



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETO  
***INŽINERINĖS INFORMATIKOS*** STUDIJŲ  
**PROGRAMOS (612I13002)**  
**VERTINIMO IŠVADOS**

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**EVALUATION REPORT**  
**OF *ENGINEERING INFORMATICS* (612I13002)**  
**STUDY PROGRAMME**  
**at *VILNIUS GEDIMINAS TECHNICAL UNIVERSITY***

Grupės vadovas:  
Team leader:

Prof. Andrew McGettrick

Grupės nariai:  
Team members:

Prof. Jerzy Marcinkowski

Prof. Jyrki Nummenmaa

Asta Urmanavičienė

Tautvydas Jančis

Išvados parengtos anglų kalba  
Report language - English

Studijų kokybės vertinimo centras

## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Inžinerinė informatika</i>
Valstybinis kodas	612I13002
Studijų sritis	Fizinių mokslų
Studijų kryptis	Informatika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (4 m.)
Studijų programos apimtis kreditais	240 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Informatikos bakalauras
Studijų programos įregistravimo data	Lietuvos Respublikos švietimo ir mokslo ministro 1997 m. gegužės 19 d. įsakymu Nr. 565

## INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Engineering Informatics</i>
State code	612I13002
Study area	Physical Sciences
Study field	Informatics
Kind of the study programme	University Studies
Study cycle	First
Study mode (length in years)	Full-time (4 years)
Volume of the study programme in credits	240 ECTS
Degree and (or) professional qualifications awarded	Bachelor of Informatics
Date of registration of the study programme	19 of May 1997, under the order of the Minister of the Ministry of Education and Science of the Republic of Lithuania No. 565

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The Centre for Quality Assessment in Higher Education

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## I. INTRODUCTION

The procedures of the external evaluation of Vilnius Gediminas Technical University (VGTU, for short) first-cycle study programme *Engineering Informatics* were initiated by the Centre for Quality Assessment in Higher Education of Lithuania; it selected and appointed the external evaluation Review Team formed by the head, Professor Andrew McGettrick (University of Strathclyde, Scotland), Professor Jerzy Marcinkowski (University of Wrocław, Poland), Professor Jyrki Nummenmaa (University of Tampere, Finland), Asta Urmanavičienė (employer representative – social partner, Lithuania), and Tautvydas Jančis (student representative – Kaunas University of Technology Lithuania).

For the evaluation, the following documents have been considered:

1. Law on Higher Education and Research of Republic of Lithuania;
2. Procedure of the External Evaluation and Accreditation of Study Programmes;
3. General Requirements of the First Degree and Integrated Study Programmes;
4. Methodology for Evaluation of Higher Education Study Programmes.

The basis for the evaluation of the study programme is the Self-Evaluation Report (hereafter, referred to as the SER) prepared in 2013, its annexes and the site visit of the Review Team to VGTU on October 9<sup>th</sup>, 2013. The visit included meetings with different groups: the administrative staff of the Faculty, the staff responsible for preparing the self-evaluation documents, teaching staff, students, employers and alumni. The Review Team evaluated various support services (classrooms, laboratories, library, computer facilities), examined a sample of students' work, and various other materials. After the Review Team discussions and the additional preparation of conclusions and remarks, preliminary general conclusions of the visit were presented to staff. After the visit, the Review Team met to discuss and agree the content of their final report, which represents the agreed views of the Review Team.

Importantly, the review of the study programme took place in the context of an institutional vision and mission statements:

- The mission of VGTU is *to educate and foster a personality who is public-spirited, creative, entrepreneurial, competitive, receptive to science and state-of-the-art technologies as well as cultural values; and help ensuring the country's public, cultural and economic prosperity, social concord and preservation of the national cultural identity.*
- The vision of the VGTU is *to be a prestigious Lithuanian establishment of higher education, whose scientific and study level reach the standards of the best European*

*technical universities, attractive to Lithuanian and foreign scientists and students, and is able to meet environmental challenges and has a significant social importance for development of the country.*

*Engineering Informatics* is a 4-year Bachelor study programme that admits only full-time students. It is offered by the Department of Information Technologies in the Faculty of Fundamental Sciences. It was the first informatics field study programme offered by VGTU.

In carrying out the review, the Panel was charged with addressing a number of different degree programmes in computing within Vilnius Gediminas Technical University, indeed within the same Faculty. As a result, there was considerable commonality in areas such as resources, staffing, administrative oversight, etc. Accordingly the Panel felt that it was appropriate on occasion to replicate certain aspects of their findings in the various reports.

## II. PROGRAMME ANALYSIS

### *1. Programme aims and learning outcomes*

The main aim of the study programme is to ‘provide fundamental knowledge and abilities of informatics study field based on theoretical and practical skills’. This is a relatively general statement of intent, but is legitimately interpreted to mean an orientation towards information systems implementation, the creation of flexible IT services and managing risk in an IT environment.

The intended learning outcomes for the study programme include: to design, create and test information systems to the domain requirements, to make a plan and a budget for creating and implementing information systems while using resources optimally; to create flexible IT services, to improve IT productivity based on results and methodologies of IT management modeling; and, to manage requirements conformity and risk in an IT environment while guaranteeing data and software integrity.

There is consistency between the aims of the programme and the intended learning outcomes. However, the aims do not differentiate this study programme sufficiently well from other study programmes offered by the Faculty, e.g. the Bachelor study programme in *Information Technology Service Management*. For instance, a refinement of the intended learning outcomes of this programme includes an understanding of information technologies service management processes.

The relationship between the course and intended learning outcomes as presented in the SER document is a bit problematic. The SER lists all course modules that have even the slightest connection with the various intended learning outcomes, which is not reasonable in all cases. For instance, the management of databases is associated with approaches to writing software; the knowledge of the principles on information systems design is addressed in the modules the C++ programming language, object oriented design, software systems fundamentals, and artificial intelligence and expert systems. It is, of course, understandable that a course module serves several intended learning outcomes, but the relationship between the aim of the course and the intended learning outcomes should be more obvious. In the view of the Review Team, the alignment between these aims and intended learning outcomes would benefit from review.

Comprehensive information on the aims and intended learning outcomes of the *Engineering Informatics* study programme is available in Lithuanian and English languages via the VGTU website: <http://studijos.vgtu.lt/studiju-programos/>.

## **2. Curriculum design**

The curriculum meets the statutory legal requirements. The entire study programme consists of 240 ECTS credits of study: these include 171 ECTS credits devoted to course units for the field of study, 15 ECTS credits devoted to general course units established by the university and a further 24 ECTS credits to course units established by the university and chosen by the student, 15 ECTS credits devoted to periods of practice (periods spent in industry), and 15 ECTS credits are devoted to the final Thesis.

The course modules are spread evenly across the various semesters and their themes are not repetitive. The content of the course modules is consistent with the type and level of the studies. However, the study programme could be stronger on the theoretical foundations, as implied by the aims of the study programme. But the scope of the study programme and variety of courses is sufficient to ensure that students achieve the intended learning outcomes.

In terms of curriculum design, much reference is made in the SER to the publications of the Association for Computing Machinery (ACM); this provides curriculum guidance on computer science and was published in 2008. There is no reference to the more recent CS 2013. But references to these documents tend to be selective, and important observations from these documents have been ignored.

The programme does offer various classes on such topics as programming, software development, operating systems, databases, human-computer interaction and these are supported by classes in mathematics and business, which is good. However the Review Team made a number of observations (space for further improvement): perhaps Digital Logic is of marginal importance nowadays; professional legal and ethical considerations should be compulsory for all students; internet and net centric programming could have greater presence; concurrency (for multi-core processors) was important; mobility was an important topic; students should be exposed to a richer variety of programming paradigms. But in addition, the course on Human Computer Interaction (HCI) had a syllabus that did not reflect the normal understanding of this important topic. The Practice course came in for some criticism as well; while the concept is important it was felt that a two-week spell was inadequate and a period of two to three months was needed to bring benefit to all parties.

At the meeting with staff the issue of the volume of the content of the mathematics classes for students was seen by the Review Team as problematic. There was general agreement that there should be a greater emphasis on discrete mathematics and reduced emphasis on continuous mathematics. However, it appeared that there were impediments at university level to making changes to these classes. At the meeting with staff, there was little evidence of staff working at Faculty and University level to alter the situation. Of course, any mathematics will strengthen the capability to think mathematically, but the courses should also motivate the students and give a good basis for the computing studies of the study programme. In this case, discrete mathematics with topics like e.g. set theory, logic, graph theory and theory of automata would seem a much more appropriate choice.

### ***3. Staff***

According to the SER, there are 38 lecturers in the year 2012 who teach the students of the *Engineering Informatics* Bachelor study programme. Among them there are 5 professors, 22 docents, 8 lectors and 3 assistants. The teaching staff are experienced and well qualified; within the last 5 years, their scientific and pedagogical experiences have been evaluated and approved. The average age of lecturers is 48.5 years, which is very high. There is very little turnover of staff, which is not good, as new people could bring new ideas. New staff are mainly recruited from the graduates of VGTU. Most of the teachers do hold PhD degrees, and in this respect the statutory legal conditions, that at least 50% of the study field subjects must be taught by recognised scientists, required to run the study programme are very clearly satisfied. But again these qualifications are often from VGTU itself.

Generally staff have been active in furthering their qualifications, e.g by participating in international or Lithuanian seminar and courses. Many have over 10 years of experience in teaching and several have contributed to textbooks and have spent periods of time in companies.

The teaching load of the staff members is usually between 300 and 400 hours a year. This is a lot, but it is not impossible to reconcile such a load with professional development, including some serious research.

From the staff CVs included in the SER, it appeared that one member of staff supervises 10 undergraduates each year, plus 8 Masters students, plus 2 or 3 PhD students; in the view of the Review Team, such a load is excessive and does not allow sufficient time for effective student supervision.



Unfortunately the system VGTU uses to measure and assess the research achievements of its staff results in misdirected incentives. To be more specific, the Review Team understood that an academic teacher of VGTU is required to publish, every 5 years, 3 papers in journals listed by Thomson Reuter's "Web of Science" product and having the so called "impact factor" (a notion trademarked by Thomson Reuter's). As a consequence, most of the staff members publish quite a lot, but mostly in, from an international perspective, relatively low esteem venues like journals co-published by Vilnius Gediminas Technical University itself.

In the view of the Review Team such publications, regardless of their number, do not constitute evidence of high quality research. However, the publication lists of a small number of the teaching staff members also include papers in journals (or in conference proceedings) which, although not really in the top league internationally, are genuine venues for ideas exchange in their field. The examples include papers in "Advances in Engineering Software", "Computer Physics" and in "IFIP Advances in Information and Communication Technology".

The very low research activity of the teaching staff members is compensated by their knowledge of the subjects taught and their teaching competences. During the visit, a mathematics lecturer provided information about her discrete mathematics class and that was reassuring. In the view of the Review Team, the competences of the teaching staff are adequate to ensure the achievement of intended learning outcomes of this undergraduate study programme. This conclusion was reached by the Review Team after visiting several classes, after the meeting and discussions with the teaching staff, and after the meeting with the student representatives who were quite enthusiastic about the quality of teaching.

There had been around 12 international visits by staff to countries such as the Czech Republic, Italy, Turkey, Spain and the UK often to honour Erasmus agreements and students were benefitting from these mobility arrangements. However, opportunities for developing wider benefits, such as collaborative international research, were not apparent.

#### ***4. Facilities and learning resources***

The material resources are very good indeed. The lecturing takes place in spacious lecture accommodation which is equipped with video projectors as well as interactive boards. There are six computer laboratories which house 153 personal computers and these are entirely sufficient to meet the needs of students on the programme. Students can get access to the software they need and the network provision is very good, and includes access to EDUROAM, a network for research and education throughout Europe. Parallel computing (in a cluster) is available and

there is a cloud computing service. There are access points that allow students with their own computers to access networks and the facilities. Students were able to gain access to the software they required. Generally, the premises for studying are very good both in their size and quality and students expressed no anxiety about any aspect of them. Special ramps had been installed to allow access by disabled students.

Since 2006 the Faculty of Fundamental Sciences in VGTU had been a member of the Microsoft Academic Alliance programme. This allows students access to operating systems, programming environments, design tools and even course materials. The Faculty is also a member of the IBM Academic Initiative Programme which again provides access to training materials and to software.

Generally students were very satisfied with these resources and the Review Team was encouraged by the positive atmosphere of study and work in the laboratories and teaching facilities; the teachers there were highly competent and the students were engaged in interesting and appropriate tasks.

Some of the material resources are shared with other study programmes, which makes it a little bit more complicated to evaluate them. Students were very satisfied with the available resources. They were very content with the library provision and with the general computing provision.

The Review Team observed that subscriptions to the ACM (Association for Computing Machinery) and IEEE (Institute of Electrical and Electronics Engineers) electronic digital libraries had been cancelled because they were not being used sufficiently. These are among the most important electronic libraries. In the view of the Review Team it was important that prestigious resources of international standing should be available to both staff and students and their use should be encouraged.

### ***5. Study process and student assessment***

Changes to the admissions regulations for this study programme had occurred in 2009 resulting in decreased numbers of students; at that time the possibility of entering the study programme on a part-time basis or via extramural studies was discontinued. The number of applicants in 2012 was 358, with the number selected being 24 with high average marks. This is a decrease from 2008 when 768 applied and 102 were selected.

The Review Team enjoyed a very positive meeting with the students. They were enthusiastic about their experiences and study programme in general. At the meeting with the students it was

clear that they liked programming and the programme was meeting their needs. Students saw the acquisition of certificates that demonstrated technical competence and which were recognised globally as being very important to them. Indeed the social partners also saw this as important.

The Review Team had concerns about the weight of importance being placed on these certificates as opposed to the university diplomas both by the students and employers. When deciding whether to accept a candidate for employment, the certificates, personality and other tests were typically the determining instruments, not the university diploma and accompanying assessment of student performance.

Study plans for the programme had been revised to make them European Credit Transfer and Accumulation System (ECTS) compliant, and this has created greater opportunities for individual study plans and for welcoming students from other countries.

The final Thesis was intended be based on independent scientific or applied research and involve the application of knowledge and understanding corresponding to the study programme aims. From the grades for both 2011 and 2012 the following statistics emerged; there were 102 students for 2011 and 77 for 2012 in total. In 2011, 33 students score top grade of 10 and the average score was 8.69. In 2012, 23 students score 10 and the average is 8.62.

The social partners were very enthusiastic in their support for the study programme. They saw it meeting their needs and they wished to see greater numbers of students studying on this programme and graduating to help industry. One of the social partners had entered into a formal agreement with the university which allowed students to sit on company training course and attract credit (assuming it was successfully completed) as a substitute for a university class. The Review Team viewed this positively but would be concerned if it happened on a large scale; so it would be important to control the number and nature of such initiatives. Some 23 students from the programme had been selected on a competitive basis to undertake study abroad.

The Review Team concluded that the university's student assessment systems are in need of attention at all levels. Neither employers nor indeed the students themselves placed sufficient value or pride in their awards. This needs to be addressed so that education in higher education becomes uniformly respected and highly valued.

Social support is good and students interviewed during the evaluation visit expressed no concerns in this area. Sports, health and cultural activities are supported at institutional level. Special facilities are available for disabled students and scholarships are available for good performance and also for hardship cases. For both foreign students and disabled students

individual study plans can be negotiated with the Dean of the Faculty.

## ***6. Programme management***

Programme management was seen to include: programme review, programme update and maintenance, internal quality assurance, and ensuring the effective involvement of social partners. Responsibilities for the study programme management fell jointly to the Department and to the Faculty. The Review Team gained the impression that programme management was not working effectively. There were staffing issues related to the age profile of the staff and to the lack of diversity in the background of the staff; there were curriculum issues that required attention; the student assessment system was not as effective as it should have been; and the quality feedback mechanisms used as input to quality improvement processes were ineffective.

Despite of the fact, that the evaluation and improvement processes involved social stakeholders: students, alumni, teachers and social partners, the results of internal evaluation of the study programme should have been used more strongly to improve the study programme, e.g. on the curriculum design concerning the role of mathematics, and to develop a more uniform quality standard for the lecturers in the study programme.

Currently, there are many ways to produce feedback. The students can talk directly to the teachers. The students can also express their concerns to the student representatives, which take care of the communicating problematic matters with the teachers / Dean / Head of the Department. The students have also electronic discussion forums. It is also possible to file an official complaint – apparently this is more relevant when the issue is about marking. There is also a university-wide information system “Medeinė”, through which the students provide formal feedback that acts as input to the quality system. None of the students on this study programme believed that giving feedback through the “Medeinė” system would lead to improvement, and, consequently, they did not provide it. The system is university-wide and over their visit to the institution the Review Team gained the impression that, although students could input textual feedback to the “Medeinė” system, the staff believed that the system includes only numerical feedback.

During the visit the Review Team met with social partners. All of them expressed the view that graduates from this study programme were very important for Lithuania and they would welcome greater numbers of graduates. However, none of them had any formal way of providing input to the Department about change or development. The Review Team was left with a question about whether there were systematic approaches to the involvement of a range of social

partners.

From the staff's description of departmental management, the position of the Head of the Department carries great responsibility without including the means to be truly effective and to provide genuine and much needed leadership.

### III. RECOMMENDATIONS

1. The self-evaluations carried out prior to the review highlighted areas of strength but also areas of weakness. Steps should be taken to ensure that all areas of weakness are addressed so that the weaknesses are removed and the benefits of self-evaluation are confirmed.
2. The aims and some of the intended learning outcomes of the study programme should be reviewed so as to identify it and to differentiate it clearly from other study programmes offered by the Faculty. Care should be taken to ensure a simple and clear relationship between courses aims and intended learning outcomes.
3. The curriculum should be reviewed to address issues raised by the Review Team. This included addressing the mathematics issue, revising the syllabus for Human Computer Interaction and generally ensuring that all courses syllabuses are up-to-date.
4. Rigorous assessment regimes need to be put in place at all levels. These must encourage students to achieve their full potential in all aspects of their work, reward excellence, and their implementation should include safeguards against misuse and not be overly bureaucratic.
5. Greater numbers of staff should be exposed to and become engaged with the highest international standards of research and scholarship.
6. The university should demonstrate its commitment to encourage excellence in teaching and learning by putting in place for staff prestigious awards for excellence in teaching. These should encourage innovative pedagogical developments that engage and motivate students and this includes the imaginative uses of (new) technology.
7. Literature of the highest international standards should be easily accessible to both staff and students and management should take steps to ensure this is utilised.
8. The university is encouraged to put in place a course feedback system that is non-threatening and effective, and is used systematically. It should provide rapid feedback to staff members. Its proper usage should be monitored.
9. The institution should give serious consideration to the role of the Head of Department and the framework within which the Head has to operate. This is to ensure there is an environment in which dynamic leaders can flourish and bring about effective ongoing change.
10. There should be greater attention to enthusiastic marketing of the programme (perhaps with support from social partners) to attract greater numbers of applicants and this should project an appropriately exciting and attractive message to potential applicants.

## IV. SUMMARY

*Engineering Informatics* is a 4-year undergraduate study programme that admits only full-time students. It is offered by the Department of Information Technologies, in the Faculty of Fundamental Sciences. It was the first informatics field study programme offered by VGTU.

The curriculum did address a broad range of topics, which is good. However for further improvement, there was a need to review the curriculum to remove some anomalies, e.g. in the mathematics courses, as well as to up-to-date some courses.

The Review Team had concerns about exposure of both staff and students to the highest international standards of excellence. They wished to encourage the institution to make such materials available and to encourage its use by both staff and by students. Steps had to be taken to encourage staff to become engaged in leading research of international standing and worth.

Social partners spoke enthusiastically about the need for greater numbers of graduates from this study programme; these graduates had a vital role in helping to meet the needs of Lithuania. In recent years the numbers entering the study programme had fallen but this was attributed to reasons external to the university.

The students themselves were enthusiastic about their studies; they were enjoying the programme and it was meeting their needs. They enjoyed programming itself and the various courses were assisting them in improving these skills.

Students felt that gaining certificates that carried international recognition was very important to them. They saw the study programme helping them with this. Social partners likewise, when seeking to employ students, also saw these certificates as essential; when they were tendering for contracts they had to be able to show that their workforce was qualified in this way. The Review Team was concerned that university qualifications and the assessment of student performance were essentially not a factor in gaining employment; the students had recognised this.

The Review Team felt strongly that steps had to be taken to re-establish student assessment as a vital matter, tied to the reputation of the institution. Students themselves had to feel challenged and had to feel the need to excel in these assessments. Social partners had to recognise the value of this assessment.

The issue of study programme management was a concern. Heads of Department carried great responsibility but they were not always provided with suitable support mechanisms. The Review Team felt that this matter had to be addressed.

## V. GENERAL ASSESSMENT

The study programme *Engineering Informatics* (state code – 612I13002) at Vilnius Gediminas Technical University is given **positive** evaluation.

*Study programme assessment in points by evaluation areas.*

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	3
2.	Curriculum design	3
3.	Staff	3
4.	Material resources	4
5.	Study process and assessment (student admission, study process student support, achievement assessment)	3
6.	Programme management (programme administration, internal quality assurance)	2
	<b>Total:</b>	<b>18</b>

\*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.

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Asta Urmanavičienė

Tautvydas Jančis



**VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETO PIRMOSIOS PAKOPOS  
STUDIJŲ PROGRAMOS *INŽINERINĖ INFORMATIKA* (VALSTYBINIS KODAS –  
612I13002) 2013-12-12 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-550-2 IŠRAŠAS**

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## V. APIBENDRINAMASIS ĮVERTINIMAS

Vilniaus Gedimino technikos universiteto studijų programa *Inžinerinė informatika* (valstybinis kodas – 612I13002) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	3
3.	Personalas	3
4.	Materialieji ištekliai	4
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	2
	<b>Iš viso:</b>	<b>18</b>

\* 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

*Inžinerinė informatika* – tai ketverių metų pirmosios pakopos nuolatinė studijų programa. Studijų programą vykdo Fundamentinių mokslų fakulteto Informacinių technologijų katedra. Tai pirmoji informatikos krypties studijų programa, kuri buvo pradėta vykdyti Vilniaus Gedimino technikos universitete.

Pagirtina, kad studijų turinys apima daug temų. Vis dėlto siekiant tobulinti studijų turinį, reikalinga peržiūrėti programos sandarą – atsisakyti kai kurių kritikuotinų studijų dalykų, pavyzdžiui, susijusių su matematika, taip pat skirti dėmesio kai kurių studijų dalykų atnaujinimui.

Ekspertų grupė yra susirūpinusi dėstytojų ir studentų galimybėmis susipažinti su aukščiausiais tarptautiniais srities (informatikos) standartais. Universitetas turėtų pasirūpinti aukščiausius tarptautinius standartus atitinkančių mokymo išteklių prieinamumu ir skatinti dėstytojus ir

studentus jais naudotis. Dėstytojai turėtų būti skatinami dalyvauti svarbiuose (aukšto lygio) tarptautiniuose moksliniuose tyrimuose.

Socialiniai partneriai pageidautų, kad šioje studijų programoje būtų parengiama daugiau absolventų, nes Lietuvos darbo rinkoje tokios srities specialistai yra labai reikalingi. Pastaraisiais metais stojančiųjų į šią studijų programą skaičius sumažėjo, tačiau tai įvyko dėl išorinių priežasčių.

Studentų atsiliepimai apie šią studijų programą – geri. Jie palankiai vertina studijų programą ir teigia, kad ji atitinka jų poreikius. Studentams patinka programuoti, taip pat ir kiti studijų dalykai, padedantys jiems tobulinti programavimo įgūdžius.

Studentams labai svarbu gauti sertifikatus, kurie pripažįstami užsienyje. Studentų manymu, ši studijų programa suteikia tokią galimybę. Socialiniai partneriai, kurie siūlo darbą studentams, taip pat teikia daug reikšmės sertifikatams, nes sudarant verslo sutartis darbdaviai turi pateikti duomenis apie darbuotojų kvalifikaciją. Ekspertų grupei susirūpinimą kelia, kad universitete įgyjama kvalifikacija ir studentų pasiekimų įvertinimas neturi lemiamos įtakos įsidarbinant. Šį faktą pripažino ir studentai.

Ekspertų grupė rekomenduoja imtis būtinų priemonių pertvarkant studentų pasiekimų vertinimo sistemą, nes tai yra tiesiogiai susiję su universiteto įvaizdžiu. Studentai turėtų jaustis išbandomi ir būti skatinami siekti kuo geresnių rezultatų. Socialiniai partneriai turėtų pripažinti studentų pasiekimų įvertinimo svarbą.

Studijų programos vadyba kelia susirūpinimą. Katedrų vadovams tenka didelė atsakomybė, tačiau jiems ne visada suteikiama reikiama pagalba. Ekspertų grupės nuomone, ši problema turėtų būti sprendžiama.

### **III. REKOMENDACIJOS**

1. Prieš išorinį vertinimą atliktoje savianalizėje buvo išryškintos studijų programos silpnybės ir stiprybės. Reikėtų imtis priemonių, siekiant užtikrinti, kad visos silpnybės būtų įvertintos, pašalintos, taip patvirtinant savianalizės naudą.
2. Studijų programos tikslai ir kai kurie numatomi studijų rezultatai turėtų būti peržiūrėti, siekiant suteikti studijų programai aišką identitetą bei diferencijuoti studijų programą iš kitų fakultete vykdomų studijų programų. Ryšys tarp studijų dalykų tikslų ir numatomų studijų rezultatų turi būti aiškus ir paprastas.

3. Studijų programa turėtų būti peržiūrėta atsižvelgiant į ekspertų grupės pateiktus siūlymus, ypatingas dėmesys turėtų būti skiriamas matematikos studijų dalyko problemiškumui, taip pat turėtų būti peržiūrėtas Žmogaus ir kompiuterinio sąveikos studijų dalyko aprašas bei užtikrinama, kad, žvelgiant iš visumos perspektyvos, visų studijų dalykų aprašai būtų atnaujinti.
4. Studentų vertinimas visais lygmenimis turėtų būti tikslesnis / griežtesnis. Vertinimas turėtų skatinti studentus siekti geriausių darbo rezultatų visais atžvilgiais, atspindėti pasiektus išskirtinai gerus rezultatus, o jo praktinis įgyvendinimas turėtų būti susietas su saugikliais, vengiant netinkamo panaudojimo atvejų ir pernelyg didelės orientacijos į biurokратиškumą.
5. Daugiau dėstytojų turėtų dalyvauti tarptautiniuose aukščiausio lygio moksliniuose tyrimuose, siekdami įgyti daugiau žinių.
6. Universitetas turėtų skatinti išskirtinai gerą mokymą ir mokymąsi. Už išskirtinius nuopelnus dėstyje akademiniam personalui galėtų būti skiriami prestižiniai apdovanojimai. Tai turėtų paskatinti dėstytojus naudoti inovatyvius mokymo metodus, kurie sudomintų ir motyvuotų studentus, tai taip pat galioja inovatyvių technologijų panaudojimui mokymo procese.
7. Vadovybė turėtų pasirūpinti, kad dėstytojams ir studentams būtų suteikiama galimybė naudotis aukščiausius standartus atitinkančia tarptautine moksline literatūra.
8. Universitete reikėtų sukurti negąsdinančią ir veiksmingą grįžtamojo ryšio apie studijų dalykus teikimo sistemą, kuria būtų naudojama periodiškai. Dėstytojai turėtų operatyviai gauti studentų atsiliepimus. Reikėtų stebėti ar sistema veikia tinkamai.
9. Reikėtų rimtai apsvarstyti, koks yra katedros vadovo vaidmuo, taip pat jo veiklos sąlygas. Tai reikalinga siekiant užtikrinti, kad būtų sukurta aplinka, kurioje dinamiški lyderiai galėtų atskleisti savo gebėjimus ir įgyvendinti veiksmingus pokyčius.
10. Reikėtų skirti daugiau dėmesio entuziastingam studijų programos populiarinimui (galbūt pasitelkiant socialinius partnerius), siekiant pritraukti daugiau studentų. Minėtasis populiarinimas turėtų būti pagrįstas įdomios ir patrauklios informacijos perdavimu potencialiems studentams.

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Paslaugos teikėjas patvirtina, jog yra susipažinęs su Lietuvos Respublikos baudžiamojo kodekso<sup>1</sup> 235 straipsnio, numatančio atsakomybę už melagingą ar žinomai neteisingai atliktą vertimą, reikalavimais.

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<sup>1</sup> Žin., 2002, Nr.37-1341.