



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

VYTAUTO DIDŽIOJO UNIVERSITETO
STUDIJŲ PROGRAMOS *INFORMATIKA*
(*valstybinis kodas – 612II3003*)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF *INFORMATICS* (*state code -612II3003*)
STUDY PROGRAMME
at VYTAUTAS MAGNUS UNIVERSITY

Experts' team:

1. **Prof. dr. Andrew McGettrick (team leader)** *academic,*
2. **Prof. dr. Peeter Normak,** *academic,*
3. **Prof. dr. Jukka Paakki,** *academic,*
4. **Mr Tomas Urbonas,** *representative of social partners'*
5. **Mr Žygimantas Benetis,** *students' representative.*

Evaluation coordinator -

Mr/Ms Rasa Paurytė

Išvados parengtos anglų kalba

Report language – English

Vilnius
2015

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Informatika</i>
Valstybinis kodas	612II3003
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Informatika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinės studijos, 4 metai
Studijų programos apimtis kreditais	240 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Taikomosios informatikos bakalauras
Studijų programos įregistravimo data	1997-06-04

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Informatics</i>
State code	612II3003
Study area	Physical Sciences
Study field	Informatics
Type of the study programme	University Studies
Study cycle	First
Study mode (length in years)	Full-time, 4 years
Volume of the study programme in credits	240 ECTS
Degree and (or) professional qualifications awarded	Bachelor of Applied Informatics
Date of registration of the study programme	04-06-1997

© Studijų kokybės vertinimo centras
The Centre for Quality Assessment in Higher Education

CONTENTS

I. INTRODUCTION.....	4
1.1. Background of the evaluation process.....	4
1.2. General.....	4
1.3. Background of the HEI/Faculty/Study field/ Additional information.....	4
1.4. The Review Team.....	5
II. PROGRAMME ANALYSIS	5
2.1. Programme aims and learning outcomes.....	6
2.2. Curriculum design	7
2.3. Teaching staff	10
2.4. Facilities and learning resources	11
2.5. Study process and students' performance assessment.....	12
2.6. Programme management	15
2.7. Examples of excellence *	17
III. RECOMMENDATIONS.....	19
IV. SUMMARY	21
V. GENERAL ASSESSMENT	23

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 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.	Questionnaires for students about study subjects

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

.....

Vytautas Magnus University was established in 1922. Currently it has around 480 staff and 8,000 students with around 70% of these being undergraduate. It prides itself in being unique within Lithuania in promoting a liberal arts philosophy which allows students a certain latitude in the design of their studies.

The Informatics study programme is offered by the Department of Applied Informatics which is in the Faculty of Informatics, one of 10 Faculties in the University. It was accredited in 2010 and given accreditation for a 6 year period; in 2012 the title of the programme had been changed from Business and Applied Informatics to Informatics to reflect the inclusion of the software systems strand.

1.4. The Review Team

The review team was completed according *Description of experts' recruitment*, approved by order No. 1-01-151 of Acting Director of the Centre for Quality Assessment in Higher Education. The Review Visit to HEI was conducted by the team on 22-23/03/2016.

- 1. Prof. dr. Andrew McGettrick (team leader)**, *Strathclyde University, Professor of Computer Science and Information, United Kingdom.*
- 2. Prof. dr. Peeter Normak**, *Tallinn University, Professor, Director of the School of Digital Technologies, Estonia.*
- 3. Prof. dr. Jukka Paakki**, *University of Helsinki, Professor in Computer Science, Finland.*
- 4. Mr Tomas Urbonas**, *CEO of Information Technology Company JSC "SONARO", Lithuania.*
- 5. Mr Žygimantas Benetis**, *student of Kaunas University of Technology study programme System Software.*

The assessment was based on scrutiny of the self evaluation report produced by the institution (and associated annexes). The review panel also visited the institution on Tuesday 22nd and Wednesday 23rd March 2016 and held informative meetings with the faculty administration, teachers, students, alumni and social partners. In addition the team saw samples of student work and documentation related to the activities of the Study Programme Committee. During their visit, the review panel had a tour of the premises and facilities used by students.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The overall aim of the study programme is to produce as graduates informatics professionals who are able to perform an analysis of real world problems, and then design and implement solutions having regard to the implications for business but also for society. These have been derived from European Commission goals as set out in the Lisbon declaration and subsequent communiqués.

There are three strands to the programme:

- The *applied informatics* strand which places an emphasis on analysis, modelling and simulation and the ability to implement processes having regard to the use of mathematical ideas, ideas from artificial intelligence and machine learning, and concepts from multimedia
- The *business informatics* strand to address the analysis of business needs, business management tools and e-services
- The *software systems* strand to address the crucial software development life cycle and the accompanying emphasis on process, quality and measurement

The Faculty sees this study programme as being unique in Lithuania since it covers not just knowledge about informatics but it also covers information management issues.

Graduates are expected to be equipped to work as in the software field as developers, testers, and / or systems administrators in both the public and private sectors or to continue their studies with a Masters degree.

The programme objectives and intended learning outcomes are classified into: knowledge and its applications, covering topics such as mathematical topics including probability and statistics, basic and advanced informatics topics, fundamentals of business and topics on software systems reflecting the three strands of the study programme; skills to perform research and these focused on interdisciplinary activities and relevant software developments underpinned by appropriate theoretical considerations; special skills to address the analysis, design and development of software systems and business solutions as well as to critically assess new trends in informatics;

social skills involving teamwork as well as the presentation of technical matters to both experts and non-experts; and, personal skills which address self-learning, the professional and social as well as the ethical skills and any relevant environmental and economics context. In the view of the review team these were of a high standard, though there are different emphases on these outcomes in the different strands.

These were clearly defined and information about the study programme was publicly available in English at www.vdu.lt/en/studies/degree-studies/bachelor-ba/informatics

The learning outcomes have been based on level 6 from the *Outline of the Lithuanian Qualifications Framework, 2007* as well as the *European Qualifications Framework, 2008*. It has also taken account of international reports such as the 2015 EQANIE standards, the ACM Curricular Recommendations and it has benefitted from comparative benchmarking. Moreover they are consistent with the institutional goals as outlined in the VMU Strategic Plan 2012-20. Importantly, graduates are seen to meet the needs of the Lithuanian labour market. In the 2014 publication of the Veidas magazine, it was reported that Informatics faculty and its study programmes were ranked top amongst Lithuanian universities.

The programme aims and the learning outcomes were seen by the review panel to be consistent with type and level of qualification and the degree offered.

The name of the programme, its learning outcomes and the qualification were all seen by the review panel to be mutually compatible.

2.2. Curriculum design

The curriculum of the Programme has been designed to comply with the national orders on *Approval of the Descriptor of Study Cycles* (Minister for Education and Science of the Republic of Lithuania, Order No V-2212, 2011) and *Approving the General Requirements of the First Degree and Integrated Study Programmes* (Minister for Education and Science of the Republic of Lithuania, Order No V-501, 2010). In addition, the internationally acknowledged education model of Computer Science, the joint *ACM / IEEE-CS Computing Curriculum* has been used as a substance framework for the Programme, along with the *SIGKDD Data Mining Curriculum* proposal and the national *Guidelines of Competence Development in the Study Field of Informatics*.

The curriculum meets the legal requirements on first degree Bachelor (university) study programmes as follows:

- the scope of the Programme is 240 in ECTS (European Credit Transfer and Accumulation System) (minimum: 210 ECTS, maximum: 240 ECTS)
- the number of subjects taught per semester varies from 3 to 7 (maximum: 7)
- there are 167 ECTS of special subjects in the study field; that is, all the “subjects in the study field” except for Term Paper and Bachelor Thesis, the complete “special (professional) part of the study programme” and the three “elective study subjects (B group)” (minimum: 165 ECTS)
- there are 15 ECTS of general university study subjects (minimum: 15 ECTS)
- there are in total 50 ECTS of electable alternatives in the study field or in another field, general university study subjects and free electives (maximum: 60 ECTS)
- there are 15 ECTS of practice, in the form of Internship (minimum: 15 ECTS)
- there is a final Bachelor Thesis of 12 ECTS and an associated final project (Term Paper) of 3 ECTS, totalling 15 ECTS (minimum: 12 ECTS)

According to the plan (schedule) of the Study Programme and the subject descriptions, the study subjects are spread evenly and their themes are not repetitive.

The Programme is provided in three specializations, *Applied Informatics*, *Business Informatics*, and *Software Systems*. In principle, this makes the Programme broad and allows students to design the studies according to their own interests. Also, the curriculum includes a number of elective study subjects (possibly from other departments, faculties or even universities) to be used for individual specialization. The Review Team, as well as the students, acknowledges that some of the subjects include lectures given by visiting experts from industry.

The curriculum, however, does not support real specialization well enough: the first two years (semesters 1-4) are the same for all the specializations, and as many as 7 out of the 13 compulsory lectured subjects in the last two specialized years (semesters 5-8) are actually the same. Moreover, some of the compulsory or elective subjects in semesters 5-8 are not central to the specialization.

The Review Team recommends making the specializations more different from each other as well as more focused on the core theme. For instance, the subjects Coding and Compression, Artificial Intelligence and Processes Analysis are of marginal importance to the specialization in *Software Systems* and should be replaced, for instance, with special subjects in software processes, software quality and requirements engineering.

There is room for improvement also in the common part of the curriculum: the subject on Human-Computer Interaction is so important that it should be made compulsory (and moved from semester 5 to some earlier semester), the contemporary concept of “Internet of things” should be addressed in more detail, and the current norm of development in ICT companies, lean and agile software methods, should be in a more central role.

Despite these comments and recommendations, in general the content of the subjects and the possible specializations is consistent with the type and level of the studies, and the scope and content of the Programme are sufficient and appropriate to ensure reaching the learning outcomes. Also, the content of the Programme reflects the latest achievements in science and technologies.

The Bachelor Thesis and the preceding Term Paper are made on a topic which is relevant for the Programme. In most cases the topic is taken from a list prepared by the teachers, but can also be proposed by the student or a company. The Review Team got the impression that the theses are quite technical and in some cases in lack of a final touch.

In the previous assessment of the Programme (2010), a recommendation was made to prepare students better in (oral) communication and team work skills. According to the study subject descriptions, a sufficient number of the subjects have allocated time for group/team work. Concerning skills in communication, the curriculum includes the compulsory subject on Professional Language for Students of Physical Sciences in semester 4. In the meeting with students, the Review Team was positively surprised at their open communication and good skills in English.

The course management system Moodle is widely used in the Programme. The Review Team recommends finding possibilities to provide some of the subjects in a proper e-learning mode, for instance by implementing them as massive open online courses (MOOC). Having subjects available as MOOCs would, in particular, make the studies more flexible for students who have a

(full-time) job. In general, the teaching methods for the subjects are appropriate for the achievement of the intended learning outcomes.

2.3. Teaching staff

The study programme *Informatics* is delivered by 9 Professors (24% of the staff and 27% of the subjects), 14 Associate Professors (47% of the subjects) and 14 lecturers, i.e. 37 in total. 68% of teachers have PhD degree. The legal requirements are completely met. However, from about 100 degrees (BA, MA and PhD) more than 90% has obtained in Lithuanian institutions. This explains why the amount of research conducted in international teams is relatively small (see below).

The qualifications of teaching staff are adequate. 29 teachers (78%) have professional interests in the areas directly related to the field of teaching. This is completely acceptable. Note that considerable amount of teachers (about 60%) have practical experience more than 3 years in the subject area of their courses.

The yearly admission to the programme was continuously growing during last years and was 43 in 2015. The total number of students was 100 in 2015 (Table 9 of SER). It is impossible to estimate the student/teacher ratio, as the teaching staff is teaching on different study programmes in parallel. Even if the teaching staff would devote only 25% of their teaching time for teaching courses of the programme, the student/teacher ratio is favorable – about 11 ($=100/37*4$).

The teaching staff has been quite stable during last few years and is able to assure an adequate provision of the programme. The majority (73%) has full-time employment in VMU and the average age of teaching staff is about 47 years. Although the average age could be somewhat lower, the age distribution is quite reasonable: about 40% of teachers are up to 40 years and 13% above 60.

The average teaching load is 32% from the total work load which enables the teaching staff to devote enough time to R&D and for preparation of course materials. However, the university has not yet implemented a regular system of sabbaticals for teaching staff. The teachers also complained that the need for participating on international conferences is significantly bigger than the university is able to support.

Some teachers are very productive and have published in high-level international journals and proceedings. On the other hand, the amount of research conducted in international teams is relatively small – only very few teaching staff members have joint publications with colleagues from other countries. Moreover, the majority of the staff members have published only in

national titles, in non-public titles without official references or in titles internal to the university. This is apparently caused by the general policy which values more the quantity rather than quality of publications. This should be reverted as it can lead to production of “scientific noise” and undermines the reputation of science. The abovementioned factors (small number of degrees obtained in foreign universities, non-existing sabbaticals, scarce participation on international conferences and involvement in international research teams) allow conclude that the potential of teaching staff to contribute in international academic activities is not fully exploited.

2.4. Facilities and learning resources

According to the SER, the premises for studies are adequate both in their size and quality; it matches requirements for that number of students. SER provides detailed information about the premises. Additional evidence were also found during the institutional visit to VMU, EET was satisfied that good infrastructure. There are 2 new laboratories founded in 2014, also there are 33 private companies funded places in the faculty. High speed Wi-fi accessibility is great, it is covering the whole building. All lecturers have their own working places equipped depending to their needs. VMU informatics faculty is accessible for students with disabilities. Access to the premises is provided for students with reduced mobility, there is a separate working place for students with visual impairment in the library.

The key items to cover teaching and learning equipment used for this study programme is as follows:

- Seven specialized laboratories are supporting the study process and research work: Multimedia laboratory, Computer Controlled Systems Laboratory, Internet and Mobile Solution Laboratory, Audiovisual technology Laboratory, Neuroscience Laboratory, Computer Networks Laboratory, Computer Graphics labs. Multimedia laboratory is very well equipped with the newest hardware and software solutions.
- Tablets / phones, Raspberry PI, Robots and other smart gadgets are used in laboratories.
- 3 levels of e-learning are used.
- There are two global and mandatory in university level information systems “first class” and “moodle”.

- Computer laboratories with video conferencing equipment and recording possibilities.
- Lecturers are provided with tablets for distance learning purposes.
- There are also consultations, discussions and cooperation between students performed by using a forum tool.

EET was provided with information about students' practices. University has permanent agreements with 10 companies for students practice, but usually most students are already working. Due to that most of the students performs their practices at the companies they are already working at.

Regarding library facilities:

- There is a possibility to use VMU library Services virtually - an electronic catalogue provides access to the library data and databases.
- Approx. 18 licensed online databases (EBSCO, ScienceDirect, SpringerLink, Taylor and Francis, Wiley InterScience, etc.) are covering the study subjects of applied informatics are available to the staff and students at VMU via University libraries
- The library webpage also has up-to-date communication tools such as news and information channel subscription (RSS) and a feedback option to provide opinion about the Services provided.
- Library itself is open from 8.00 to 21.00 Monday - Friday and from 9.00 to 18.00 on Saturdays.

2.5. Study process and students' performance assessment

Admission to the programme takes place on the basis of state funding or private funding. The state-funded entry utilizes a nation-wide point calculation based on performance in examination results at high school together with the priority given to VMU in the selection process. A weighting of 0.4 is given for performance in mathematics, 0.2 for the Lithuanian language mark, 0.2 for information technology or physics, 0.2 for other subjects including history, geography, chemistry, etc and finally 0.2 for an additional component that takes into account other achievement such as being a prizewinner in contest such as the Olympiads. The same calculations are used for privately funded students. In short, the admissions requirements can be considered to be well-founded.

The number of students with state-funding (and self-funding) admitted to the study programme in the years 2011, 2012, 2013, 2014, 2015 have been 11(4), 10(4), 9(11), 13(30), and 17 (26) respectively. In those years the number of applicants have been 215, 378, 413, 450 and 302. Of those applicants the numbers putting VMU as first priority (and priorities 1-6) were 23(144), 41(262), 33(283), 38(290) and 39(246).

The study programme is organized on the basis of 30 credits per semester; as befits a liberal arts university there is some flexibility for students to design their own programmes but a minimum of 24 credits and a maximum of 36 credits must be taken during each semester. 3, 4 and 6 credit classes typically attract 75, 100 and 160 hours. The number of lectures for subjects is around 30-45 lecture hours per semester and 15- 30 seminar or laboratory hours per week. The full load in terms of total student hours amounted to 1600 hours per year. From the fifth semester the three strands of applied informatics, business informatics and software systems are apparent. Students did take advantage of the liberal arts orientation of the institution, some students taking opportunities to learn foreign languages and other topics, e.g. business courses.

In terms of the selections made between the three strands: for fourth year students it was 50-50 between business informatics and systems software; for third year students systems software was the most popular; for second year, a student volunteered that he knew of only one student who would select business informatics (at the start of the third year).

During their visit the review panel concluded that students did seem to be spending roughly the expected amount of time per week on their study programme, taking into account both formal contact hours and independent learning time. Students would complain about the workload associated with a class. Although there was room for sympathy, teachers were conscious of the need to conform to the requirements of a class.

The numbers of students graduating each year (109) has been 64.7% of the 2010 intake and 67% of the 2011 intake. Of those excluded around 30% are for non-performance and 70% for personal reasons such as difficult financial situation, emigration or lack of motivation.

The review panel was fully satisfied that the organisation of the study programme was of a high order and certainly sufficient to ensure the achievement of the learning outcomes. However, some students felt that there could be greater challenge in the programme: comments were made

about the pace being slow, about examination questions that relied on memory with less attention to problem solving, and some repetition of material (associated with Java) around second year.

Having students involved in research activity was proving difficult due to pressures of their jobs. Students were in such demand that they tended to have employment from around second year onwards

Staff have an impressive record of being involved in visiting institutions abroad In the years 2011, 2012, 2013, 2014, 2015 some 19%, 16%, 24%, 24% and 19% of the teaching staff have visited institutions abroad in countries such as Austria, Denmark, Finland, France, Germany, Italy, UK, United States. The Faculty has Erasmus arrangements with some 28 universities (111). Students also have opportunities to study abroad and on average 1-5 VMU students participate in mobility programmes with some 2-5 coming to VMU from other countries mainly Germany, Georgia and Turkey. To encourage students to consider mobility possibilities, an 'Erasmus Day' is organized each year. In reality there was limited interest in Erasmus possibilities partly because the students held jobs and they did not see how this would benefit them.

Within this university with the liberal arts orientation, open dialogue between students and staff on all matters is encouraged. Different forms of academic and social support are published in the FirstClass intranet and different forms of study subject material is available via the Moodle learning environment. By regulation, each semester every full-time teacher supplies at least 20 hours of academic support usually in the form of officially announced meetings with students; these may be face-to-face, via Skype, or other electronic means. Students seen by the review panel during their visit expressed great satisfaction with the easy and supportive atmosphere in the institution.

Career planning is available via the VMU Youth Career Centre and face-to-face meetings happen at least once per year with alumni to reinforce thinking about careers. Moreover social partners have agreed to draw career opportunities to the attention of graduating students.

Students who perform well can win scholarships; each year 2-3 students from this study programme benefit from these. Certain scholarships can be available on a one-off basis to all students and there is financial support for handicapped students. The Office of Student Affairs takes care of social issues and this covers scholarships and subsidies but also dormitory

placements; these (for one year) are also available and some 65% benefit from these. The Student Representative Council represents student interests; these may result in medical consultations or accommodate sporting interests.

The assessment system for each class corresponds to the learning outcomes for the subject and the general learning outcomes for the study programme. The precise arrangements for each class are available via the Moodle system. A 10-point scale is used in line with VMU processes; the lowest pass mark is 5. Each subject is typically assessed on the basis of: a mid-term examination counting between 15%-35%; practical work or other intermediate assessment counting 15%-35%; and, a final written examination counting 50%. Results are posted on the intranet within 5 working days; appeals for a review of an assessment can be made to the Dean of the Faculty.

Although the SER provides information about assessment of students, there is insufficient mention of matters such as the moderation of examinations, double marking of assessments, etc. all to ensure quality. The final thesis is regarded as the most important evidence of a student's abilities; it typically involves software development but may involve an element of research.

The 2014 publication of the Veidas magazine identifies the VDU Informatics faculty and its study programmes as top within Lithuania. It appears that graduates from this study programme tend to gain employment though the precise take up is unclear. Graduates tend to be employed as analysts, consultants, designers, project managers in a variety of sectors.

2.6. Programme management

The administrative units involved in the management of the study programme include: the Informatics Study Programme Committee, the two departments and the Faculty Board. Changes to the programme involve the Dean of the Faculty, the Faculty Board and the University Academic Commission of the Physical Sciences. The Informatics Study Programme Committee is the main unit involved in ensuring its health and currency of the study programme.

The Informatics Study Programme Committee and the two main departments undertake a detailed review of at least once every three years. In the view of the SKVC review team this is very good practice, especially in view of the rapid technological advances. In this process, staff, students and social partners are encouraged to give feedback to the Informatics Study

Programme Committee. The conclusions are presented to the Dean the Faculty Board and the University Academic Commission of the Physical Sciences.

Following analysis of the findings, the Informatics Study Programme Committee devises improvement plans and implementation is discussed with the relevant department Head, the faculty Dean and the Faculty Board. There is a twice yearly check on progress of the implementation.

The review panel was satisfied that responsibility for decisions and the monitoring of implementation are clearly allocated.

The internal quality assurance measures are regulated by internal document that include the VMU Statute, VMU Study Regulations and orders of the Rector and Vice-Rector. They rely on extensive surveys:

- Each semester students are invited to be involved in a survey for each study subject; results are summarised and sent by the Office of Academic Affairs to the relevant Department; teachers have access to this information
- Each year the Office of Academic Affairs carries out a survey on the study programme as a whole to identify strengths and weaknesses and to identify areas for improvement are carried out 6 months and one year after graduation. From such a survey carried out in May 2015, graduating students scored 7.82 out of 10 for the theoretical part, 8.27 out of 10 for the internship but 6.18 out of 10 for practical skills
- Feedback from alumni and social partners is carried out during face-to-face meetings as well as via online surveys.

So there is input from stakeholders to decision making about the study programme and that is documented in meetings of the Study Programme Committee. However, from questioning at meetings and from scrutinising Study Programme Committee papers during their visit, the review panel had some concerns: the numbers of students completing questionnaires was 25% or even less; the students did not know who their student representative was; the social partners did not know the identity of their Study Programme Committee representative; the concept of quality control over assessment did not feature. In fact the student representative on the Study

Programme Committee was a doctoral student; the review panel felt that it would be far more appropriate to have a student representative from the Informatics student body.

The freedom of choices and action enjoyed by students was seen as attractive features both of this study programme and of the institution and students had flexibility and were able to manage their time.

At the meeting between the review panel and social partners, a number of comments were made: on this bachelors study programme greater attention should be paid to analytic skills, as well as presentation skills and team building. Moreover, students tended not to see sufficient value in the concept of process (from software engineering). It was also made clear that all social partners employed agile methods, and yet there was insufficient attention to agile methods in the study programme.

2.7. Examples of excellence *

Strengths

- The Informatics Study Programme Committee and the two main departments undertake a detailed review of at least once every three years.
- The study programme was seen as broad with opportunities for specialisation
- The three strands to the study programme namely applied informatics, business informatics and software systems provided an interesting structure from the fifth semester with the third strand being introduced as a response to student ambitions
- The liberal arts orientation of the institution provided an environment in which there was a certain flexibility about study programmes and students were exploiting this with some enthusiasm and to their benefit
- As a result of feedback, the Study Programme had introduced change that led to improvement
- The alumni and the social partners spoke positively about the study programme and the graduates
- The informal atmosphere and the way in which students were treated was attractive to the students (despite the fact that they were often employed)
- Teaching staff did address state of the art topics and the staff / student ratio was favourable

- The treatment of students was described as, not personalized, but individualized and students appreciated this
- There were visiting lecturers from industry
- The teachers confirmed that the study programmes were reviewed roughly every 3 years and they were fully involved in this
- Teachers could ask the library to purchase texts to support their work.

Weaknesses

- The salaries of staff were described as often being less than the salary for a bachelor students and this created problems of staff morale
- Having students who were employed during their studies students was a challenge for staff and the institution
- A number of topics did not receive sufficient attention: lean and agile methods, and the concept of the-internet-of-things
- Lack of ready access to the top international research publications and literature (e.g. as it exists within the ACM and the IEEE digital libraries)
- The percentage of students making returns to questionnaires was too low (typically around 25%)
- The representative of students on the Study Programme Committee was unknown to the student body
- The representative of the social partners of the Study Programme Committee was unknown to the social partners who met with the review panel

III. RECOMMENDATIONS

1. The review panel felt that, in driving forward the development of the study programme, the Study Programme Committee should be taking on board input, not just from social partners and students, but importantly also from the wider academic community. In part this recommendation is to highlight the leadership role of institutions
2. Steps be taken both within the institution and at higher levels within the Lithuanian system to give proper attention to high quality research; this should facilitate the better integration of researchers from Lithuania in the wider high profile research community
3. Encourage the institution to supply ready access to the top international research publications and literature, so enabling staff to be better involved with the international community
4. Encourage current and prospective university teachers to acquire degrees in leading foreign universities
5. Introduce attractive and effective sabbatical leaves for full-time teachers (NB! The same recommendation was also in the Assessment Report of 2010).
6. Put more emphasise on publishing in high-level international journals and proceedings.
7. The student representative on the Study Programme Committee should be a member of the Informatics student body and should reflect the views of that body
8. The social partners should be made aware of their representative on the Study Programme Committee and this position should be used to reflect the views of all social partners
9. The Study Programme Committee should arrange that the specialisations are made more distinct from each other and more focussed on their core substance.
10. Steps should be taken to ensure that a far larger percentage of students make formal returns via questionnaires about the study programme so strengthening the basis on which the Study Programme Committee can make decisions.
11. As there is no comfortable co-working places for students, the faculty should consider establishing at least a few such places with no access restrictions. Moreover, there should be more communication about possibilities to use existing facilities, the process should be clear and well defined.
12. Even though VMU has access to various databases, students and lecturers have outlined that a wider range of different databases should be considered and access to those databases should be provided to them.

13. There should be a review of the curriculum to place stronger emphasis on analysis skills, presentation skills and team building. The review should also address the better inclusion of agile methods for software development, the removal of overlap around the second year (associated with the teaching of Java)
14. Consideration should be given to providing evidence of attention to the quality of assessment so that external scrutineers can be convinced that this is being managed carefully and consistently. In this process there should be disincentives for setting questions that relied purely on memory work and for multiple choice questions, with greater attention being given to questions that involved problem solving.

IV. SUMMARY

This Bachelor in Information Engineering study programme in Informatics is offered by the Departments of Applied Informatics and Systems Analysis within the Faculty of Informatics, one of ten faculties in the University. As the study programme in Business and Applied Informatics, it was last accredited by the Lithuanian Centre for Quality Assessment in Higher Education (SKVC) in 2010 and then for a six-year period; in 2012 the title of the programme changed to Informatics to reflect greater attention to software systems.

The study programme is offered as a four-year full-time degree attracting some 240 credits (ECTS). Its structure reflects the liberal arts orientation of the institution, allowing students a certain latitude in the design of their own studies. The underlying degree is based on the three strands of applied informatics, business informatics and software systems. The Faculty sees this study programme as being unique in Lithuania (29) since it covers not just knowledge about informatics but it also covers information management issues.

In each of the 8 semesters, the basic study programme involves 800 hrs of student time; successful completion attracts 30 credits. The students were exploiting the liberal arts orientation of the institution to positive effect and they appreciated the informal atmosphere and close links with staff. In the view of review panel students were spending around the right expected amount of time on their studies (including formal classes and independent study time).

Changes had been made as a result of input from students and /or study partners: the system software strand had been introduced as a result of feedback from students; teaching methods in the programming class had been adjusted for similar reasons; likewise team work; a greater emphasis on applications was now a feature of the statistics course as a result of feedback. The review panel did have concerns about the percentage of students who were making returns via the questionnaires and this needed attention.

Graduates are expected to be equipped to work in the software field as analysts, designers, developers, testers, consultants and / or systems administrators in both the public and private sectors or to continue their studies with a Masters degree.

Both the alumni and the social partners met by the review panel spoke positively about the study programme and the graduates. They did point to some areas of possible improvement, e.g. analytic skills, presentation skills, but were generally very happy with the study programme.

V. GENERAL ASSESSMENT

The study programme Informatics (state code – 612I13003) at Vytautas Magnus University 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	4
2.	Curriculum design	3
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	19

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is exceptionally good.

Grupės vadovas: Team leader:	Prof. Dr. Andrew McGettrick
Grupės nariai: Team members:	Prof. Dr. Peeter Normak
	Prof. Dr. Jukka Paakki
	Mr. Tomas Urbonas
	Mr. Žygimantas Benetis

**VYTAUTO DIDŽIOJO UNIVERSITETO PIRMOSIOS PAKOPOS STUDIJŲ
PROGRAMOS *INFORMATIKA* (VALSTYBINIS KODAS – 612I13003) 2016-05-23
EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-113-3 IŠRAŠAS**

<...>

VI. APIBENDRINAMASIS ĮVERTINIMAS

Vytauto Didžiojo universiteto studijų programa *Informatika* (valstybinis kodas – 612I13003) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	4
2.	Programos sandara	3
3.	Personalas	3
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	Iš viso:	19

* 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

Šią informacijos inžinerijos bakalauro Informatikos studijų programą vykdo Informatikos fakulteto (vieno iš dešimties universiteto fakultetų) Taikomosios informatikos ir Sistemų analizės katedros. Verslo ir taikomosios informatikos studijų programą paskutinį kartą Lietuvos studijų kokybės vertinimo centras (SKVC) akreditavo 2010 m. šešerių metų laikotarpiui. 2012

m. programos pavadinimas buvo pakeistas į „Informatika“, kad atspindėtų didesnę programinės įrangos sistemoms skiriamą dėmesį.

Nuolatinių studijų programa dėstoma ketverius metus. Ją baigus suteikiamas bakalauro laipsnis. Norint baigti programą reikia surinkti 240 kreditų (ECTS). Jos struktūra atspindi institucijos laisvą požiūrį, kai studentams iki tam tikro lygio leidžiama susiplanuoti savo studijas. Laipsnis suteikiamas remiantis trimis pagrindinėmis sritimis: taikomąja informatika, verslo informatika ir programinės įrangos sistemomis. Fakulteto teigimu, ši studijų programa Lietuvoje unikali (29), nes joje ne tik suteikiama žinių apie informatiką, bet dėstomos ir informacijos valdymo temos.

Kiekvienam iš 8 pagrindinės studijų programos semestrai reikia skirti 800 valandų studijų laiko; norint sėkmingai baigti semestrą, reikia surinkti 30 kreditų. Studentai teigiamai išnaudojo institucijos laisvą požiūrį ir įvertino neformalią atmosferą bei glaudžius ryšius su personalu. Vertinimo grupės požiūriu, studentai skyrė apytiksliai tiek laiko savo studijoms, kiek reikia (įskaitant oficialių paskaitų ir savarankiško mokymosi laiką).

Išklausus studentų ir (arba) studijų partnerių nuomonę, buvo įvesta pokyčių: sisteminės programinės įrangos kryptis buvo pradėta dėstyti studentams išreiškus tokį pageidavimą, dėl panašių priežasčių buvo pakeisti ir programavimo paskaitų dėstymo metodai, taip pat darbas grupėse. Kaip buvo prašoma grįžtamo ryšio anketose, dėstant statistiką daugiau dėmesio pradėta skirti taikomosioms programoms. Vertinimo grupė buvo susirūpinusi, kad mažai studentų grąžindavo užpildytas grįžtamojo ryšio anketas ir į tai reikėjo atkreipti dėmesį.

Tikimasi, kad absolventai bus pasirengę dirbti programinės įrangos srityje analitikais, projektuotojais, kūrėjais, testuotojais, konsultantais ir (arba) sistemų administratoriais tiek viešajame, tiek privačiajame sektoriuje arba toliau tęs magistro studijas.

Buvę studentai ir socialiniai partneriai, kurie dalyvavo susitikimuose su vertinimo grupe, apie studijų programą ir absolventus atsiliepė labai teigiamai. Jie nurodė keletą sričių, kurias būtų galima tobulinti, pvz., analitinius gebėjimus.

<...>

III. REKOMENDACIJOS

1. Vertinimo grupės manymu, toliau tobulindamas šią studijų programą Studijų programos komitetas turėtų atsižvelgti į tai, kokį indėlį į ją įneša ne tik socialiniai partneriai ir studentai, bet ir plačioji akademinė bendruomenė. Iš dalies, šia rekomendacija skatinama pabrėžti institucijų lyderystės vaidmenį.

2. Reikėtų imtis žingsnių tiek institucijoje, tiek aukštesniuose Lietuvos mokslo sistemos lygiuose, kad tinkamas dėmesys būtų skiriamas kokybiškiems moksliniams tyrimams. Tai turėtų palengvinti Lietuvos mokslininkų integraciją į platesnę aukšto profilio mokslininkų bendruomenę.

3. Skatinti instituciją teikti prieigą prie populiariausių tarptautinių mokslinių publikacijų ir literatūros, kad personalas veiksmingiau dalyvautų tarptautinės bendruomenės veikloje.

4. Skatinti esamus ir būsimus universiteto dėstytojus įgyti mokslinius laipsnius pirmaujančiuose užsienio universitetuose.

5. Įvesti patrauklias ir veiksmingas mokslines atostogas visu etatu dirbantiems dėstytojams. (Pastaba. Ta pati rekomendacija buvo teikiama 2010 m. vertinimo išvadose.)

6. Labiau skatinti mokslininkus skelbti publikacijas aukšto lygio tarptautiniuose žurnaluose ir leidiniuose.

7. Studentų atstovas Studijų programos komitete turėtų būti Informatikos programos studentų organizacijos narys ir turėtų atstovauti šios organizacijos interesams.

8. Socialiniai partneriai turėtų būti informuoti apie savo atstovą Studijų programos komitete ir ši pareigybė turėtų būti skirta visų socialinių partnerių pozicijai atstovauti.

9. Studijų programos komitetas turėtų užtikrinti, kad specializacijos labiau skirtųsi viena nuo kitos ir labiau koncentruotųsi į pagrindinį dalyką.

10. Reikėtų imtis veiksmų norint užtikrinti, kad kur kas didesnė studentų dalis grąžintų anketas su klausimais apie studijų programą, kuriomis remdamasis Studijų programos komitetas galėtų priimti sprendimus.

11. Kadangi studentai neturi patogios erdvės bendram darbui, fakultetas turėtų sukurti bent kelias tokias erdves, į kurias būtų galima patekti be apribojimų. Be to, reikėtų plačiau informuoti apie galimybes naudotis esamomis patalpomis, procesas turėtų būti aiškus ir apibrėžtas.

12. Nors VDU turi prieigą prie įvairių duomenų bazių, studentai ir dėstytojai nurodė, kad reikėtų apsvarstyti galimybę pasirinkti daugiau duomenų bazių ir jiems suteikti prieigą prie jų.

13. Reikėtų peržiūrėti studijų turinį, kad būtų labiau pabrėžiami studentų analitiniai, pristatymų teikimo gebėjimai ir komandos formavimo įgūdžiai. Peržiūrint studijų turinį taip pat reikėtų įtraukti daugiau aktyvių programinės įrangos tobulinimo metodų, panaikinti pasikartojimus antrame kurse (susijusius su „Java“ programos dėstymu).

14. Vertėtų skirti ypatingą dėmesį įrodymams, kad rūpinamasi vertinimo kokybe, tam, kad išorės vertintojai galėtų įsitikinti, jog ši sritis valdoma atsakingai ir nuosekliai. Šis

procesas neturėtų skatinti kelti klausimų, atsakymus į kuriuos galima išmokti ar pasirinkti atsakymą iš kelių variantų, bet skatintų pateikti tokius klausimus, į kuriuos atsakant reiktų pritaikyti problemų sprendimo įgūdžius.

<...>

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

Vertėjos rekvizitai (vardas, pavardė, parašas)