



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Šiaulių universiteto  
**INFORMATIKOS STUDIJŲ PROGRAMOS (612I10008)**  
**VERTINIMO IŠVADOS**

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**EVALUATION REPORT OF *COMPUTER SCIENCE***  
**(612I10008)**  
**STUDY PROGRAMME**  
at Šiauliai university

Grupės vadovas:  
Team leader:

Prof. Dr. Vladimir Oleshchuk

Grupės nariai:  
Team members:

Prof. Dr. Jörg R. Mühlbacher

Prof. Dr. Jukka Paakki

Doc. Dr. Daiva Vitkutė-Adžgauskienė

Mr. Faustas Zubka

Mr. Juras Biliūnas

Išvados parengtos anglų kalba  
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## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Informatika</i>
Valstybiniai kodai	612I10008
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Informatika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (4), iššęstinė (5,5)
Studijų programos apimtis kreditais	240
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Informatikos bakalauras
Studijų programos įregistravimo data	1999-04-23 Nr. 560

## INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Computer science</i>
State code	612I10008
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), Part-time (5,5)
Volume of the study programme in credits	240
Degree and (or) professional qualifications awarded	Bachelor of Informatics
Date of registration of the study programme	1999-04-23 Nr. 560

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The Centre for Quality Assessment in Higher Education

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## I. INTRODUCTION

The Lithuanian Centre for Quality Assessment in Higher Education has invited five independent experts and one representative of students (hereinafter called Expert Team) from Finland, Austria, Lithuania and Norway to review and assess the higher education first cycle study (Bachelor) programme *Computer Science* (state code 612I100085, informatics study field) at Šiauliai University (hereinafter ŠU). The full-time study programme (further Programme) is delivered by the Faculty of Mathematics and Informatics, ŠU, coordinated and conducted by the Department of Informatics (further Department, DI) with the help of teaching staff from other departments of ŠU.

The Expert Team visited the Faculty on February 27, 2013<sup>1</sup>.

The Expert Team met the administrative staff (3) of the Faculty represented by the Dean, Head of the Department of Mathematics, and Chair of the Council of the Faculty. General issues, such as structure of the faculty, financing, and quality improvement measures, and reasons for students' intake decrease and dropouts, etc. were discussed.

On the meeting with staff responsible for preparation of the Self-Analysis Report (2), the Expert Team has discussed the content of the Self-Analysis Report to clarify points that were described not clearly enough in the report. Also design, content and specific distinguishing features of the programme were discussed. The questions concerning less uncovered in the self-assessment report issues were discussed. After that, a meeting with members of teaching staff (7) of the Programme took place.

The Expert Team conducted also interviews with students (20). Students of all study years (except the first year) were presented. The Expert Team was familiarized with students' attitude towards the Programme: the students expressed mostly positive opinions about the Programme. The Expert Team had possibility to familiarize with students' final works. Finally, in separate meeting, the Expert Team met graduates (4) and social partners (6). They have also expressed positive attitudes about the Programme.

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<sup>1</sup> During this day (February 27) the Expert Team had actually a joint visit concerning 2 study programmes at the Faculty. Some of the meetings with the Programme stakeholders were performed jointly.

At the conclusion of the visit, the Expert Team conducted a meeting with staff of the Faculty and presented general remarks related to the visit and highlighted some strengths and weaknesses of the programme under review.

The Programme was assessed and accredited in 2010. One of the aims of the present evaluation was to assess changes made in accordance with the remarks and recommendations of the previous evaluation.

In the following, the findings of the Expert Team are outlined. The Self-assessment report submitted by the Faculty, the observations made at the time of the visit, and the supplementary material received during the visit form the basis of these assessments.

## II. PROGRAMME ANALYSIS

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

The learning outcomes of the Programme are well substantiated and designed in agreement with the Programme goals. Information about the study programme is publicly accessible in the section “Studijų programos“ of the University website (only in Lithuanian).

According to the self-assessment report, the Lithuanian labour market has an increasing need for professionals in informatics engineering and the country has an intention of becoming a leader in the knowledge-based industry sector. Hence, the programme aims and learning outcomes are based on the professional needs of the labour market and the society. The links between learning outcomes and the learning outcomes of study subjects as well as between the studies and the methods of evaluation of students' achievements are outlined in the description of each subject. Topics of study subjects also match the learning outcomes. The topics of the study subjects are detailed enough; they are compatible with modern contexts, based on faculty research results and recent literature.

The programme aims and 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. However, the claimed (in SAR) uniqueness of the Programme in Lithuania is questionable. In our opinion it is quite traditional programme in Computer Science. Also, since most of graduates are employed in the region, the

analyses of software used by local companies in the region should be done and the programme should teach the most relevant software used by these companies. Accordingly, programme aims should be adjusted to support regional public and labour market needs.

## ***2. Curriculum design***

The Computer Science study program meets the requirements of the Lithuanian legal acts and normative documents, the Statute of SU, and regulatory documents governing the development of study programs and procedures of studies. The total scope of studies, the scope of individual modules and groups of modules (including theoretical subjects, course papers, practical work and final exams), final exams, student independent and auditorium work meet the regulations on studies legislation.

Forms and methods used in classes are satisfactory. Teaching/learning process is organized in different forms: self-dependent work, classroom work, i. e. lectures, practice, laboratory works, there are used different methods, e. g., verbal instruction, demonstration, discussion, group work, case studies, testing, project work, etc.

Study subjects and/or modules are spread evenly, their content generally are not repetitive. The content of the subjects and/or modules generally is consistent with the type and level of the studies. Topics of study subjects are detailed enough, and sufficient to achieve respective learning outcomes. However, some subject descriptions specify lists of main references are too long (up to 10 references in some cases). To be realistic such lists should be short (f. ex. 1-3 references). All other references should be moved into lists of recommended reading. General subjects are too wide and efforts should be made to adjust the content of general subjects for informatics students.

The content of the programme generally reflects the state-of-the-art in the field. The compulsory subjects ensure that students acquire the latest knowledge in the informatics study field and develop a critical understanding of knowledge interaction of the informatics and other fields. The elective subjects are intended for student's training in the selected specialization. The free subjects are offered by all departments of SU and must be approved by the Programme's study committee.

However, in our opinion to have three specializations for so few students are too many (According to SER in year 2012 nine students were admitted). In such a case students do not have a choice to select specialisation. The very strong recommendation is that the curriculum should be adjusted to the number of students and the number of specializations should be reduced to provide *real* choice to students. Accordingly, concentration towards one specialisation would dramatically increase the quality of the curriculum.

### **3. Staff**

The teaching staff providing the Programme formally meets legal requirements. The study programme corresponds to the research interests of the teaching staff. The staff members' expertise is sufficient for teaching associated with the Programme.

The number of the teaching staff members of the Department (12) is adequate to ensure learning outcomes where 8 positions are permanent teaching staff. Most of the classroom teaching in the Programme was done by four members of teaching staff (Dr. V. Širius (616 hrs), lect. L. Kaklauskas (600 hrs), lect. G. Luža (560) and Dr. V. Giedrimas (542 hrs)). In addition, Course Paper, Bachelor's Final Work and Practice of Systems Design and Implementation were supervised by five more members of teaching staff (lect. V. Dumskis, Dr. G. Felinskas, lect. L. Tankelevičienė, lect. L. Kaklauskas, Dr. K. Žilinskas). However, several teachers (Giedrimas, Kaklauskas, Luža) have a rather high load in the number of different study subjects taught in the programme (up to 8-10 subjects). This can potentially reduce the quality of teaching and should be relieved and decreased substantially.

Two professors from other institutions (Vilnius University Institute of Mathematics and Informatics, Vilnius Gediminas Technical University) employed by the Department do not teach in the Programme. Lecturers of the study program undergo the certification process, and the tenders for the positions are organised once in 5 years' term as established in the University Statute. The core of the study program teaching staff is permanently employed at SU and they are appointed to positions through public tendering procedures for the time of 5 years as established by the University Statute. Their scientific and educational activities have been evaluated during the certification. The average age of teaching staff is 46 years.

Three teachers involved in the study program have travelled abroad on academic purpose during the last 5 years (V. Giedrimas – Czech Republic, Turkey, Estonia, Greece; G. Felinskas – Czech

Republic). Sabbatical leave are difficult to arrange from economical point of view, however teacher take part in short term exchanges. In our opinion more teachers should use international mobility and the absence of sabbatical leave has, to some extend, an effect to professional development of staff.

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

Classrooms and computer classrooms have enough capacity to ensure proper conditions for students. With respect to the number of students of the Programme, the number of classrooms and laboratories is sufficient. Technical and hygienic conditions in the laboratories and classrooms are comfortable. All the premises correspond to the modern requirements of work safety and hygiene.

Students of the Programme have the possibility to use the services of SU library. Teaching materials (textbooks, books, periodical publications, databases), generally, are accessible. Overall, central library is very close to department of informatics. Library has undergone renovation and now is very comfortable, easy to use and modern. There are independent work rooms, all rooms and conference halls have modern equipment. The library is open on work days until 8 p.m., on Saturdays – until 4 p.m. During the period of preparation of graduation these by students and during examination sessions the Library working hours are extended until 10 p.m. However, the central digital sources of scientific publications in Informatics (Computer Science), the ACM Digital Library and IEEE Xplore (the IEEE digital library) are not available in the University library. The University should take immediate actions for obtaining the rights to these libraries, which is essential not only for scientific research in Informatics but also for the final theses in the area.

Also, some equipment looks to be outdated (at least for multimedia). There is a need to provide more information on alternative technologies especially used by local companies (for example open source).

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

The admission procedure is complete, adequate and well organized. Student admission takes place based on the relevant criteria. However, increasingly fewer students are accepted into the Studijų kokybės vertinimo centras



Program. In the Table 15, more than 200 students applied to the Program last year, but the university has accepted only nine students. The Administration has explained that it really depends on the number of available state-funded places. The number of students who choose the Programme as first priority is low.

The organisation of the study process ensures an adequate provision of the Programme and the achievement of the learning outcomes. The study process is based on the higher education institution documents. The scientific and applicable scientific activities are included in the studies. The students of the Programme have the opportunity to study part of the subjects abroad (seven students have travelled under the ERASMUS programme during the period of 2007-2012). This number is very low and actions should be taken to increase it.

The knowledge assessment system is criterion-proportional and according to it the students' knowledge level is assessed by the criteria set by the lecturer, and each grade meets the achievement of certain learning outcomes.

Social partners provide topics for theses. However, more contacts with *industrial* social partners have to be established. Moodle is used to support learning. However, it is not optimized in the sense that there are too many Moodle spaces (5) in use. Students identified this problem and confirmed, that it makes it difficult to use. However, students are pleased that all of the information about the topics that they are being studied can be found in the system. The students suggested to combine all Moodle sub-systems in one.

One more thing that brings some shadow on this study program is that students lost possibility to choose their specialization because of number of students. The student should adapt to the decision of majority of students in their academic group.

The University provides students with academic and social support. Students are fully provided with academic (subject-related and organisational), social, financial, technological support and assistance on issues of future career. Academic support means: provision of information on the programme, flexible timetable of studies, a possibility to study according to the individual study plan, timetable of teaching staff's consultations, consultation of students on other studies-related questions. Means of social support: scholarships, social allowances, diminishing of the tuition fee or payment in parts, a possibility to live in students' dormitories, socio-cultural, health services, psychological, legal assistance.

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

Responsibilities for decisions and monitoring of the implementation of the programme are clearly allocated. The management of the study programmes and the process of decision making are regulated by SU Statute, SU Regulations for Study Programmes Committees, SU Regulations for the Group for Monitoring Study Programme's Quality. These provide a detailed description of the study programme management process.

The Programme is supervised by the Department of Informatics. The Group for Monitoring Study Programme's Quality consists of 5 members (3 teaching staff members, a student and a social partner). Assoc. Prof. Dr Vaidas Giedrimas is a supervisor of the Programme.

All the members of the Study Committee actively participate in the renewal of the study programmes. The university teachers are involved in the preparation of the study programmes, while the study subject descriptions, with regard to the comments and requests of the social partners, are prepared in the departments.

At the end of each year, at the Department meeting, results of academic, methodical and research activities of teaching staff are analysed; the Head of the Department presents the report to the Faculty Dean.

Research and management of quality at ŠU is performed on several levels: the University level; at the Faculty; at the department level; at the level of teaching staff. Assessment of the studies process (the macro level) is held each year since 2008. The last assessment has been carried out in 2011. Some teaching staff members carry out assessment of the content of their delivered subjects and the quality of instruction (on the micro level).

However, the formal procedure for getting feedback from students on subject level should be compulsory for all subjects and each semester. Today's situation does not assure the effective feedback from the students. Recommendations from industrial social partners should be made more visible (to see their involvement in the Programme). Most importantly, recommendations from the previous evaluation should be fully implemented. After analysis it can be stated that a lot of recommendations from previous assessment are not implemented. According to SU these changes are under the process of implementation.

### III. RECOMMENDATIONS

1. The programme should use software used by regional companies (for example, open source).
2. Curriculum should be adjusted to the number of students and the number of specializations should be reduced to provide real choices to students.
3. Reduce lists of main references (in subject descriptions) to reasonable size.
4. Access to ACM/IEEE digital libraries should be re-established.
5. More modern equipment should be used in laboratories
6. Increase student mobility.
7. Optimize use of Moodle – reduce number of Moodle spaces (5) in use.
8. Implemented compulsory formal procedure for getting feedback from students on subject level.

#### IV. SUMMARY

The study programme of Computer Science (state code 612I10008, informatics study field) is coordinated by the Faculty of Informatics and Mathematics and conducted by teaching staff of the Department of Informatics. The purpose of the study program is to prepare informatics specialists to perform activities in the following areas of specialization: Administration of Computer Systems, Multimedia Systems and Software Systems.

The most positive aspects are: qualified teaching staff. However, several teachers have a rather high load in the number of different study subjects taught in the programme (up to 8-10 subjects); English proficiency of students has improved; range of subjects offered by bachelor programme looks very good (all major areas are covered). However, some effort should be made to adjust the content of general subjects for informatics speciality; students are enthusiastic and satisfied with the study programme.

The issues, which could be improved, are: urgently increase number of students as during past years it dramatically decreased up to 9 students in 2012; Optimize use of Moodle – reduce number of Moodle spaces; more contacts with industrial social partners are needed and also these contacts should be more formal that would help to identify the input of social partners towards optimising study programme; equipment (at least for multimedia) needs to be upgraded; provide more information about alternative technologies with focus on those used by regional companies; try to re-establish access to IEEE/ACM digital libraries.

## V. GENERAL ASSESSMENT

The study programme *Computer science* (state code 612I10008) at Šiauliai 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	2
3.	Staff	3
4.	Material resources	3
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>16</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.

Grupės vadovas:

Team leader:

Prof. Dr. Vladimir Oleshchuk

Grupės nariai:

Team members:

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V. APIBENDRINAMASIS ĮVERTINIMAS

Šiaulių universiteto studijų programa *Informatika* (valstybiniai kodai – 612I10008; 61209P106) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	2
3.	Personalas	3
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	2
	<b>Iš viso:</b>	<b>16</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

Studijų programą „Informatika“ (valstybės kodas 612I10008, informatikos studijų kryptis) koordinuoja Informatikos ir matematikos fakultetas, o įgyvendina Informatikos katedros dėstytojai. Studijų programos tikslas - rengti informatikos specialistus, kurie dirbtų šiose specializuotose srityse: kompiuterinių sistemų administravimas, multimedijos sistemos ir programinės įrangos sistemos.

Labiausiai teigiami aspektai yra šie: kvalifikuotų dėstytojų komanda, tačiau kai kurių dėstytojų darbo krūvis yra pakankamai didelis ir jie programoje dėsto keletą įvairių studijų dalykų (iki 8-10 dalykų); pagerėję studentų anglų kalbos įgūdžiai; bakalauro programoje siūlomas dalykų spektras atrodo labai gerai (apimamos visos pagrindinės sritys). Tačiau reikia

stengtis bendrųjų dalykų turinį susieti su informatikos specialybe; studentai yra entuziastingi ir patenkinti studijų programa.

Dalykai, kuriuos būtų galima pagerinti, yra šie: skubiai padidinti studentų skaičių, kadangi pastaraisiais metais jis dramatiškai sumažėjo iki 9 studentų 2012 m.; optimizuoti „Moodle“ naudojimą – sumažinti „Moodle“ erdvių skaičių; reikia užmegzti daugiau ryšių su informatikos srities socialiniais partneriais, taip pat šie ryšiai turėtų būti daugiau formalūs, kas padėtų nustatyti socialinių partnerių indėlį optimizuojant studijų programą; reikėtų atnaujinti įrangą (bent jau naudojamą multimedijai); daugiau informacijos pateikti apie alternatyvias technologijas akcentuojant tas, kurias naudoja regiono bendrovės; pabandyti atstatyti prieigą prie IEEE/ACM skaitmeninių bibliotekų.

### **III. REKOMENDACIJOS**

1. Programoje turėtų būti naudojama programinė įranga, kurią naudoja regiono bendrovės (pavyzdžiui, atviro kodo).
2. Studijų turinys turėtų būti priderintas prie studentų skaičiaus; specializacijų skaičius turėtų būti sumažintas, kad studentai turėtų realią pasirinkimo galimybę.
3. Iki pagrįsto skaičiaus sumažinti pagrindinės literatūros sąrašus (dalykų aprašuose).
4. Turėtų būti atstatyta prieiga prie ACM/IEEE skaitmeninių bibliotekų.
5. Laboratorijose turėtų būti naudojama šiuolaikiškesnė įranga.
6. Padidinti studentų mobilumą.
7. Optimizuoti „Moodle“ el. studijų aplinką – sumažinti „Moodle“ erdvių (5) naudojimą.
8. Įdiegti privalomą oficialią tvarką, kad iš studentų gauti grįžtamąjį ryšį apie dalykų lygį.