



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Kauno technikos kolegijos
**STUDIJŲ PROGRAMOS "KELIŲ INŽINERIJA" (valstybinis kodas –
653H22002)**
VERTINIMO IŠVADOS

EVALUATION REPORT
OF "ROAD ENGINEERING" (state code – 653H22002)
STUDY PROGRAMME
at Kaunas Technical College

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Išvados parengtos anglų kalba
Report language – English

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Kelių inžinerija</i>
Valstybinis kodas	653H22002
Studijų sritis	Technologijos mokslai
Studijų kryptis	Statybos inžinerija
Studijų programos rūšis	Koleginės studijos
Studijų pakopa	Pirmoji studijų pakopa
Studijų forma (trukmė metais)	Nuolatinės (3) Iššestinės (4)
Studijų programos apimtis kreditais	180 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Kelių inžinerijos profesinis bakalauras
Studijų programos įregistravimo data	2002-08-30

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Road Engineering</i>
State code	653H22002
Study area	Technological Sciences
Study field	Civil Engineering
Type of the study programme	College Studies
Study cycle	First cycle studies
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 Degree in Road Engineering
Date of registration of the study programme	30-08-2002

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The Centre for Quality Assessment in Higher Education

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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 - Self-evaluation report and annexes.

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

In brief, Kaunas Technical College (hereafter KTC) is a HEI that provides first cycle education and training for specialist in engineering field by implementation of corresponding study programmes and their periodical improvement to meet most modern, innovative level and keep competitiveness in educational market. Besides Road Engineering programme the Department of Civil Engineering Field Study Programmes supervises also Civil Engineering and Heritage Structure Engineering programmes.

Road Engineering programme is designed for students with secondary education, having practical experience and wish to study technical, economic and management problems of road

engineering deeply. The programme combines the aspects of applied nature and academic education criteria for First Cycle Professional Bachelor Degree Studies.

The previous external evaluation of the Road Engineering programme was performed on October 2012 by an external assessment team provided by Centre for Quality Assessment in Higher Education (SKVC). The programme was given positive evaluation (19 points) and got 6 years of accreditation.

The college's webpage in English is very poor in information, comparing to detailed information in the Lithuanian version.

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 25/10/2016.

1. **Prof. Roode Liias (team leader)**, *Professor of Tallinn University of Technology, Estonia;*
2. **Prof. Rui Ramos**, *Professor of University of Minho, Portugal;*
3. **Prof. Wojciech Gilewski**, *Professor of Warsaw University of Technology, Poland;*
4. **Prof. Nikolaos Theodosiou**, *Professor of Aristotle University of Thessaloniki, Greece;*
5. **Mr Artiomus Kuranovas**, *"Trevita", director, Lithuania.*
6. **Ms Milena Medineckienė**, *student of KTH Royal Institute of Technology, Sweden.*

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

Road Engineering study field is an integral part of the national construction industry system, which reflects national economy. Automobile transport is one of the most important constituents of Lithuanian economy creating the potential of industry and other branches, increasing volumes of freight and passenger transport, developing urban and country infrastructure, ensuring sustained mobility of society members and goods transport. It guarantees dynamic development of country economy, increases Lithuanian and EU competitive capacity in international markets.

The general programme aims are well defined and are following (SER pages 5-6):

- to comprehend and implement projects of roads, streets and road structures and manage technological processes of road engineering;
- to apply the newest knowledge and technologies in organising and maintaining road structure building, street and road construction, their reconstruction, repair and maintenance;

- to combine acquired engineering competence with fundamentals of business and management, knowledge of humanities and social sciences;
- to comprehend the impact of engineering solutions on society and Lithuanian road network development, also on assuring traffic safety.

Aims and learning outcomes are publicly accessible: published in KTC's website and Education Exchanges Support Foundations., AIKOS system. According to information provided in SER (p. 6) aims and learning outcomes are presented in meetings with schoolchildren. However learning aims founded in English on college webpage <http://www.ktk.lt/assets/Uploads/SP-APRASAS-KI-eng.pdf> differs from provided in SER with stressing on aims "...To educate a specialist with the creative thinking and communication skills who is able to solve problems independently, aiming to improve his/her professional activities, to maintain professional competence in lifelong learning", "... Provide knowledge in humanitarian, social, physical and technological sciences and be able to solve professional and community problems under the market conditions" that are partly or fully missed in SER's aims. So, this requires to unify learning outcomes and aims to be the same in all official documents, data sources.

In comparison to the previous evaluation report programme aims and learning outcomes are updated and formulated according to the descriptor of the study field of Engineering and mainly focused to graduates' knowledge and personal-social abilities, engineering tasks, applied research and analysis, supporting it by ensuring mobility of the graduates on a national and international level, and allowance for continuing lifelong learning.

Learning outcomes are directed knowledge acquisition, its application, abilities to conduct research, special, social, and personal abilities, and correspond to first cycle study qualification programme's aims, its name. Road Engineering study programme combines the aspects of applied nature and academic education criteria for First Cycle Professional Bachelor Degree Studies.

Revision of different subject descriptors (SER's Annex 6) shows that learning outcomes correspond to general programme aims and learning outcomes as well as quality of Final Thesis provided for experts' evaluation. In general, Final Thesis topic and content are adequate for Road Engineering Bachelor Degree level. However, experts recommend to introduce more research activities (even in theoretical level) to be introduced, as one of the main tasks, and use more international literature references and other sources in Thesis preparation.

Besides, in order to reflect the tendencies and innovations of road engineering, the programme aims and learning outcomes (LO) are updated and well formulated (some new units start in 2016/17 academic year – SER Annex 17. Feedback on Fokus Group Discussion with Social Partners 16 03 2016 & Annex 20. Implementation of External Assessment Expert Recommendations for Road Engineering Study Programme Improvement of 2012). Contents of

Law has been changed into Building Regulations (Unit of General Course Units at the last semester of the course) in updated programme with regard to employers' suggestions (SER - Annex 17). One improvement identified in the new programme is in the second semester, the course unit of Fundamentals of Transport Infrastructure will be introduced to the 1st Year students the concepts of railway, water, air, automobile transport infrastructure, development principles and perspectives. LO are mainly focused to graduates' knowledge and personal-social abilities, engineering tasks, applied research and analysis, supporting it by ensuring mobility of the graduates on a national and international level, and allowance for continuing lifelong learning. Learning outcomes are directed knowledge acquisition, its application, abilities to conduct research, special, social, and personal abilities, and correspond to first cycle study qualification programme's aims, its name and content.

Nevertheless, there are space for future improvement in some units, mainly in course units for deeper specialization, e.g., Lean – construction management (identified by the alumni), Rules and Standards from other countries from EU (also identified by the alumni), Life Cycle Assessment for road infrastructures.

Aims and learning outcomes are publicly accessible: published in KTC's website and Education Exchanges Support Foundations, AIKOS system, and according to SER (page 7) are presented in meetings with schoolchildren. There are some differences between SER report and website provided information.

In the meeting with employers and, social partners, some positive topics have been highlighted: the graduates' skills are good to assume practical professional activities; The new programme introduces some new units, in result of the proposal from market needs, i.e., Fundamentals of Transport Infrastructure, Engineering Traffic Safety Measures, and Urban Street Engineering; In last years the themes of the final graduation thesis are more connected with real life and companies problems. But, also some skills improvements have been identified: foreign language, to embrace the opportunity to develop business outside of Lithuania (nevertheless 2 units of foreign language are in general course units).

2.2. Curriculum design

The SER mentions that the Road Engineering programme is periodically updated and improved in accordance with international legislation and demand and tendencies in national labor and construction market (2011, 2014 and 2016) with a goal to reflect tendencies and innovations in Road Engineering. Didactic models and study methods including assessment methods are student-centred and study process is result-centred. Programme is comprised of four structural course unit groups: general course unit of college studies, course unit of study field, course units for deeper specialisation studies, optional course units, and the final thesis. Full-time studies last for 6

semestres and Part-time studies last for 8 semetres - Both with a total of 180 ECTS, with 15 ECTS for the General Course Units, 102 ECTS for the Mandatory Course Units, 15 ECTS for Courses Units for Deeper Specialisation in the Field, 9 ECTS for Optional Course Units, 30 ECTS for Practices Units and 9 ECTS for the Graduation Thesis (SER – Annex 3 and 4). In the SER – Annex 5 a chart of the Course Units for the Full-time studies highlights the core of the course and make the difference for other courses in civil engineering, e.g., in the 4th and 5th semestres the units of Engineering Traffic Safety Measures, Road Design Solutions 2, Semester Work 1, and Technological Process Management and Economic Solutions, Roads Cosntructions, Enviromental and Human Safety, and Semester Work 2.

As indicate previously, full-time and part time studies last for 3 and 4 years correspondingly, duration of the academic semester and year, separate subject's volume and content are in compliance with the European credit structure, correspond programme's aims and provide necessary learning outcomes for Road Engineering graduates that receive Professional Bachelor Qualification Degree.

Subjects are spread evenly and involved in the Programme in elected and mandatory groups of subjects including general (fundamental, humanities and social), study field (Engineering and particularly Civil and Road Engineering fundamental) and specialized subjects to provide necessary knowledge and skills compulsory for Road Engineering specialists, as a branch of Civil Engineering.

The ratio of theoretical lectures and practical works is not higher than 50% of subjects' volume, leaving its other half part for students' individual work and consultations. Achievement level of necessary learning outcomes level for each subject is controlled by cumulative assessment system with intermediate and final examination / student's individual work assessment. Content of study subjects' is rather broad, consistent with the type and level of the studies and in general not repetitive in different modules but separate subjects shall be double checked for non-repetitive content. For example, graduates have mentioned that Construction Work Organisation (study field subject) and Construction Management (specialisation subject) subjects very similar to each other.

Road Engineering programme studies are completed with final thesis that represent graduates' professional knowledge and skills to find and analyse professional problems, use critical and logical thinking, specific information sources and experience to solve them.

Collaboration with social partners helps to ensure basic practical professional skills through companies representatives' public lectures, seminars, industrial and construction practices where students are introduced with Road Engineering related activities, construction companies' specific design, production and management systems, business environment.

KTC periodically organises labour market demand analyses, surveys involving stakeholders (students, graduates, social partners) related to programme's up to date content and learning outcomes that helps to keep programme's content updated.

However, it is recommended to stress more attention and involve actively social partners in organization of practical trainings, seminars, students participation in applied research activities, and to provide more practical knowledge to students within studies, practice, as it was highlighted by stakeholders in the meetings. Road Engineering comprises professional practices performed in speciality-related road construction and maintenance enterprises. Students are introduced with the objects of their future profession activity. Practices are organised after completing theoretical course.

Besides of all these positive aspects curricula shall be improved with focus to foreign language skills as this was mentioned during the interview with alumni and student as one of main reasons of students' mobility's passivity.

Introduction to European design documents (Eurocodes) shall be introduced to the students in conjunction with national standards.

Alumni also have raised demand for outside the programme courses to keep qualification up to date (BIM, CAD etc.).

The quality of the graduation theses of the students constitutes an important evidence for reaching the learning outcomes. By the titles of the theses, a wide area of the scientific field of roads engineering are covered and they propose the discussion of latest achievements in technologies. Moreover, they are consistent with the requirements that need to be studied by higher education's first cycle students.

2.3. Teaching staff

The pedagogical staff of the programme corresponds to legal acts (30 teachers, with 8 associated professors and 2 lecturers with Doctor's Degree – SER page 11), that along with lecturers' professional and pedagogical competence development including participation in scientific research activities, ensures study quality, appropriate organization and management of study process.

The general workload of pedagogical staff is organised according to legal acts with pedagogical activities for Associated Professor 60%, lecturer 70% and assistant 80% (SER page. 11). The remaining part of workload reserved for scientific-methodical work.

To achieve necessary learning outcomes there are 30 teachers (27% Associated Professors) employed, 63% of them are employed permanently. Almost half of current teaching staff has experience of pedagogical work for more than 25 years. During the assessed period, the total

average of lecturers' age working in the Road Engineering remained stable, with insignificant fluctuations. Nevertheless, a substantial part of lecturers belong to the age group of 51 to 65 years of age (57% in 2015/16 – SER page 12), but the age group from 31-50 increased from 13 (2011) to 30% (2016).

The average number of students per one pedagogical staff member is 4.7 that corresponds to the standard ratio in technological science field studies and is very good to ensure programme's outputs.

KTC provides conditions for the professional development of the teaching staff necessary for the provision of the programme. For example: staff motivation system motivate lecturers to improve their qualification, more active participation in international mobility: 25 lecturers of the Road Engineering participated in international activities during the period 2011-2016. 2 lecturers had placements abroad, 10 lecturers went to courses and trainings abroad, 6 lecturers went to other international visits. 6 lecturers gave lectures according to Erasmus programme abroad. However, some improvement should be considered in the future in the international mobility of academic staff. Besides, foreign language (English) skills have been identified as a lack in some of the interviews with staff.

During the period 2011-2016, the lecturers published 55 publications in scientific journals. 25 publications were included into the abstracted publication lists approved by Research Council of Lithuania, 14 were published in other reviewed international scientific journals and 16 were presented in conference proceedings or other sources. The average annual publication number is approximately 11. From the Curriculum Vitae of the staff members (SER – Annex 8) it is possible to identify that the majority of the publications are in the field of the courses of the teachers.

Cooperation of HEI with social partners provides possibility for staff related to study field subjects participate professional courses, research and field projects; as for example professional courses organized in the introduction to geodetic equipment and its appliance.

Though, some improvement should be considered in the future, e.g., mobility of staff - not all the members of teaching staff participate equally in mobility and scientific activity. More publications in international journals and participation in international conferences are strongly recommended. Teaching staff needs to improve their foreign languages skills, and to use more often in widely in pedagogical and research processes.

2.4. Facilities and learning resources

All teaching and learning actions mainly take place in classrooms, laboratories located in KTC central and new buildings, Multidisciplinary practical training center that fully ensures needs for programme implementation. Premises, audiovisual teaching aids, modern information

technologies, laboratories' tools, machineries are used according to the purpose and in general correspond to the safe work and hygiene norms.

Teaching of general subjects organised together with student from other study programmes in larger auditoriums, study subjects with 20-35 students in typical, and laboratory and practical tasks are organised in subgroups in specialised laboratories with not exceeding ratio between students and work places there. Individual studies can be performed in KTC library and reading room using published and online funds that are updated periodically according to the needs of students and teaching staff. Study premises: auditoriums, laboratories and reading room are equipped with computerised workstations and training stands for lecturers and students depending on type of premises and their teaching purpose.

During the period between previous (in 2011) and current programme's assessments facilities were partly updated and renovated at the expenses of college, national and European funds. Investments to learning resources such as computers, software, laboratories' equipment necessary to ensure learning outcomes were made and planned for the future, and they are working on the attraction of both, the state and private funds (for ex. Eternit laboratory) as stated by administration during interview.

Teaching materials are adequate and accessible. Students have possibility to access internet, connect to virtual learning environment Moodle, academic information system for programme's curriculum design, descriptions of subjects and assessments, use library's online international scientific databases, most popular local printed and electronic constructions journals.

HEI has adequate arrangement for student's practice involving social partners number of them planned for programme that take place inside and outside college involving social partners.

SER states that KTC cooperates with Kaunas University of Technology, which provides the possibility to make use of their library and reading-room services but interviewed teaching staff, students and graduates haven't been informed about that.

As stated in SER each year college succeed to attract more student to study Road Engineering programme. This can cause the issue with facilities compliance concerning increased demand, not only with premises (administration has ensured that now 700 students study and college allow the amount up to 900) but with reading room space (that is quite small), necessary learning resources like computer software and hardware.

In SER it is mentioned that college has about 30 licences for CAD/CAM software Solidworks, but nobody from staff, neither the students nor graduates had ever heard or used it during teaching or learning processes. This software could be introduced in subjects related to CAD and structural calculations.

Improvements to facilities still shall be done: renovation of indoor hall, conference and seminar rooms, outdoor renovation of building external walls and roof. As administration explained during the meetings – preliminary financing approval for these changes already received from Education Ministry.

2.5. Study process and students' performance assessment

The admission is organised on the basis of legal acts and is identical for state funded and non-state funded places Admission requirements are well founded and in general are based on an equation with weight coefficient taking into account secondary school evaluations and personal achievements that is common for admission of national Engineering programmes. Admission procedure is publically accessible through national specialised educational journals and web portals, college webpage, future students can be consulted on website forums, social networks, communication applications or emails.

Organisation of study programme for full- and part-time students corresponds to ECTS regulations, Programme Curriculum and allows the achievement of necessary provision for programme's learning outcomes. In the meeting with alumni, they identify that the part-time programme is one advantage, because several students start working before finish the course.

Although new funding system of studies introduced by Education Ministry that forces students to select studies more responsibly and constant monitoring of their academic results takes place, “drop out“ ratio of students is quite high (more than 50%: 83 students admitted during General Admission in 2011 and 35 in 2015 – table 11 of SER, page 18). But still corresponds to recommended marginal value. Data provided in SER data shows that students mainly decide to terminate their studies during first year. In 2013, KTC introduced the Study Adaptation Programme for new students, that included round table discussions about parties' expectations, introduction to college life, management, assessment system, programme's aims and learning outcomes. In that way, the new students are more engaged with KTC community and more motivated in the studies.

Students have opportunity to participate in mobility programmes and KTC has exchange and double degree agreements with foreign education institutions. But outcoming and incoming number of students and interview of graduates and students show that there is lack of motivation (“The students' mobility for studies was 6” in the period 2011-2016; SER – page. 25). As the main reasons of this passivity were mentioned poor foreign language skills, insufficient information, students have fear of travelling and living independently abroad, they have been already employed by the local companies. However, some improvement should be considered in the future in the international mobility of students.

HEI motivates students to participate in scientific, art and other applied science activities by introducing scholarships, favourable conditions for activities like premises, tools, additional tutorials and individual assessment schedule. Students are motivated by supervised lecturers to participate in applied science activities by performing various orders and implementation of research engineering decisions in graduation theses and publishing articles (SER – page 22). For example: members from teaching staff with the students prepared reports for conferences and articles for scientific journals. However, students' participation in research work could be more active as only in single cases one lecturer was the tutor of student's research that was the base for student's graduation final work. This is an example how this collaboration can improve overall situation with research activities for both parties: teaching staff and students. However, the number of students involved in these collaborations with staff members are not explicitly identified. A more explicit way to show the collaboration supported by students must be adopted as a motivation for the younger students to embrace this type of extracurricular activities.

Students have an opportunity for periodical academic, psychological and legal consultations, participate Career Days. Although SER states that "second and third year full-time students have the right to study according to the individual study schedule" (page 22) interviewed students and graduates have not been informed about this possibility and need to be more advertised as motivational tool for better academic result performance.

There is a scholarship system and students can also get state funded loan to cover costs for studies, dormitory that is provided by the college for relatively small monthly payments.

Students' Union works in KTC on the basis of legal entity with provided financial, organisational and legal autonomy.

The assessment system of students' performance is clear, adequate as based on periodical monitoring and cumulative grade methodology including intermediate assessment by tests, practical and individual tasks, course papers and examinations of the subject knowledge, abilities and skills to ensure proper learning outcomes. Assessment organisation and methodologies are presented in the KTC academic information system and also introduced by lecturers verbally in the beginning of particular subject course.

Periodical surveys by each lecturer are performed for the evaluation of quality and content of the subject evaluation that allows programme's management to optimise module content, and teaching methods according to students' expressed opinion.

In order to evaluate how professional activities of graduates fit into expectations of social partners, graduates and programme providers, employment research is performed annually for at least 6 months after graduation. Survey for the last 5 years shows that programme's graduates are highly demanded by the labour market (~80% of full time graduates employed after graduation

within first 6 months and ~60% according to the speciality, majority of part-time students employed according to future speciality profile during studies – SER page 26). Nevertheless, the survey output don't give any information concerning the local/region/country and type of companies the graduates are employee. In future, some new questions should be adopted in the survey in order to follow the career of the graduates in the first 5-10 years.

As a conclusion, study process and study assessment meets legal requirements and generally ensure provision of learning outcomes. More attention need to be paid to provision of practices' practical contain and skill development, as well as more active actions and efforts need to be done to motivate student for studies abroad, attract foreign studies for studies in KTC.

2.6. Programme management

The Department of Civil Engineering is responsible for the programme implementation, updating and improvement. The programme management is clear and involves initiation, coordination and monitoring of programme's requirements implementation and quality of programme execution, performs accreditation of subjects.

According to SER (Table 20) implementation of the programme is regularly monitored according to programme preparation, implementation and improvement procedure that involves collection and analysis of primary and development process data, implementation results. The assessment is monitoring by the Head of the Department and approved by the KTC Academic Council. Implementation data analysis takes place once per half year for examinations and group academic results, practical training registers, data on students' "drop-out", statistics on students'/lecturers' mobility, orders on learning outcomes, scholarships, loans and premium granting; and each year for graduation thesis topics, conclusions on defence, formation of qualification commissions, qualification award, students lecturers' and survey results and graduates' contact data. Once per 3 years Programme Committee revise subject descriptions, assessment system, references; learning outcome assessment methodology and analysis of particular subjects learning outcome, lecturers' qualification improvement plans, the analysis of students' survey results for the period of three years etc.

The internal assessment includes periodical surveys of students, alumni and social partners regarding the quality of the study programme management and curriculum design, subject teaching quality of the subjects and conditions of studies; participation of all stakeholders' and programme's administration participation in the assessment and expression of the demands of learning outcome process. External assessment is organised through SKVC with international expert team visits, interviews of stakeholders, administration, and staff, analysis of programme curriculum design, management and following assessment report. The outcomes of internal and external assessments

are used for the improvement of the programme according to College's procedure of quality assurance. As an example of external assessment result, Programme's aims and learning outcomes were improved according recommendations from the previous assessment. The example of internal assessment result – graduates have noted that after a survey, they have participated and stressed necessity to introduce first year students to study process and academic life was implemented as Adaptation Programme.

Information on programme's implementation and improvements is provided to public in form of detailed reports, that are additionally discussed with stakeholders and can be accessed through the KTC website, and social networks.

In the meeting with students, alumni, employers, and social partners, sob positive topics have been highlight: The new programme management is open to analyse and discuss improvements in the course and in the relationship with the market. As during interview with employers' representatives, they identified one important example: partnership with some companies to promote in summer some internship program to provide students with hands-on, career-specific experience through full-time work during summer break.

III. RECOMMENDATIONS

1. More attention has to be paid to students' and teaching staff's foreign languages skills and ability to use it (both regular and technical).
2. More programme's management staff activities to be done involving construction companies in practical trainings, ordering and participating in applied research activities including teaching staff of necessity to motivate students to use research in preparation of course works and final theses, conferences and journal articles.
3. Level of mobility activities must be increased twice both, for the teaching staff and students. College must ensure higher activity of incoming students. This also requires to revise college's webpage in English, as number of information is missing, not presented or presented not in full scope, still contains still some Lithuanian text etc. It is recommended to organise International weeks, expand opportunity for students to choose HEI for internship and studies, improve motivation (additional scholarship by college, social partners, shearing of experience by exchange students from previous year etc.).
4. Future investment to indoor and outdoor renovation of facilities, hardware and software, especially laboratory equipment (laboratories, equipment and tools mainly dedicated to Road Engineering excluding some fundamental test for Construction Engineering) needs to be done. There are no working canteen or cafeteria in college buildings that are the social places and part of academic environment, so experts recommend to introduce it for students, college teaching and managing staff, social partners.
5. The library and reading room has the minimum facilities to ensure the students activities outside classes. Because of that, students and alumni mentioned as improvement enlarging of the reading room size and extension of working time, larger spaces for students needs to be improved.
6. Some social spaces and services are also missing. The KTC should improve the academic environment and included in the main building a canteen or cafeteria for students and staff, and other employees of administrative services.
7. Some improvements in curricula must be done to introduce students to Lean – construction management, Rules and Standards from other countries from EU, Life Cycle Assessment for road infrastructures.
8. It is recommended to review organisational structure of the college because all 10 programmes are supervised by single faculty/department and it is not clear necessity to have department at all.

IV. SUMMARY

The programme aims and learning outcomes are well defined, clear and publicly accessible, based on the academic and professional requirements, public needs and the needs of the labour market. Its name and content corresponds with the type and level of studies and the level of qualifications offered.

In comparison to the previous evaluation report programme aims and learning outcomes are updated and formulated according to the descriptor of the study field of Engineering. The learning outcomes are mainly focused to graduates' knowledge and personal-social abilities, engineering tasks, applied research and analysis, supporting it by ensuring mobility of the graduates on a national and international level, and allowance for continuing lifelong learning.

Learning outcomes are directed knowledge acquisition, its application, abilities to conduct research, special, social, and personal abilities, and correspond to first cycle study qualification programme's aims, its name. Road Engineering study programme combines the aspects of applied nature and academic education criteria for First Cycle Professional Bachelor Degree Studies.

In order to reflect the tendencies and innovations of road engineering, the programme aims and learning outcomes (LO) are updated and well formulated (some new units start in 2016/17 academic year, e.g., Building Regulations, Fundamentals of Transport Infrastructure, etc.). Nevertheless, there are space for future improvement in some units, mainly in course units for deeper specialization, e.g., Lean – construction management (identified by the alumni), Rules and Standards from other countries from EU (also identified by the alumni), Life Cycle Assessment for road infrastructures.

Aims and learning outcomes are publicly accessible in the in KTC's website and Education Exchanges Support Foundations., AIKOS system. Nevertheless, the information provided in Self-Assessment Report and in the English college webpage differs. Therefore, KTC should unify learning outcomes and aims to be the same in all official documents, data sources.

Road Engineering programme studies are completed with final thesis that represent graduates' professional knowledge and skills to find and analyse professional problems, use critical and logical thinking, specific information sources and experience to solve them.

Curriculum design meets legal requirements. The content of methods of subjects teaching are appropriate to provide necessary learning outcomes and coincide with the type and level of the studies. However, the content of the programme could be updated, extended and improved with the latest achievements in science, art and technologies, labour market needs.

The study programme is provided by the staff meeting the relevant legal requirements and qualifications. The number of the teaching staff is adequate to ensure learning outcomes. Staff is

quite motivated and loyal and this shows that HEI creates conditions for the professional development of the teaching staff necessary for the provision of the programme and social support. Comparing to previous assessment staff has become younger, college attracts graduates, and involves them in teaching process. Along with that, it is necessary to conclude that mobility and professional turnover needs to be improved with involvement in research directly related to the study programme, and the English language skill must be a basic condition in staff members.

HEI has adequate arrangement for student's practice involving social partners number of them planned for programme that take place inside and outside College. Collaboration with social partners helps to ensure basic practical professional skills through companies representatives' public lectures, seminars, industrial and construction practices where students are introduced with Road Engineering related activities, construction companies' specific design, production and management systems, business environment.

KTC periodically organises labour market demand analyses, surveys involving stakeholders (students, graduates, social partners) related to programme's up to date content and learning outcomes that helps to keep programme's content updated.

However, it is recommended to stress more attention and involve actively social partners in organization of practical trainings, seminars, students participation in applied research activities, and to provide more practical knowledge to students within studies, practice, as it was highlighted by stakeholders in the meetings. Road Engineering comprises professional practices performed in speciality-related road construction and maintenance enterprises. Students are introduced with the objects of their future profession activity. Practices are organised after completing theoretical course.

The quality of the graduation thesis of the students constitutes an important evidence for reaching the learning outcomes. By the titles of the theses, a wide area of the scientific field of roads engineering are covered and they propose the discussion of latest achievements in technologies. Moreover, they are consistent with the requirements that need to be studied by higher education's first cycle students.

KTC provides conditions for the professional development of the teaching staff necessary for the provision of the programme. Staff are motivated and publish in journals and conferences. Moreover, cooperation with social partners provides possibility for staff related to study field subjects participate professional courses, research and field projects; as for example professional courses organized in the introduction to geodetic equipment and its appliance.

Though, some improvement should be considered in the future, e.g., mobility of staff - not all the members of teaching staff participate equally in mobility and scientific activity. More publications in international journals and participation in international conferences are strongly

recommended. Teaching staff needs to improve their foreign languages skills, and to use more often in widely in pedagogical and research processes.

It is clear that a lot of efforts and investments were done since last evaluation, but still a lot of improvements need to be done including outdoor and indoor facilities, computer and testing hardware and software, spread of social and reading room spaces, parking places for the students. The main weak points are the Library study space and the missing of a cantina and cafeteria in the main building of the College.

Organisation of study programme for full- and part-time students corresponds to ECTS regulations, Programme Curriculum and allows the achievement of necessary provision for programme's learning outcomes. In the meeting with alumni, they identify that the part-time programme is one advantage, because several students start working before finish the course.

Study process and study assessment meets legal requirements and generally ensure provision of learning outcomes. More attention need to be paid to provision of practices' practical contain and skill development, as well as more active actions and efforts need to be done to motivate student for studies abroad, attract foreign studies for studies in KTC.

Management of the study process provides necessary achievement of learning outcomes. Programme's admission requirements are clear and well-founded. Students have opportunities to participate in student mobility programmes, research, artistic and applied research activities. Assessment of their academic performance is clear, adequate for an Engineering programme and are available to public. Most of the graduates are employed within first half a year after graduation and work according to achieved speciality. Student's mobility level and their involvement in research activities needs to be improved.

Responsibilities for management of the programme are clearly stated with continuous data collection and analysis. Outcomes of internal and external evaluations of the programme are used for the improvement of the programme. Because of the dynamic of the roads construction sector in economies, still some opportunity to implement more actions with stakeholders' involvement in programme management.

After the pervious assessment, the new programme management is open to analyse and discuss improvements in the course and in the relationship with the market. Additionally, partnership with some companies to promote in summer some internship program to provide students with hands-on, career-specific experience through full-time work during summer break.

V. GENERAL ASSESSMENT

The study programme *Road Engineering* (state code 653H22002) at Kaunas Technical College 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	3
2.	Curriculum design	3
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	18

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

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

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

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

Grupės vadovas: Team leader:	Prof. Roode Liias
Grupės nariai: Team members:	Prof. Rui Ramos
	Prof. Wojciech Gilewski
	Prof. Nikolaos Theodosiou
	Mr Artiomus Kuranovas
	Ms Milena Medineckienė

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Kauno technologijos universiteto studijų programa *Kelių inžinerija* (valstybinis kodas – 653H22002) 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	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	Iš viso:	18

*1 - Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)

2 - Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

3 - Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)

4 - Labai gerai (sritis yra išskirtinė)

<...>

IV. SANTRAUKA

Studijų programos tikslai ir studijų rezultatai apibrėžti tinkamai, yra aiškūs ir viešai prieinami, pagrįsti akademiniais ir profesiniais reikalavimais, visuomenės ir darbo rinkos poreikiais. Pavadinimas ir turinys atitinka studijų rūšį ir lygį bei siūlomų kvalifikacijų lygį.

Palyginti su ankstesniojo vertinimo išvadomis, studijų programos tikslai ir studijų rezultatai yra atnaujinti ir suformuluoti pagal inžinerijos studijų krypties aprašą. Studijų rezultatai daugiausiai orientuoti į absolventų žinias ir asmeninius socialinius gebėjimus, inžinerijos uždavinius, taikomuosius mokslinius tyrimus ir analizę, užtikrinamas absolventų judumas nacionaliniu ir tarptautiniu lygmeniu, numatytas mokymasis visą gyvenimą.

Studijų rezultatai nukreipti į žinių įgijimą, jų taikymą, gebėjimą atlikti mokslinius tyrimus, į specialiuosius, socialinius ir asmeninius gebėjimus, jie atitinka pirmosios pakopos studijų programos tikslus ir pavadinimą. Studijų programa Kelių inžinerija sujungia taikomojo pobūdžio ir akademinio ugdymo kriterijų aspektus pirmosios pakopos profesiniam bakalauro laipsniui įgyti.

Siekiant atspindėti kelių inžinerijos tendencijas ir inovacijas, buvo atnaujinti ir tinkamai suformuluoti studijų programos tikslai ir studijų rezultatai (toliau – SR) (2016–2017 akademiniais metais pradėti dėstyti keli nauji dalykai, pavyzdžiui, statybos reglamentai, transporto infrastruktūros pagrindai ir kt.). Tačiau kai kuriuos modulius ir dalykus ateityje galima tobulinti, ypač gilesnės specializacijos, pavyzdžiui, optimalios (angl. lean) statybos valdymą (nurodė alumnai), kitų ES valstybių narių taisykles ir standartus (taip pat nurodė alumnai), kelių infrastruktūros gyvavimo ciklo įvertinimą.

Tikslai ir studijų rezultatai skelbiami viešai KTK interneto svetainėje ir Švietimo mainų paramos fondo svetainėje, AIKOS sistemoje. Tačiau informacija, pateikta savianalizės suvestinėje ir kolegijos interneto svetainėje anglų kalba, skiriasi. Todėl KTK turėtų suvienodinti studijų rezultatus ir tikslus, kad jie oficialiuose dokumentuose ir duomenų šaltiniuose sutaptų.

Studijų programa Kelių inžinerija baigiama parengus baigiamąjį darbą, kuris parodo absolvento profesines žinias ir įgūdžius rasti ir analizuoti profesines problemas, taikyti kritinį ir loginį mąstymą, naudotis konkrečiais informacijos šaltiniais ir remiantis patirtimi spręsti profesines problemas.

Studijų programos sandara atitinka teisės aktų nustatytus reikalavimus. Dalykų dėstymo metodų turinys yra tinkamas studijų rezultatams pasiekti ir atitinka studijų rūšį ir lygmenį. Tačiau studijų programos turinys turi būti atnaujintas, išplėstas ir patobulintas atsižvelgiant į naujausius mokslo, meno ir technologijų pasiekimus ir darbo rinkos poreikius.

Studijų programą vykdo dėstytojai, kurie atitinka teisės aktų nustatytus reikalavimus ir kvalifikacijas. Personalo skaičius yra tinkamas studijų rezultatams pasiekti. Dėstytojai pakankamai motyvuoti ir lojalūs, o tai rodo, kad ši aukštojo mokslo institucija sudaro sąlygas dėstytojų profesiniam tobulėjimui, kurio reikia studijų programai vykdyti ir socialinei paramai užtikrinti. Palyginti su ankstesniu vertinimu, dėstytojai yra jaunesni, kolegija pritraukia absolventų ir juos įtraukia į dėstymo procesą. Be to, reikia gerinti judumą ir dėstytojų kaitą įtraukiant į mokslinius tyrimus, tiesiogiai susijusius su studijų programa. Anglų kalbos mokėjimas turi būti pagrindinis dėstytojams keliamas reikalavimas.

Aukštoji mokykla turi tinkamus susitarimus dėl studentų praktikos, į kurią įtraukiami socialiniai partneriai, studijų programos praktikos suplanuotos, vyksta kolegijoje ir už jos ribų. Bendradarbiavimas su socialiniais partneriais padeda užtikrinti bazinių profesinių įgūdžių įgijimą, įmonių atstovai skaito viešąsias paskaitas, veda seminarus, vykdomos pramonės ir statybos praktikos, kur studentai supažindinami su veikla, susijusia su kelių inžinerija, statybos bendrovių atliekamu projektavimu, gamybos ir valdymo sistemomis, verslo aplinka.

KTK nuolat analizuoja darbo rinkos poreikius, rengia apklausas, kuriose dalyvauja dalininkai (studentai, absolventai, socialiniai partneriai) ir kurios susijusios su atnaujinamu studijų programos turiniu ir studijų rezultatais. Tai padeda užtikrinti studijų programos turinio atnaujinimą.

Rekomenduojama daugiau dėmesio skirti ir aktyviau įtraukti socialinius partnerius organizuojant praktinius mokymus, seminarus, studentus skatinti dalyvauti taikomųjų mokslinių tyrimų veikloje, studentams suteikti daugiau praktinių žinių studijų ir praktikos metu – tai susitikimuose pabrėžė dalininkai. Kelių inžinerija apima profesinę praktiką, kuri atliekama su specializacija susijusiose kelių statybos ir priežiūros įmonėse. Studentai supažindinami su jų būsimosios profesinės veiklos objektais. Praktika organizuojama išklausių teorijos kursą.

Studentų baigiamųjų darbų kokybė įrodo, kiek pasiekti studijų rezultatai. Sprendžiant pagal baigiamųjų darbų antraštes, apimta plati kelių inžinerijos mokslinė sritis, darbų tikslas – aptarti naujausius technologijų pasiekimus. Be to, darbai atitinka reikalavimus, kuriuos turi atitikti aukštojo mokslo pirmosios pakopos studentai.

KTK sudaro sąlygas dėstytojų profesiniam tobulėjimui, kurio reikia studijų programai vykdyti. Dėstytojai yra motyvuoti, skelbia straipsnius žurnaluose ir konferencijose. Be to, bendradarbiavimas su socialiniais partneriais suteikia dėstytojams galimybių dalyvauti su studijų krypties dalykais susijusiuose profesiniuose kursuose, moksliniuose tyrimuose ir praktiniuose projektuose, pavyzdžiui, organizuoti profesiniai kursai, skirti supažindinti su geodezine įranga ir jos taikymu.

Ateityje reikėtų apsvarstyti ir kai kurią veiklą gerinti, pavyzdžiui, dėstytojų judumą – ne visi dėstytojai vienodai dalyvauja judumo ir mokslinėje veikloje. Ypač rekomenduojama padidinti publikacijų skaičių tarptautiniuose žurnaluose, aktyviau dalyvauti tarptautinėse konferencijose. Dėstytojai turi gerinti savo užsienio kalbos įgūdžius ir dažniau jas vartoti pedagoginėje ir tyrimų veikloje.

Akivaizdu, kad po ankstesniojo vertinimo dėta daug pastangų, skirta investicijų, tačiau dar daug reikia atlikti, pavyzdžiui, atnaujinti vidaus ir išorės materialiąją bazę, kompiuterių ir testavimo techninę ir programinę įrangą, plėsti socialines ir skaitymui skirtas erdves, studentams skirtas automobilių statymo vietas. Pagrindinės silpnybės: bibliotekoje studijoms skirta erdvė, kolegijos pagrindiniame pastate trūksta valgyklos ir kavinės.

Nuolatinių ir iššestinių studijų programos organizavimas atitinka ECTS reikalavimus, studijų programos turinį ir leidžia pasiekti reikiamus studijų programos rezultatus. Susitikime su alumnais pastarieji nurodė, kad iššestinė studijų programa yra privalumas, nes kai kurie studentai pradeda dirbti dar nebaigę studijų.

Studijų eiga ir studijų vertinimo sistema atitinka teisės aktų nustatytus reikalavimus ir apskritai užtikrina studijų rezultatų pasiekimą. Daugiau dėmesio reikia skirti praktiškam turiniui ir įgūdžių formavimui, taip pat aktyviau imtis veiksmų ir motyvuoti studentus studijuoti užsienyje, pritraukti studentų iš užsienio ir studijuoti KTK.

Studijų proceso vadyba garantuoja studijų rezultatų pasiekimą. Priėmimo į studijų programą reikalavimai yra aiškūs ir pagrįsti. Studentai turi galimybes dalyvauti studentų judumo programose, moksliniuose tyrimuose, meno ir taikomųjų mokslinių tyrimų veikloje. Akademinių pasiekimų vertinimas yra aiškus, tinkamas inžinerijos studijų programai ir prieinamas viešai. Dauguma absolventų įsidarbina per pirmąjį pusmetį po studijų baigimo ir dirba pagal įgytą specialybę. Reikia gerinti studentų judumo lygį ir jų dalyvavimą mokslinių tyrimų veikloje.

Atsakomybė už studijų programos vadybą išdėstyta aiškiai, duomenys nuolat renkami ir analizuojami. Studijų programos vidiniai ir išoriniai vertinimai naudojami studijų programai tobulinti. Atsižvelgiant į dinamišką kelių statybos sektorių, dar galima imtis priemonių ir užtikrinti aktyvesnį dalininkų dalyvavimą studijų programos vadyboje.

Po ankstesniojo vertinimo naujoji programos vadyba analizuojama ir aptariama, kaip būtų galima pagerinti studijas ir atsižvelgti į rinkos poreikius. Be to, bendradarbiaujant su kai kuriomis bendrovėmis skatinama vasarą vykdyti stažuočių programą, kad studentai susipažintų su praktiniu darbu, įgytų su konkrečia veikla susijusias patirties dirbdami visą darbo dieną per vasaros atostogas.

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III. REKOMENDACIJOS

1. Daugiau dėmesio skirti studentų ir dėstytojų užsienio kalbų įgūdžiams ir galimybei vartoti užsienio kalbą (tiek bendrinę, tiek techninę).
2. Studijų programos vadovybė turėtų imtis veiksmų ir aktyviau įtraukti statybos bendroves į praktinius mokymus, taikomųjų mokslinių tyrimų užsakymą ir dalyvavimą jų veikloje, dėstytojai turi stengtis motyvuoti studentus remtis tyrimais rengiant kursinius ir baigiamuosius darbus, rengiantis konferencijoms ir rašant straipsnius žurnalams.
3. Dvigubai gerinti dėstytojų ir studentų judumą. Kolegija privalo garantuoti didesnę atvykstančių užsienio studentų aktyvumą. Būtina peržiūrėti kolegijos interneto svetainę anglų kalba, nes joje trūksta nemažai informacijos, ji nepateikta arba pateikta ne visa apimtimi, taip pat likę teksto lietuvių kalba ir t. t. Rekomenduojama organizuoti tarptautines savaites, išplėsti studentų galimybes rinktis aukštojo mokslo įstaigą specialiajai praktikai atlikti arba studijuoti, gerinti motyvaciją (kolegijos, socialinių partnerių papildomos stipendijos, praėjusiais metais mainuose dalyvavę studentai pasidalytų patirtimi ir t. t.).
4. Ateityje reikia skirti investicijų vidaus ir išorės materialiajai bazei renovuoti, techninei ir programinei įrangai atnaujinti, ypač laboratorijų įrangai (laboratorijoms, įrangai ir įrankiams, kurie daugiausiai skirti kelių inžinerijai, išskyrus kai kuriuos fundamentaliuosius testus statybos inžinerijai).

Kolegijos pastate nėra veikiančios valgyklos arba kavinės, o tai yra socialinės vietos ir akademinės aplinkos dalis, todėl ekspertai rekomenduoja kavinę įrengti, kad ja naudotųsi studentai, kolegijos dėstytojai ir vadovybė bei socialiniai partneriai.

5. Bibliotekos ir skaityklos, kur studentai galėtų dirbti po užsiėmimų, materialioji bazė yra minimali. Studentai ir alumnai minėjo, kad reikia plėsti skaityklos plotą ir ilginti darbo valandas, taip pat pagerinti studentams skirtas didesnes erdves.

6. Taip pat trūksta kai kurių socialinių erdvių ir paslaugų. KTK turėtų gerinti akademinę aplinką ir pagrindiniame pastate numatyti valgyklą arba kavinę, kuri būtų skirta studentams, personalui ir kitiems administracines paslaugas teikiantiems darbuotojams.
7. Tobulinti studijų turinį ir studentus supažindinti su optimaliu (angl. *lean*) statybų valdymu, kitų Europos Sąjungos valstybių narių taisyklėmis ir standartais, kelių infrastruktūros gyvavimo ciklo vertinimu.
8. Rekomenduojama peržiūrėti kolegijos organizacinę struktūrą, kadangi visas 10 studijų programų prižiūri vienas fakultetas/katedra, todėl nėra aišku, ar apskritai reikalinga katedra.

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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)