



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus verslo kolegijos
**STUDIJŲ PROGRAMOS "PROGRAMAVIMAS IR
INTERNETINĖS TECHNOLOGIJOS" (valstybinis kodas –
653I13003)
VERTINIMO IŠVADOS**

**EVALUATION REPORT
OF "COMPUTER PROGRAMMING AND WEB-
TECHNOLOGIES" (state code -653I13003) STUDY PROGRAMME
at Vilnius Business College**

Review' team:

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2. **Prof. Peeter Normak,** *academic,*
3. **Prof. Robert Pucher,** *academic,*
4. **Ms Vilma Eidukynaitė,** *representative of social partners'*
5. **Mr Vytautas Mickevičius,** *students' representative.*

Evaluation coordinator -

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Išvados parengtos anglų kalba
Report language – English

Vilnius
2017

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	Programavimas ir internetinės technologijos
Valstybinis kodas	653I13003
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Informatika
Studijų programos rūšis	Koleginės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (3); iššęstinė (4)
Studijų programos apimtis kreditais	180
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Taikomosios informatikos profesinis bakalauras, Programuotojas
Studijų programos įregistravimo data	2007

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	Computer programming and WEB-technologies
State code	653I13003
Study area	Physical studies
Study field	Informatics
Type of the study programme	College studies
Study cycle	First
Study mode (length in years)	Full-time (3); part-time (4)
Volume of the study programme in credits	180
Degree and (or) professional qualifications awarded	Professional Bachelor degree in Applied Informatics, Programmer
Date of registration of the study programme	2007

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I. INTRODUCTION

1.1. Background of the evaluation process

The evaluation of on-going study programmes is based on the **Methodology for evaluation of Higher Education study programmes**, approved by Order No 1-01-162 of 20 December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC).

The evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of the studies.

The evaluation process consists of the main following stages: 1) *self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI)*; 2) *visit of the review team at the higher education institution*; 3) *production of the evaluation report by the review team and its publication*; 4) *follow-up activities*.

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

The programme is **accredited for 6 years** if all evaluation areas are 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 the SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI before, during and/or after the site-visit:

No.	Name of the document
1	Total number of students (programme <i>Computer Programming and Web-technologies</i>)
2	Description of outcomes of the study programme. Provisional version 20017
3	Minutes of the Department meeting 2016-08-31 No ITK-4
4	Changes of study curriculum 2016/2017

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

VBC is a private higher education institution which was founded in 1989 and offers bachelor level degree programmes to over 500 students. This bachelor study programme was started in 2007 and this is its second accreditation. The first accreditation was for a period of three years.

The College has five departments, one of these being the studies department which oversees the three academic departments of: Information Technology, Economics and Business Management, and Foreign Languages. Being quite a small college it can be agile and efficient in its communication however it does have formal structures and committees to manage quality assurance processes, the highest being the Academic Board. There is also a Management Representative who takes overall responsibility for the quality management systems implemented within the college. There are a variety of ways in which the students can provide feedback however, there is a Students' Association which offers a formal student voice within the College.

This basis for this review has been the self-evaluation report (SER), the legal acts and a site visit on 24th April 2017. During the visit, the review team undertook a site tour which included visits to classrooms, the library and specialist resources. They also met with the following groups: senior management, staff responsible for authoring the SER, teaching staff, students, alumni and social partners, and reviewed a sample of bachelor theses.

1.4. The Review Team

The review team was completed according *Description of experts' recruitment*, approved by order No. V-41 of Acting Director of the Centre for Quality Assessment in Higher Education. The Review Visit to HEI was conducted by the team on 24/04/2017.

- 1. Prof. Liz Bacon (team leader)**, *Professor of Software Engineering, Deputy Pro Vice-Chancellor, Faculty of Architecture, Computing and Humanities, University of Greenwich, United Kingdom.*
- 2. Prof. Peeter Normak**, *Director of the School of Digital Technologies, Tallinn University, Estonia.*
- 3. Prof. Robert Pucher**, *Head of the Department of Computer Science, University of Applied Sciences "Technikum Wien", Austria.*
- 4. Ms Vilma Eidukynaitė**, *Director of UAB "IT Akademija", Lithuania.*
- 5. Mr Vytautas Mickevičius**, *doctoral student of Vytautas Magnus University, study programme Informatics.*

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The study programme has an aim (called Programme objective on the College website), of 6 core objectives for the programme plus one objective each for the two specialisations. This translates into 17 core learning outcomes and an additional 2 learning outcomes for each specialisation. The intended meaning behind the programme objectives and learning outcomes are in general understood, however some are not clear, for example:

- “A graduate understands the process of algorithmization of a problem, is able to analyse and design algorithms of information processing”. The meaning of the words “understands the process of algorithmization of a problem” is unclear.
- “A graduate is able to project and develop graphical user interfaces”. The meaning of the word “project” is unclear in this context.
- “A graduate is able to project and create websites of modern design as well as systems of services and information”. Again the use of the word “project” in this context is unclear.

The wording of the learning outcomes may lack clarity in part due to translation issues, for example, “objective programming” should in fact be “object-oriented programming”. However, words such as “understand” or “know” in learning outcomes are generally considered hard to measure and should not be used. Learning outcomes should flow from a sentence such as “At the end of this programme a student should be able to” (it is acknowledged that most of them do). The choice of verb following the sentence is important in order to make it clear what skills, knowledge and experience the students will have at the end of their degree. The wording of the learning outcomes which do not following these requirements should be reviewed. The programme objectives are publicly available both in Lithuanian and in English languages. The learning outcomes were not found in the public Internet.

The study programme was renewed in 2012 and its objectives have been formulated in close cooperation with the College’s social partners (Infobalt Association, BlueBridge, Metasite Solutions, Bridge2APEX, Užupis Creative Cluster etc.). For determining the necessary competences (intended learning outcomes) of the graduates, an analysis of about two thousand job descriptions in IT was conducted. About half of the jobs in IT were targeted at software developers. The objectives and intended learning outcomes for the programme have not been modified in subsequent years – these coincide exactly with the objectives and intended learning

outcomes of the study programme that was submitted to the previous (2014) accreditation, although the content of the study programme has undergone some minor changes since that time.

The study programmes of the college are focused on humanities, social sciences and IT, and would appear to meet the missions, operational objectives and strategy as these are general and not related to a specific subject area. It was noted however that as the college has “business” in its name, the objectives and intended learning outcomes could benefit from including more business-related aspects.

The SER document explains that the programme objectives and intended learning outcomes which were formulated considering the ACM Computing Curriculum (2013). However, the ACM sub-discipline is not specified (ACM proposes curricula recommendations for undergraduate study programmes in five sub-disciplines, <http://www.acm.org/education/curricula-recommendations>). From the visit discussion it was understood that relevant information was taken from the related 5 sub-disciplines in order to inform the design of the programme. It was also noted that the Lithuanian Republic Professions Classifier that is based on International Professional Standards ISCO-08 was used.

In general the programme objectives and intended learning outcomes correspond to the type and first cycle of studies, and to the level of qualification. It was noted that in the SER, there is reference to the orders No V-501 (2010) and V-2212 (2011) of the Minister of Education and Science about approving the general requirements of the first degree and of the descriptors of study cycles.

There are two specializations in the study programme: 1) Computer Network Administration and 2) Internet Technologies. Given the title of the study programme is Programming and Internet Technologies, the rationale for the first specialisation was unclear as a specialization in, for example, Software Engineering would be more logical. However, it was accepted that the content required to meet the title of the award was delivered within the core subjects, and the volume of credits for the specializations were not extensive, and designed to meet the current requirements of the market. It was however noted that the content was not always fully reflected in the learning outcomes for example, the topic of security is taught relatively extensively throughout the programme but is not fully reflecting in the learning outcomes and they should be amended to reflect this.

2.2. Curriculum design

The study programme has identical content for both the full-time (3 years) and part-time (4 years) modes of study. In all areas, for both modes, the study programme meets the minimum legal requirements however they are exceeded in two areas. The first being the professional placement which consists of 30 credits (minimum credits are 24) and the second area being the practice placements and other practical placement, which has 61 credits (the minimum is one third of the programme which is 60). However, it was noted that the detailed calculations for all legal requirements would have been helpful in order to ensure there was no misunderstanding.

The subjects in each year of the study programme are appropriate and in general, the curriculum meets the learning outcome as defined, and is broadly consistent with degrees found elsewhere in Europe. The content of the programme provides core subjects which meet the title of the award and is appropriate for the type and cycle of the studies. It additionally offers two specialisations in the areas of programming and computer networks, however the core content is considered suitable for the title of the award. The curriculum content is valued by both students and social partners, and meets the needs of the industry at the point of student graduation however, technical skills date rapidly so it is important that generic and transferable skills such as learning how to learn are fully embedded, as these will support students for a lifetime in the industry. In general the curriculum addresses transferable skills well and the study methods were considered to be appropriate. Good examples of this such as project-based learning and team work were provided.

In terms of updates to the curriculum since the previous accreditation, whilst good examples of teaching the latest hardware and software were provided, these were not always reflected in the documentation which listed fairly dated text books and software. The documentation should be updated to reflect the actual reading resources and software used. It was noted that only minimal changes to the curriculum have been made in response to the recommendations from the last review and curriculum issues identified at the last accreditation event still need to be addressed for example the limited amount of software engineering in the programme. The team felt it particularly important that more software engineering was included which should address the full software development lifecycle, frameworks and methodologies etc. The study programme team should also consider strengthening areas such as disruptive technologies e.g. cloud to support a growing demand from industry.

The Programme Study Committee have used the ACM curriculum as a guide however, they are strongly recommended to consider European guidelines such as that provided by EQANIE. The Programme Study Committee should consider including the security content within the programme as suggested by the European accreditation recommendations on security content for non-security specialist informatics degrees. <http://www.eqanie.eu/media/cybersecurity-principles-learning-outcomes-whitepaper.pdf>.

With regard to the bachelor thesis, the practical work is very good and demonstrates an appropriate level of achievement for a student at the end of their degree. However, whilst this is an applied bachelor degree, students should still be able to demonstrate bachelor level higher level thinking skills of critical thinking, evaluation and analysis, demonstrated for example through an analysis and justification by a student of their decisions at each stage of their solution e.g. rationale for their choice of technology used, analysis and design methodology chosen, testing strategies, and some reflection in the conclusions on what they learned, what they might do different if approaching the problem again etc. Embedding student thesis work in the research of the staff more fully should help students to understand expectations and raise standards to be more comparable with those internationally.

In general the content, study methods and assessment techniques enable learners to achieve the learning outcomes and the scope of the programme is satisfactory however as noted above, the word of the learning outcomes needs attention and student achievement of an appropriate level in the project needs improvement.

2.3. Teaching staff

33% of the study field subjects are taught by scientists or recognized artists which is well above the required limit of 10%, and 58% of the staff have 3 or more years of experience, which also is well above the required limit of 50%. The staff who teach on the study programme therefore meet the legal requirements.

The qualifications of the teaching staff are adequate to ensure learning outcomes. Around 67% of teaching staff are working in companies in their field of teaching, which ensures a strong link with industry and that knowledge, skills and industry practice is brought into the classroom. There is a formal selection process for teachers and the suitability of lecturers' qualifications is

assessed before a teacher is hired. Companies who employ graduates also state, the skills and knowledge of the graduates meet their requirements very well.

The number of teaching staff is adequate to ensure the intended learning outcomes. Around 20 teaching staff members take care of approximately 80+ students. Although, it is unclear what percentage of time each member of staff devotes to the teaching of this cohort of students, interviews with students indicate an exceptionally short response time by teachers (typically one day) to questions asked, which would indicate the staffing base is more than adequate. Although no precise number was provided regarding the turnover of staff, it was clear from discussions that the staff base is relatively stable.

The college offers training to teachers and encourages teachers to take part in exchange and mobility programmes for professional development. Social activities (such as participation at the Vilnius Regatta on the last week-end of August) are provided to support team building between all members of the teaching staff. This is especially beneficial for part time teachers.

As teachers mostly come from companies they have a good understanding of their company's needs however, teachers need to be involved more deeply in research activities to ensure they are familiar with scientific methods in their field of teaching and this is an area where there is room for improvement. The recruitment of a member of staff to oversee and lead the research activities was welcomed however the College now needs to articulate their plans to enhance the research culture which will also help raise the standards of critical discussion and thinking in the bachelor theses produced by students.

2.4. Facilities and learning resources

The premises and equipment for studies are adequate, both in their size and quality. The interior is modern and the furnishing is appropriate. Vilnius Business College has 3 large lecture rooms, 4 medium size lectures rooms, 4 computer laboratories. All classrooms were fully functional, have projectors for presentations and met the requirements for a suitable learning environment. Some students use their personal computers in lectures and whilst wifi is adequate, the number of power sockets is limited.

The absence of an elevator makes it difficult to access the lecture rooms for disabled people (the College premises are located on the 4th floor) however it was acknowledged that there isn't an easy solution as the building is shared with other organisations.

The software available are considered adequate to support the programme. However, there is a focus on open source software (PHP, MySQL, Linux distributions and etc.) in the learning process which is laudable, but should be supplemented by some widely used proprietary software as well, for example, through Microsoft MSDN Academic Alliance programme.

Vilnius Business College has adequate arrangements for students practice. The College has social partners who suggest practice placements for students, however students may also find places for internship by themselves.

There is a library and a reading room, with 11 computer work seats in the library and 12 in the reading room. The library resources are limited and most of the text books are fairly dated, reflecting the reading lists in the subject (module) descriptions. Whilst students tend to use more online learning materials, the College should keep at least one up-to-date version of each text book in the library as a reference copy i.e. a copy that cannot be taken out on loan, but remains permanently available for use within the library for students to access when they are on the premises.

The students have access to the libraries of other institutions and the College is a member of Lithuanian Research Library Consortium (LRLC) which provides access to databases that are subscribed to by LRLC. Membership of this association provides access to the most popular data bases, however students do not have direct access to the ACM and IEEE Digital Libraries at the college which are important for this field of study, although these are accessible through other libraries they have access to in Vilnius.

2.5. Study process and students' performance assessment

The admission requirements are clear, appropriate and publicly available. The overall numbers on the programme have been relatively stable for the past two years, 86 full-time and part-time students in 2016, showing a slight increase from 81 in 2015. This was quite a significant increase from the previous three years which recruited around 50 students annually. Within the group of

86 students, it was noted that there has been a substantial shift from full-time to part-time in the past year which increased from 26 students in 2015 to 42 in 2016.

Students arrive with a variety of strengths and skills and so far it has not been possible to draw conclusions from any analysis of admission requirements in relation to dropout, however apart from those students who don't start the course, the largest group to dropout is those who realise programming is not for them in the first month. After this initial period, the retention is much better. The students appear very satisfied with the programme, with it being reported that 97% of students are happy with the college and would recommend it to others, and in concert with the Social Partners, commented highly on the practical component of the study programme. Graduates of this programme are highly sought after by industry both locally and nationally and many also get jobs overseas, which is testimony to design and delivery of the study programme.

The majority of the staff are part-time and working in the industry so this provides students with access potential projects and work experience. It also helps to ensure applied research results are brought into the classroom along with real problems for students to solve in their projects, in addition to providing opportunities for student placements.

Moodle is the chosen Virtual Learning Environment. Staff use a range of assessments on the study programme suitable to measure the learning outcomes of the programme. Some good examples of project-based learning and team working development were provided and these are considered important as they provide students with skills they need for life. Students also reported that they had an excellent relationship with their teachers. They were free to contact them outside class for both academic and social support, and always got a very quick response. Feedback on their assignments was very quick, the range being from immediate to about a week depending on the nature of the assignment. Staff provide useful feedback that supports their learning and students are encouraged to ask for further help if they have not fully understood their feedback. As a result, no students had felt the need to use any formal complaint or appeals procedure.

The college provides access to Erasmus+ exchanges for periods of study elsewhere and some students had undertaken this experience however many were restricted by personal circumstances such as employment commitments.

2.6. Programme management

Responsibilities for decisions and monitoring of the implementation of the programme are described in the SER, however it was not particularly easy to follow and an organisational structure would have been helpful. However during the visit, the study programme team clarified how the responsibilities are clearly allocated. The quality assurance system is based on the standards and guidelines for quality assurance in the European Higher Education Area (ESG) and on ISO 9001:2008. The college academic board, the highest body of the college, is responsible for decisions to improve the quality of the study process. Decisions on how to monitor and to improve the study process is undertaken by the studies departments. For this study programme the responsibility lies in the IT department.

Data and other information regarding programme implementation had been collected and analysed in 2013, 2014 and 2015. The analysis includes student's opinion on the quality of the teaching of lectures, analysis of staff satisfaction, a general student survey, and opinions of study program graduates. Also continuous dialogues with students, teachers, alumni, employers and internship supervisors are used to collect data which is used to improve the quality of the study programme.

The outcomes of internal and external evaluations of the programme are used for the improvement of the programme in a systematic way; details on internal and external surveys are precisely given in table 10 of the SER.

Social stakeholders are included into programme assessment and improvement however a formal process, such as an annual meeting, to gather inputs, brainstorm and provide feedback to the partners on changes made, should be introduced. It is interesting to see that student's parents also are included into the programme assessment and improvement process however the team should be conscious of data privacy issues in this regard.

The internal quality assurance measures are effective and efficient. The used tools support time management, financial and human resources. A very impressive demonstration of the resulting quality in teaching is the satisfaction of employers with the performance of graduates.

The information about the study programme is public, relevant and easily accessible on the college website, but only in the Lithuanian language. For students all relevant information such as subject descriptions, the assessment system and criteria, lists of recommended study literature are available in the online learning environment.

V. GENERAL ASSESSMENT

The study programme *Computer programming and WEB-technologies* (state code – 653113003) at Vilnius Business College is given **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	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	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. Liz Bacon
Grupės nariai: Team members:	Prof. Peeter Normak
	Prof. Robert Pucher
	Vilma Eidukynaitė
	Vytautas Mickevičius