STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Alytaus kolegijos

STUDIJŲ PROGRAMOS *INFORMACINIŲ SISTEMŲ TECHNOLOGIJOS (valstybinis kodas – 653E15009)*

VERTINIMO IŠVADOS

EVALUATION REPORT

OF *TECHNOLOGIES OF INFORMATION SYSTEMS (state code – 653E15009)*

STUDY PROGRAMME

At Alytus College

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Išvados parengtos anglų kalba
Report language – English

Vilnius
2016

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	***Informacinių sistemų technologijos***
Valstybinis kodas	653E15009
Studijų sritis	Technologijos mokslai
Studijų kryptis	Informatikos inžinerija
Studijų programos rūšis	Koleginės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (3 metai), ištęstinė (4 metai)
Studijų programos apimtis kreditais	180 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Informacinių sistemų inžinerijos profesinis bakalauras
Studijų programos įregistravimo data	Lietuvos Respublikos švietimo ir mokslo ministro 2012 m. rugpjūčio 17 d. įsakymu Nr. SR-4060.

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	***Technologies of Information Systems***
State code	653E15009
Study area	Technological Sciences
Study field	Informatics Engineering
Type of the study programme	College studies
Study cycle	First
Study mode (length in years)	Full-time studies (3 years), part-time studies (4 years)
Volume of the study programme in credits	180 ECTS
Degree and (or) professional qualifications awarded	Professional Bachelor of Information System Engineering
Date of registration of the study programme	17th August 2012, under the Order of the Minister of the Ministry for Education and Science of the Republic of Lithuania No. SR-4060.

CONTENTS

I. INTRODUCTION

1.1. Background of evaluation process

The evaluation of on-going study programmes is based on the **Methodology for Evaluation of Higher Education Study Programmes,** approved by the Order No 1-01-162 of 20th December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter, SKVC). Evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: *1) self-evaluation and the Self-evaluation Report (hereafter, the SER) prepared by a Higher Education Institution (hereafter, the HEI); 2) a visit of the Review Panel at the higher education institution; 3) preparation of the evaluation report by the Review Panel and its publication; 4) follow-up activities.*

On the basis of the study programme external evaluation SKVC takes a decision to accredit the study programme either for 6 years or for 3 years. If evaluation of the programme is negative such programme is not accredited.

The programme is **accredited for 6 years** if all evaluation areas were evaluated as "very good" (4 points) or "good" (3 points).

The programme is **accredited for 3 years** if none of the areas was evaluated as "unsatisfactory" (1 point) and at least one evaluation area was evaluated as "satisfactory" (2 points).

The programme **is not accredited** if at least one of evaluation areas was evaluated as "unsatisfactory" (1 point).

1.2. General

The application documentation submitted by the HEI follows the outline recommended by SKVC.

1.3. Background of the HEI/Faculty/Study field/Additional information

Alytus College (hereafter, the College) is a public higher education institution that was founded in 2000. The College has three faculties and offers 13 study programmes with emphasis on practical training.

Technologies of Information Systems is a three-year Professional Bachelor programme for full-time students and four-year for part-time students. The study programme, which also is open to international students, is hosted by the Department of Information Systems in the ICT Faculty.

The Review Panel was asked to evaluate two study programmes at the College in addition to *Technologies of Information Systems*, namely *Administration of Computer Network* and *Multimedia, Design and Publishing Technologies*. These study programmes have several similarities, such as several overlapping study subjects, overlapping teaching staff and a shared management structure. These similarities are reflected in the three SERs, which have several identical descriptions. Consequently, this report has similar descriptions as the other evaluation reports when addressing aspects that are common to the programmes. However, the Review Panel want to emphasize that each of the study programmes has been evaluated individually on its own merits according to the information provided.

1.4.The Review Panel

The Review Panel was composed according to the *Description of the Review Team Member Recruitment*, approved by the Order No 1-01-151, 11/11/2011 of the Director of the Centre for Quality Assessment in Higher Education. The visit to the HEI was conducted by the Panel on 26-27/04/2016.

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   Professor at Oslo and Akershus University College of Applied Sciences, Norway.
2. **Prof. Jürgen Dorn**
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3. **Prof. Kari-Jouko Räihä**
   Professor at University of Tampere, Finland.
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   IT Security Officer at Klaipėdos nafta, SC, Lithuania.
6. **Ms Ieva Ulevičiūtė**
   3rd year student in Applied Mathematics (first cycle) study programme at Vilnius University, Lithuania.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The aim of the study programme is to educate students for the labour market in the area of information systems. However, two partially antagonistic aims of the College are stated in the SER and were emphasized during the site visit, namely to internationalize the College and to serve regional businesses. This leads to the provision of English lectures and orientation towards international standards on one side and the adaptation to local needs on the other. This is a challenge for the College and the programme.

The SER declares that graduates of the programme shall be "able to analyse technical characteristics of computer hardware and software, design, install and integrate IS into the company activities in order to assure efficient work of information systems in a company, combining knowledge of engineering with the fundamentals of business; use, select, classify and analyse target information, constantly improving their competencies, think creatively and critically as well as analyse and generalise the results of their work".

According to the College management, the aims are motivated by the needs of local businesses and the general market needs and these needs were confirmed during the Review Panel's discussions with social partners.

The aims are to be achieved by six intended learning outcomes. The intended learning outcomes are listed in Table 1 of the SER and assigned to 39 study subjects in the curriculum indicated in Table 3 of the SER. Most of the intended learning outcomes appear to be too abstract and general. For example, it is not obvious to a potential employer what specific types of problems the graduate is trained to solve according to the intended learning outcome "Apply knowledge of general fundamental sciences and fundamentals of computer engineering, use abilities provided by IT, systems, databases, information networks and application software in order to solve information management tasks and problems of a specific company". Some intended learning outcomes are assigned to over 15 study subjects and it is therefore difficult to identify the actual intended learning outcome of a specific subject. The assignment of the intended learning outcomes to study subjects leaves an impression that the programme is highly research-oriented, while the aims of the programme signal a focus on practical experience. It may therefore be useful to split up the intended learning outcomes such that a more fine-grained learning objective-to-subject assignment is possible while making the profile of the programme more visible. The intended learning outcomes should be the vocabulary that is used to discuss

expectations with social partners and communicate to students what they will learn. For example, the intended learning outcomes should state that the students should be able to solve programming tasks. The current intended learning outcomes do not describe the programming skills to be learned via the study programme.

The aims of internationalization and innovation, emphasized by the College management during the site visit, should also be clearly reflected in the intended learning outcomes. Moreover, security is a key issue in technologies of information systems and students' ability to work with security in IT-systems should be clearly defined in the intended learning outcomes.

In general, the programme aims and the intended learning outcomes are consistent with the type and level of studies and the level of qualifications offered.

A description of the programme and the intended learning outcomes are published on the Web[1]. All applicable Lithuanian laws in terms of definition of the programme aims and intended learning outcomes appear to be regarded. The name of the study programme is compatible with the aims and content of the study.

2.2. Curriculum design

The study programme comprises of 180 ECTS, which is consistent with regulations for professional bachelor study programmes in Lithuania[2]. The volumes for the full-time and part-time provisions are equivalent. The study programme description lists 15 ECTS general subjects, which is the minimum required by law[3]. However, the actual number can be considered to be more than 15 ECTS as the study subjects *Mathematics*, *Physics*, *Fundamentals of Business*, *Electrotechnics*, *Electronics*, *Statistics*, *Environmental and Human Safety*, also can be classified as general subjects since these are not central to Technologies of Information Systems. The study field subjects total 153 ECTS which is above the minimum requirement of 135 ECTS[4]. Of these, 111 ECTS makes up the compulsory study field subjects, 30 ECTS are allocated to practical

[1] http://alytauskolegija.lt/technologies-of-information-systems/
[2] Order of the Minister for Education and Science of the Republic of Lithuania "General Requirements of First Degree and Integrated Study Programmes".
[3] Order of the Minister for Education and Science of the Republic of Lithuania "General Requirements of First Degree and Integrated Study Programmes".
[4] Order of the Minister for Education and Science of the Republic of Lithuania "General Requirements of First Degree and Integrated Study Programmes".

training, and the final thesis comprises 12 ECTS, which is above the minimum legal requirement of 9 ECTS[5].

The study subjects for both the full-time and part-time variations of the study programme are spread evenly, with one noteworthy exception. There is only one 3 ECTS subject related to the Technologies of Information Systems in the first semester, namely *Information Technologies*. The other subjects are not directly related to Informatics Engineering, namely *Standards of Professional Language and Document Management*, *Foreign Language*, *Fundamentals of Law*, *Mathematics*, *Physics* and *Fundamentals of Business*. Students interviewed expressed a desire to be introduced core subjects already from a day one. Students may be demotivated having to start with subjects that do not match their academic interests. This may consequently lead to some students dropping out. The College is thus recommended to introduce more subjects related to the Technologies of Information Systems during the first semester to fuel students' enthusiasm for learning while moving non-related subjects to later semesters. There does not appear to be any repetitive themes in the study programme.

The contents of the study field subjects in the *Technologies of Information Systems* study programme are relatively consistent with the type and level of Information Systems studies worldwide. The study programme has a good balance of programming subjects totalling 30 ECTS, namely *Programming*, *Object Oriented Programming*, *Programming by PHP*, *Applied Programming* and *Practical Training in Programming of Internet Systems*. However, it appears to be too many unrelated study subjects, both general subjects and study field subjects. In particular, it is unclear why *Physics*, *Electrotechnics*, *Electronics*, *Statistics* and *Environmental and Human Safety* are listed as study field subjects and not general subjects as none of these subjects are closely related to Technologies of Information Systems. If these study subjects were considered general subjects it would be apparent that there are too many general subjects where some should be replaced by core subjects that are related to Technologies of Information Systems.

The study programme has a wide profile with 30 ECTS of programming subjects, several highly relevant core Informatics Engineering study subjects, such as *Data Structures and Algorithms*, *Databases*, *Operating Systems*, *Software Engineering*, *Fundamental of Computer Networks* and *Computer Graphics*, several current subjects related to Internet systems: *HTML Technologies*,

[5] Order of the Minister for Education and Science of the Republic of Lithuania "General Requirements of First Degree and Integrated Study Programmes".

Programming by PHP and *Human-Computer Interaction* and also several study subjects related to business and organizations that places Information Technology in the context of the society: *Fundamentals of Business*, *Information Systems* and *Business Information Systems*. The scope of the programme is thus sufficient to ensure the achievement of the intended learning outcomes.

The content and methods of the study subjects appear appropriate for the achievement of the intended learning outcomes. Moodle is used for learning management.

The contents of the study programme adequately reflect the latest achievements in science and technologies. The study programme has a good mix of study subjects that are highly relevant for graduates that will work as generalists within the area of Technologies of Information Systems. However, there is no specific security subject in the programme. This is a weakness in the light of current cybersecurity threats to information systems and financial institutions around the world. The study programme also covers HTML, web programming and human-computer interaction. However, there is no mention of user-centric development processes and website prototyping in the study subject descriptions. User-centric processes and prototyping are essential for successful development of information systems and these techniques are widely used by professional web designers and developers around the world.

2.3. Teaching staff

The teaching staff of the study field subjects is reported to consist of 20 teachers, five of whom are PhDs. Additionally, four teachers with Master's degree teach general college subjects. 18 ECTS out of 153 ECTS in study field subjects, i.e. 11.8%, are taught by doctors of science, which satisfies the legal requirement of 10%[6]. However, it is noteworthy that only one of the teachers has the doctoral degree in Informatics Engineering. The other doctoral degrees are in Educology, Physics, Economics, and Environmental Engineering and Landscape Management. The Panel recommend to increase the proportion of scientific degree holders among the teaching staff, especially in core Informatics Engineering fields. This could for instance be achieved by supporting the doctoral studies of some teachers that currently have a Master's degree, as was the case with at least one of the PhD degrees obtained during the reporting period.

The average teaching experience of the teaching staff is 20 years, which is high. Four new teachers were hired during the evaluation period, so there is some turnover of the teaching staff.

[6] Order of the Minister for Education and Science of the Republic of Lithuania "General Requirements of First Degree and Integrated Study Programmes".

The average age of the teaching staff is 49 years. The teaching staff actively publishes lecture material and participates in several committees and study programme development activities.

Another legal requirement is that at least half of the staff should have at least three years of practical experience[7]. This is satisfied by about 10 of 20 teachers listed for the study programme (excluding the general subjects), only marginally meeting the legal requirement. It is recommended to report on the practical experience of the staff in a way that details their work outside Alytus College and other educational institutes (both higher education and primary level) and how this experience is related to the study subjects they are teaching. It is difficult to identify the connection between the subjects taught and prior practical experience from the CVs provided with the SER appendices. In any case, the Panel recommends that the College continues to make an effort to employ more teachers with recent relevant practical experience, for instance by recruiting part-time teachers from local industry. The study subjects descriptions indicate that representatives from companies have been consulted when developing the subject in cases where the teacher did not have relevant practical experience. Such consultations are indeed useful, but they do not eliminate the need for teachers with first-hand practical company work-experiences.

It would also be helpful if the information gathered about teachers' experience included details about how the teachers have shared their time between teaching and practical work. For instance, one of the SER appendices lists that 59 years old teacher has 36 years of teaching experience and 26 years of practical experience, totalling 62 years. Clearly, for these numbers to add up some of the experiences reported must be part-time, but it is not clear what is considered the full-time experience and what is considered the part-time experience.

The number of students has gradually risen from 98 to 138 during 2011-2015, and the ratio of students per teacher is stated to be 5 in the SER. Again, this is partly a reporting issue. Teachers share their time between several study programmes, and some work only part-time. A more useful metric would be to use a full-time equivalent (FTE) both for students and teachers, so that a teacher using 20% of his or her time for teaching in this programme is counted as 0,2 teachers. Nevertheless, even with a revised metric it is a concern whether the programme is economically viable, that is, whether the College is able to attract a sufficient number of students to maintain the high level of personal supervision. Increasing the number of new students should be a main priority in future development efforts.

[7] Order of the Minister for Education and Science of the Republic of Lithuania "General Requirements of First Degree and Integrated Study Programmes".

The field of Technologies of Information Systems develops at a fast pace and requires the teachers to be well informed on new developments and they continuously need to update their skills. The College does support the development of the professional skills of the personnel based on their individual plans. The teaching staff have the opportunity to participate in international exchange, conferences, and other events that provide new knowledge. This commendable practice should be continued to the extent financially possible.

A particular skill that needs strengthening is working knowledge of the English language. Internationalization and attracting increasing numbers of foreign students is a core element of the strategy of the College. To achieve this goal, sufficiently many teachers must be able to communicate with international students. The study programme has successfully attracted several international students and the interviews with these confirmed that several teachers have insufficient English skills. One possibility of remedying this situation is to arrange English courses for the current teaching staff and reward efforts by individual teachers to improve their English, for instance via regular appraisal discussions and during contract renewal. Visiting lecturers from abroad can help to alleviate this issue, but the programme should not depend on their support.

The teaching staff are involved in various activities, including art exhibitions, termed "applied research" in the SER. These applied research activities are not the same as scientific research and only one international publication was listed in the CVs of the teaching staff, namely an article in the European Scientific Journal. The teaching staff are active in international mobility programmes, and it is recommended to extend such teacher exchanges to also include research activities as this may help increase the culture to be involved in research at the College. On the other hand, scientific research is not the main responsibility of the College. Still, it is important for students to learn the basics of the scientific method (problem description, analysis, experimenting, reporting), and they would benefit from the teachers using their own research experiences in the teaching.

2.4. Facilities and learning resources

The premises for studies appear adequate both in their size and quality. There are good conditions for students in the classrooms in terms of hygiene norms and technical facilities. Most of the equipment is up-to-date; the classrooms are renovated and equipped with the wireless Internet connection allowing students to use their own computers at the College. However, there

does not seem to be enough electricity outlets for many students to use their own computers simultaneously.

Some of the classroom computers should be renewed and the College has plans for this in 2016. The College should carefully consider if it is more optimal to invest in many computers with moderate specifications or fewer computers with modern and higher specifications.

The Microsoft DreamSpark programme allows students and teachers to use the latest software products. Several of these software products are de facto standard in many businesses.

The College has Cisco laboratory and plans to obtain a HP Laboratory to enhance students' practical experience with networking. There are also plans to renew the Cisco laboratory. The College provide students with VPN access allowing students access to internal resources for self-study outside the College.

It would be relevant for *Technologies of Information Systems* study programme to give students practice with new server technology for virtualization. More importantly, the College does not have an infrastructure and laboratory where students can learn about security attacks on information systems and train to prevent and protect against such attacks or have practice in penetration testing of information systems. The Review Panel suggest further improvement of the teaching resources in this direction.

The students reported that they mostly use e-books provided by the teachers. The students find these e-books more practical than the printed books in the library that quickly become outdated. However, the library has recently purchased a small quantity of current and highly relevant titles to update its collection.

2.5. Study process and students' performance assessment

The admission requirements are clear, well-founded and available on the College website[8]. According to the SER, the drop-out level of students is as high as 26.3% during the period 2012-2015 and the main reason is believed to be academic performance as 12.4% of the students failed their exams. *Information Technologies* is the only subject in the first semester that is highly related to the study field, totalling 3 ECTS. The other first semester subjects, that are, *Standards of Professional Language and Document Management, Fundamentals of Law, Foreign Language, Mathematics and Physics*, are not closely related to Technologies of Information

[8] http://alytauskolegija.lt/stojantiesiems/

Systems and this organization may cause some students to lose interest and motivation. This observation was supported by the interview with the students as several students expressed a desire to have more programming already from the very start. Apart from the first semester, the study process is relatively logically organized throughout the semesters. The study subjects are also supported by relevant practical training to ensure that the students achieve the intended learning outcomes.

Another important goal of the College is to prepare graduates, who would be capable to fluently communicate in English and work in international teams. The College therefore hosts open lectures in English given by visiting professors. However, these lectures are mostly organized for general subjects such as Philosophy and Psychology. The site visit revealed that most students would prefer to perform coursework in international groups and have lectures together with the foreign exchange students at the College. The College is therefore encouraged to organize common study field subjects for both local and foreign exchange students.

Technologies of Information Systems study programme students do applied research during their final thesis relevant to the needs of the organisations or businesses where students find practice places. The site visit revealed that the students are quite positive towards participation in applied research activities during their studies. Some of the teachers claimed to organise special projects that included students but no evidence was given on that.

Students have opportunities to participate in Erasmus exchange programmes. Ten students have opted for this since 2012. Graduates have an opportunity to continue their studies in Coventry University (the UK) where they can qualify for a Bachelor in Engineering after one year of study. Nearly 20 graduates of Alytus College have already used this opportunity.

The College organizes adaptation events for the entrants of the *Technologies of Information Systems* study programme. Students are introduced to Moodle where they can find all the information related to their studies. Moreover, students are consulted by the Faculty Dean, the Head of Department, the group tutors and the teachers of the study programme. Consultations are also conducted via e-mail. Students can get help with their future career via the Career and Public Relations Centre. Disabled students are eligible for financial support. Students can retake exams. Students who have not failed any exams can apply for several types of financial support, including social grants, promotional grants, orphan's grants, mobility grants, one-time social grants or bonuses. Students are asked to complete surveys 2-3 times a year. According to the students, international students only give feedback through discussions with Alytus College

teachers and management staff. The College is recommended to collect data more systematically by asking all students, including international students, and graduates of the study programme to complete carefully designed questionnaires.

The assessment system of the study subjects is clearly explained in-class at the beginning of each semester and made available electronically. The final assessment of each subject is composed of the results from intermediate tests and the exam. The exam counts for 50% or more. The final assessments are uploaded onto the Moodle system where students log in and check their results. The final theses are evaluated by an Assessment Board with representatives of employers and teachers of the College.

It is too early to conclude that the graduates meet the programme provider's expectations as the study programme has only been running since 2012. According to the SER, approximately 57% of the graduates found employment relevant to the study programme. The site visit revealed that this employment recently has risen to 71%.

2.6. Programme management

The Internal Study Quality Management System was certified according to ISO 9001:2008 in 2013. Responsibilities for decisions and monitoring of the implementation of the programme appear to be clearly allocated. The Coordinator and the Study Programme Committee are the most central structures. The Study Programme Committee is responsible for the implementation of the programme and the continuous quality supervision. The Coordinator oversees the daily implementation of the study programme.

Study programme quality surveys, graduate surveys and employer surveys are carried out every year. Students confirmed the systematic issue of surveys for each study subject during the site visit. However, the interviews revealed that there are several key issues that do not seem to have been identified, documented and handled by the quality management system. For example, students indicated that they had told the College that they would like programming basics to be moved to the first semester and general subjects to be moved to later semesters. This suggestion is indeed consistent with the pedagogical perspective of motivating students by introducing subjects that match their interest from the start. Moreover, stakeholders do not appear to be systematically informed of changes to the study programme resulting from their feedback. In addition to the implementation of changes resulting from feedback it is also important to inform

stakeholders giving feedback about the consequences of their input as this is likely to motivate and encourage more constructive feedback and quality culture at the College.

Concerns regarding low quality of final thesis supervision is another issue that the College appears to have missed. The Review Panel are unable to identify evidence that the College is aware of the quality of final thesis supervision nor takes systematic steps to ensure a minimum quality of final thesis supervision. Example initiatives could be to survey students' experiences with the final thesis work and to offer teaching staff courses in supervision.

In addition to responding to surveys, stakeholders are also represented in various committees such as the group that prepared the SER and Study Programme Committee. The College also have regular round-table meetings with social partners to discuss improvements to the study programme. The College runs an Alumni Club to maintain contact with former students. Alumni are invited to provide suggestions for improvement.

The College has a well-defined study programme management structure on paper, but the management structure does not appear to be completely effective and efficient in practice. For example, although the practical experience of the teaching staff currently satisfies the legal requirement, it is with a narrow margin. The study programme is thus vulnerable; if just one of the teachers with sufficient experience leaves the Department the legal requirements are no longer met. This critical situation was not identified or discussed in the SER, and the Review Panel did not get the impression that this was considered a critical situation during the meeting with the College management. For effective management of a study programme it is essential that the teaching staff situation, and other areas with legal requirements, are constantly monitored, analysed and improvement plans are drafted and executed.

It is commendable that the College is striving to attract foreign students to the study programme, and the contact with the international students is likely to benefit the local students. The international students expressed satisfaction with the written material in English, but were less satisfied with oral information due to insufficient English proficiency among some teachers. The interviews revealed that international students were not asked to fill in the study subjects' evaluation questionnaires. This suggests that the management of the study programme is not completely rigged to handle international students. It is very important that all sides of the management of the study programme include the international students.

Some of the teaching staff also expressed that their ideas for handling international students was to organize these into a separate group from the local students. The Review Panel would strongly discourage the segregation of local and international students. Instead, the College should strive to integrate the international students into the regular curricular activities. Both international students and the local students reported that they are not encouraged to work together on coursework, but signalled that they would like such mixed groups, as this would give additional learning across cultures. The management structures of the College need to actively support and encourage the integration of international students.

III. RECOMMENDATIONS

1. ***Make the intended learning outcomes of the programme more specific*** such that they clearly match the contents of the study subjects.
2. Clearly ***define internationalisation, innovation, programming and network security in the intended learning outcomes***.
3. ***Replace study field subjects unrelated to Technologies of Information Systems*** with new and highly related study field subjects, in particular Information Technology Security.
4. ***Increase the number of teachers with PhDs*** in a field relevant to Technologies of Information Systems (Computer Science).
5. ***More accurately monitor teachers' relevant practical experience***, and emphasize relevant practical experience when employing new teachers.
6. Implement initiatives to ***improve the English skills of the teaching staff***.
7. ***Exploit teaching staff mobility programmes*** as the means to increase the international research activity among the teaching staff of the study programme.
8. ***Monitor the quality of the final thesis supervision***.
9. ***Ensure that the evaluations focus on issues of importance*** such that critical areas are identified and necessary action is taken.
10. ***Integrate the international students into the regular curricular activities*** such that international and local students are encouraged to work together.
11. ***Include international students in the evaluations of the study subjects***.

IV. SUMMARY

The aims of the study programme appear consistent with the needs of the region. The College's efforts to offer the study programme to international students are highly commended. However, genuine steps should be taken to integrate international and local students. Local and international students will both have much to gain by working together.

The intended learning outcomes of the programme appear to be too abstract and general. It is therefore difficult for prospective students and other stakeholders to understand what graduates of the study programme have learned. Instead, the intended learning outcomes should be more specific and more closely match the content of the study subjects. Internationalisation, innovation, programming and network security should be clearly defined in the learning outcomes.

The curriculum is broad and it includes several study subjects that are highly relevant for training Informatics Engineers capable of working with a diverse set of tasks related to Technologies of Information Systems. However, the curriculum does not include any study subjects related to computer security. It is essential to give graduates sufficient training in computer security to help overcome the increasing cybersecurity threats to information systems. The curriculum contains too many study field subjects that could easily have been classified as general subjects as they have weak relevance to Technologies of Information Systems. The first semester is dominated by unrelated study subjects.

The study programme teaching staff meets legal requirements, but only by a small margin. Although the College has documented a growth in terms of teaching staff with PhDs in the study field, the number is still low. The College is thus recommended to continue their efforts to increase the ratio of teachers with relevant PhDs that are actively involved in research. More importantly, the number of teaching staff with relevant practical experience is low. Yet, teaching staff with relevant practical experience is crucial to this professional study programme. The College thus needs to focus their attention on the quality and relevance of the teaching staff's practical experience. Attention also needs to be intensified on the English abilities of the teaching staff as language competence is a key factor to succeed with the internationalisation efforts.

The facilities and learning resources are adequate to offer the *Technologies of Information Systems* study programme. This is also the case for the study process and students' performance assessment.

There are problems with the management of the study programme, as the system seems unable to identify key issues that need attention. For example, the College does not appear to have identified that the ratio of teaching staff with relevant practical experience is marginally above the legal minimum limits. Other examples include that the College seems unaware of the quality of the final thesis supervision and that the College evaluations do not cover the international students. Adjustments must be made such that also international students are surveyed, that substantial and relevant issues are systematically identified and documented, and that the College is able to act accordingly.

V. GENERAL ASSESSMENT

The study programme *Technologies of Information Systems* (state code – 653E15009) at Alytus College is given a positive evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Programme aims and learning outcomes	2
2.	Curriculum design	2
3.	Teaching staff	2
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	2
	Total:	**14**

*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. Frode Eika Sandnes
Grupės nariai: Team members:	Prof. Jürgen Dorn
	Prof. Kari-Jouko Räihä
	Assoc. Prof. Jaanus Pöial
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ALYTAUS KOLEGIJOS PIRMOSIOS PAKOPOS STUDIJŲ PROGRAMOS *INFORMACINIŲ SISTEMŲ TECHNOLOGIJOS* (VALSTYBINIS KODAS – 653E15009) 2016-07-14 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-166 IŠRAŠAS

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Alytaus kolegijos studijų programa *Informacinių sistemų technologijos* (valstybinis kodas – 653E15009) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	2
2.	Programos sandara	2
3.	Personalas	2
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	2
	Iš viso:	**14**

* 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)

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IV. SANTRAUKA

Studijų programos tikslai atitinka regiono poreikius. Ypač pagirtinos kolegijos pastangos bandyti į studijų programą pritraukti studentus iš užsienio. Vis dėlto, reikėtų imtis realių veiksmų

siekiant tinkamai integruoti tarptautinius studentus. Dirbdami drauge vietos ir užsienio studentai gautų daug abipusės naudos.

Studijų programos numatomi studijų rezultatai yra pernelyg abstraktūs. Atitinkamai būsimiems studentams ir kitiems išorės socialiniams dalininkams sunku suprasti, kokie tiksliai specialistai yra rengiami šioje studijų programoje. Programos numatomi studijų rezultatai turėtų būti konkretesni ir glaudžiau sietis su studijų dalykų turiniu. Numatomuose studijų rezultatuose turėtų aiškiau atsispindėti tarptautiškumo dimensija, inovacijos, programavimas ir tinklų apsauga.

Studijų turinys yra platus ir apima keletą studijų dalykų, kurie yra itin aktualūs rengiant informatikos inžinierius, gebančius spręsti įvairias užduotis, susijusias su informacinių sistemų technologijomis. Vis dėlto, studijų programoje nėra nei vieno dalyko, susijusio su kompiuterių sauga. Labai svarbu studentams suteikti pakankamai kompiuterių saugos žinių, kad jie gebėtų susidoroti su vis didėjančiomis informacinių sistemų kibernetinio saugumo grėsmėmis. Studijų programoje yra per daug studijų krypties dalykų, kuriuos taip pat galima priskirti ir prie bendrųjų, dėl menkų jų sąsajų su informacinių sistemų technologijomis. Pirmajame semestre dominuoja būtent su informatikos inžinerija tiesiogiai nesusiję studijų dalykai.

Studijų programos dėstytojai atitinka teisės aktų reikalavimus, bet tik nedidele persvara. Nors programos vykdytojai dokumentuose ir nurodė, kad dėstytojų, turinčių mokslų daktaro laipsnį, daugėja, tačiau jų vis dar yra per mažai. Todėl rekomenduojama toliau didinti mokslo daktarų inžineriniuose moksluose skaičių. Taip pat svarbu daugiau dėmesio skirti personalo įsitraukimui į mokslo tiriamąją veiklą. Pažymėtina, kad studijų programoje trūksta tinkamos praktinės patirties turinčių dėstytojų, o jie vykdant kolegines studijas yra labai svarbūs. Programos vykdytojai turi užtikrinti dėstytojų praktinės patirties kokybę ir aktualumą. Akcentuotinos ir nepakankamos dėstytojų anglų kalbos žinios, nes tai yra esminis veiksnys sėkmingam tarptautiškumo skatinimui.

Patalpos ir mokymosi ištekliai yra pakankami *Informacinių sistemų technologijų* studijų programos vykdymui. Tą patį galima pasakyti apie studijų eigą ir studentų pasiekimų vertinimą.

Problemų kyla dėl studijų programos vadybos – esama sistema nesukuria prielaidų identifikuoti esminių programos silpnybių. Pavyzdžiui, programos vykdytojai nenustatė, kad dėstytojų, turinčių reikiamą praktinę patirtį, skaičius vos peržengia teisės aktais nustatytą žemiausią ribą. Kiti pavyzdžiai: programos vykdytojams nėra žinoma, kad studentai susiduria su problemomis, susijusiomis su vadovavimo baigiamiesiems darbams kokybe, taip pat tai, kad programos

vertinimuose nedalyvauja tarptautiniai studentai. Būtina pasirūpinti, kad studentai iš užsienio dalyvautų apklausose, kad sistemingai būtų identifikuojami ir dokumentuojami svarbiausi ir aktualūs probleminiai klausimai ir kad kolegija galėtų imtis atitinkamų priemonių reikiamu metu.

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III. REKOMENDACIJOS

1. ***Sukonkretinti numatomus studijų rezultatus***, kad jie visiškai derėtų su studijų dalykų turiniu.
2. ***Numatomuose studijų rezultatuose*** turi aiškiai atsispindėti ***tarptautiškumas, inovacijos, programavimas ir tinklų apsauga***.
3. ***Studijų krypties dalykus, nesusijusius su informacinių sistemų technologijomis, pakeisti*** naujais, tiesiogiai su studijų kryptimi susijusiais dalykais bei būtinai įtraukti studijų dalyką *Informacinių technologijų sauga*.
4. ***Padidinti skaičių dėstytojų, turinčių mokslo daktaro laipsnį*** kryptyse, kurios yra susijusios su informacinių sistemų technologijomis (kompiuterių mokslu).
5. ***Atidžiau stebėti, kad dėstytojai turėtų sukaupę dėstomą dalyką atitinkančios praktinės patirties*** bei ją akcentuoti į darbą priimant naujus dėstytojus.
6. Imtis priemonių ***dėstytojų anglų kalbos žinių gerinimui***.
7. ***Pasinaudoti dėstytojų judumo programomis*** kaip priemone skatinti programos dėstytojų tarptautinę mokslo tiriamąją veiklą.
8. ***Stebėti vadovavimo baigiamiesiems darbams kokybę***.
9. ***Užtikrinti, kad atliekant programos vertinimą didžiausias dėmesys būtų skiriamas svarbiausiems dalykams,*** siekiant nustatyti labiausiai tobulintinas sritis ir imtis reikiamų veiksmų.
10. ***Daugiau dėmesio skirti tarptautinių studentų integracijai***, pavyzdžiui, skatinti tarptautinius ir vietos studentus dirbti kartu.
11. ***Tarptautinius studentus įtraukti į studijų dalykų vertinimą***.

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