and is also somewhat lowering its potential.

The aims and learning outcomes of the Civil Engineering master programme and the specialisations within are defined with sufficient clarity. The programme is generally consistent with the type and level of studies and the level of qualifications offered, being largely in compliance with the principles of creating study programmes elsewhere in Europe.

The demand for graduates of Civil Engineering programme is convincingly argued. This estimate is based on the approximate numbers of current positions and potential vacancies, reflecting a reasonably high potential demand by the labour market. The adequacy of this estimate was generally confirmed by the social partners. This confirms that needs of the labour market are generally well met by the content of the programme. The social partners specifically emphasised high demand for specialist with strong engineering background.

The depth of requirements on knowledge and obtained skills are generally conforming the overall requirements to master studies. At the same time, the available specialisations are narrow and limited in number as there are parallel specific programmes of broad field of civil engineering.

The learning outcomes are not well implemented, being mostly written in vague terms not allowing proper assessment and consistent use. The institution provided insufficient evidence on practical application of the learning outcomes in the programme development. The stakeholders (teaching staff, students, graduates, employers) were not confident about the learning outcomes. The Review Panel recommends developing a systematic formal way to periodically review them involving all the stakeholders (students, graduates, social partners and teaching staff). The specific features of the programme of Civil Engineering are not very clearly reflected by the title that is much too general.

2.2. Curriculum design

The Civil Engineering curriculum (120 credits in total, 60 credits per year) meets all legal requirements regarding its structure and individual components. The graduation thesis comprises for 39 credits which is remarkably exceeding the lower limit of credit points (30).

The Review Team gathered firm evidence of an English version of the same programme that is running in parallel. The teaching staff repeatedly noted that the lack of international students attending the Civil Engineering studies is due to the fact that the same programme is also delivered in English language, to a different group. The English version of the programme was not subject to assessment and the documentation provided by the Department did not contain references to the courses and groups studying in English.

The sequence of modules and courses of the Civil Engineering programme is logical and generally balanced. The list of courses is short and no unnecessary overlaps could be detected in the content of courses.

The practical training is granted exclusively through the graduation thesis, as no other practical training is included in the programme. This solution may not be optimal, considering the demand for practice-oriented graduates with strong engineering background. Therefore, the Review Panel recommends including lab training, including risk analysis, in the programme.

The content of courses and modules in the Civil Engineering programme is generally consistent with the master level studies and is sufficiently supporting an academic study. Professional content of the modules is sufficient for developing qualified specialist.

Students are however insufficiently encouraged to attend lectures in English. Although the participation of guest lecturers was mentioned in the report provided by the Department, the assessment team did not gain evidence that these lectures represent a part of regular studies. Including compulsory elements, lectures and courses in English language could be the first steps towards 'internationalisation at home' and might also further encourage the students to accept the proposals for international mobility. Wider application of English language in teaching could be implemented, inter alia, by introducing student paper summaries in English and by developing course material in English. Currently, the Review Team observed insufficient attention to the development of professional English and this is considered a weakness of the programme.

Appropriateness of the professional content of the modules and subjects is evident from the materials provided by VGTU. The teaching methods, however, are rather traditional, not remarkably innovative. A particular feature of the programme at VGTU is a rather limited number of contact hours but the scope of the programme is sufficient to ensure learning outcomes. The content of the programme is in most aspects reflecting the recent achievements in

science and technologies, the individual subjects being mainly provided by specialists with a PhD or equivalent degree. Further introduction to the Building Information Modelling software and collaborative approaches (BIM) can be recommended.

Considering the large proportion of students combining their studies with a job, the Review Panel recommends making full usage of ECTS opportunities in terms of crediting work experience or club association projects.

2.3. Teaching staff

The analysis of the documentation shows that the teaching staff meets legal requirements with more than 80 % holding a scientific degree and more than 60 % showing compliance between research field and teaching topics. Additionally, the volume of study field subjects taught by teachers holding a Professor position is not less than 20 % as expected.

The teaching staff is recognised as committed and qualified; the great majority being involved in research and/or industrial projects, some of them at international level, producing publications and participating in national or international conferences.

Observation of table 8.6.4 (Annex 8.6) for academic year 2015-2016 shows a number of 29 teaching staff involved in the master programme of Civil Engineering for 46 students in total. During the period 2012-2016, the average ratio staff/students is of 0.6 (annex 8.6, table 8.6.3); the number of teaching staff being therefore sufficient for ensuring globally the programme with good conditions. However, a great discrepancy exists between the ratio values of the specialisations of “Roads” (0.71) and “Urban Transport systems” (0.97) due to the higher number of students in Roads specialisation.

When looking at the movements of teaching staff from academic year 2012-2013 to 2015-2016 (annex 8.6, table 8.6.4), we observe a global decrease: 14 departures vs 6 arrivals that are partly due to the reduction of the number of specialisations from 3 to 2, but the self-evaluation report mentions leaving of staff “to better paid positions in business sector or other higher education institutions”. During the same period 5 promotions were awarded and 4 people moved to lower positions, showing positively that teaching staff structure is not totally static and that there is a strict appraisal procedure.

The pedagogical workload of teachers inside the programme has decreased significantly during the period; in 2015-2016 the average academic (teaching) load, calculated from table 8.6.6 (Annex 8.6), was equal to 100 academic hours with a huge dispersion (from 10 to 250 hours) explained by the presence of full time and part-time staff and by the involvement of most teachers in other programmes too.

Teaching staff is given the opportunity to attend internships, either in the country or abroad, especially through Erasmus+ staff mobility programme: about 100 visits were made in total between 2012 and 2016.

Besides existing internships and mobility, the Review Panel recommends developing training of teaching staff on the subject of learning outcomes, as they are not yet playing a central role in the study process.

2.4. Facilities and learning resources

VGTU makes auditorium rooms, dedicated laboratories, reading rooms within the library and specialised databases and software available to the students. 25 auditorium rooms are available with some recently renovated. The classes take place in the premises of the Faculty of Environmental Engineering, Saulėtekio al. 11 and the Urban Engineering Department laboratory, Linkmenų str. 28. There are no problems to use two different locations because there is no need to travel to any other location on the same day. There are plans in the future to move the laboratory from Linkmenų str. 28 to Saulėtekio Avenue 11.

Modern and operational multimedia equipment, including internet connection, is available in the rooms, sometimes sponsored by social partners. Health and safety conditions of auditorium rooms are complying with the regulations. The students have the opportunity to work in the main class rooms with 30 places and computer room with 20 workplaces (department of Roads). An additional computer room (15 places) is available as well in the laboratory of Urban Traffic. The Review Team considers that the premises are very good and suitable to deliver the programme.

The students are not trained to perform experiments in the laboratories in this programme but some final thesis requires experimental work. The laboratory equipment and measurement instruments are relevant for this purpose. The equipment is maintained operational and sometimes renewed. The safety conditions in laboratories should however be improved by clearly demarcating restricted areas where appropriate. A further attention should be given to training the students to health and safety issues in laboratories, beyond getting their signature on a standard form. Lab training could be developed and include assignments on risk analysis.

The students are trained to use specialised software as well. The list of software is extensive and very well suited for the study process. The programmes are up-to-date and useful for the urban engineering market. A better attention should be given however on further implementing the BIM software and collaborative approach in the study programme.

The accessibility to resources for undergoing practical training is good. The Departments are participating in the real-life projects, performing feasibility analyses, developing collaboration with several Lithuanian Associations, municipalities and private companies. The departments have developed relevant collaboration with the social partners and are making effort to support the students in getting in contact with practical case-studies.

VGTU has a Central Library with 11 reading rooms and 330 working places. The Central library offers very flexible working time and access to databases, books, journals and other e-resources. The Central library is also providing printing, scanning, binding services.

Recent books and journals are available in English and Lithuanian both in the Central library and reading rooms. There are also some specialised books in Lithuanian published by VGTU which also edit their own scientific journals. During the study process, the students have the opportunity to use ALEPH computer system, which includes 10 Lithuanian libraries, and the Lithuanian Standardisation Department database.

The teachers are using handouts, slide presentations, videos, special equipment and software. The teachers and students are using the learning management system Moodle. The Review Panel appreciates the large use of Moodle but recommends considering further its possibilities and other internet tools, beyond the basic information transfer. The number of resources available in Lithuanian and English are suitable for the study process.

2.5. Study process and students' performance assessment

The admission to the Civil Engineering master programme is open to students holding a bachelor degree in Civil engineering, Engineering, Environmental engineering or Energetics study fields. Graduates must fulfil requirements for general and special completed subjects which is different for each of specialisation. There is no entrance exam and all applicants are rated by weighting bachelor degree final grade, subject exams marks and research papers. Admission is organised by the Student Admission and Information Centre of University.

Considering the number of applications for the period 2011 to 2015, a fluctuation of interest can be observe in the Road specialisation, and a large decrease of interest in Urban Transport Systems specialisation – from 85 applicants in 2012 to 43. Regarding the applicants who chose this study programme as their first priority, there is clear decreasing tendency as first priority in Urban Transport Systems and fluctuating in Roads specialisation. The latter could be clearly subsequent to the existence of a closely related master programme is Road Safety

Engineering. Regarding the decreasing number of students, the Review Panel recommends to intensify the efforts to increase the visibility of the programme involving all the stakeholders.

The programme is available for full-time studies. The schedule for both classes and examinations is rational. Classes start in the afternoon since most of the students are already employed. Drop-out rates of students are stable and good with a retention rate from 70% to 100% for the period of 2009-2015. Best practices could however be shared with the Urban Engineering Information Systems specialisation to make the drop-out ratio lower and closer to Roads and Urban Transport Systems specialisations. Regarding the students already employed, the Review Team suggests making full use of ECTS opportunities in terms of crediting work experience or club association projects. Student surveys are collected and used. Participation of students should however be improved.

The students have the opportunity to participate in Young Scientist Conference “Science – Future of Lithuania” which is hosted by VGTU. More options to foster student participation in research should be encouraged.

Student mobility is encouraged by VGTU International Relations Office. From 2011 to 2015 only 8 students went abroad by Erasmus+ mobility programme. Students claimed that they are getting regular information about Erasmus mobility from University administration, but lack of time and concerns losing their position in company are the main reasons why Erasmus mobility figures remain so low. The Review Panel however noticed a very large consensus of the need and relevance of international exchanges and recommends urgently analysing the current barriers, proposing and implementing appropriate solutions.

The students have good access to several sports, health and cultural facilities. There is an active VGTU Students Association which organises various events and activities and represents the students inside and outside of university. Accommodation is provided to non-resident students. VGTU Carriers and Integration Office provides individual and group consultations for students about career opportunities, including during Career days. Multiple scholarships are available for students based on study, merit or social circumstances. Student loans are subsidised by state.

The assessment system is based on a 10 points grading system. It is very clear and publicly available. It could be improved by elucidating the grade significance consistently with the learning outcomes. Students can receive informal feedback about their grades and an appeal procedure is available. In order to encourage Erasmus mobility, the University defined a clear relationship between ECTS and University grading systems. The final grade is a weighted result of exam, course project, course work, integrated project, report and final project marks.

Social partners reported good collaboration with the Department of Urban Engineering. It could however be strengthened by developing placement opportunities.

2.6. Programme management

The master in Civil Engineering is supervised by VGTU Department of Urban Development and Department of Roads (Faculty of Environmental Engineering). The programme is managed by a study programme committee where each department is represented together with student and social partner representatives. It is recommended to better involve the teaching staff in the management of the programme and quality processes. Further approval by Faculty study committee, Faculty and University Council is required for the changes to be implemented, which is usual.

The Review Team has noticed many closely related civil engineering programmes and questions whether or not it is necessary. The Review Team observed much confusion about the specificity of each programme among the stakeholders (students, graduates and social partners), particularly for this whose title does not reflect the content. The Review Team recommends that VGTU examines the more efficient use of resources.

VGTU has implemented an information system “Alma Informatika” to collect all data related to the study programmes, but there is still a need to further develop the database to include information from graduates (first employment, surveys) and social partners.

Since 2007, an automated student surveying system has been successfully operating in the university information system. Two student surveys on the course units are organised annually: after each term (winter and spring) exam sessions. The survey results reveal the students have a very high level of satisfaction about the courses and teachers. However, the low rate of responses requires further actions to foster student participation.

The internal quality assurance system of the university is based on European Standards and Guidelines for Quality Assurance in Higher Education. VGTU has implemented consistent procedures regarding programme management, students’ assessment, staff training, study resources, career services, and students’ participation. The Review Team is acknowledging such procedures and encourages VGTU to continuously improve their implementation and quality.

The main responsibility for the programme quality assurance belongs to the study programme committee and the faculty study committee. The Review Team acknowledges that internal quality measures have been implemented but their effectiveness should be better substantiated by evidence in the self-evaluation report. Moreover, the Review Team recommends

paying a better attention on its quality as it currently contains many mistakes or misrepresentations.

The master in Civil Engineering has been accredited by SKVC for 6 years in 2011 but VGTU has requested to anticipate the external review process to synchronise all civil engineering programme accreditation. The Review Panel regrets that the recommendations have not been properly analysed and only a few improvements have been implemented. The Review Panel recommends further to systematically collect information and data on the programme and review it periodically by focusing more on feedback and developing and implementing a coherent plan of actions. Finally, a better attention should be paid to communicating the changes to the stakeholders, particularly if they have been surveyed.

III. RECOMMENDATIONS

1. The Review Panel noticed that the current title of the programme (civil engineering) is misleading and recommends focusing on the actual content.
2. The Review Team recommends that VGTU examines the more efficient use of resources. The Review Team questions whether or not it is necessary to have so many closely related separate civil engineering programmes in VGTU.
3. In terms of programme management, the Review Panel recommends to systematically collect information and data on the programme and review it periodically within the study programme committee involving all the stakeholders including the teaching staff.
4. In the same regard, the Review Panel recommends to pay a better attention the recommendations of the accreditation report and to design a subsequent action plan.
5. Whereas the learning outcomes are now available, the Review Panel noticed that they are not yet playing a central role in the study process and recommends developing a systematic formal way to periodically review them involving all the stakeholders (students, graduates, social partners and teaching staff).
6. In this regard, the Review Panel recommends developing training and workshops for the Teaching staff in order to enhance the coherence between learning outcomes, methods and assessment.
7. Regarding the curriculum design, the Review Panel recommends including lab training in the programme.
8. The Review Panel appreciated the large use of the learning management system Moodle but recommends considering further its possibilities and other internet tools, beyond the basic information transfer.
9. In terms of internationalisation, the Review Panel noticed a very large consensus of the need and relevance of international students' exchanges offered by the Erasmus+ programme but their number remains low. It is recommended to urgently analyse the current barriers and propose and implement appropriate solutions.

10. In this regard, the Review Panel would like to repeat the recommendation to improve the students' level in English language by offering courses, learning activities, study material and assigning coursework in English.
11. When examining the final theses, the Review Panel noticed major deficiencies in citations to the literature and recommends strengthening urgently expectations in this regard.
12. Regarding the decreasing number of students, the Review Panel recommends to intensify the efforts to increase the visibility of the programme involving all the stakeholders.
13. Considering the large proportion of students combining their studies with a job, the Review Panel recommends making full usage of ECTS opportunities in terms of crediting work experience or club association projects.
14. In terms of research, the Review Panel recommends better engaging the Faculty members and the students in research projects, particularly international to foster exchange of best practices.
15. The safety conditions in laboratories should be improved by clearly demarcating restricted areas where appropriate and training the students to risk analysis.

IV. SUMMARY

This two year full-time (three year part-time) programme leading to a Master of Civil Engineering is consistent with the aims and learning outcomes and with the type and level of studies and the level of offered qualifications. The specific features of the programme of Civil Engineering are however not very clearly reflected by the title that is much too general.

The curriculum design meets the legal requirements and the study subjects and/or modules are spread evenly. The content of the modules is generally appropriate for the intended learning outcomes. The staff is well qualified to deliver the programme and staff –student ratio is exceptionally good. The staff is properly engaged in research, professional bodies and self-continuous development, though not always evenly. The facilities in terms of classrooms, libraries, reading rooms, computer rooms are very appropriate. The study process and student assessment are generally adequate. The Master of Civil Engineering is supervised by VGTU Department of Urban Development (Faculty of Environmental Engineering). It is managed by a study programme committee.

However, the Review Team has identified major deficiencies in terms of programme management where the systematic review and upgrade is not yet properly implemented or supported by action plans. The need to run many closely related programmes in civil engineering by VGTU has also been questioned. The Review Team further suggested other possible improvements. A better attention should be given to the implementation and review of the learning outcomes by fostering a collaborative approach with all stakeholders and offering appropriate training for the staff. The internationalisation should be extended, starting by offering learning opportunities to improve the English level of the students, fostering Erasmus exchange and enlarge the staff involvement in international projects. Training the students to searching and citing the international literature must be improved. Further actions should be taken to make the programme more visible. Safety conditions in the laboratories require a better attention.

Finally, the same programme is available in an English version. No evidence was made available to the Review Panel which is unable to assess and confirm the quality of this programme.

V. GENERAL ASSESSMENT

The study programme *Civil engineering* (state code – 621H20002) at Vilnius Gediminas Technical University is given positive evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Programme aims and learning outcomes	2
2.	Curriculum design	3
3.	Teaching staff	3
4.	Facilities and learning resources	4
5.	Study process and students' performance assessment	3
6.	Programme management	2
	Total:	17

*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:

Prof. Philippe Bouillard (team leader)

Grupės nariai:
Team members:

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