



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus technologijų ir dizaino kolegijos

STUDIJŲ PROGRAMOS *STATINIŲ INŽINERINĖS SISTEMOS*

(valstybinis kodas – 653H24004)

VERTINIMO IŠVADOS

EVALUATION REPORT

OF *BUILDING ENGINEERING SYSTEMS*

(state code – 653H24004)

STUDY PROGRAMME

At Vilnius College of Technologies and Design

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Išvados parengtos anglų kalba
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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Statinių inžinerinės sistemos</i>
Valstybinis kodas	653H24004
Studijų sritis	Technologijos mokslai
Studijų kryptis	Statybos inžinerija
Studijų programos rūšis	Koleginės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinės (3), iššęstinės (4)
Studijų programos apimtis kreditais	180 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Statinių inžinerinių sistemų profesinis bakalaurs
Studijų programos įregistravimo data	2012-05-18

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Building Engineering Systems</i>
State code	653H24004
Study area	Technological Sciences
Study field	Civil Engineering
Type of the study programme	College type studies
Study cycle	First
Study mode (length in years)	Full-time (3), Part-time (4)
Volume of the study programme in credits	180 ECTS
Degree and (or) professional qualifications awarded	Professional Bachelor in Building Services Systems
Date of registration of the study programme	18-05-2012

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The Centre for Quality Assessment in Higher Education

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I. INTRODUCTION

1.1. Background of evaluation process

The evaluation of on-going study programmes is based on the **Methodology for Evaluation of Higher Education Study Programmes**, approved by the Order No 1-01-162 of 20th December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter, SKVC). 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 the Self-evaluation Report prepared by a Higher Education Institution (hereafter, the HEI)*; 2) *a visit of the Review Panel at the higher education institution*; 3) *preparation of the evaluation report by the Review Panel and its publication*; 4) *follow-up activities*.

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

The programme is **accredited for 6 years** if all evaluation areas were 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 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.	QA manual and documentation
2.	MoMs of programme related committees
3.	Student Transcripts

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

Vilnius College of Technologies and Design was established (in its current structure) in 2008 under resolution No 785 of the Government of the Republic of Lithuania, with the integration of Vilnius Technical College into Vilnius College of Construction and Design. However, the origin of different faculties dates back to as far as 1930s (Technical School). Petras Vileišis Railway Transport Faculty roots from 1947, the establishment of Vilnius Railway Transport Technical School. The Civil Engineering Faculty evolved from Vilnius Technical School of Construction, established in 1954, and so did the Design Faculty.

The Vilnius College of Technologies and Design (VCTD) consists of 4 faculties: Civil Engineering faculty, Design faculty, Petras Vileišis Railway Transport faculty and Technical faculty. The study programme Buildings Engineering Systems is found under the study area of Technological Sciences, within the study field of Civil Engineering.

The programme awards the degree of Professional Bachelor in Building Services Systems.

1.4. The Review Panel

The Review Panel was composed according to the *Description of the Review Team Member Recruitment*, approved by the Order No 1-01-151, 11/11/2011 of the Director of the Centre for Quality Assessment in Higher Education. The visit to the HEI was conducted by the Panel on 2nd of December, 2016.

1. Assoc. Prof. George Markou (Chair of the Team)

Associate Professor at ALHOSN University, United Arab Emirates.

2. Assoc. Prof. Andrus Aavik

Associate Professor at Tallinn University of Technology, Estonia.

3. Assoc. Prof. Liga Gaile

Associate Professor at Riga Technical University, Latvia.

4. Assoc. Prof. Vincentas Vytis Stragys

Vice Chairman at Lithuanian Association of Civil Engineers, Lithuania.

5. Tautvydas Šimanauskas

Masters student at Kaunas University of Technology (Building Services System field), Lithuania.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The study programme of Building Engineering Systems (BES), at the VCTD, aims to educate specialists of building services systems that will be able to design, install engineering systems and supervise the works. It also aims to derive graduates that will be able to solve professional and public problems under competitive market conditions; to train them so as to develop creative thinking, good communication skills, be team players, be able to take individual decisions, be responsible for their activities, thus strive to successfully develop in their professional field. Upon successful completion, the graduates are awarded with the Professional Bachelor's Degree qualification in Building Services Systems. The RP found the aims clear but not well stated (the English translations requires improvement) within the SER.

The RP visited the website of VCTD, where the only link available (English version) was referring to the Civil Engineering Programme (8th Nov. 2016). Therefore, the aims and learning outcomes of the programme were not accessible to the public. This can be misleading and confusing to foreign applicants. The College's administration stated that the website is under maintenance and will be ready soon, in both Lithuanian and English languages.

The aims of the study programme are divided into two main groups and for each group different programme learning outcomes (PLOs) were developed (see Table 2 pages 6-7 of the SER). A total of 7 PLOs are presented in Table 2, where the mapping to the offered courses is provided. After a detailed study of the provided Table, it was found that the programme requires to further update their PLOs by including the "long-life learning" skill within one of the PLOs (or add a new PLO), hence this should be accordingly incorporated within the courses' syllabi. It is recommended to add an extra PLO that will include this skill. Long-life learning is a significant skill of any engineer or specialist that is active within any engineering industry and should be included within one of the PLOs of the programme. In addition to that, the RP noted that the internship course was not correlated to all of the learning outcomes, being a course that allows the students to experience the application of what they have learned through their studies. Courses like Final Project/Thesis and Internships should satisfy all PLOs of the programme, while a balanced mapping should be in place. The RP recommends the development of a matrix through which the number of courses that are correlated with each PLO could be easily seen and a balanced mapping should be foreseen. Also by using a coding system for each PLO, it will allow the compact inclusion of the PLOs within tables (especially syllabi and instructor reports),

thus will allow the development of a mapping matrix. It is also recommended to include all offered courses by the programme, within this matrix and overall manage the mapping in order to achieve a balanced correlation.

The aims and PLOs (as described in the SER of the BES programme) are based on the public needs and the needs of the labour market. The construction industry of Lithuania that relates to the building development and maintenance showed an increase the last 5 years hence the labour market demands will be able to absorb the new graduates. Given that the programme is aiming on delivering Building Systems Specialists, its developed aims and programme learning outcomes were found to be based to the professional requirements.

According to the Lithuanian Qualification Framework (Level 6), the BES programme aims and programme learning outcomes were found to be consistent with the type level of studies and qualifications offered by the programme (as described within the SER).

The RP found that the name of the programme (Building Engineering Systems), its learning outcomes, content and the qualifications offered are compatible with each other.

2.2. Curriculum design

The study programme Building Engineering Systems is one of the three study programmes in the field of civil engineering that is offered at the VCTD. The programme BES with a total volume of 180 ECTS credits (e.g. 4,800 academic hours) complies with the Order of the Minister for Education and Science of Republic of Lithuania “General Requirements for the First Degree and Integrated Study Programmes” (9 April 2010 No V-501). The programme is delivered for full-time (3 years, e.g. six semesters) studies and for part-time (4 years, e.g. eight semesters) studies with an equal subject volume. Compliance with the minimum requirements of legal acts meets the volume of the General College study subjects (with 15 ECTS), subjects of the study field have 135 ECTS, special study subjects have 30 ECTS, optional subjects have 9 ECTS and for the Practice volume a 33 ECTS is foreseen, while the Final Project has 12 ECTS. In the programme one module is incorporated (with 15 ECTS) that meets the legal requirement of minimum 10 ECTS.

The programme curriculum design is kept in good balance between providing basic knowledge of general Engineering fundamentals and imparting relevant practical skills in different subject areas of building engineering systems. The first two semesters focus on the general engineering fundamentals. The third and fourth semesters provide studies on the key study field subjects.

Finally, the fifth and sixth semesters place emphases on the special study subjects such as Optional subjects, Final thesis and Practice, therefore, increasing the students' individual work hours and decrease the theoretical lectures. The volume of the consultation contact hours is consistent throughout all of the studies with a slight increase towards the end of studies.

Individual working hours do not exceed the 50% of total hours. Also the proportion of theoretical lectures (19% for full time studies) is considered appropriate for this type and level of studies. The study plan reveals that study subjects are spread evenly and their themes are not repetitive.

The Course descriptions were found to be well detailed. It can be seen that the content and methods of the subjects and module are appropriate for the achievement of the intended learning outcomes. Each subject ends with an individual work (IW) or a final exam (E). 42% of the subjects foresee a final exam. In total 33 subjects of the programme have 40 final assessments, meaning that for subjects that last more than one semester, intermediate assessment is conducted. Nevertheless, the RP suggests the strengthening of the analytical part of the Final Project by reflecting the deeper professional knowledge gained throughout the study years.

The construction of the Core Curriculum and scope of the BES programme is appropriate to ensure the defined learning outcomes as it covers all of the civil engineering generic groups and is consistent with other European programmes in Building Engineering Systems. Although the study programme BES has a volume (25%) of similar subjects with the study programme Civil Engineering, it was found that the content of the subject is adapted to the relevant programme and intended learning outcomes.

The students are additionally familiarized with the latest achievements in science and technologies via educational and cogitative trips to a real-life projects and to the companies producing building materials or systems and operating in the field of engineering systems of buildings. Consideration is given to incorporate the use of Building Information Modeling (BIM) into the study process. This is done through joint projects between students of BES and students of the Civil Engineering programme and is considered as good practise.

2.3. Teaching staff

All the teachers, 25 in 2015/16 academic year (a/y), working in the BES study programme, have at least a Master's degree or an equivalent higher education degree in various fields of science (01T, 02T, 10T, 01S, 03S, 06S, 07T, 04H, 02P, 03P).

Ph.D. holders teach the 17,2 % of the study field subjects. 3 teachers of the BES study programme were Ph.D. holders in 2015/16 a/y and 4 teachers in 2016/17 a/y.

Subject teachers of the BES study programme have a suitable and adequate practical and pedagogical experience (see Annex 2 of SER) to ensure learning outcomes. 80% of the programme teachers have at least three years of practical experience in the subject field. The majority of teaching staff has a long teaching experience (only 3 teachers out of 25 have less than 5 years, Annex 2 of SER). Teachers' practical experience update requirement is regulated by the procedure, established with the College internal document (2 teachers updated practical experience in enterprise during 2015 and 3 teachers in 2016). Nevertheless, College has mentioned in the SER insufficient updating of teacher qualifications through internships at companies, as a weakness of the BES study programme. The RP recommends to establish a clear and formalized procedure for the renewal of the practical experience of staff.

Teachers participated in the project "Implementation of Competences Improving Model for Vocational Teachers and College Teachers", which aimed to provide teachers with technological competences to work in a new sectorial practical training centre base.

In order to achieve individual and organizational goals, teachers are preparing annual professional and pedagogical competence improvement plans. Every five years, the teachers are participating in the (re)election process of their position when their qualification is re-evaluated.

Teachers with practical experience in the subject area supervise students' practical training. All practice supervisors in companies have at least a Master's qualification degree and at least three years of practical work experience in the relative study field.

During the assessment period, 9 teachers had exchange visits to educational institutions of 6 countries. The College had also 9 incoming teachers from Poland, France, Turkey, Portugal and Kazakhstan.

The Procedure of Composition of Educational Workload of the Teachers of the College regulates the educational workload of teachers, which is 1548 hours per a/y and includes auditorial work (not more than 50%), non-contact hours (15%), methodical activities (15%), applied scientific research (10%) and organizational activities (10%).

The Staff/Student Ratio of BES study programme is 1:13, which is ideal according to international standards and the number of the teaching staff is adequate to ensure learning

outcomes. However, taking into consideration, that 18 teachers out of 25 BES study programme teachers, which are also included in the teachers' list of Civil Engineering study programme, that has a Staff/Student Ratio of 1:19, makes the overall Staff/Student Ratio of two programmes 1:32 for those 18 teachers. This ratio is high and negatively influences the teachers' ability to dedicate enough time to all students. The RP recommends the new faculty employments for the BES programme to be performed according to the real 1:32 ratio and not the virtual 1:13 that was given in the SER.

Staff turnover in the BES study programme is small based on the teaching experience data found in the SER, Appendix 2. The average age of the teachers, teaching at the BES study programme, is 44,7 (12% are under 30, 44% are 31-45, 32% are 46-60 and 12% are 61 and over). The average age and the age distribution are found to be satisfactory.

During the evaluation team site visit meeting jointly with the Civil Engineering and Building Engineering Systems programmes teachers, it was noticed that from the 12 teachers present only 3 were employed at a full-time basis and the rest were part-timers. The faculty were asked to provide the reason that led them to choose the part-time option, where the clarified reason for that was the low remuneration of College work, which mostly depends from the governmental policy and cannot be influenced by the College. The large number of part-time teachers has influenced also the study process as study programme students noted. Students complaint that full-time teachers have more time for personal consultancy than part-time teachers and they wished to have more full-time faculty. The RP recommends the increase of the full-time faculty in the programme in order to overcome this weakness.

88% of teachers have pedagogical experience over 5 years (see Annex 2 of SER). New teachers are hired using a system of public competition for the position where the candidates are evaluated based on their qualifications by using criteria that assess their academic, pedagogical and professional activities.

Teachers' professional improvement is regulated by the College Outlines of Qualification Requirements of Duties. All teachers have equal possibilities to update their qualifications. They can choose method of qualification upgrade themselves and their achievements are evaluated during the attestation every 5 years.

Main qualification update methods foresee the participation at scientific conferences (in average 15 persons annually), international exchange programmes (3 persons in a/y), courses and

seminars (25 persons in a/y) and internships (1 person in a/y, in total 5 persons during the evaluation period). The practical knowledge that is acquired during the internship is used for updating the content of the taught subjects.

Teachers are participating in international exchange programmes (9 teachers in 6 countries during the evaluation period). The College organizes Erasmus+ funds applications for exchange twice a year. Erasmus+ exchange visits provides teachers with the possibility to take over the best practice of international partners. However, the College has mentioned insufficient updating of teacher qualifications through international activities as a weakness of the BES study programme. The RP recommends the development of a solid strategy in order to alleviate this weakness.

The teachers of the BES study programme are involved in research, which is closely related to the study programme and have had several presentations on different national and international scientific-practical conferences, also published study programme topic related papers (see Annex 3 of the SER).

During the assessment period teachers of the study programme cooperated with other higher educational institutions, in performing joint applied research and in other activities (competitions of students, international conferences, exchange visits, etc.), that are directly connected with the BES study programme.

Teachers also participated in the project “Enhancing Responsible Research and Innovation through Curricula in Higher Education (EnRRICH)” in 2015, using the EU Scientific Research and Innovations Programme “Horizon 2020” possibilities. In addition to that, the network of partner enterprises was expanded to create wider basis for applied research.

Best practice, obtained from the cooperation and research activities, has been implemented in the BES study programme and the content of subjects/modules has been updated. As a result of the cooperation with social partners some learning/teaching facilities were updated, which helped students to develop professional knowledge and to participate more widely in applied research.

Applied research projects and expert activities implementation is an important additional source of funds for the College and according to the SER insufficient development of applied scientific, contracting and expert activities is mentioned as a weakness of the study programme. In order to alleviate this weakness, the College has decided to develop the applied scientific activity plan for

the years 2017-2020. The activity plan has to be assessed in the new external evaluation cycle of the programme.

The students (who participated in the meeting with the RP) were asked to rate the BES programme's teachers, grading them with an overall 8.5 out of 10, while the alumni graded them with an overall 8 out of 10. This is an evidence of the students' satisfaction.

2.4. Facilities and learning resources

For the academic needs of the BES programme, the College provides with 23 classrooms and 5 laboratories. All premises are equipped with technical software facilities and learning resources. Classrooms and laboratories comply with hygiene norms HN 102:2001.

For the studies requirements of the BES programme, the Campus is integrated with technical facilities and laboratories such as: computerized work places, multimedia, room with mobile screens and magnetic boards. Laboratories are also equipped with specialized stands for experimental activities of the programme: stand of water management for buildings, stand of heating system, stand for air conditioning, hydraulic and heat pump. The laboratory of Geodesy is equipped with modern geodetic equipment. The laboratory of Material Sciences and Standardization is equipped with instruments and devices for testing various building materials. All laboratories were found to be adequate and well maintained.

Organization of professional practices is regulated by the Academic Council Protocol. Practices are of 3 types and are held by organizing professional/educational activities. Specialized practice of Geodesy is carried out within the College premises, while students get the chance to use modern geodetic equipment. Industrial and Final Practice courses are organized and take place at innovative construction companies of Lithuania. A progressive tendency is for the students to perform their practice abroad according to the Erasmus Plus programme.

In 2015 six students performed their practice outside Lithuania (Norway and Czech Republic). There are signed contracts with construction companies and social partners to enlarge practice places. Such documents are signed with Association of Plumbers, Lithuanian Association of Civil Engineers and JSC "Danfoss".

For the library needs of the BES programme, the main source of teaching material is located in College library. 210 titles are devoted for the BES study programme. Publications are listed in the internet site of the College, while the resources of the College library are frequently updated.

The library subscribed in 3 databases. References and access to databases are available from the computerized workplaces found in the library. Methodological material, lectures, recommendations for course papers and projects are periodically updated and available in both hard and soft copies.

2.5. Study process and students' performance assessment

Admission requirements have been developed according to the general provisions of the Association of Lithuanian Higher Education Institution for General Admission and are available on the College webpage. Secondary school education degree is required for applicants to enter the study programme.

Since 2014, on average the number of admitted students in state-funded studies has been more than three times in comparison to the number of those admitted with their own funds.

The duration of the semester of studies is 20 weeks. The programme consists of general College subjects, study field subjects, special study subjects and a final project. Each subject consists of contact hours, practical activities, consultancy hours and individual work. The College organises educational trips, during which students are introduced to real-life projects, which they have previously discussed in their lectures. Much attention is given to practices where students will close the gap between theory and practical implementation. The average academic performance of the students in the study programme varies from 6.45 to 7.36, whereas 1st year student performance was found to be lower.

College students participate in different kinds of contests and conferences related to their speciality. Students attend the national contest "Smart city", where teachers encourage students to participate in such events. This is an evidence of good practice.

The College has 45 Erasmus+ partners. The information about the programme is available for students in several different ways, as students can get information from staff or in events organized specially for the Erasmus+ programme. The amount of students that go abroad and foreigners that come to the College differs greatly, as the foreign students were found to be larger in number (14 during the period of assessment).

The number of drop-out students has changed and the situation is better, (2012 – 10 students dropped out, whereas in 2016 just one) because the College has put much attention into

individual consultations. These private consultations are available for students if needed and their timetable can be found on the College webpage.

First year students are introduced to the academic processes by the first week. Students communicate with teachers through MOODLE, e-mails and phone. Students can find methodological information on MOODLE but only around 20% of studies subjects' information is uploaded on the platform, therefore it is recommended to increase the number of subjects that are available through MOODLE. Student opinions on the quality of studies are attained through surveys; however, students do not feel that their opinion changes the College due to their survey answers.

There is social and financial support for students available and students with good academic performance thus are eligible to receive scholarships. Students state they would appreciate closer relations with their teachers. The College has also established a career centre and there is a possibility to get involved with extracurricular activities such as sports.

The evaluation of students is based on their academic performance, that consists of an accumulation index and an examination grade. Examination results are posted via the internet system within three days. Moreover, students are provided with the opportunity to discuss their assessments with the teacher.

Data state that 92,86% of graduates are employed in jobs relevant to their speciality in the same year after graduation. The College pays a great attention to keep discussions with social partners and reveal what needs are essential for the students to work effectively in their field. Social partners clarify that students have good knowledge and practical skills, thus are of value to their companies. The College does not have a strong relation with graduates, thus it is recommended to activate the Alumni club in order to organize events and perform surveys.

2.6. Programme management

The management of the programme is performed by the corresponding faculties of the College, where the BES study programme is under the umbrella of the technological sciences in the Faculty of Civil Engineering. During the visit, the RP interviewed the Dean of the Faculty that is responsible in managing the CE and BES programmes, thus found a solid management team. The monitoring and update recommendations in regards to the programme, is performed by a 5-member committee, which consists of a faculty member, a social partner, a student, a representative from another higher educational institution and a fifth member that can be either.

The proposals of this committee are directly sent to the Dean of Faculty who then discusses them with the Faculty Board for approval. Then the proposed changes are sent to the Academic Council for final approval. The RP finds this approach efficient, given that the monitoring of the programme is performed in a consistent direct way by the Dean.

Based on the internal quality assurance manual of the College, the programme collects yearly the results from surveys and students' outcomes in order to analyze the results and derive conclusions on the overall performance of the BES programme (according to the QA manual). The foreseen frequency of data collection is considered by the RP as adequate. An internal study quality management system is in the process of being implemented.

The QA department of the College was found to be well structured and organized. During the visit the RP was presented with QA related material that was developed by the QA department, while the monitoring of 30 KPIs was also presented at the College level. This is a clear evidence of good practice in establishing a solid QA system. The RP recommends for a simplification in the QA procedures that foresee the implementation of the internal self-evaluation standards, to further improve the efficiency of the QA unit.

The BES programme is following the internal quality assurance procedures that foresee the utilization of all stakeholders' opinions so as to improve its curriculum and deliverable material. According to the SKVC and the submitted SER, the study programme did not undertake any external assessment within the last 4 years. The RP recommends that the programme should organize the visit of external experts (at least once every three years) so as to further contribute to its improvement and support its effort to monitor the progress in achieving its vision. As mentioned in the SER, the EVALG which is a German agency, assessed the programme in 2012 receiving positive comments. It is recommended to find a different external accreditation body that will further help in the improvement of the programme.

All stakeholders of the programme are involved in the evaluation procedure, while the need for additional improvement on the level of students and social partners' participation in the evaluation procedure, was acknowledged by the programme's administration, thus was also stated within the SER. The RP recommends that the BES programme should propose solid methods and a strategy through which it will ensure that the students and social partners will be further actively involved, thus further contribute to the evaluation and improvement of the programme. The utilization of the Alumni club, that was found to be inactive, is also recommended.

The internal QA system which is in place at the College level, fortifies the BES programme to act upon weaknesses and integrate any required changes according to the received feedback. As stated in the programme's SER, an internal study quality management manual was also developed but currently in the process of implementation. The QA measures are sufficient and well developed. The RP recommends the development of a detailed course portfolio for each course, in order to further assess the courses' learning outcomes achievement.

II. RECOMMENDATIONS

1. The RP found the programme aims clear but not well stated (the English translations requires improvement) within the SER. It is recommended to collaborate with a native English speaking Civil Engineering professor to assist in this task.
2. The RP visited the website of VCTD, where the only link available (English version) was referring to the Civil Engineering Programme (8th Nov. 2016). Therefore, the aims and learning outcomes of the programme were not accessible to the public. This can be misleading and confusing to foreign applicants. It is recommended to develop the web page of the BES programme in both Lithuanian and English languages.
3. It is recommended that the programme further updates their PLOs by including the “long-life learning” skill within one of the PLOs, hence this should be accordingly incorporated within the courses’ syllabi. It is recommended to add an extra PLO that will include this skill.
4. The RP recommends the development of a matrix through which the number of courses that are correlated with each PLO could be easily seen and a balanced mapping should be foreseen.
5. It is also recommended to use codes for each PLO. By using a coding system for each PLO, it will allow the compact inclusion of the PLOs within tables (especially syllabi and instructor reports), thus will allow the development of a mapping matrix. It is also recommended to include all offered courses by the programme, within this matrix and overall manage the mapping in order to achieve a balanced correlation.
6. In order to display the knowledge and capability required for independent work, the strengthening of the analytical part of the Final Project should be considered.
7. It is recommended to increase the amount of electronic methodological material (courses) available on the MOODLE system.
8. It is recommended to take actions to develop stronger lasting student-teacher relationships, i.e. an active Alumni club.
9. The College has mentioned in its SER an insufficient updating of teachers’ qualifications in internships at the companies as a weakness of the BES study programme. Based on that, the RP suggests to establish a Practical Work Internship Procedure to ensure the requirement that 50% of staff members’ practical experience has to be updated at least every five years through two months of training or by practice through internship or through an in-service training.
10. The Staff/Student Ratio of BES study programme is 1:13, which is ideal according to international standards. However, taking into consideration, that 18 teachers out of 25 BES

study programme teachers, which are also included in the teachers' list of Civil Engineering study programme, that has a Staff/Student Ratio of 1:19, makes the overall Staff/Student Ratio of two programmes 1:32 for those 18 teachers. This ratio is high and negatively influences the teachers' ability to dedicate enough time to all students. The RP recommends the new faculty employments for the BES programme to be performed according to the real 1:32 ratio and not the virtual 1:13 that was given in the SER.

11. During the RP site visit meeting jointly with the Civil Engineering and BES study programme teachers, it was noticed that from the 12 teachers present only 3 were employed as full-time and the rest were part-timers. The provided reason for this phenomenon was the low remuneration of the College work. The large number of part-time teachers has influenced the study process of the programme as students noted, where full-time teachers had more time for personal consultation with them in comparison to part-time teachers. It is recommended for the College to find possibilities to improve the salary policy to ensure the quality of the BES study programme.
12. The College should establish solid policies in regards to the funding of faculty in participating in national and international conferences every year and the financial support should be clearly stated through a pre-defined amount for each faculty member.
13. The College should develop a clear policy on how the funds of a project that is awarded to a faculty member are distributed and inform all faculty members so as for them to be aware of this policy. The overheads should not be more than 20% of the overall funding of the project.
14. It is also recommended to make all policies available to faculty through the College web site.
15. The RP recommends a simplification of the QA procedures that foresee the implementation of the internal self-evaluation standards, to further improve the efficiency of the QA unit.
16. As mentioned in the SER, the EVALG which is a German accreditation agency, assessed the programme in 2012 receiving positive comments. It is recommended to find a different external accreditation body that will further help in the improvement of the programme.
17. The utilization of the Alumni club, that was found to be inactive, is also recommended (i.e. organize events, distribute and collect surveys, etc.).
18. The RP recommends the development of a detailed course portfolio for each course, in order to further assess the courses' learning outcomes achievement.

IV. EXAMPLES OF EXCELLENCE *

The programme has strong connections with the industry, while the social partners expressed their strong support and preference to the programme. The integration of BIM technology in the curriculum and especially the Final Thesis illustrates that the programme strives to incorporate state-of-the-art technologies and academic trends. Furthermore, the programme's Final Thesis is performed through a multi-disciplinary concept by integrating the Civil Engineering students with the Building Engineering System students through common projects. This is an international trend that is recommended by accreditation bodies such as ABET, hence illustrates the strength of the programme.

The QA department was found to be active and knowledgeable. The College should further support the QA department in its endeavor to achieve an optimum integration at the programme level.

IV. SUMMARY

The RP found the aims clear but not well stated (the English translations requires improvement) within the SER. The RP visited the website of VCTD, where the only link available (English version) was referring to the Civil Engineering Programme (8th Nov. 2016). Therefore, the aims and learning outcomes of the programme were not accessible to the public in English. A total of 7 PLOs are presented in Table 2 of the SER, where the mapping to the offered courses is provided. After a detailed study of the provided Table, it was found that the programme requires to further update their PLOs by including the “long-life learning” skill within one of the PLOs (or an additional PLO), hence this should be accordingly incorporated within the courses’ syllabi. It is recommended to add an extra PLO that will include this skill. The RP recommends the development of a matrix through which the number of courses that are correlated with each PLO could be easily seen and a balanced mapping should be foreseen. By using a coding system for each PLO, it will allow the compact inclusion of the PLOs within tables (especially syllabi and instructor reports), thus will allow the development of a mapping matrix. It is also recommended to include all offered courses by the programme, within this matrix and overall manage the mapping in order to achieve a balanced correlation.

The curriculum design meets the legal requirements and the content of the subjects and/or modules is consistent with the type and level of the studies. The subject modules are consistent with the College type studies of the Professional Bachelor Degree and are appropriate for the achievement of the intended learning outcomes. The subject module learning outcomes are generally consistent with the programme learning outcomes. The strengthening of the analytical part of the Final Project should be considered. Proceeding of integrating the digital solutions in the study process is also suggested.

The study programme is provided by staff meeting legal requirements and the qualifications of the teaching staff are adequate to ensure the learning outcomes. The Practical Work Internship Procedure has to be established to ensure the requirement that 50% of staff members’ practical experience has to be updated at least every five years through two months of training or by practice through internship or through an in-service training. The Staff/Student Ratio is 1:13, which is ideal according to international standards, but jointly with Civil Engineering study programme students, the ratio becomes 1:32, which is high and has a negative influence to the teachers’ ability to dedicate enough time to all students. Teaching staff turnover was found to be low and able to ensure an adequate provision of the programme. The RP is concerned about the large number of part-time teachers, which have negative influence to the study process as the

students also stated. The staff professional and pedagogical development activities are reviewed every 5 years.

For the academic needs of the BES programme, the College provides with 23 classrooms and 5 laboratories. All premises are equipped with technical software facilities and learning resources. For the study requirements of the programme, the technical facilities and laboratories are of sufficient level. The academic process foresees 3 types of practices: Internship of construction works, practice of geodesy, industrial and final practice, which are all well supported by the existing laboratories. In the library there is a sufficient number of teaching and learning resources, which are updated frequently.

Admission requirements are clear and publicly available. Students are provided with the possibility to participate in mobility programmes. Study information is provided by the electronic system MOODLE; however, it is recommended to increase the amount of electronic methodological material available on this system. It is recommended to take actions to develop stronger lasting student-teacher relationships, i.e. an active Alumni club. The College assessment system is clear, adequate and publicly available. The majority of graduates meet the programme expectations and the programme is valued by the social partners.

The RP finds the programme's management efficient, given that the monitoring of the programme is performed in a consistent way by the Dean. The QA department of the College was found to be well structured and organized. During the visit the RP was presented with QA related material that was developed by the QA department, while the monitoring of 30 KPIs was also presented at the College level. This is a clear evidence of good practice in establishing a solid QA system. The RP recommends that the BES programme should propose solid methods and a strategy through which it will ensure that the students and social partners will be further actively involved, thus further contribute to the evaluation and improvement of the programme. The utilization of the Alumni club, that was found to be inactive, is also recommended. The RP recommends the development of a detailed course portfolio for each course, in order to further assess the courses' learning outcomes achievement.

V. GENERAL ASSESSMENT

The study programme *Building Engineering Systems* (state code – 653H24002) at Vilnius College of Technologies and Design is given a 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	3
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	3
	Total:	19

*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:	Assoc. Prof. George Markou
Grupės nariai: Team members:	Assoc. Prof. Andrus Aavik
	Assoc. Prof. Liga Gaile
	Assoc. Prof. Vincentas Vytis Stragys
	Tautvydas Šimanauskas

**VILNIAUS TECHNOLOGIJŲ IR DIZAINO KOLEGIJOS PIRMOSIOS PAKOPOS
STUDIJŲ PROGRAMOS *STATINIŲ INŽINERINĖS SISTEMOS* (VALSTYBINIS
KODAS – 653H24004) 2017 KOVO 13 D. EKSPERTINIO VERTINIMO IŠVADŲ NR.
SV4-46 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Vilniaus technologijų ir dizaino kolegijos studijų programa *Statinių inžinerinės sistemos* (valstybinis kodas – 653H24004) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	3
3.	Personalas	3
4.	Materialieji ištekliai	4
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	Iš viso:	19

* 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

Ekspertų grupės nuomone, studijų programos tikslai yra aiškūs, bet ne visai tinkamai aprašyti Savianalizės suvestinėje (reikia peržiūrėti vertimą į anglų kalbą). Peržiūrėjusi VTDK svetainę (2016 m. lapkričio 8 d.) ekspertų grupė pastebėjo, kad vienintelė nuoroda anglų kalba buvo nuoroda į studijų programą Statybos inžinerija. Studijų programos Statinių inžinerinės sistemos rezultatai ir tikslai nebuvo viešai skelbiami anglų kalba. Tai gali sukelti problemų užsienio kandidatams, norintiems studijuoti šią studijų programą. Rekomenduojama, kad tinklalapis, kuriame pateikiama informacija apie studijų programą Statinių inžinerinės sistemos, būtų parengtas lietuvių ir anglų kalbomis. Savianalizės suvestinės 2 lentelėje yra nurodyti iš viso 7 studijų rezultatai ir jų sąsajos su dėstomais dalykais. Atidžiau panagrinėjus lentelę nustatyta, kad reikėtų peržiūrėti studijų rezultatus įtraukiant į vieną iš jų (ar pridėdant kaip papildomą studijų

rezultata) mokymosi visą gyvenimą gebėjimą – šis studijų rezultatas taip pat turi būti įtrauktas į dalykų programas. Pageidautina, kad mokymosi visą gyvenimą gebėjimas būtų papildomas studijų rezultatas. Ekspertų grupė rekomenduoja sudaryti dalykų ir studijų programos rezultatų matricą ir nustatyti aiškias sąsajas tarp dalykų ir studijų programos rezultatų. Priskyrus kiekvienam studijų rezultatui kodus, tokiu atveju informacija apie studijų rezultatus lentelėse būtų pateikta kompaktiškiau (ypač dalykų programų aprašuose ir dėstytojų ataskaitose) ir būtų galima nustatyti sąsajas. Taip pat rekomenduojama į minėtą matricą įtraukti visus studijų programos dalykus ir nustatyti aiškias sąsajas tarp dalykų ir studijų programos rezultatų.

Programos sandara atitinka teisės aktų reikalavimus; dalykų ir (ar) modulių turinys atitinka studijų rūšį ir lygmenį. Dalykų moduliai atitinka profesinio bakalauro laipsnio koleginių studijų rūšį ir yra tinkami numatytiems studijų rezultatams pasiekti. Dalykų modulių rezultatai iš esmės dera su studijų programos rezultatais. Reikia suteikti daugiau svarumo baigiamojo darbo analitinei daliai. Taip pat patartina į studijų procesą įtraukti skaitmeninius sprendimus.

Dėstytojų kolektyvas atitinka teisės aktų reikalavimus; dėstytojų kvalifikacija tinkama studijų rezultatams pasiekti. Rekomenduojama nusistatyti ir patvirtinti praktinio darbo stažavimosi tvarką, pagal kurią dėstytojai ne mažiau kaip kas 5 metus įgytų 50 % praktinių žinių dalyvaudami dviejų mėnesių trukmės mokymo kursuose, stažuotėse arba kvalifikacijos kėlimo kursuose. Dėstytojų ir studentų santykis – 1:13. Tai idealus santykis pagal tarptautinius standartus. Tačiau atsižvelgiant į tai, kad dėstytojai taip pat dėsto studijų programą Statybos inžinerija, realus dėstytojų ir studentų santykis yra 1:32. Toks santykis per didelis ir dėl to dėstytojai negali skirti pakankamai laiko visiems studentams. Dėstytojų kaita maža, todėl užtikrinamas tinkamas studijų programos vykdymas. Ekspertų grupei nerimą kelia didelis ne visą darbo dieną dirbančių dėstytojų skaičius. Studentų nuomone, dėl to nukenčia studijų procesas. Dėstytojų profesinis tobulėjimas ir pedagoginė veikla peržiūrimi kas 5 metai.

Akademiniam studijų programos Statinių inžinerinės sistemos poreikiams užtikrinti Kolegija yra paskyrusi 23 auditorijas ir 5 laboratorijas. Visos patalpos aprūpintos technine programine įranga ir mokymo ištekliais. Techninė įranga ir laboratorijos atitinka studijų programos reikalavimus. Akademinis procesas apima 3 praktikos rūšis: statybos darbų praktiką, geodezijos praktiką, gamybinę ir baigiamąją praktiką, kuri atliekama naudojantis esamomis laboratorijomis. Biblioteka turi pakankamai mokymo ir mokymosi išteklių, kurie pakankamai dažnai atnaujinami.

Studentų priėmimo reikalavimai yra aiškūs ir viešai skelbiami. Studentams suteikiama galimybė dalyvauti mobilumo programose. Studijų informacija pateikiama elektroninėje sistemoje

MOODLE, tačiau rekomenduojama didinti šioje sistemoje pateikiamos e-mokymo metodologinės medžiagos (dalykų) apimtį. Reikia imtis priemonių, kad būtų stiprinami ilgalaikiai ryšiai tarp dėstytojų ir studentų, pavyzdžiui, skatinti aktyvesnę alumnų klubo veiklą. Kolegijos vertinimo sistema aiški, tinkama ir viešai skelbiama. Dauguma absolventų pasiekia studijų programos reikalavimus, studijų programą gerai vertina socialiniai partneriai.

Ekspertų grupės nuomone, studijų programos vadyba veiksminga, atsižvelgiant į tai, kad studijų programos vykdymą nuosekliai prižiūri dekanas. Kolegijos kokybės užtikrinimo skyrius gerai struktūruotas ir organizuotas. Vizito metu ekspertų grupė buvo supažindinta su Kokybės užtikrinimo skyriaus parengta medžiaga kokybei užtikrinti. Taip pat buvo pristatyti 30 pagrindinių veiklos rezultatų rodiklių, kurių stebėseną vykdoma Kolegijos lygmeniu. Tai yra gerosios praktikos pavyzdys, kuriant tvirtą kokybės užtikrinimo sistemą. Ekspertų grupė rekomenduoja numatyti tinkamus studijų programos Statinių inžinerinės sistemos metodus ir strategijas, siekiant paskatinti studentus ir socialinius partnerius aktyviau dalyvauti vertinant ir tobulinant studijų programą. Taip pat reikia skatinti aktyvesnę alumnų klubo veiklą, nes jis veikia nelabai aktyviai. Ekspertų grupės nuomone, reikia parengti išsamų kiekvieno dalyko aprašą, pagal kurį būtų vertinama, ar dalykų studijų rezultatai yra pasiekti. <...>

IV. GEROSIOS PRAKTIKOS PAVYZDŽIAI

Vykdamas studijų programą glaudžiai bendradarbiaujama su pramonės įmonėmis; socialiniai partneriai labai remia studijų programą ir ją gerai vertina. Statinio informacinio modeliavimo (BIM) technologijų įtraukimas į programą ir baigiamąjį darbą rodo, kad studijų programos procese taikomos šiuolaikinės technologijos ir akademinės tendencijos. Baigiamasis darbas atliekamas daugiadalykiniame kontekste, studijų programų Statinių inžinerinės sistemos ir Statybos inžinerija studentams vykdamas bendrus projektus. Tai tarptautinė tendencija, kurią taikyti rekomenduoja akreditacijos institucijos, pavyzdžiui, ABET. Tai yra studijų programos stiprybė.

Kokybės užtikrinimo skyrius aktyviai veikia institucijos lygmeniu, tačiau Kolegija turi užtikrinti, kad skyriaus veiklos rezultatai būtų panaudojami ir programos lygmenyje.

<...>

III. REKOMENDACIJOS

1. Ekspertų grupės nuomone, studijų programos tikslai yra aiškūs, bet ne visai tinkamai aprašyti Savianalizės suvestinėje (reikia peržiūrėti vertimą į anglų kalbą). Šiam tikslui rekomenduojama pasitelkti gimtakalbį Statybos inžinerijos profesorių ar jo padėjėją.
2. Peržiūrėjusi VTDK svetainę (2016 m. lapkričio 8 d.) ekspertų grupė pastebėjo, kad vienintelė nuoroda anglų kalba buvo nuoroda į studijų programą Statybos inžinerija. Studijų programos Statinių inžinerinės sistemos rezultatai ir tikslai nebuvo viešai skelbiami. Tai gali sukelti problemų užsienio kandidatams, norintiems studijuoti šioje studijų programoje. Rekomenduojama, kad tinklalapis, kuriame pateikiama informacija apie studijų programą Statinių inžinerinės sistemos, būtų parengtas lietuvių ir anglų kalbomis.
3. Rekomenduojama peržiūrėti studijų programos rezultatus, įtraukiant į vieną iš jų mokymosi visą gyvenimą gebėjimą – šis studijų rezultatas taip pat turi būti įtrauktas į dalykų programas. Pageidautina, kad mokymosi visą gyvenimą gebėjimas būtų apibrėžtas kaip papildomas studijų rezultatas.
4. Ekspertų grupė rekomenduoja sudaryti dalykų ir studijų programos rezultatų matricą ir nustatyti aiškias sąsajas tarp dalykų ir studijų programos rezultatų.
5. Rekomenduojama visiems studijų rezultatams priskirti kodus. Naudojant kodus informacija apie studijų rezultatus lentelėse būtų pateikta kompaktiškiau (ypač dalykų programų aprašuose ir dėstytojų ataskaitose) ir būtų galima nustatyti sąsajas. Taip pat rekomenduojama į minėtą matricą įtraukti visus studijų programos dalykus ir nustatyti aiškias sąsajas tarp dalykų ir studijų programos rezultatų.
6. Kad studentai galėtų pritaikyti savo žinias ir gebėjimą dirbti savarankiškai, reikėtų suteikti daugiau svarumo baigiamojo darbo analitinei daliai.
7. Rekomenduojama MOODLE sistemoje didinti e-mokymo metodologinės medžiagos (dalykų) apimtį.
8. Reikia imtis priemonių, kad būtų stiprinami ilgalaikiai ryšiai tarp dėstytojų ir studentų, pavyzdžiui, skatinti aktyvesnę alumnų klubo veiklą.
9. Savianalizės suvestinėje, kaip studijų programos Statinių inžinerinės sistemos trūkumą, Kolegija paminėjo, kad siekiant kelti dėstytojų kvalifikaciją rengiama per mažai stažuočių įmonėse. Todėl ekspertų grupė rekomenduoja įdiegti praktinio darbo stažavimosi tvarką, pagal kurią dėstytojai ne mažiau kaip kas 5 metus įgytų 50 % praktinių žinių dalyvaudami dviejų mėnesių trukmės mokymo kursuose, stažuotėse arba kvalifikacijos kėlimo kursuose.
10. Studijų programos Statinių inžinerinės sistemos dėstytojų ir studentų santykis – 1:13. Tai idealus santykis pagal tarptautinius standartus. Tačiau atsižvelgiant į tai, kad 18 iš 25 studijų programos Statinių inžinerinės sistemos dėstytojų taip pat yra įtraukti į studijų programos

Statybos inžinerija, kurios dėstytojų ir studentų santykis yra 1:19, dėstytojų sąrašą, dėl minėtų 18 dėstytojų, dėstančių abiejose studijų programose, bendras šių dviejų studijų programų dėstytojų ir studentų santykis yra 1:32. Toks santykis per didelis ir dėl to dėstytojai negali skirti pakankamai laiko visiems studentams. Ekspertų grupė rekomenduoja, kad fakultetas planuodamas naujas studijų programos Statinių inžinerinės sistemos darbo vietas, atsižvelgtų į realų santykį 1:32, o ne Savianalizės suvestinėje nurodytą santykį 1:13.

11. Per ekspertų grupės susitikimą Kolegijoje su studijų programų Statybos inžinerija ir Statinių inžinerinės sistemos dėstytojais buvo išsiaiškinta, kad iš 12 susitikime dalyvavusių dėstytojų tik 3 buvo visą darbo dieną dirbantys darbuotojai, o likusieji – ne visą darbo dieną dirbantys darbuotojai. Šio reiškinio priežastis – nedidelis darbo Kolegijoje atlyginimas. Studentų teigimu, dėl didelio skaičius ne visą darbo dieną dirbančių dėstytojų nukenčia studijų procesas, o visą darbo dieną dirbantys dėstytojai gali skirti daugiau laiko asmeninėms studentų konsultacijoms. Rekomenduojama, kad Kolegija ieškotų būdų, kaip būtų galima padidinti dėstytojų atlyginimus, kad būtų užtikrinta studijų programos Statinių inžinerinės sistemos kokybė.

12. Kolegija turi parengti fakulteto dalyvavimo nacionalinėse ir tarptautinėse konferencijose kiekvienais metais finansavimo strategiją, numatant tikslį ir pakankamą finansinės paramos sumą kiekvienam fakulteto darbuotojui.

13. Kolegija turi parengti aiškią tvarką, pagal kurią fakulteto nariams būtų skirstomos lėšos projektams vykdyti, ir supažindinti su šia strategija visus fakulteto darbuotojus. Pridėtinės projekto vykdymo išlaidos neturėtų sudaryti daugiau nei 20 % visos projekto finansavimo sumos.

14. Rekomenduojama, kad visos vidinės tvarkos būtų skelbiamos Kolegijos internetinėje svetainėje.

15. Ekspertų grupė rekomenduoja supaprastinti kokybės užtikrinimo procedūras, numatančias vidaus savianalizės standartų įdiegimą, kad Kokybės užtikrinimo skyriaus veikla būtų dar efektyvesnė.

16. Kaip minima Savianalizės suvestinėje, Vokietijos akreditavimo agentūra EVALG 2012 m. teigiamai įvertino studijų programą. Siekiant dar labiau tobulinti studijų programą, rekomenduojama, kad studijų programą įvertintų ir kita akreditavimo institucija.

17. Pastebėta, kad alumnų klubas veikia neaktyviai. Rekomenduojama skatinti aktyvesnę jo veiklą (pavyzdžiui, organizuoti renginius, rengti apklausas, jas apibendrinti ir t. t.).

18. Ekspertų grupė rekomenduoja parengti išsamų kiekvieno dalyko aprašą, pagal kurį būtų vertinama, ar dalyko studijų rezultatai yra pasiekti.

<...>

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

Vertėjos rekvizitai (vardas, pavardė, parašas)