



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

KAUNO TECHNOLOGIJOS UNIVERSITETO
PROGRAMŲ SISTEMOS STUDIJŲ PROGRAMOS
(612I30002)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF *SOFTWARE SYSTEMS* (612I30002)
STUDY PROGRAMME
AT KAUNAS UNIVERSITY OF TECHNOLOGY

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Programų sistemos</i>
Valstybinis kodas	612I30002
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Programų sistemos
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (4 m.), iššęstinė (6 m.)
Studijų programos apimtis kreditais	240 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Programų sistemų bakalauras
Studijų programos įregistravimo data	Lietuvos Respublikos švietimo ir mokslo ministro 2011 m. kovo 10 d. įsakymu Nr. SR-990

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Software Systems</i>
State code	612I30002
Study area	Physical Sciences
Study field	Software Engineering
Kind of the study programme	University Studies
Study cycle	First
Study mode (length in years)	Full-time (4 years), part-time (6 years)
Volume of the study programme in credits	240 ECTS
Degree and (or) professional qualifications awarded	Bachelor of Software Engineering
Date of registration of the study programme	10 of March 2011, under the order of the Minister of the Ministry of Education and Science of the Republic of Lithuania No. SR-990

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The Centre for Quality Assessment in Higher Education

CONTENTS

I. INTRODUCTION.....	4
II. PROGRAMME ANALYSIS	7
1. Programme aims and learning outcomes.....	7
2. Curriculum design	8
3. Staff	10
4. Facilities and learning resources	13
5. Study process and student assessment.....	14
6. Programme management	15
III. RECOMMENDATIONS	17
IV. SUMMARY	19
V. GENERAL ASSESSMENT	22

I. INTRODUCTION

The procedures of the external evaluation of the Kaunas University of Technology (hereafter, KTU) *Software Systems* Bachelor study programme were initiated by the Centre for Quality Assessment in Higher Education of Lithuania nominating the External Evaluation Peer Group (hereafter, EVPG) formed by the head, Professor Philippos Pouyioutas (Professor of Computer Science and Vice Rector, University of Nicosia, Cyprus), Professor Manfred Nagl (Professor Emeritus of Software Engineering, RWTH Aachen University, Germany), Dr Eleni Berki (Adjunct Professor of Software Quality and Formal Modelling, University of Tampere, Finland), Mr Adomas Svirskas (Freelance IT Consultant and Researcher, Institut Eurécom, Sophia-Antipolis, France), employer representative, and Mr Justinas Petravičius (Vilnius Gediminas Technical University, Lithuania), student representative.

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. Methodology for Evaluation of Higher Education Study Programmes;
4. General Requirements of the First Degree and Integrated Study Programmes.

The basis for the evaluation of the study programme is the Self-Evaluation Report (hereafter, SER), prepared in 2013, its annexes, the site visit of the EVPG to KTU on 6 November 2013 and the two site visits of two other KTU study programmes (7 November 2013 for the *Informatics* Bachelor study programme and 8 November 2013 for the *Informatics* Master study programme), as well as the SERs of the aforementioned two other study programmes. The three site visits helped the EVPG get an overall view of the way the KTU Faculty of Informatics, its departments and study programmes offered operate. The site visit of the *Software Systems* Bachelor study programme incorporated all required meetings with different groups: senior administrative staff including the Dean of the Faculty and Deputy Deans, staff of the Software Engineering Department of the Faculty of Informatics offering the study programme and responsible for preparing the SER, teaching staff, first, second and third year students as this study programme is in its third year of offering, graduates of other relevant study programmes of the Faculty of *Informatics* and employers. The EVPG evaluated various support services (classrooms, laboratories, library, computer facilities) and other provided material. After the EVPG discussions and additional preparations of conclusions and remarks, introductory general conclusions of the site visit were presented. After the site visit, EVPG met to discuss and agree the content of the report, which represents the EVPG's consensual views.

The findings of the EVPG during the three site visits re-enforced the view of the EVPG that there are some organizational issues to be addressed at the faculty level. By reading the three SERs for the three study programmes evaluated, the EVPG identified a number of discrepancies as same data/information is expressed in very different ways, resulting in overall confusion. The EVPG's conclusion from reading the three SERs was that the three reports were prepared in isolation of each other. During the three site visits, this was clarified to be the case; thus, the reports were not built using a modular approach with the three SER groups working together for the common parts/issues addressed, an approach one would expect to be followed by informatics specialists. The overall approach of preparing the SERs separately indicates the fact that the various departments involved, do not co-operate enough (both at the strategic level, as well as at the operational level).

The three site visits helped the EVPG to understand the structure of the Faculty of Informatics and its departments. This was not clear at all from reading the three SERs. Only after a request by the EVPG, a hierarchical organizational chart/diagram was provided, listing the 5 departments of the faculty and under each department the study programmes offered, as well the number of students and graduates of each programme. The EVPG was informed that during the last years, re-organization has been taking place, which resulted in merging departments (from 7 before to 5 now). The 83 teaching staff members of the faculty are now distributed in the 5 departments (an average of 17 staff members per department), which are: *Computer Science, Information Systems, Software Engineering, Multimedia Engineering, and Applied Informatics*. The EVPG noticed, the names of the departments do not clearly reflect their specialization in research and teaching. It seems that the existing faculty structure reflects the historical situation rather than today's needs and state-of-the-art developments. The EVPG believes that further re-organization needs to take place in order to utilize better human resources and promote collaboration between departments, study programmes and staff.

All mentioned departments offer one Master and one Bachelor study programme except of the Software Engineering Department which offers two Bachelor and one Master study programme. In total the Faculty of Informatics offers 6 study programmes at the 1st cycle (Bachelor) level: *Informatics Engineering, Information Systems, Software Systems, E-Learning Technologies, Multimedia Technologies, Informatics* and 5 study programmes at the 2nd cycle (Master) level: *Information and IT Security, Information Systems Engineering, Software Engineering, Information Technologies of Distance Education, Informatics*.

The Bachelor study programmes are all based on a 2+2 model. The first two years (120 ECTS credits) of all 6 study programmes are the same, thus students of all study programmes share the same classes. Each course of the first two years is owned by one of the 5 different departments (i.e. none of the departments own all courses). The last two years (120 ECTS credits) provide a specialization, leading thus to the 6 individual study programmes (*Informatics Engineering, Information Systems, Software Systems, E-Learning Technologies, Multimedia Technologies, Informatics*). It is important to note that all 6 Bachelor study programmes also share a number of 3rd and 4th year courses offered during the last two years. Thus on average, there is a 70% overlap between the 6 study programmes, making it difficult to clearly distinguish their identity, clear objectives and differences when compared to each other. The descriptions of the study programmes are thus not very attractive to students. They do not adequately explain the possibilities of specialization, the differences to other study programmes offered, the attractiveness for the labour market, the specific profile of the graduates, etc.

Furthermore the overall responsibility to offer the study programmes, seems to be more at the faculty/Dean level. As it was clear during the three site visits, there is very tight control at the faculty level with regards the direction of the faculty, the departments and the study programmes. The decision-making and control are in the hands of the Dean, the Heads of departments and the programme leaders/co-ordinators. The teaching staff is not adequately involved in decision-making and/or providing input and feedback. Thus, a bottom-up approach should be also adopted in the decision-making, empowering the teaching staff to contribute to change and innovation.

The *Software Systems* study programme belongs to the study fields group Mathematics/Computer Science and is offered by the Department of Software Engineering. The Software Engineering Department seems to be one of the most active departments in the faculty, as about 25% of the financing comes from outside. The cooperation within the department and between the other departments of the faculty still should be improved. The staff, PhD students, and students of the departments could work closer together, especially the departments administration and the staff. The EVPG was pleased to note that the *Software Systems* programme is very attractive to students as the numbers of new entrants are high and on the increase (67 new students in 2011 and 98 new students in 2012). This increase in the number of students is very much related however to the dramatic decrease in the number of students of the other Bachelor study programme evaluated by the EVPG, namely *Informatics*. Considering the numbers of students in the other Bachelor study programmes of the faculty, the *Software Systems* Bachelor study programme seems to be the most successful one.

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

The aims of the *Software Systems* Bachelor study programme are readily available online only in the Lithuanian language. Seeking to increase internationalization of the study programme, it is recommended to make the programme aims and intended learning outcomes publicly available in English language as well. In the SER, the aims and learning outcomes were outlined as follows (the services of a professional interpreter are recommended to make the English version more accurate):

“The aim of this programme is to prepare high quality specialists of software systems who are able to analyse, develop, test, implement and modernize software systems that meet the latest achievements in information technologies, meeting the Lithuanian economy and export needs. After completing Software System Study Programme, the specialists acquire professional competence to perform complex software system development on their own. Software Systems graduates are able to work as computer system analytics, designers, programmers and testers in design groups or individually, to absorb and implement effective design methods, to work remotely. They can manage small groups of system designers and programmers.”

Noticeable, that besides of aforementioned system analysts, designers and programmers, the aims and intended learning outcomes of the study programme should also take into the account the IT industry needs for skilled software and systems architects and technical project managers. It is suggested by the EVPG to address that.

In general the intended study programme learning outcomes are in line with requirements of the Bachelor level studies and the sixth level of the European Qualifications Framework, however much more emphasis should be put on the modern trends of IT, namely Service Oriented Systems, IT as a Service, Virtualization, Cloud Computing. It is difficult to imagine how a young graduate could be successful without knowledge of these subjects, however they are largely absent from the SER and the study programme in overall.

At a more general, but equally important level, the commonalities and differences of the study programme aims and intended learning outcomes of the *Software Systems* Bachelor study programme and the Bachelor study programme *Informatics* (and apparently also for the other 4 Bachelor study programmes of the faculty) are not clearly defined. It means that there is no clear outside or black-box view of the different Bachelor study programmes: specific aims, specific intended learning outcomes. One would expect, that since all 6 Bachelor programmes share the

first two years and also some other courses during the last two years (that is they have on average 70% overlap), that the list of the intended learning outcomes of these programmes would have an equivalent overlap and would be written in co-operation with all departments, using a modular approach. Thus one would expect that the SERs of the two study programmes evaluated by EVPG would list a common set of intended learning outcomes, as well as an additional number of intended learning outcomes for each of the two study programmes. This is not the case however as the intended learning outcomes listed in the two SERs have been written completely in isolation. It highlights the need for reviewing the intended learning outcomes of all study programmes of the faculty, identifying the common and the specific ones for each study programme.

Further to this, and as a consequence of the unclear set of the intended learning outcomes, it is not easy to read the descriptions of the study programmes, which should clearly describe the aims of the study programmes and, correspondingly, the common and different profiles of the graduates and/or their value for the labour market. The absence of such descriptions could make it more difficult to attract students in the future. This is especially true and important for attracting foreign students.

2. Curriculum design

As it was mentioned in the Introduction, the *Software Systems* study programme is offered by the Department of Software Engineering and is very attractive to students (67 new students in 2011 and 98 new students in 2012). Considering the numbers of students at the other Bachelor study programmes of the faculty, the *Software Systems* Bachelor study programme seems to be the most successful one. So, it is well accepted by students, but also – as we could see in the discussion – by the employers. In general, there is an interesting and fruitful connection between companies and department, which has some influence on the quality of studies and graduates.

The study programme is a combination of theory, business, and engineering. Students argue that they have chosen this study programme, because it is the broadest one. The study programme guarantees that every student has worked out a nontrivial running computer programme. The study programme allows graduates to become software developers of quite different sorts. It covers a variety of profiles of graduates suited for different future types of employees: programmers, testers (more general, quality assurance engineers), designers. Orthogonally, the education given by the study programme is also suited for specialization, for the profiles of: business administration software, embedded systems software, distributed systems software. This specialization is even deeper, if students continue for a Master.

The study programme conforms to the Bologna Process and legal and formal requirements of the Lithuanian Law. It comprises of 240 ECTS credits thus satisfying the minimum required by Lithuanian Law (210 ECTS credits) and the minimum required by the Bologna Process (180 ECTS credits). The semester student workload also satisfies the 30 ECTS credits, however this is not very clear from the programme plan of studies as given in Table 7.1 of the SER. This is indicative of the problems that EVPG faced when reading the SER and comparing it with the SER of the other 2 study programmes that were evaluated. Table 7.1 provides a matrix of courses and the semesters offered, rather than simple tables of all semesters with the courses offered each semester so one can easily see the courses offered every semester and the total number of ECTS credits per semester. Out of the 240 ECTS credits, 177 ECTS credits are for study field courses (satisfying the minimum requirement of 165 ECTS credits), 24 ECTS credits for the student practice out of which 18 ECTS credits are for the Final Practice (satisfying the minimum of 15 ECTS credits), 12 ECTS credits for the final degree project, 15 ECTS credits for the general education courses (satisfying the minimum of 15 ECTS credits) and 12 ECTS credits for general electives.

The courses are spread evenly across the semesters (though, as pointed out before this is not clear at all by a simple look at Table 7.1 of the SER). Most of the basic courses are offered during the first 4 semesters (Mathematics, Physics, introductory courses for Informatics, general education/general electives such as English and Philosophy). The content of the courses is consistent with the type and level of studies and the content and methods of learning/assessment employed in the courses are appropriate for the achievement of the course and programme intended learning outcomes.

However, the structure of the study programme is not clear enough. It is not evident what the contents of courses are about, why the programme contains certain courses and not other ones, what are the course prerequisites, etc. The programme should make up a graph, where the nodes are courses with certain and well-defined contents, clearly distributed over semesters, and with clear relations between them. In this graph also, the elective courses have to be clear (what to choose, which specific profile results, which specific fields chosen and/ or combined).

The main competences of a graduate after having finished the study programme with corresponding individual specializations by having chosen certain electives are provided by the study programme's courses offered by the Department of Software Engineering, which is responsible for the study programme. Necessary underlying knowledge is provided from other departments, like data bases systems, communication, etc. So, for this study programme there are

clear interfaces and responsibilities. What can be improved is, how electives on one hand and the projects and the Bachelor thesis on the other hand contribute to a specialization, and how some templates for specializations can look like.

Furthermore, the specific following topics of the study programme should be clarified and clearly described: Programming, OO programming, Data Structures, and Practice of Programming, which each exists in two versions “Elements” and “Fundamentals”. In the discussion EVPG learned that one version is for the non-experienced, the other for the experienced students. The course syllabi are not like this. There also seems to be some redundancy between these courses in each series of the two versions. Additionally, the role of the projects – which seem to be in some relation to the thesis work – is not clear from the SER.

As with other study programmes the theses are planned to be done with industry. That is positive, as the practical and application view is always regarded. However, even Bachelor theses should have some relation to the scientific state of the art or the state of the art of technology. In some cases they even can contribute to some scientific progress. So, the process of agreeing on the topic of a thesis or accepting a thesis must have these connections in mind.

Another and more general remark belongs to the type of university studies and the international visibility of a study programme and corresponding department or faculty: the EVPG believes that more freedom to choose courses, a closer relation to research, a specific treatment of bright students, a stronger international relation (by courses offered in English, lecturers from outside, students going abroad for some time, etc.), and a stronger influence of students for their individual study plan is needed.

Summing up, nevertheless, the name of the programme, its intended programme and courses learning outcomes, content, and qualifications offered are altogether compatible with each other to some extent. This positive statement does not override the critical remarks, suggestions, and recommendations given above.

3. Staff

The *Software Systems* study programme is taught by full-time teachers. This study programme is delivered by 12 professors, 18 associate professors and 7 lecturers (most with PhD degrees) with the necessary competence for the Bachelor study programme. Most of the staff members have the Doctor’s Degree in Informatics or Informatics Engineering, as well as extensive research and teaching experience, which is adequate to help students achieve the intended learning outcomes. The staff members are also involved in other study programmes. Assistants and doctoral students

(currently 9 in the Department of Software Engineering) participate in the study process conducting theoretical lectures, laboratory work and exercises. The average age of teacher working on the programme in 2012-2013 was ~53.5 years (professors – ~57 years, associate professors – ~55 years, lecturers – ~43 years).

The staff members of the *Software Systems* Bachelor study programme seem to be a homogeneous group regarding nationality. For the most staff members the stability of the job positions as well as the growth and innovation strategies seem to bring a commitment and focus to work tasks. The joint publications of the staff members, mainly co-authored by the same university/faculty scientists in the field, are interesting and relevant to the staff's research and teaching.

There are very few women among the staff and their absence from the higher management positions and professorships is notable; there are no other minorities noticeable. The same (disappointing) figures in women doctoral researchers and students have been observed. There should be equal opportunities policies or positive discrimination strategies for students and staff, taken into consideration in the programme and faculty staff in general. An obvious recommendation here would be to have a suitable recruitment policy to attract competent students and personnel from any minorities, including women.

The involvement of the staff in research projects that are related to their teaching subject is a very positive point and indicator for the integration of research and teaching activities. Some of the staff members are involved in some international research activities and a few exchange programmes, which suitably fit to the structure of this study programme. Such activities can bring an exchange of innovative research ideas and knowledge transfer. Most importantly they could enrich teaching/pedagogical practice and experience, which form an invaluable aspect and integral part of any curriculum design; these should further be improved in order to better address the needs of this new study programme.

The ratio of staff-student (1:11) is adequate. The teaching and learning resources and spaces also seem to be utilised well by the majority of the staff members. However, there are staff members, who are not satisfied with their teaching and research tasks as allocated (or as resulted). Neither are they happy with their own personal and professional development. They do not even seem to recall any acquaintance with the staff's professional development strategy of the faculty and the Kaunas University of Technology in general, emphasising that there is not even adequate financial support for conference/workshop attendance. Some of the staff members are also

dissatisfied with the students' behaviour and students' demanding rights, let alone the management's tendency to treat the students as 'customers', since they bring money.

Additionally, during the evaluation visit, some of the teaching and research staff expressed many wishes for improvement: apart from higher salary requirements, in particular the staff wished for less workload and administration pressures, and expressed dissatisfaction and anger for unpaid overtime hours and no reward bonus or even performance review systems. This should be addressed by the study programme managers.

Furthermore, reflecting on the findings from the evaluation visit, the EVPG thinks of the following: if the staff members (at all levels) are not supportive for the demands and wishes for the other staff members, there will be no staff commitment to any activity that brings about change and reform. If there are not any internal feedback mechanisms and quality procedures among the staff for exchanging ideas and approving improvement actions based on at least representative and consensus participation, no mission or vision strategies will be supported; nor, eventually, realized.

Senior and executive management should consider to deploy motivating factors for their staff in terms of: i) providing more time available for research and ii) securing more financial support for conferences, workshops and other similar activities' (e.g. pedagogic seminars) attendance and participation. These decisions could: a) greatly support and improve the competencies of the teaching and research staff and b) strengthen their international experiences even more.

Teaching staff members, on the other hand, should also take initiatives to efficiently re-organize their time allocation to various duties, by themselves. This can happen by personally choosing the most appropriate teaching and learning approaches and research methodologies for their own work. As an example, the following recommendation is next provided: during the visit it was mentioned that some lecturers aspire the Problem-Based Learning (PBL) principles and apply them in their teaching and research. This could further be encouraged among other staff members, too, because PBL can help integrate research and teaching, increase reflection and re-arrange time/duties allocation effectively. Last but not least, PBL could be most effective as a teaching methodology and thinking approach to research and life only when the whole study programme follows and supports PBL.

Professional and personal development should also be encouraged through memberships in national and international informatics societies, special interest scientific groups, trade unions and professional associations (CEPIS, IEEE, ACM, IEE), and other. The membership fee

sometimes is expensive (see e.g. the Institute of Electrical and Electronics Engineers-IEEE) considering the Lithuanian standard of living and the staff's salary scales. That's why these memberships should financially be supported by the management.

Internal feedback mechanisms and quality procedures among staff members could bring valuable exchanged feedback and other opinions for different teaching and learning methods and tools, research results and potential application/applicability, and other issues. Feedback through teaching/tutorial observations can enrich the lecturers' experiences, enhance the staff relations and increase the teaching quality.

Finally, an anonymous survey on staff's job satisfaction could enrich all the above observations and could give the necessary data to the administrative and management staff for action for improvement and necessary changes and/or reforms.

4. Facilities and learning resources

Overall, the premises for studies, buildings, classrooms, laboratories, library and the teaching and learning equipment are adequate in terms of quantity, size and quality and provide appropriate access to people with disabilities.

Classrooms are equipped with computers and projectors. Library opening hours are considered both adequate and convenient (Monday-Thursday 08.00-20.00, Friday 08.00-18.00 and Saturday 09.00-16.00). Access to public Internet space and restricted data bases is provided. Teaching materials (textbooks, books, periodical publications, databases) are adequate and accessible. Computer Labs are equipped with modern computers. Computer equipment and the network are sufficient, properly administered and secured. Internet connection is sufficient and wireless network is accessible through the premises. There is a diversity of equipment, technology platforms and software available for the students.

The premises/facilities include a very good Innovation and Business Centre, as well a very good e-learning Unit, both providing resources that enhance the teaching/learning experience of the teaching staff and students.

The main recommendation of EVPG with regards to the facilities and learning resources is for the department to keep modernizing and improving the facilities and resources available to the students and teaching staff. Staff members suggested during the meeting that some more hardware resources should be available for them. Furthermore, in order to promote and support Problem Based Learning (PBL) and collaborative work, there is a need to further improve the

availability of space that supports this kind of learning activities. Finally, in order to solicit feedback from all users, the department could carry out an annual questionnaire requesting feedback with regards to the facilities and resources.

5. Study process and student assessment

In general, the study process ensures an adequate provision of the programme and the achievement of the intended learning outcomes. The admission requirements are well founded and student numbers are very good (67 new students in 2011 and 98 new students in 2012).

The status of economical development of Lithuania (informatics is an ideal field for economic improvement as it does not demand for a high investment) and specifically the tough demographic problem requires for taking all efforts to increase the number of graduates, especially in those fields where they can get a good job. All students seem to combine studies with some work in industry, in not rare cases with too much time for work and too little time for studies. On the other hand there is an official part-time study mode, which should cover the needs of students combining studies and work. This part-time study mode seems not to be accepted. Students mostly want to have both at the same time. In cooperation between department and employers it should be clearly communicated that the amount of work during studies should not exceed a threshold (like 10 to 15 hours per week).

The EVPG was pleased to note the existence of an Innovation and Business Centre at the university that allows students to participate in business start-up initiatives. The teaching staff is encouraged to further engage students in their research projects (through project work/assignments, the final year thesis and/or the practicum in industry which can be linked to state-of-the-art research).

The EVPG was also pleased to note the existence of a very good e-learning Unit that provides support to teaching staff in developing e-material. Students reported however that their teachers use different platforms for delivering e-learning material. The EVPG suggests that the department streamlines the delivery of e-learning material by introducing unified rules for the teaching staff to make use of a single e-learning system systematic and obligatory.

The assessment system of students' performance is clear, adequate and publicly available. However there is room for improvement, especially with regards to the feedback received on student work. Furthermore there is a need to strengthen the link between the students and their representative so as to formally provide input to the department.

In general the department is recommended to enhance the students learning experience by promoting further a student-centred learning environment. To this end, Problem Based Learning (PBL), collaborative work, exposure to research and use of real life case studies should be utilized. Furthermore, in order to improve the students' social and soft skills, as well as language, communication and presentation skills, students should be encouraged to participate in out-of-class social activities organised by the department/faculty/university. Finally, student support centres should provide either staff-led or student-led tutorials to weak students.

6. Programme management

Programme management at KTU is administered and coordinated by the Vice Rector for Studies and Department of Studies, responsible for the formation of Study Programme Committees (SPC). The SPC is the main body responsible for study programme review, assessment, quality assurance and enhancement. The SPC provides recommendations to the department offering the programme, the Faculty Board and the Senate Study Committee.

The 15-members SPC for the Bachelor Degree in Informatics is well qualified and includes highly ranked professors (including the Dean of Faculty), social/industry partner and a student representative delegated from the Faculty Student Union. One however may question the balance of the members of the committee as 86% of the committee members are internal professors and only 7% (one member) is a social partner and 7% (one member) is a student. One could argue that the SPC could include two representatives from social partners and two students.

As per the SER, curriculum is reviewed both at the study subject level as well as at the study programme level every year and is presented to the Faculty Board for approval. Each subject of the programme has a co-coordinating lecturer responsible for it. All changes are approved hierarchically by the faculty and Senate and the relevant Study/Quality Committees.

Lecturers are evaluated every five years by the Accreditation and Contest Commissions of KTU according to law provisions. They are also evaluated every semester by students through a survey carried out by KTU Study Service. The results of the student surveys are also made available to the SPC, the departments, the faculty and the Student Union. Round table discussions are organized with students so that they can provide face-to-face feedback and actions are taken based on the discussions.

Thus, at least on paper it seems that there is a well-structured hierarchical system providing at different levels quality assurance. The process is regulated by various policy documents of the university.

The finding of the EVPG during the site visit, however, revealed that the whole process of programme management needs to adhere more strictly to the written rules and regulations. The following observations were made during the site visit, which indicate some flaws in the application of the process:

1. The teaching staff is not engaged as expected in study programme management and review. The decisions for changes/improvements in study programmes are taken at a higher level (Dean, Heads of departments and Coordinators of study programmes), without much communication taking place between the management team of the faculty/department and the teaching staff. Thus there is a need for enhanced communication, not only with regards to programme management, but also with regards to other issues concerned with staff (research, teaching loads, staff development, etc.). To this end, the faculty and the department need to address this issue and engage more the teaching staff in the decision-making processes.
2. There is a strong link between the social partners and the department and this is a good aspect of the programme. Social partners provide input to the programme, through various collaboration agreements allowing student placement/activities in companies, employment of graduates, guest lectures and some limited research collaborations. This is hindered, however, from the lack of formal meetings between them and their representative and with the department. It seems that all input provided is on an informal and ad-hoc basis. The social partners also identified the need for improving the language skills, social and soft skills, as well as presentation and communication skills of the students. As a conclusion, the implementation of the whole process of engaging the social partners in programme review and management needs to be further enhanced.
3. The student representative in the self-evaluation group did not have formal meetings with his colleagues in order to formally receive, record and provide input to the group. However, as pointed out during the meetings, students do provide input through questionnaires that they fill at the end of every semester, though no formal feedback is given to them with regards the input they provide and any action taken.

III. RECOMMENDATIONS

1. The faculty is recommended to re-examine its structure and its departments, as well as the co-operation of the departments in jointly offering study programmes and carrying out research activities.
2. The faculty and the departments are recommended to co-operate more, especially since the first two years of all the programmes offered are common and some courses of the last two years are also shared by all study programmes. To this end, the aims and objectives, intended learning outcomes, profiles and descriptions of the programmes need to be revisited and addressed using a modular approach and in co-operation with the other departments. These should be clearer in all reports and publications leaflets (as well as the website).
3. The faculty is recommended to encourage and engage the teaching staff in all activities of the department and faculty and especially in the decision making process. Thus, more power and at the same time responsibility, should be given to the teaching staff and the various boards. To this end, a better communication channel should also be established between teaching staff and the management team. The faculty and the department are also recommended to have a suitable recruitment policy to attract competent personnel from any minorities, including women.
4. The faculty and the department are recommended to provide a better work environment for the teaching staff (reduced teaching load, funding for research, conference participation and staff development). To this end, the faculty is recommended to carry out regularly a job satisfaction questionnaire.
5. At the same time, the teaching staff is recommended to take more initiatives and actively engage in all academic community activities. Teaching staff should further engage in curriculum development, funding applications (Horizon 2020) and research collaborations.
6. The department is recommended to define more precisely the identity, rationale, intended learning outcomes, structure and course pre-requisites graph/tree of the *Software Systems* Bachelor study programme.
7. The department is recommended to develop a better description for the study programme. There has to be also a convincing English version. The revised/enhanced programme and its description should be closer to the *standards* of an *internationally visible, research-oriented university*, according to the vision of KTU. So, especially, research-orientation, internationalization, flexibility, and adaptability for individual study plans should be made clearer.

8. The department is recommended to enhance the curriculum of the study programme with courses addressing state-of-the-art topic areas such as: Service Oriented Systems, IT as a Service, Virtualization and Cloud Computing.
9. The department is recommended to streamline the delivery of e-learning material by introducing unified rules for the teaching staff to make use of a single e-learning system systematic and obligatory. Furthermore, the department could encourage the staff to utilize the services of the e-learning Unit and provide some incentives to staff (e.g. time release) for developing through the Unit professional e-learning material.
10. The department is recommended to carry out an annual questionnaire requesting feedback from both students and staff, with regards the facilities and resources in order to maintain the standards of the available resources.
11. The department is recommended to provide a better student-centred learning environment. To this end, Problem Based Learning (PBL), collaborative work within courses, linking of final year thesis and industry practicum/placements with the research work of the teaching staff and the use of real-life case studies should be further promoted. Appropriate space should also be made available to promote and support such learning activities. Furthermore, the learning process should be improved, especially with regards to providing feedback to students for their assignments and exams and in general the formal communication between students and the department should be enhanced.
12. The department is recommended to further develop their quality assurance mechanisms and especially to audit the adherence to the rules and regulations so as the programme review/management process is carried out regularly and its results are formally recorded. The department is therefore recommended to set up formal arrangements through which all stakeholders are further involved and their input is formally recorded and analysed and any actions taken communicated back to them.

IV. SUMMARY

Overall the External Evaluation Peer Group (EVPG) identified a general problem at the organizational and structural level of the faculty and its departments. Although the number of departments has been recently reduced through merging of departments, the EVPG believes that the structure of the faculty needs to be re-addressed. There seems to be lack of co-operation between the departments and lack of communication at the faculty and departmental level between the top management team and the teaching staff. Furthermore, teaching staff seemed to be distant/not engaged in the developments/changes taking place at the faculty, departments and study programmes and they take no part in decision making. The faculty and the department need to look into these issues.

The *Software Systems* Bachelor study programme provides a good first-cycle qualification. Admissions numbers are good and the study programme seems to be attractive for local students. The intended learning outcomes of the study programme are in line with the requirements of the sixth level of the European Qualifications Framework, however they need to be more clearly defined and expressed, especially in comparison with the intended learning outcomes of the other study programmes offered by the faculty.

The identity, rationale, intended programme learning outcomes, structure and course pre-requisites graph/tree of the study programme need to be revised in comparison to the other study programmes of the Faculty. The curriculum should be enhanced with courses addressing state-of-the-art topic areas such as: Service Oriented Systems, IT as a Service, Virtualization and Cloud Computing, as well to build in students' language and soft skills. Finally, the description of the programme needs also to be clearer in all reports and publications leaflets (as well as on the website).

The staff members of the *Software Systems* Bachelor study programme seem to be a homogeneous group regarding nationality. They are a well-qualified team to teach the courses (study subjects) of the study programme. Overall, staff members of the programme are pedagogically equipped and scientifically competent, having a PhD degree in their own research field. The staff-student ratio (1:11) is quite good. There are almost no women among the staff and their absence from the higher management positions and professorships is notable. An obvious recommendation here would be to have a suitable recruitment policy to attract competent personnel from any minorities, including women. The department is also recommended to improve the work conditions of staff by reducing teaching loads and providing incentives and financial support for research, participation in conferences and professional

development. Finally the teaching staff is also recommended to take more initiatives and further engage in international research projects/collaborations and publish in international fora.

The premises for studies, buildings, classrooms, laboratories, library and the teaching and learning equipment are more than adequate both in their quantity, size and quality; all are accessible by students with disabilities. The classrooms, library and computer labs are all well equipped. Computer equipment and the network are sufficient, properly administered and secured. Internet connection is sufficient and wireless network is accessible through the premises. There is a diversity of equipment, technology platforms and software available for the students. The premise/facilities include a very good Innovation and Business Center as well a very good e-learning Unit. The department is recommended to keep modernizing and improving the facilities and resources and to provide additional appropriate space for collaborative learning activities.

The study process ensures an adequate provision of the programme and the achievement of the intended programme and course learning outcomes. The admission requirements are well founded. The Innovation and Business Centre at the University allows students to participate in business start-up initiatives. The e-learning provision needs to be streamlined so that students are exposed to one e-learning platform and e-learning approach. The assessment system of students' performance is clear, adequate and publicly available. However there is room for improvement, especially with regards to the feedback received on students work. In general, the department is recommended to enhance the students learning experience by promoting further the student-centred learning environment. To this end, Problem Based Learning (PBL), collaborative work, participation of students in research projects of teaching staff and usage of real life case studies should be enhanced.

The study programme is managed and reviewed according to documented standard and established methods and techniques that involve all stakeholders, namely, teaching staff, students, alumni and employers. However this does not seem to happen without any flaws and in a formal and systematic way and within the framework of established rules, regulations and procedures. Any feedback received from stakeholders and actions taken based on this are not formally recorded and communicated to them. It was evident that teaching staff, social partners/employers, students and alumni need to be more actively and meaningfully involved in the study programme review and improvement. The strong link that exists with social partners need therefore be more utilized in this respect. The department is thus recommended to further

develop programme management and review process, as well as the quality assurance mechanisms and to have an auditable system in place.

V. GENERAL ASSESSMENT

The study programme *Software Systems* (state code – 612I30002) 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	2
2.	Curriculum design	2
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
	Total:	16

*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. Philippos Pouyioutas

Grupės nariai:
Team members:

Prof. Manfred Nagl

Dr Eleni Berki

Mr Adomas Svirskas

Mr Justinas Petravičius

**KAUNO TECHNOLOGIJOS UNIVERSITETO PIRMOSIOS PAKOPOS STUDIJŲ
PROGRAMOS *PROGRAMŲ SISTEMOS* (VALSTYBINIS KODAS – 612I30002) 2014-01-
22 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-48 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Kauno technologijos universiteto studijų programa *Programų sistemos* (valstybinis kodas – 612I30002) vertinama **teigiamai**.

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

* 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

Ekspertų grupė identifikavo bendrą fakulteto ir jam priklausančių katedrų organizacinio ir struktūrinio lygmens problemą. Nors neseniai katedrų skaičius buvo sumažintas jas sujungus, ekspertų grupė mano, kad fakulteto struktūra turėtų būti iš naujo peržiūrėta. Ekspertų grupės nuomone, katedros nepakankamai bendradarbiauja, taip pat trūksta aukščiausio lygio administracijos darbuotojų ir dėstytojų bendravimo fakulteto ir katedrų lygmenimis. Be to, anot ekspertų grupės, dėstytojai yra atitolę / neįtraukiami į fakulteto, katedrų ir su studijų programomis susijusius patobulinimus / pokyčius bei nedalyvauja priimant sprendimus. Fakultetas ir katedros turėtų spęsti šiuos probleminius klausimus.

Programų sistemų bakalauro studijų programa yra suteikiama gera pirmosios studijų pakopos kvalifikacija. Priimamų į studijų programą studentų skaičius yra didelis, todėl galima daryti prielaidą, kad studijų programa yra patraukli vietiniams studentams. Programos numatomi

studijų rezultatai atitinka Europos kvalifikacijų sąrangos šeštojo lygmens reikalavimus, tačiau jie turėtų būti aiškiau apibrėžti ir pateikti, ypatingai lyginant su kitų fakulteto siūlomų studijų programų numatomais studijų rezultatais.

Turėtų būti peržiūrėtas studijų programos identitetas, pagrindumas, programos numatomi studijų rezultatai, struktūra ir studijų dalykams taikomi išankstiniai reikalavimai (grafikas / medis) lyginant su kitomis fakulteto studijų programomis. Siekiant patobulinti studijų programos sandarą turėtų būti įtraukiamas studijų dalykų, orientuotų į tokias šiuolaikines temas: į paslaugas orientuotos sistemos, IT kaip paslauga, virtualizacija ir debesų kompiuterija dėstymas, taip pat tobulinami studentų kalbos ir kiti ne techninio pobūdžio gebėjimai. Galiausiai, visose savianalizės suvestinėse (įskaitant ir kitas vertintas studijų programas) ir informaciniuose lankstinukuose (taip pat ir interneto svetainėje) turėtų būti pateikiamas aiškesnis studijų programos aprašas.

Programų sistemų bakalauro studijų programos personalas, tautybės atžvilgiu, yra homogeniškas. Studijų programos dalykus dėsto aukštos kvalifikacijos specialistai. Apskritai, programoje dėstantis akademinis personalas tiek pedagoginiu, tiek ir moksliniu aspektais yra kompetentingas. Pažymėtina, kad dėstytojai yra įgiję mokslo daktaro laipsnį srityje, kurioje vykdo mokslinius tyrimus. Dėstytojų ir studentų santykis (1:11) yra ganėtinai geras. Atkreiptinas dėmesys, kad tarp dėstytojų beveik nėra moterų, taip pat yra pastebimas ir jų nebuvimas aukštesniojo rango vadovų pareigose bei tarp profesorių. Akivaizdi rekomendacija šiuo atveju būtų vykdyti atitinkamą įdarbinimo politiką, kuri leistų pritraukti kompetentingą personalą iš mažumų grupių, įskaitant ir moteris. Katedrai taip pat rekomenduojama gerinti darbuotojų darbo sąlygas mažinant dėstymo krūvį, taip pat skatinant bei teikiant finansinę paramą vykdyti mokslinius tyrimus, dalyvauti konferencijose ir tobulintis profesinėje srityje. Galiausiai, dėstytojams rekomenduojama imtis daugiau iniciatyvos ir toliau dalyvauti tarptautiniuose mokslinių tyrimų projektuose bei publikuoti tarptautinėje erdvėje.

Studijoms skirtos patalpos, pastatai, auditorijos, laboratorijos, biblioteka ir mokymo bei studijų įranga yra daugiau nei pakankama kiekio, apimties ir kokybės atžvilgiu. Visi ištekliai yra pritaikyti studentams su negalia. Auditorijos, biblioteka ir kompiuterių laboratorijos yra gerai įrengtos ir aprūpintos. Kompiuterinė įranga ir tinklas yra pakankami, tinkamai administruojami ir saugūs. Interneto ryšys yra pakankamas. Bevielis interneto ryšys veikia visose patalpose. Įranga, technologijų platformos ir programinė įranga yra įvairi ir prieinama studentams. Universitete veikia labai pozityviai vertintini Inovacijų ir verslo centras ir E-mokymosi centras. Katedrai

rekomenduojama ir toliau tęsti materialijų išteklių modernizavimą ir gerinimą bei skirti papildomas tinkamas patalpas bendradarbiavimu pagrįstų studijų vykdymui.

Studijų procesas užtikrina tinkamą programos vykdymą ir numatomų programos ir studijų dalykų rezultatų pasiekimą. Priėmimo reikalavimai yra tinkamai nustatyti. Studentams yra suteikiamos galimybės dalyvauti judumo programose, tačiau dėl įvairių priežasčių studentai tokiose programose nedalyvauja. Inovacijų ir verslo centras universitete suteikia galimybę studentams dalyvauti verslo kūrimo iniciatyvose. Vis dėlto turėtų būti dedama daugiau pastangų siekiant skatinti studentus dalyvauti mokslo tiriamojame veikloje. E-mokymosi sistema turėtų būti suderinta, kad studentai naudotųsi vieninga e. mokymosi platforma ir vadovautųsi vieningu e. mokymosi požiūriu. Studentų pasiekimų vertinimo sistema yra aiški, tinkama ir viešai prieinama. Tačiau pažymėtina, kad šiuo atžvilgiu vis dar yra ką tobulinti, ypač grįžtamojo ryšio apie studentų atliktą darbą teikimo atžvilgiu. Apskritai, katedrai rekomenduojama plėtoti studentų mokymosi patirtį toliau kuriant į studentą orientuotą studijų aplinką. Siekiant šio tikslo, reikėtų skatinti probleminį mokymąsi, darbą kartu, studentų dalyvavimą dėstytojų mokslinių tyrimų projektuose, ir mokymo/-osi procese naudoti pavyzdžius iš realaus gyvenimo.

Studijų programa yra vykdoma ir peržiūrima atsižvelgiant į dokumentuose nustatytus standartus, metodus bei priemones, kurie įtraukia visus socialinius dalininkus, t. y., dėstytojus, studentus, absolventus ir darbdavius. Vis dėlto šis procesas nevyksta be tam tikrų trūkumų – formaliai ir sistemingai, pagal nustatytas taisykles, reglamentus ir procedūras. Iš socialinių dalininkų gautas grįžtamasis ryšys ir veiksmai, kurių buvo imtasi juo remiantis, nėra formaliai įtvirtinami; suinteresuotosios šalys nėra apie tai informuojamos. Akivaizdu, kad dėstytojai, socialiniai partneriai / darbdaviai, studentai ir absolventai turėtų būti aktyviau ir prasmingiau įtraukiami į studijų programos peržiūrėjimo ir tobulinimo procesą. Todėl glaudus ryšys, kuris yra palaikomas su socialiniais partneriais, turėtų būti dar aktyvesnis. Katedrai rekomenduojama toliau tobulinti studijų programos vadybą ir vertinimo procesą, taip pat kokybės užtikrinimo mechanizmus ir garantuoti patikrinamos sistemos buvimą.

III. REKOMENDACIJOS

1. Fakultetui rekomenduojama peržiūrėti savo struktūrą ir katedras, taip pat katedrų bendradarbiavimą bendrai siūlant studijų programas ir vykdant mokslo tiriamąją veiklą.
2. Fakultetui ir katedroms rekomenduojama glaudžiau bendradarbiauti, ypač atsižvelgiant į tai, kad visų vykdomų studijų programų pirmieji dveji studijų metai yra bendri, o taip pat ir kai kurie paskutiniųjų dviejų metų studijų dalykai sutampa. Dėl šios

priežasties studijų programų tikslai ir uždaviniai, numatomi studijų rezultatai, profiliai ir aprašai turėtų būti peržiūrėti ir pertvarkyti laikantis modulinio požiūrio ir bendradarbiaujant su kitomis katedromis. Jie turėtų būti aiškiau pateikiami visose savianalizės suvestinėse ir informaciniuose lankstinukuose (įskaitant ir interneto svetainę).

3. Fakultetui rekomenduojama skatinti dėstytojus įsitraukti į visas katedros ir fakulteto veiklas, o ypač į sprendimų priėmimo procesą. Šiuo tikslu dėstytojams ir įvairiems atsakingiems struktūriniais daliniams turėtų būti suteikta daugiau įgaliojimų ir tuo pačiu atsakomybės bei turėtų būti užtikrinamos geresnės bendradarbiavimo sąlygos tarp dėstytojų ir vadovybės. Fakultetui ir katedrai taip pat rekomenduojama vykdyti tinkamą įdarbinimo politiką, kuri leistų pritraukti kompetentingą personalą iš įvairių mažumų grupių, įskaitant ir moteris.
4. Fakultetui ir katedrai rekomenduojama sukurti geresnę darbo aplinką dėstytojams (sumažinti darbo krūvį, finansuoti mokslinius tyrimus, dalyvavimą konferencijose ir profesinį tobulėjimą). Siekiant šio tikslo, fakultetui rekomenduojama parengti pasitenkinimo darbu klausimyną ir reguliariai atlikti apklausas.
5. Tuo pat metu dėstytojams rekomenduojama imtis daugiau iniciatyvos ir aktyviai dalyvauti visoje akademinės bendruomenės veikloje. Dėstytojai turėtų ir toliau dalyvauti tobulinant studijų programą, teikti paraiškas dėl finansavimo („Horizontas 2020“) ir bendradarbiauti vykdant mokslinius tyrimus.
6. Katedrai rekomenduojama aiškiau nustatyti *Programų sistemų* bakalauro studijų programos identitetą, pagrįstumą, taip pat aiškiau apibrėžti numatomus studijų rezultatus, struktūrą bei studijų dalykams studijuoti būtinas sąlygas (grafikas / medis).
7. Katedrai rekomenduojama parengti geresnę studijų programos aprašą. Taip pat turėtų būti parengta įtikinama versija anglų kalba. Peržiūrėta / patobulinta programa, taip pat ir jos aprašas, atsižvelgiant į KTU viziją, turėtų labiau derėti prie *tarptautiniu mastu matomo, į mokslinius tyrimus orientuoto universiteto* standartų. Taigi, atkreiptinas dėmesys, kad aiškesniais turėtų tapti orientacija į mokslinius tyrimus, internacionalizacija, lankstumas ir gebėjimas prisitaikyti prie individualių studijų planų.
8. Katedrai rekomenduojama patobulinti studijų programos sandarą papildant ją studijų dalykais, kurie būtų orientuoti į šiuolaikines temas, tokias kaip į paslaugas orientuotos sistemos, IT kaip paslauga, virtualizacija ir debesų kompiuterija.

9. Katedrai rekomenduojama racionalizuoti e-mokymosi medžiagos pateikimą, nustatant dėstytojams vieningas taisykles sistemingai ir privalomai naudotis vieninga e-mokymosi sistema. Be to, katedra galėtų skatinti dėstytojus pasinaudoti E-mokymosi centro paslaugomis ir inicijuoti dėstytojų (pvz., laiko skyrimas) talpinamos profesinės medžiagos tobulinimą naudojantis Centru.
10. Katedrai rekomenduojama vykdyti metinę apklausą orientuotą į studentų ir dėstytojų grįžtamojo ryšio teikimą apie materialiąją bazę, siekiant užtikrinti turimų išteklių atitikimą standartams.
11. Katedrai rekomenduojama geriau užtikrinti į studentą orientuotų studijų aplinką. Siekiant šio tikslo, turėtų būti toliau skatinama taikyti probleminį mokymąsi, komandinį darbą, susieti baigiamuosius darbus ir praktikas / stažuotes su dėstytojų mokslo tiriamuoju darbu ir realiais pavyzdžiais iš gyvenimo. Reikėtų sukurti sąlygas (erdvės aspektas) skatinti ir remti tokią studijų veiklą. Be to, turėtų būti patobulintas studijų procesas, ypač grįžtamojo ryšio apie studentų atliktas užduotis bei egzaminus teikimo atžvilgiu, taip pat turėtų būti sustiprintas formalus studentų ir katedros bendravimas.
12. Katedrai rekomenduojama toliau tobulinti kokybės užtikrinimo mechanizmus, ypač daug dėmesio skiriant peržiūrėjimui, kaip laikomasi nustatytų taisyklių ir reglamentų, siekiant užtikrinti, kad programos peržiūrėjimo / vadybos procesas būtų vykdomas reguliariai, o jo rezultatai būtų oficialiai įforminami. Todėl katedrai rekomenduojama įtvirtinti formalius susitarimus, kurių pagalba visos suinteresuotosios šalys būtų labiau įtraukiamos į studijų kokybės užtikrinimą, jų teikiamas grįžtamasis ryšys būtų oficialiai fiksuojamas ir analizuojamas bei joms būtų pranešama apie visus atliktus pakeitimus.

<...>

Paslaugos teikėjas patvirtina, jog yra susipažinęs su Lietuvos Respublikos baudžiamojo kodekso¹ 235 straipsnio, numatančio atsakomybę už melagingą ar žinomai neteisingai atliktą vertimą, reikalavimais.

¹ Žin., 2002, Nr.37-1341.