



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

**KAUNO TECHNOLOGIJOS UNIVERSITETO
INFORMATIKOS INŽINERIJOS PROGRAMOS
(612E10001)
VERTINIMO IŠVADOS**

**EVALUATION REPORT
OF *INFORMATICS ENGINEERING* (612E10001)
STUDY PROGRAMME
AT KAUNAS UNIVERSITY OF TECHNOLOGY**

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Išvados parengtos anglų kalba
Report language - English

Vilnius
2012

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	Informatikos inžinerija
Valstybinis kodas	612E10001
Studijų sritis	Technologijos mokslai
Studijų kryptis	Informatikos inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (4), iššęstinė (6)
Studijų programos apimtis kreditais	240
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Informatikos inžinerijos profesinis bakalauras
Studijų programos įregistravimo data	2002-06-14 švietimo ir mokslo ministro įsakymas Nr. 1093

INFORMATION ON ASSESSED STUDY PROGRAMME

Name of the study programme	Informatics Engineering
State code	612E10001
Study area	Technological Sciences
Study field	Informatics Engineering
Kind of the study programme	University studies
Level of studies	First
Study mode (length in years)	Full-time (4), part-time (6)
Scope of the study programme in credits	240
Degree and (or) professional qualifications awarded	Bachelor of Informatics Engineering
Date of registration of the study programme	June 14, 2002, the order of the Minister of the Ministry of Science and Education of the Republic of Lithuania No. 1093

CONTENTS

I. INTRODUCTION.....	4
II. PROGRAMME ANALYSIS	5
1. Programme aims and learning outcomes.....	5
2. Curriculum design	5
3. Staff	6
4. Facilities and learning resources.....	6
5. Study process and student assessment.....	7
6. Programme management	8
III. RECOMMENDATIONS	11
IV. SUMMARY	12
V. GENERAL ASSESSMENT	13

I. INTRODUCTION

The Lithuanian Centre for Quality Assessment in Higher Education has invited four independent experts and one representative of students (hereinafter called Expert Team) from Estonia, Latvia, and Lithuania, to review and assess the higher education first cycle study (bachelor) programme *INFORMATION ENGINEERING* (state code 612E10001, informatics engineering study field) at the Kaunas University of Technology (KTU). The study programme (further Programme), both in full- and part-time mode, is provided by the Department of Computer Science (further Department), the Faculty of Informatics (Faculty). Implementing the Programme is supported also by other units and departments. The Programme has two specializations: Information Technologies and Computer Systems Engineering.

The Expert Team visited the Faculty on October 2-4, 2012¹. All activities during the visit were scheduled for October 2, except observation of various support services (class rooms, computer services, library), which took place on October 4.

On October 2, the Expert Team met the administrative staff (8) of the Faculty represented by the Dean, three Deputy Deans, and the Heads of Software Engineering, Information Systems, Business Informatics and Computer Science departments. General issues, such as Faculty structure, financing scheme, quality management, web-site structure, promotion of study programmes were discussed. Next, a meeting with staff (5) responsible for preparation of the Self-Assessment Report was conducted. At this meeting, the Expert Team was given clear and exhaustive answers to the questions concerning less uncovered in the self-assessment report issues. After that, a meeting with 18 members of teaching staff of the Programme took place.

The Expert Team conducted also interviews with some students. The group consisted of 23 students, among them 5 2nd-year undergraduates, 14 3rd-year undergraduates and 4 4th-year undergraduate students. The Expert Team was familiarized with students' attitude towards the Programme; the students expressed mostly positive opinions about the Programme. Some possible improvements were proposed by the students; more essential suggestions are highlighted in the Programme analysis below, where appropriate. The Expert Team had possibility to familiarize with students' final works. Finally, in separate meetings, the Expert Team met 11 graduates and 10 social partners. The graduates as well as the social partners expressed positive attitudes about the Programme.

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

¹ During this period (October 2-4) the Expert Team had actually a joint visit concerning also 4 other study programmes at the Faculty. Some of the meetings with the Programme stakeholders were performed jointly.

The findings of the Expert Team are reflected in the following. The self-assessment report (further SAR) submitted by 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 Programme learning outcomes are well defined and clear. They are publicly accessible in KTU web-pages, both in Lithuanian and English. In these web-pages, the Programme aims are given indirectly, in the form of an annotation. Though, in SAR (page 7) the aims are outlined more correctly. However, one of the (obvious) aims – preparation for second cycle studies – is not mentioned.

No doubt, the Programme aims and learning outcomes are based on the academic and professional requirements, public needs and the needs of the labour market. The needs are well substantiated using surveys and labour market analyses conducted by recruitment and employment-driven companies JSC "Search Group", JSC "J.Friisberg & Partners", JSC "Delta Management Solutions", "INFOBALT" association members. The programme aims are developed in accord of these needs. The graduates have opportunity to employ according to their specialty straight after completing university or even during the last few years of studies. They have good opportunities to employ in the European Union countries as well.

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.

2. Curriculum design

The curriculum design meets legal requirements, except the volume of freely chosen subjects. As stated in SAR, page 13:

Freely chosen subjects make 3,75% (9 credits), while according to the General Regulation of Studies in Technological Sciences (Engineering) they should make at least 5% (12 credits) of the total volume of the Programme.

As was explained by the Programme administration, this deficiency (initially caused by some contradiction in legal acts) has been overcome as of now.

Study subjects are spread evenly, their themes are not repetitive.

The content of the subjects is consistent with the type and level of the studies. The content and methods of the subjects are appropriate for the achievement of the intended learning outcomes. There is reasonable ratio between lectures, practical works (labs) and students'

independent work. Most of the lectures involve interactive mode and video demos. However, (as mentioned by students) some lectures are delivered only in the form of *PowerPoint* presentation.

The scope of the Programme is sufficient to ensure learning outcomes.

The content of the Programme reflects amply the latest achievements in information technologies. General subjects could be better tailored to Programme needs.

3. Staff

The Programme is provided by the staff meeting legal requirements.

The qualifications of the teaching staff are very high; no doubt, they are adequate to ensure learning outcomes. The 32% of staff is composed from professors, while 97% of teachers are doctors of science. In fact, almost all staff members involved are Doctors (except for one Master). Most of the teachers of the Programme participate also in the second and/or third-cycle study programmes.

The number of the teaching staff is adequate to ensure learning outcomes. There are 11 professors, 18 docents and 5 lecturers working in the Programme.

Teaching staff turnover is able to ensure an adequate provision of the Programme. The average age of teachers is around 54 years in 2011-2012.

The beneficial conditions are created for the staff to perform their academic work as well as the opportunities to participate in various scientific projects and to improve skills: prepare and defend scientific studies, prepare and publish study books and monographs, go to the internships in foreign universities and scientific research centers, or to improve their professional qualification by other means. However, the professional development of the teaching staff necessary for the provision of the Programme could be more systematic (planned). In particular, introducing the system of sabbatical leaves at KTU would be highly beneficial.

Teaching staff of the Programme is involved in research, directly related to the study programme. In particular, the core subjects of study field are taught by scientists whose research is closely related to the subject areas.

4. Facilities and learning resources

The premises for studies are adequate both in their size and quality. All lecture rooms are equipped with the necessary furniture and basic didactic material. Projectors and computers for multimedia-based instruction are available.

In general, technical infrastructure is very good. The teaching and learning equipment (laboratory and computer equipment, consumables) are adequate both in size and quality.

Nevertheless, more modern software for more general computing courses is needed (students' wish).

There are adequate arrangements for students' practice. Practice is organized both internally (in the labs) and externally (in the companies).

Teaching materials (textbooks, books, periodical publications, databases) are adequate and accessible. However, there is no access to online literature sources from home, no VPN (access only from KTU computers). Remark: These statements above are based on indirect indicators, mainly opinions expressed by students and graduates. As scheduled by the Agenda, there was only one (joint for 5 study programmes) short visit to the library and other facilities.

However, as an advantage, the direct link to the rich library of Vilnius Gediminas Technical University should be stressed. On the other hand, the following disadvantage could be mentioned: opening hours of the library are not long enough for students to study, especially on the weekends; the library closes at 7 p.m. on week days, and is closed on weekends.

5. Study process and student assessment

The admission requirements are well-founded. The Programme is popular among entrants; last enrolment was good – all government quota of state-financed study places were fulfilled. The number of students enrolled in the Programme during 2007 and 2011 period was between 148 and 74: 2007 – 148 enrollments (114 day-time form, 34 evening-time form), 2008 – 132 (113 – day-time, 19 – evening-time), 2009 – 113 (94 – day-time, 19 – evening-time), 2010 – 69 (62 – full-time form, 7 – part-time form), 2011 – 74 (65 – full-time form, 9 – part-time form).

The organisation of the study process ensures an adequate provision of the Programme and the achievement of the learning outcomes. However, quality of final theses could certainly be even higher, if the supervision tasks would have been distributed more evenly. In 2012, 14 (out of 31) final theses have been supervised by the same teacher, and 8 by another one. Also, information for students is somewhat decentralized: there are different environments for electronic material for separate subjects – some in university *Moodle*, some in other places.

Students are encouraged to participate in research and development activities. Student involvement in the research is very good. The students of the Programme are actively participating in the “Technorama” – the annual exhibition of young scientists' inventions and achievements, where have won the Rector Prizes in 2007, 2009 and 2010. In order to stimulate students to participate in exhibition, the Centre of Real Time Computer Systems is established two nominations, 1000 Lt each.

Students have opportunities to participate in student mobility programmes. They can go to study to a country participating in the Erasmus programme for the period of 3–12 months. During the period being analyzed 4 students of the Programme went for the studies in foreign universities (France-1 Finland-1, Greece-2). Once a year the Faculty organizes information show

“ERASMUS Hours at Faculties” for the students, who are interested in the studies by ERASMUS. However, it would be desirable to encourage students even more actively to participate in mobility activities.

KTU ensures an adequate level of academic and social support. The coordinator of the Programme and the supervisors of the specializations are consulting and solving problems of the students of the Programme during informal meetings. A social scholarship is appointed for one semester, its size – 3 basic social allowances per month. Incentive scholarships for good study results (3 basic social allowances) and a few one-shot social and incentive scholarships are possible to apply for.

The assessment system of students’ performance is clear, adequate and available. The criterion proportional grading ten-point scale to assess knowledge, abilities and skills is applied. The order of the assessment of students’ knowledge and skills is presented in the descriptions of study subjects available on the KTU Internet website. Assignments of self-study (colloquiums, seminars, group home works, individual home works, etc.), possessing weighted coefficients, are used for assessment of learning results (knowledge and skills) of each particular subject. The assignments are composed and formulated so that all learning results expected in a subject would be considered. The description of each subject, which is also presented on the KTU website, indicates the order of the assessment of knowledge and abilities. A coordinating teacher acquaints the students with it by presenting requirements of a subject and the timetable of presenting self-study assignments and their forms on the first week of a semester. Teachers give their students the feedback on their achievements by acquainting them with their evaluations of self-study assignments and examinations in written form, as well as they present oral comments. All evaluations are presented at the electronic sheet of the KTU academic system as well.

Professional activities of the majority of graduates meet the Programme providers' expectations. However, contacts with companies need to be further tightened, e.g. organize invited lecturers from industry. Social partners mention good communication skills of the graduates. Teamwork elements should be introduced already in first study years, more accent to practical issues, more specialization and elective courses, shorter breaks, evening lectures are desirable (some of the students’ wishes).

6. Programme management

Responsibilities for decisions and monitoring of the implementation of the Programme are clearly allocated. The Department performs the organization and renewal of the Programme. The leading role has the responsible coordinator of the Programme. The teachers coordinating the subjects, the coordinator of the Programme and the Study Programme Committee (SPC) of the Faculty, which accredits a subject, are responsible for the quality and renewal of separate study subjects. If there is a need, the Programme is renewed by the SPC of the Faculty according to the Department’s presentation.

First of all the study subjects and the Programme are discussed at the methodical group of the Department and department itself. The assessment of the curriculum (the content of each study

subject) is carried out by comparing the content of a subject to the latest achievements of the science field as well as analogous study subjects at other Lithuanian and foreign higher education institutions. The teacher is responsible for renewal of his / her study subject. The coordinator of the Programme presents the prepared, discussed and improved study documents to the SPC.

The written requests to renew the Programme, study subjects or to change specializations (branches) after their initial discussion at the SPC of the Faculty are given to the Study Service of the University for the further analysis. When discussing the Programme, a representative of the students' organization takes part at the meetings of the SPC of the Faculty. If there are any rational suggestions of students, teachers or employers on the Programme or the content of separate subjects, these suggestions are discussed at the methodical group of the Department and at the meetings of the Department; and, if there is a need, the Programme is being improved accordingly. The final decision on the changes in the study programme is taken by the SPC of the Faculty of Informatics. The University Senate, the tenth of which students make, sanctions the essential changes of the Programme according to the request of the Study Commission of the Senate.

Information and data on the implementation of the Programme are regularly collected and analysed. Current matters of the quality of the Programme and other study programmes provided by the Department as well as the quality of final degree projects and the learning results are discussed at the methodical group and at the meetings of the Department for at least two times per semester or more. When the academic year finishes, the quality of study programmes, final degree projects and their defense is analyzed at the meetings of the Department, the Dean's Office, the Board of the Faculty and the SPC.

The outcomes of internal and external evaluations of the Programme are used for the improvement of the Programme. For the first time the Programme was assessed in December, 2002. All of the outcomes are taken into account. In particular, subject „Chemistry“ was removed from the Programme, and subject “Machine Elements and Mechanisms” was replaced by “Integrated Engineering Systems” subject.

The evaluation and improvement processes involve stakeholders. However, while the students' involvement is active, involvement of social partners and alumni is rather low. At the meeting only one person from Alumni has had a chance to say his comments to the Faculty via e-mail, the others seem not to have closer contacts with the Faculty. Also, even more systematic approach to collecting students' opinions and their analysis seems necessary to introduce.

The internal quality assurance measures are effective and efficient. The current issues of the quality of the Programme are discussed at the meetings of the Department and it's methodical group for two-three times during a semester; annually at the general meeting the study quality is analyzed by discussing the quality of the first-cycle final degree projects and learning outcomes of each subject. The survey of the students of the first-cycle studies is performed by the University Study Service. Additionally, Faculty organizes independent anonymous survey involving all students. Every faculty and department is presented with summarized estimations of teachers' activity and subjects' quality.

At the end of each semester in order to get feedback, students get a possibility to evaluate the content of the study subjects and the quality of their delivery according to the order set at the University; they fill in the electronic questionnaire of the evaluation in their personal virtual sites in the University academic information system. The aim of this survey is that every study subject would be assessed by all students who have chosen it; thus the students participate in the improvement of the subject.

Long-term results of the surveys are used by the SPC when accrediting study subjects, as well as they are considered by the accreditation commission, administration of faculties, and students' representatives in evaluating teachers' work. General results of the survey are discussed at the meetings of the Dean's Office and the Department. Thus students' opinion on their studies, their quality and the competences being acquired is constantly analyzed. The results of these constant researches induce teachers to develop their qualification and to renew the study subjects.

Considering the students' opinion on the study quality, the subjects of the Programme are renewed; the grid of the Programme is corrected. The publicized information on the obtained results of the Programme quality assessment is used by the Programme teachers to eliminate its weaknesses.

III. RECOMMENDATIONS

1. General subjects could be better tailored to the study programme needs.
2. Give more support to teaching staff for the professional development necessary for the provision of the study programme. Consider introduction of sabbatical leaves.
3. Keep software updated as much as possible, especially for more general computing courses.
4. Centralize information sources for students. Ensure access to online literature sources from home.
5. Distribute theses' supervision tasks evenly.
6. Intensify co-operation with stakeholders: tighten contacts with companies; more systematically collect students' opinions and organize adequate responds.
7. Make active preparations for application to obtain European Informatics Programme Quality Label (Euro-Inf Label) from EQANIE for the study programme.

IV. SUMMARY

The higher education first cycle study (bachelor) programme *INFORMATION ENGINEERING* (state code 612E10001, informatics engineering study field) at the Kaunas University of Technology, both in full- and part-time mode, is provided by the Department of Computer Science, the Faculty of Informatics. Implementing the programme is supported also by other units and departments. The programme has two specializations: Information Technologies and Computer Systems Engineering. Information Technologies specialization purpose is to prepare specialists, who have knowledge of information technologies application and improvement, information security, integration of IT applications, system administration and maintenance, skills in analysis of technologies application, abilities and skills in designing, developing and deploying integrated ICT applications. Computer Systems Engineering specialization purpose is to prepare specialists, who have knowledge of real-time and embedded computer systems, information acquisition, processing and control, information transfer and displaying, skills in organizing, developing, deploying and managing computer systems projects.

The study programme is one of the strongest in Lithuania among the bachelor's programmes in the field of informatics engineering. The most positive aspects are: curriculum design, qualifications of teaching staff, technical infrastructure, popularity and social demand, international exchanges/relations, virtual learning environment. The issues which could be improved: usage of modern teaching methods in all courses, tailoring study subjects, concentration of online resources, reckoning of students' and other stakeholders opinions.

After necessary improvements, the study programme could be submitted to EQANIE to be awarded European Informatics Programme Quality Label (Euro-Inf Label).

V. GENERAL ASSESSMENT

The study programme *Informatics Engineering* (state code – 612E10001) at Kaunas University of Technology is given **positive** evaluation.

Study programme assessment in points by fields of assessment.

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	4
2.	Curriculum design	3
3.	Staff	4
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)	4
	Total:	22

*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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