

# STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

# KAUNO TECHNOLOGIJOS UNIVERSITETO STATYBOS PROGRAMOS (62402T103, 621J80001) VERTINIMO IŠVADOS

# EVALUATION REPORT OF CONSTRUCTION (STATE CODE – 62402T103, 621J80001) STUDY PROGRAMME at KAUNAS UNIVERSITY OF TECHNOLOGY

Grupės vadovas:
Team leader:
Prof. Allan Asworth

Grupės nariai: Team members: Prof. Dr.-Ing. Andreas Rolf Gustav Jahr

Asoc. Prof. Dr. Dalia Čikotienė

Dr. Artiomas Kuranovas Paulius Simanavičius

Išvados parengtos anglų kalba Report language - English

## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	Statyba
Valstybinis kodas	621J80001
Studijų sritis	Technologijų mokslai
Studijų kryptis	Statybų technologijos
Studijų programos rūšis	Universitetinės
Studijų pakopa	Antroji
Studijų forma (trukmė metais)	Nuolatinės (1.5), ištęstinės (2)
Studijų programos apimtis kreditais	90
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Statybų technologijų magistras
Studijų programos įregistravimo data	2002-06-14

### INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	Construction
State code	621J80001
Study area	Technological Sciences
Study field	Building Technology
Kind of the study programme	University studies
Study Cycle	Second cycle
Study mode (length in years)	Full-time studies (1,5), part-time studies (2)
Volume of the study programme in credits	90
Degree and (or) professional qualifications awarded	Master of Building Technology
Date of registration of the study programme	2002-06-14

Studijų kokybės vertinimo centras

The Centre for Quality Assessment in Higher Education

# **CONTENTS**

CONTENTS	3
I. INTRODUCTION	4
II. PROGRAMME ANALYSIS	5
1. Programme aims and learning outcomes	5
2. Curriculum design	5
3. Staff	
4. Facilities and learning resources	7
5. Study process and student assessment	7
6. Programme management	9
III. RECOMMENDATIONS	11
IV. SUMMARY	12
V. GENERAL ASSESSMENT	14

### I. INTRODUCTION

The vision of Kaunas University of Technology is to be a leading European university with knowledge and technology development and transfer based activities. Its mission is to provide a research based studies of international level, to create and transfer knowledge and innovative technologies for sustainable development and innovative growth of the country and to provide an open creative environment that inspires leaders and talented individuals.

The teaching staff and research workers of the University carry out fundamental and applied research, actively engage in international projects and projects financed by the Lithuanian research institutions, and use their scientific experience and knowledge in the process of teaching. Some members of the teaching staff of arts programmes are involved in artistic activities. Their experience is highly important in ensuring not only scientific, but also artistic level of the implemented arts programmes.

Studies and research are implemented at the University by 13 faculties, including 74 departments, 27 centres, 5 institutes and 16 scientific laboratories that carry out academic activities. The Centre for International Studies has one scientific laboratory and a library. The University's 12 institutes have 4 centres and 7 scientific laboratories. The University's 6 centres have 4 scientific laboratories. The University has 18 administrative and servicing divisions. The staff of 2,759 persons includes 960 teachers and 146 research workers (on 31 December 2011). Nearly 1,000 persons in the University staff hold an academic degree.

The University is integrating into the global academic and scientific community through its membership of a wide range of international organisations. The University has implemented EUREKA projects of the European Research and Development Association and projects under the European Cooperation in Science and Technology programme.

The graduate study programme of *Construction* was established in 2002. It consists of a full-time (1,5 years) and a part-time version (2 years). The programme is supervised by the Department of Building Structures, Department of Building technology and Department of Building Materials of KTU Faculty of civil engineering and Architecture and reviewed by the Committee of Study Programmes. The last modification was in 2011, to comply with legal requirements depending the number of credits of the master thesis. The Department employs 16 teachers (14 of them full-time), including 4 professor, 10 associate professors and 2 lecturers.

### II. PROGRAMME ANALYSIS

### 1. Programme aims and learning outcomes

The programme aims and learning outcomes are well defined, clear and publicly accessible. The programme aims and mainly the learning outcomes are based on the academic and/or professional requirements, public needs and the needs of the labour market. The second-cycle study programme of Construction should lead to highly-skilled and competitive professionals of Building technology to ensure the development of the economic potential of the country, develop the sector of services and industry of the country, and create new jobs. The learning outcomes (Table 2, Self-Analysis Summary Report – SER) have been carefully analysed, categorised and tabulated to provide explicit information for those teaching on the course and for students (SER, Tab. 3).

The number of outcomes seems to be very high, e.g. 13 in one module (Computer-Aided Design of Construction Process) or 15 (Research Project). It is questionable, whether all are individually assessable by the examiners.

The programme aims and in principle the learning outcomes are consistent with the type and level of studies and the level of qualifications offered. The name of the programme, its learning outcomes, content and the qualifications offered are compatible with each other.

### 2. Curriculum design

The curriculum design of the second-cycle study programme of Construction meets legal requirements. Therefor the required decisions are made by the legal bodies.

The study subjects and/or modules are spread evenly, their themes are not repetitive and the content of the subjects is consistent with the type and level of the studies. The curriculum is orientated on technologically applications, due to the necessary practically and theoretical depth of the subject. This is entirely appropriate and is common in programmes in other countries.

The curriculum enables the students to analyse and creatively use scientific and technical information, retrieval databases and specific software, e.g. for structural analysis. The studies develop the abilities of research, experimental and analytical work which are necessary for the individual completion of complex research and analytical tasks in respect of Construction.

The content and the methods of the modules are appropriate for the achievement of the intended learning outcomes. The modules are described in detail, including schedules, analysis of outcomes, assessment methods and workload.

The scope of the programme is sufficient to ensure learning outcomes. There are four modules in the first, five in the second and the final degree project in the third semester. The credits meet the ECTS regulations with 60 credits per year and 90 credits for 1,5 years for a full-time programme. The full-time programme takes three semesters to complete and the part-time programme takes four semesters that is two years. For them the scope of studies per term ranges from 15 to 30 credits.

There are three different module groups, which can be chosen freely, if there are enough places available. Since this is not the case in the ongoing semester (more than 70 applicants for appr. 20 places), the students have been assigned to a certain module group chosen by their grades.

The content of the programme reflects the latest achievements in science and technologies. The teachers are actively involved in research and scholarship at different levels and publish their work at local and international conferences and in recognised journals. This enhances the programme of study and helps to advance the subject content.

The final thesis is discussed with a master student at the beginning of the first term so that the topic of the study module 'Research project' corresponds to the topic of the final thesis. Students can propose the topics of final degree project, so he is able to follow his personal interests.

Social partners, staff, alumni and students are satisfied with the programme. The presented application orientated research project documentations and master theses reflect very well the projected programme aims.

### 3. Staff

The study programme is provided by the staff meeting legal requirements. The qualifications of the staff are appropriate. All staff teaching on the programme is adequately qualified, at least up to doctorate level. Staff has relevant and up to date professional experience (Annex 3.3 SER, long-standing teaching or company experience, even international). All staff is encouraged to improve their teaching qualification and staff development at the university encourages them to further extend their knowledge and skills in this respect, e.g. by the five-year period of assessment in their tenure-track.

The qualifications of the teaching staff are adequate to ensure learning outcomes. There are 16 construction staff members who are professionally qualified in the subject area. Two of them are part-time teachers in special fields, pricing and fire safety. These subjects should be taught by practitioners on academic level, which is achieved. The number of the teaching staff is adequate to ensure learning outcomes.

The turnover of teaching staff is appropriate. The distribution of age (Tab. 7, SER) is evenly distributed. The turnover of staff has advantages and disadvantages. It provides stability for the students, but too little turnover can result in new ideas and practices being limited.

There are appropriate activities provided by the University for professional development of the teaching staff necessary for the provision of the programme, e.g. pedagogical education, organizing conferences and international internships (Annex 3.3 SER).

All staff has an active involvement in research and scholarship. All of the teachers of the programme were successfully certified. In the last five years coordinating teachers have published 39 articles in the publications included in the main list of ISI, 40 in publications included in international data bases, 58 in other reviewed scientific publications. Teachers also actively participate in scientific seminars and courses where they learn about various innovations and acquire skills. In total, over the last five years 70 scientific seminars and courses have been attended. Funding of qualification improvement is established for the employees of the University, which would be desirable to increase.

By attending scientific seminars or professional development courses, teachers have improved their qualifications over 60 times in this way over the last five years. The publications are of high quality, most participate in publishing. However, International staff-exchange could be improved.

### 4. Facilities and learning resources

The premises used for studies are adequate both in their size and quality. The Construction students use classrooms, laboratories of the Faculty of Civil Engineering and Architecture of the University, as well as the services of the library and reading-rooms. They are sufficient for the learning outcomes. In the study process, the laboratory of concrete technology of the Department of Building Materials and the computer class of the Department of Building technology can be used. Master students are allowed to attend experiments in specialised laboratories: the laboratory of building materials, the laboratory of research methods of building materials and products; also scientific and testing laboratories: the laboratory of physico-chemical testing, the laboratory of concrete and mortar, the laboratory of fillers, the laboratory of microscope and dilatometer testing, the laboratory of shrinkage and creep testing, the laboratory of mineral binders and thermal processes testing, the laboratory of durability testing, and the hall of mechanical testing.

Premises intended for the study process are planned according to the standard numbers of students during class.

Libraries and the reading-rooms are located in the Faculty of Civil Engineering and Architecture and the Central Library. The Central Library accommodates totally 114 student workplaces, including 24 computerised workplaces. The reading-room of the Faculty of Civil Engineering and Architecture has 100 student workplaces, including 13 computerised workplaces. The central library and the library of the Faculty of Civil Engineering and Architecture are open on Monday to Thursday from 8:00 a.m. to 7:00 p.m., on Friday from 8:00 a.m. to 6:00 p.m. and on Saturday from 9:00 a.m. to 3:00 p.m. The access to electronic media is good, the faculty library and the Central Library should be coordinated better. Literature should be there where the students are. Not available books, international published articles and journals can be delivered by the nationwide university library system. Also, accommodation for students is sufficient but improvable.

### 5. Study process and student assessment

The Procedure for Admission to the Second-Cycle programme of Construction is carried out by the Faculty Selection Commission. Admission of persons holding the diploma of the accomplishment of the first-cycle university studies is carried out by way of competition according to the competitive score consisting of weight average of the grades of the first-cycle studies multiplied by coefficient 0.8 and the assessment of scientific activities in a ten-point scoring system multiplied by coefficient 0.2. Expert assessment of scientific activities in accordance with the documents submitted is carried out by the Selective Commission of Competition in the preliminary meeting prior to the Mandate Commission. The competition ranking order compiled is announced in advance on the board of announcements of the Faculty and on the website. A possibility for appeals is foreseen. The rules of and procedure for the admission to the second cycle study programmes are notified in annually published Rules of Admission to Kaunas University of Technology and are available on the University's site.

The Faculty decided not to provide additional paid student places aside the free places from the government basket.

The fluctuation in the number of students during the period of studies is monitored since 2007. Completion rates started low and stabilized since 2010 on a very high rate. In 2011, all of those students who started on the programme graduated with a degree which is explained with the

admission process and improvements in the motivation of students as well in the better coordinated timetables to support their individual work.

Students' motivation is also promoted by the project "Best Graduates of Technical Universities" implemented by the Career Centre of KTU and the Directorate of Integration and Career of VGTU.

The organisation of the study process ensures an adequate provision of the programme and the achievement of the learning outcomes. It allows development of study skills based on students' structured individual work. Timetables of classes are developed by the faculty, well coordinated, not overlapping, and taking into account students' requests. Practical work in the field of the study programme is strongly supported. Drawn up timetables are approved by the Dean of the Faculty. The results of intermediate assessment are inserted into the summary of the assessment of study modules in the academic information system (IS). Individual cases can be handled. The final assessment of the student having completed the module takes place during the exam session, and in case of a disease the Dean postpones the examination.

Lectures, practical sessions, and consultations with fixed timetable do not exceed 50% of all the time. There is a very easy and open access for students to consultation with the teaching stuff.

The Research project, which is good for preparation of the Final project, and the Final project itself encouraged students to participate in applied research activities with a strong connection to professional applications. Altogether there are 36 credits available for applied research activities. Still the organization of the study process needs improvement. Too many learning outcomes, which was already mentioned in curriculum design, makes the evaluation of the learning outcomes that the students gets after completing a course really difficult to understand. Moreover, after talking with the students it seemed that the biggest part didn't understand the intended learning outcomes. Also there seems to be a need to get more practical knowledge. The students who didn't work in their field mentioned that more practical works could be included. More excursions to industry might be appropriate.

Students have opportunities to participate in student mobility programmes. The Faculty has effective cooperation agreements on student exchange programme ERASMUS. This outgoing possibility is not used yet by the master students, because most of the students are part time employed in construction companies. At least those students who are part time employed in international construction companies should be encouraged to go abroad respectively their employers should be encouraged to send students abroad.

The university assists students to solve the issues of students' social and professional integration during studies and upon their completion, individually learn the material of the studies, facilitates preparation for the assessment of acquired knowledge and skills.

The assessment system of students' performance is clear, adequate and publicly available. In order to ensure active performance of students throughout the semester, ability to use theoretical knowledge in practice, objective assessment of learning outcomes, the University uses a criteria-based ten-point scoring system and the accumulative assessment, which encourages systemic work during the semester. Where the accumulative assessment is used, learning outcomes are evaluated on the basis of intermediate assessments of tests, individual work, essay, defence of laboratory work, etc., and the final grade is determined based on intermediate assessments and examination scores. A student will qualify for the final examination only subject to the completion of semester assignments and pass during the assessment. The study programme ends with the assessment of the student's education level, i.e. defence of the thesis.

Professional activities of the majority of graduates meet the programme providers' expectations. Employment of graduates depends not only on the qualification acquired but also on the economic situation. The survey of the graduates of the last year revealed that even 80 % of them work according to their speciality (2.5.5 SER). It shows that programme management and partners involvement ist strongly organized.

To improve motivation and employability of the graduates, meetings with programme graduates working in the public and private business sector are organized who are invited to share their experience in pursuing a successful career. Graduates having gained experience of administrative, scientific-research, engineering work reveal the importance of thorough and structured work for the development of self-expression of highly-qualified specialists of construction based on their personal experience, explain what competence is prerequisite for successful work. The Career Centre is assisting students in proper planning of professional career, preparing for the open labour market; helping to solve employment issues of students and graduates of KTU.

In spite of exceptionally good possibilities the participation of students and social partners could be more intensive as it is. Not only student representatives and those external partners who are part-time teachers should be involved in the programme improving process. A higher number of participants could be included e.g. by annual workshops with students and social partners.

### 6. Programme management

The responsibilities for decisions and monitoring of the implementation of the programme are clearly allocated:

The management of the study programme of Construction is organised according to the Statute of the University. New Temporary Academic Regulation was approved by the Senate recently in June 2012. The activities of programme administration and internal quality assurance of the study programme are controlled and coordinated by the Vice-Rector. The programme implemented by the Faculty of Civil Engineering and Architecture.

Information and data on the implementation of the programme are annually collected and analysed. The information data system of the university is up to date and effective.

To permanently update and improve the programme the Committee of Study Programmes CSP is installed, consisting of the Dean, the Heads of Departments, and a student. It is cooperating with another board, the Committee of Studies and Academic Culture. Social stakeholders, as students, employers, professional organisations, the Heads of the Departments and the employees of the Faculty are advising the Council of the Faculty. Proposals coordinated with the Council of the Faculty are submitted by CSP, the Service of Studies, and the latter having summarised the proposals submits them for approbation to the Rector and for the approval of the Senate. At last the whole course book will be designated by the Senat.

The process of study programme administration and quality assurance is reflected in the Academic Information System which is operating since 2003 on an ORACLE database. The Academic Information System of the university is up to date and very effective.

The internal evaluation process is supported by the Internal Study Quality Assurance System IQAS. It is used by the Management and by students. The IQAS is active when problems of internal study quality assurance are indicated.

Structure and content of the programme are reviewed and updated every three years. The Certification and Competition Commission of the University and Faculty (CCC) surveys the compliance of teachers with qualification requirements set for the position, certifies them for five years and arranges competitions to the position.

Members of the Dean's Office of the Faculty and Heads of the Departments of the Faculty are involved in the process of quality assessment permanently.

For the programme of Construction the Dean's Office and the Heads of the departments are discussing quality assurance problems and students' proposals for improvements in their weekly meeting. Students and teachers meet and discuss urgent issues at "Round Tables". Heads of Departments attend teachers in lectures every term.

At the end of a term the students give feedback on their personal desktops of the Academic Information System by electronic assessment questionnaires. This survey is intended for the assessment of each study subjects by all students who choose it. It should contribute to the improvement of each study subjects and is also used for a long-term assessment of all programme modules. Summarized statistics are made public. The students of the Faculty also take part in the process of quality assessment and improvement through representation of students in the Committee on Study Programmes and the Council of the Faculty.

The questionnaire at the end of a semester might be too late to take measures and for a direct feedback. A discussion between teacher and students should take place more early.

Since the spring term in 2010, the students made an independent survey on studies and gave teachers points and positive and negative comments. The results are not accessible during this survey but student wishes and ideas are intensively accepted during "round table" talks between the programme responsible persons and the students.

The outcomes of internal and external evaluations of the programme are used for the improvement of the programme.

The improvement of the quality of the study programme is initiated by the CSP through deliberating upon the study modules and drawing a collegiate conclusion whether a module meets the criteria of certification. It is determined whether the module complies with the granted knowledge and abilities and the objectives of the programme, the link between the granted knowledge and abilities with the methods of studies and assessment, the appropriate teachers' experience, the recommended and additional literature as well as methodological aids to the content and level of the module, the sufficiency of the laboratories and computer equipment and software required for lectures. In spite of their possibilities the participation of students is not as intensive as it should be.

The contents of the module tables are often not up to date and should be looked through thoroughly. Literature is sometimes outdated and standards are not valid anymore. Prerequisites are usually wrong and just suggestions.

Comments and recommendations of external social stakeholders are highly important to the improvement of quality in higher education. They are members of the Committee on Study Programmes, qualifying commission for Master's theses defence and the Council of the Faculty. As members of the commission, external social stakeholders bring forward proposals in relation to the quality of the study programme. External social stakeholders, who take part in the

commissions for the defence of theses, not only assess the theses, but also annually provide their comments and conclusions in respect of the quality of the programme.

The programme is improved through the advices of external stakeholders, a huge number of companies which have cooperation or support contracts, professional associations and related ministries. Still a broader participation might be possible.

The internal quality assurance measures are effective and efficient.

### III. RECOMMENDATIONS

- 1. The learning outcomes should thoroughly be examined and reduced.
- 2. Outdated literature and not valid standards should be replaced.
- 3. A greater part of the staff might participate in publishing.
- 4. More international exchange of staff should be encouraged.
- 5. Investment in laboratories should be continued.
- 6. Students should be more active in the improvement of the study programme.
- 7. More stakeholders should be involved in improvement of the study programme.
- 8. Module descriptions should be looked through thoroughly for not valid prerequisites modules, which would lead to longer studies. Those should be replaced by recommendations.

### 1. Programme aims and learning outcomes

The programme aims and learning outcomes are well defined, clear, and public. They are based on professional and academic requirements and appropriate to the market. The programme type and level is suitable to insure the learning outcomes.

Students, staff, employers, and alumni are satisfied with the programme, its aims, and its outcomes. The number of outcomes should be reduced to an assessable amount.

### 2. Curriculum design

The curriculum is orientated on technologically applications, due to the necessary practically and theoretical depth of the subject. This is entirely appropriate to legal requirements, the needs of the students and the social partners and up to date. The three different module groups are well accepted. Modernisation of the lectures and the suggested literature to up to date standards should go on.

### 3. Staff

Staff qualification meets the legal requirements. The staff is highly qualified and experienced to ensure the learning outcomes. It's publications are good, most participated in publishing. The participation of the staff in international exchange could be increased.

### 4. Facilities and learning resources

The laboratories are sufficient for the learning outcomes. The invesment in equipment should be continued. Students practice is ensured not only by the faculties facilities but also by the easy acsess to practice work in the field of the programme.

The access to electronic media is good, necessary books and literature can be provided by the libraries. The coordination of Faculty and Central Library should be improved.

### 5. Study process and student assessment

The admission requirements are well founded and the study process is well organised to achieve the learning outcomes. The sudents are encouraged to participate in applied research and to participate in student mobility programmes. Socioal and academic support is available. The assessment system is clear, adequate and public.

Practical hands-on-approach for the students should be intensified to give them more self-confidence.

The majority of graduates meets the expactations of the programmes providers an employers. Participation of students and social partners in the programme improvements process is still not as intensive as it could be.

### 6. Programme management

The responsabilities for decissions and monitoring of programm are clearly set and the Acadmic Information System which collects and analyses the datea is continually updated. All evaluations like this document are used for further development of the programme. The quality insurance system operates effective and efficient.

Even if social partners are involved in the improvement process on a regulary base, not all of them are engaged and informed. This engagement should be more intensive. Programme management should ensure, that actual literature and valid standards are recommended in the module descriptions an be thought.

### V. GENERAL ASSESSMENT

The study programme *Construction* (state code – 62402T103, 621J80001) at Kaunas University of Technology is given **positive** evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	3
2.	Curriculum design	3
3.	Staff	4
4.	Material resources	3
5.	Study process and assessment (student admission, study process student support, achievement assessment)	4
6.	Programme management (programme administration, internal quality assurance)	3
	Total:	20

<sup>\*1 (</sup>unsatisfactory) - there are essential shortcomings that must be eliminated;

Grupės vadovas:
Team leader:
Prof. Allan Asworth

Grupės nariai: Team members: Prof. Dr.-Ing. Andreas Rolf GustavJahr

Asoc. Prof. Dr. Dalia Čikotienė

Dr. Artiomas Kuranovas

Paulius Simanavičius

<sup>2 (</sup>satisfactory) - meets the established minimum requirements, needs improvement;

<sup>3 (</sup>good) - the field develops systematically, has distinctive features;

<sup>4 (</sup>very good) - the field is exceptionally good.

<...>

### V. APIBENDRINAMASIS ĮVERTINIMAS

Kauno technologijos universiteto studijų programa *Statyba* (valstybinis kodas – 621J80001, 62402T103) vertinama **teigiamai**.

Eil.	Vertinimo sritis	Srities
		įvertinimas,
Nr.		balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	3
3.	Personalas	4
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	4
6.	Programos vadyba	3
	Iš viso:	20

<sup>\* 1 -</sup> Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)

### IV. SANTRAUKA

### 1. Programos tikslai ir studijų rezultatai

Programos tikslai ir studijų rezultatai yra aiškiai apibrėžti ir vieši. Jie pagrįsti profesiniais ir akademiniais reikalavimais, atitinkančiais rinkos padėtį. Programos tipas ir lygis yra tinkamas, siekiant užtikrinti studijų rezultatus.

Studentai, dėstytojai, darbdaviai ir absolventai yra patenkinti programa, jos tikslais ir rezultatais. Studijų rezultatų skaičių reikia sumažinti iki tokio kiekio, kurį būtų lengva vertinti.

<sup>2 -</sup> Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

<sup>3 -</sup> Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)

<sup>4 -</sup> Labai gerai (sritis yra išskirtinė)

### 2. Programos sandara

Programos mokymo planas pritaikytas technologijoms, skirtas aptarti teorinę ir praktinę dalį. Programa visiškai atitinka teisinius reikalavimus, studentų bei socialinių partnerių poreikius ir yra aktuali. Trys skirtingų modulių grupės yra priimtinos. Reikia toliau taikyti paskaitų modernizavimo ir literatūros atnaujinimo darbus.

### 3. Dėstytojai

Dėstytojų kvalifikacija atitinka teisinius reikalavimus. Dėstytojai – labai kvalifikuoti ir patyrę, geba užtikrinti studijų rezultatus. Jų publikuojami straipsniai yra geros kokybės; straipsnius skelbia dauguma dėstytojų.

Reikėtų padidinti dėstytojų dalyvavimą tarptautiniuose mainuose.

### 4. Įranga ir studijų ištekliai

Laboratorijų yra pakankamai, kad būtų užtikrinti studijų rezultatai. Reikėtų toliau investuoti į įrangą. Studentų praktika užtikrinama ne tik naudojant įrangą fakultetuose, bet ir profesinės veiklos darbą programos srityje.

Prieiga prie elektroninių šaltinių yra gera, bibliotekose galima gauti reikiamų knygų ir literatūros. Reikėtų pagerinti fakulteto ir centrinės bibliotekos bendradarbiavimą.

### 5. Studijų eiga ir studentų vertinimas

Įstojimo reikalavimai yra gerai pagrįsti, o studijų eiga – gerai organizuota, kad būtų galima pasiekti studijų rezultatų. Studentai skatinami dalyvauti taikomojoje tiriamoje veikloje ir studentų mobilumo programose. Galima socialinė ir akademinė parama. Vertinimo sistema yra aiški, tinkama ir vieša.

Reikėtų intensyvesnio studentų savarankiško darbo, kad jie labiau pasitikėtų savimi.

Dauguma absolventų patenkina darbdavių lūkesčius. Studentų ir socialinių partnerių dalyvavimas tobulinant programą nėra toks intensyvus koks galėtų būti.

### 6. Programos vadyba

Atsakomybė už sprendimus ir programos stebėseną yra aiškiai paskirstyta, o akademinių duomenų sistema, kurioje kaupiami ir analizuojami duomenys, yra nuolat atnaujinama. Visi įvertinimai, tokie kaip šis dokumentas, naudojami tolesniam programos tobulinimui. Kokybės užtikrinimo sistema veikia efektyviai ir produktyviai.

Socialiniai partneriai periodiškai įtraukiami į tobulinimo procesą, bet ne visi iš jų tuo domisi ir yra informuojami. Jie turėtų intensyviau įsitraukti. Programos vadyba turėtų užtikrinti, kad modulių aprašuose būtų rekomenduojama aktuali literatūra ir galiojantys standartai.

### III. REKOMENDACIJOS

- 9. Studijų rezultatai turėtų būti peržiūrėti ir jų skaičius sumažintas.
- 10. Reikia pakeisti pasenusią literatūrą ir nebegaliojančius standartus.
- 11. Straipsnius turėtų skelbti didesnė dalis dėstytojų.
- 12. Reikia skatinti didesnius tarptautinius dėstytojų mainus.
- 13. Reikia tęsti investicijas į laboratorijas.
- 14. Studentai turėtų aktyviau dalyvauti tobulinant studijų programą.
- 15. Daugiau socialinių partnerių turėtų būti įtraukti į studijų programos tobulinimą.
- Studijų modulių aprašus reikia atidžiai peržiūrėti ir panaikinti negaliojančius reikalavimus
   modulius, kurie prailgintų studijas. Juos reikia pakeisti rekomendacijomis.

<...>