



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Mykolo Romerio universitetas
STUDIJŲ PROGRAMOS VERSLO INFORMATIKA
(valstybinis kodas - 612I10006)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF BUSINESS INFORMATICS
(state code - 612I10006) STUDY PROGRAMME
at Mykolas Romeris University

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Verslo informatika</i>
Valstybinis kodas	612I10006
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Informatika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė – 3,5 metai; iššęstinė – 5 metai
Studijų programos apimtis kreditais	210 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Informatikos bakalauras
Studijų programos įregistravimo data	2008-02-22 Nr. ISAK-430

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Business Informatics</i>
State code	612I10006
Study area	Physical Sciences
Study field	Informatics
Type of the study programme	University studies
Study cycle	First
Study mode (length in years)	Full-time (3,5 years); Part-time (5 years)
Volume of the study programme in credits	210 ECTS
Degree and (or) professional qualifications awarded	Bachelor of Informatics
Date of registration of the study programme	2008-02-22, Nr. ISAK-430

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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 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	Extended version of Annex 2 (List of the teaching staff)

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

Mykolas Romeris University (MRU) was set up in 2004. More than 16000 students are enrolled at MRU, amongst them about 250 from abroad. MRU is the second largest university in Lithuania and offers study programmes in the study areas social sciences, physical sciences and humanities. The BI bachelor programme was accredited in 2008 and updated in March 2013. In

2015 the BI programme was shifted from the Faculty of Social Technologies to the Business and Media School (BMS), which is one of the six faculties of MRU. During their on-site visit the members of the evaluation panel learned that MRU also offers a master programme in business informatics. According to MRU's website the Business and Media School offers 7 different bachelor programmes and eight different master programmes in total (2 of the bachelor programmes and one master programme being from the study field of informatics).

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 07/04/2016.

- 1. Prof. Dr. Liz Bacon (team leader)** *University of Greenwich, Deputy Pro Vice-Chancellor, Faculty of Architecture, Computing and Humanities, Professor of Software Engineering United Kingdom of Great Britain and Northern Ireland.*
- 2. Prof. Dr. Helmar Burkhart**, *Basel University, Full Professor, Switzerland.*
- 3. Prof. Dr. Gerald Steinhardt**, *Vienna University of Technology, Full Professor, Austria.*
- 4. Mr. Vaidas Repečka**, *UAB Minatech Co-Founder, Director, Lithuania.*
- 5. Mr. Vytautas Mickevičius**, *PhD student of Informatics study programme, Vytautas Magnus University, Lithuania.*

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The study programme aims at educating computer science professionals who are well-versed in business information infrastructure issues, in business information systems and in organizing business management and informational processes by applying modern information and communication technology (SER p. 7). The objectives of the programme are influenced and motivated by European strategic programmes as well as by an expected future need for experts in the Lithuanian ICT sector (SER pp. 6f.). During the site visit the senior management and faculty administration staff told the evaluation panel that the design of the programme follows market demands for IT and entrepreneurship competences; one of the major goals is to enable students to develop their own business.

The programme aims and learning outcomes are published on the university's website (both in Lithuanian and in English), the students know them and are well aware of where to find them. The 23 learning outcomes correspond to 5 competencies (2 generic ones and three subject specific ones) that the students will achieve during their studies. However, the competences and learning outcomes are not consistent within the whole document. The SER does not make clear the difference/ consistency between section 2.1 (SER pp. 7f.) and section 2.2 (SER pp. 15f.) (and this did not become clear from discussions with the staff responsible for the preparation of the SER either).

Furthermore competences like modelling and abstract thinking as well as a general competency in systematically analysing problems ("analytical and critical thinking") or - as an outcome - the ability to apply a scientific approach in solving problems are missing. All of them would be expected from a study programme in the field of computer science located within a university. Another core competency that is not covered in the learning outcomes sufficiently, is understanding and improving organizational processes, which is one of the key capabilities of all graduates in the field of Business Informatics / Information Systems according to the ACM/AIS curriculum guidelines. Given the increasing importance of innovation it might also be advantageous to strengthen innovation related issues in the aims and learning outcomes. It is undoubtedly positive that the programme actually aims to teach innovation, this is, however, not reflected clearly enough in the programme learning outcomes. Moreover the programme aims do not reflect MRU's intention to qualify their students to continue further studies (e.g. master

programmes) or to support the rise to the challenge of life-long learning. The programme does deliver on this but it is necessary to make sure the documentation reflects this intention.

An important indicator for the achievement of learning outcomes are the bachelor theses: With regard to the theses, the students are doing quite good practical work. The discussion of their work, however, in a scientific context and the quality of referencing appropriate journal articles etc. varies. Some do this very well; others are very weak with few references primarily to software manuals and technical support material. This weakness does not appear to be reflected in the marks awarded to a thesis and it is an important criteria in marking. All theses need to be brought up to the same standard in order to meet international academic requirements.

When it comes to future plans the SER is not quite up-to-date, since it states that MRU plans to adapt and rename the programme “Information Systems and Innovation” to make it more attractive and to meet market needs better. As the evaluation panel learned during their site visit the current plans of the management are to redesign the programme with a focus on data analytics. Both directions would be advisable. The management, however, should make a clear decision with at least a mid-term perspective and not render themselves subject to short-term market needs and short-lived trends.

2.2. Curriculum design

The study programme comprises 210 ECTS (which is the minimum in Lithuania) and is designed to be completed within 7 semesters (for full time students). There are two tracks, an English one (which started in 2013) and a Lithuanian one; and in addition there is a special schedule for part-time students with a spreading of the 210 ECTS over 5 years (in Lithuanian only). The English track was set up in the wake of a cooperation project with Middlesex University in UK, which started in 2013 (with a preliminary term of contract till 2018). The curricula of the English track and the Lithuanian track are basically the same, although the subject courses are not necessarily taught by the same teachers.

The curriculum design meets the legal requirements and combines IT with business management subjects. Study subjects are spread evenly and the topics are not repetitive. According to the SER pp. 14f. the curriculum consists of the main study field (168 ECTS, including basic disciplines of informatics [28% of the study programme], special study subjects of informatics and information technology [20%], theoretical basics of informatics [8,5%], mathematics [8,5%], and alternatively selected study subjects [8,5%]); of general education subjects (8,5%); of general university elective subjects (2,8%) and of subjects from the law study field (5,7%). 174 ECTS

out of 210 ECTS are compulsory courses, 36 ECTS out of 210 ECTS are “optional courses” (which means that they are in fact compulsory but the students can choose these courses from two or a larger number of electives), a distribution that is reasonable for a bachelor programme.

Forms and methods of the teaching and learning process are satisfactory; this, too, applies to the distribution of contact hours and individual study hours in the full-time programme.

The Business Informatics bachelor programme at MRU is strong on the business side and it is interdisciplinary, which is also a strength of the programme. On the positive side it has also to be mentioned that some core informatics subjects were moved to the first year (e.g. Computer Architectures and Operation Systems, Theory of Algorithms, Databases and Fundamentals of Programming) in response to the last SKVS evaluation; whereas Data Structures and Algorithms remained in the 3rd semester.

However, the role of the course unit “Specialized Programming Languages” in the existing form as a compulsory course is difficult to comprehend, since it still focuses on microcontrollers. MRU management should consider either introducing other languages or making it an optional course, since microcontroller programming is not really core material for Business Informatics students. Furthermore the programme is lacking in topics like modern web technologies, HCI and responsive design, which are state-of-the-art in comparable study programmes. Mathematics in the first semester is an optional course, which means that students have to attend it but can choose between two different courses: Mathematical Analysis and Linear Algebra on the one hand and Contemporary Mathematics on the other hand. This is seen as disadvantageous by the evaluation panel since all students should be provided with the same foundations in mathematics. The curriculum, too, does neither sufficiently ensure that students engage with research activities nor does it secure that members of the teaching staff appropriately involve their students in this kind of activities. Alumni told the evaluation panel that they are not aware of having been involved in scientific research activities during their studies. Students mentioned and agreed upon the lack of motivation being the main reason for little research activity. Based on the small number of social partners the panel saw, the planned modernisation of the curriculum in terms of security and data analytics and modern technologies is welcome. Social partners commented on the combination of business and computing being a strength.

2.3. Teaching staff

According to Annex 2 the staff of the BI bachelor programme consists of 34 people: 9 professors, 8 associate professors, 5 lecturers with a PhD and 12 lecturers without PhD (6 of them being PhD students). However, the SER did not make it clear that one professor's primary affiliation is another university and he has only an hourly-based contract which also applies to one associate professor. 9 of the 17 lecturers are employed part-time (7 of them have an hourly-based contract, one is employed for 10 hours/week and one is employed for 20 hrs/week). 5 out of 17 lecturers have a PhD; 12 do not have a PhD. That means that in total 22 (out of 34) of the people teaching in this bachelor programme have a PhD and 12 do not have a PhD (extended version of Annex 2).

The educational experience in years averages 18.6 amongst the professors and associate professors (range from 6 to 32), 8.25 amongst the lecturers with PhD (range from 6 to 10) and 6 amongst the lecturers without PhD (range from 3 to 10; 7 out of 12 having an educational experience between 3 and 5 years) (extended version of Annex 2).

The members of the evaluation panel were concerned whether teaching staff with an hourly-based contract are available for students' questions to an appropriate extent. The teaching staff assured the panel members during the site visit that all teachers are sufficiently available for students' requests; in particular that the lecturers with an hourly-based contract can be contacted by students via email, and they answer quickly not only on the day of the week they do their teaching but throughout the whole week.

The information on the study subjects and their corresponding teachers, which MRU passed on to SKVC and to the expert panel (i.e. SER; the annexes; the extended version of annex 2, which the panel received during the site visit; and the response to the draft version of the evaluation report), was inconsistent (e.g. with regard to the subjects included in the study field, the correlation of teachers and subjects/ course units, the names, and the academic degrees of the teachers). Therefore the evaluation panel was unable to make a clear statement whether or not MRU satisfies the legal regulations, which require at least half of the subjects in the study field to be taught by scientists who have a scientific PhD. Using the most recent data provided after the review, and the most favourable scenario, the number of teachers with a PhD suggests that MRU meet the 50 % threshold however it is very close to the percentage required by the law meaning that the loss of very few staff could render them illegal. Therefore the number of staff with a PhD should be increased to ensure that MRU is well above the threshold for the whole

duration of programme and in both the English and the Lithuanian degree routes. Since this study programme is part of the informatics study field, the ratio of teachers with a PhD should especially be increased in the informatics and IT subjects (i.e. according to SER pp. 14f: basic disciplines of informatics, special study subjects of informatics and information technology, theoretical basics of informatics).

Looking at the professors with a full time contract, those in business dominate, whereas most of the computer science course units are taught by staff members employed with an hourly-based contract. This is not appropriate for a study programme in the informatics study field. Thus there should be a better balance between professors in the business and informatics areas.

Based on the sub-set of staff the members of the evaluation panel met, and possibly because of the diversity of the subject area covering maths, informatics and business, and the fact that two versions of the programme are run, one in Lithuanian and one in English which is validated by Middlesex University, the staff did not come across as a fully integrated team. The panel would encourage the faculty to set up mechanisms to enhance communication between the teaching staff. The panel understands that a joint board of studies has recently been set up to facilitate communication, however, given the programme is taught separately in both English and Lithuanian, where different staff teach the same course units but in a different language, the staff should be working together on a daily basis to ensure a consistent student experience and consistent outcomes for the students.

According to SER 2.3.4 (SER p. 18) the number of students currently enrolled for BI are 133 full time students and 14 part time students (which are exactly the same numbers reported in SER for the 2013 evaluation). Based on this information, there are 8.6 students per professor (including associate professors) or 4.3 students per staff member (professors and staff members calculated per capita). When visiting MRU the evaluation panel was provided with different figures: 47 full time students and 15 part time students (information given by a member of the staff responsible for the preparation of the SER). Based on this information, there are 3.7 students per professor (including associate professors) or 1.8 students per staff member (professors and staff members calculated per capita). SER describes a student/teacher ratio of 7:1 (SER p.18). All these figures indicate a quite generous students-to-staff ratio compared to international standards.

Given the reported age profile of the academic staff and the high number of lecturers with an hourly-based contract the staff base appears to be relative stable and secure. Nevertheless, it is very important to pay attention to high scientific standards when hiring new staff members.

In the past two years the number of incoming lecturers and scientists decreased to one per year (compared to 5 and 6 in the two years before) (SER p. 19), and it is not quite clear in which ways incoming visitors may contribute to the study programme.

Most of the professors and associated professors demonstrate international activities through their publications. Those who mainly focus on the Baltic area should be encouraged by the senior management and faculty administration staff to enhance their international scientific activities. The situation of the lecturers is different: Some of them seem not to be scientifically active, some have published internationally and some also focus their scientific work mainly on the Baltic area (or Lithuania). Following the argumentation of SER (p 17f) the research activities of the staff are, by and large, connected with the study programme.

One important indicator for the support of staff members' professional development, as well as for internationalization, is the participation of staff members in international conferences and long-term visits abroad, and the support they get by their university for doing this. During the site visit the panel was assured that staff members are encouraged by their university to participate in conferences and to stay abroad. The financial support primarily comes from external funds (Erasmus, projects). If there is no external money available, MRU provides a limited budget for supporting the participation in international conferences, etc. This financial support is often bound to the submission of papers, which makes sense as strategic incentive to foster international research and publication activities. According to SER (p. 19) three members of the teaching staff went abroad as outgoing lecturers in the past 4 years (2011-2015, that is 0,75 on average per year), where one of them went abroad 5 times in this time period. So the number of outgoing lecturers is not high and the distribution is rather uneven.

2.4. Facilities and learning resources

As the evaluation panel could see when visiting the facilities at MRU (classrooms, lecture halls, library, computer rooms, laboratories etc.) the premises for studies and the teaching and learning equipment are very good. The offices and buildings are well-equipped, the interior is modern and the furnishing is appropriate. The accessibility of premises as well as the support for handicapped people is good. By and large, there is a friendly and inspiring atmosphere. Free wireless network access is available via eduroam, so students can use internet resources and collaboration tools for their studies. Most of the information on the website is available in Lithuanian and in English.

IT equipment is good in quality and quantity, modern and appropriate for the training of business informatics students. Cooperation projects with companies contribute to the good IT equipment and to keeping it up-to-date.

The library is also well equipped and provides an inspirational environment for studying. Its opening hours (24 hours 7 days a week) are very user friendly. There are e.g. appealing group study rooms, which can be booked by student groups to do their project work together. Students have access to full text databases, but they do not have access to ACM Digital Library and IEEE Explore, two of the most relevant full text databases in the field of informatics. This is a considerable drawback, since free access to these digital libraries for students and staff members is international standard in the field of informatics.

MRU's networking with industry and their connections to start-ups are good. A modern remote building houses the Social Innovation Laboratories network, which could be set up with the support of EU-funding. Two of these seven laboratories are relevant to the business informatics programme of MRU: the Social Technologies Lab and the Creative & Digital Industries Lab. These laboratories have recently started their activities. They are a kind of incubator for start-ups and are an excellent instrument to foster technology transfer as well as cooperation between MRU and business.

The university has adequate arrangements for students practice. Alumni told the evaluation panel that they got offers from companies after their internship. It was mentioned by staff responsible for the SER that most of the students work during their studies, so employment is not an issue. Mostly students want to do their internship as part of their jobs because they do not want to earn less money during their internship.

2.5. Study process and students' performance assessment

The admission requirements are well-founded and based on legal requirements. They are accessible publically on the MRU website (SER pp. 25f.). During the admission period MRU has set up an special phone line to provide interested parties with additional information regarding the admission process.

The organisation of the study process does not fully ensure an adequate provision of the programme and the achievement of the intended learning outcome, since students are not sufficiently encouraged to participate in research. One of the recommendations of the 2013 evaluation report was to put more emphasis on promoting student engagement with research

activities. However, this research panel ascertained that students are still not especially lead to research and actively encouraged to participate in research activities. According to MRU, students may on the one hand participate in scientific conferences and “other scientific events” on site (it is unclear how often these happen and how many students engage with these events). On the other hand, according to the SER (pp. 11 and 17), research should be done in their bachelor theses in connection with their internships. However, as already mentioned, the quality of the bachelor theses varies with regard to discussing their work in a scientific context and referencing scientific literature. Especially the theses which mainly reference software manuals and technical support material do not demonstrate sufficient involvement of their authors in scientifically sound research activities. (More than 50% of the bachelor theses are supervised by lecturers without a PhD, and approx. half of these are supervised by lecturers whose primary affiliation is a company, so specifying minimum scientific qualifications (e.g. a PhD) for staff members supervising bachelor theses could be an efficient measure of quality enhancement for bachelor theses.) Furthermore annex 5 states that the Social Innovations Laboratory Network was created to provide opportunities for students to participate in research activities (in response to the last SKVC evaluation). This was also confirmed in discussions with MRU representatives. The social innovation lab network, however, does not appear to be a main instrument for involving students in research per se but rather for fostering cooperation between university and business and fostering technology transfer - which is very positive, but does not solve the research issue.

Students have the possibility to participate in student mobility programmes, although only few students took this chance (6 in 2012/13, 2 in 2013/14, 3 in 2014/15) (SER p. 30). This should definitely be improved. Students told the evaluation panel that they are fully aware of where to find the relevant information and that they are encouraged to go abroad by the university. Yet they hesitate to take advantage of these opportunities. Nevertheless, the university should increase their efforts in this respect (Erasmus, international summer schools).

Student support is widespread and is also good. The assessment system of students’ performance is clear and appropriate. Especially the assessment processes to authenticate student work submitted are very thorough. Students know the learning outcomes and also know where to find them. A drawback results from the fact that where different staff teach the same course units in the English and the Lithuanian tracks, they do not work together. So it is not guaranteed that all students learn the same content and are assessed according to the same criteria. This should be improved by establishing obligatory formal and informal meetings of the respective staff

members, who should work together to ensure consistent teaching content, assignments and assessment standards.

On the whole, the professional activities of the majority of the graduates meet the programme providers' expectations. It was mentioned by students and alumni that the students are given good opportunities to combine their studies with work, and finding a studies-related job (programmer, data analyst, IT manager) is not an issue. According to SER (31) more than 50% of full-time students have a job when finishing their bachelor studies. And most of the graduates have a job after having completed their bachelor studies; only a minority continues studying.

2.6. Programme management

Responsibilities for decisions and monitoring of the implementation of the programme are clearly allocated (although somewhat complicated and interlaced). There is a hierarchical structure of committees and responsible academic managers (Study Programme Committee, Faculty Council, Study Vice-Rector, Rectorate, Study Commission of the Senate, Senate) responsible for quality assurance and adequate provision of the programme (SER p. 33). All relevant stakeholders are involved in the process: teaching staff, students and employers/social partners. E.g. the Study Programme Committee consists of 9 teaching staff members, 2 representatives of social partners and 2 student representatives.

Main instruments for improving the bachelor programme at MRU are the constant evaluations of the quality of teaching by students (each time they have finished a course unit), the evaluation of the whole study programme by last year students and collecting the opinions of social partners. Another important factor of quality assurance as stated by MRU representatives is the cooperation with Middlesex University, since MRU has to meet the quality criteria of Middlesex University. These requirements however only applied to the English track. However, it did not become clear if this cooperation already had considerable impact on the programme design and realisation.

Although the representatives of MRU described the involvement of social partners as an important achievement, the indeed small number of social partners the evaluation panel met for an information exchange were unfamiliar with mechanisms for providing input to the curriculum. Students, however, reported that they can give feedback on the study programme and make suggestions or file complaints. Usually these suggestions and complaints are seized and lead to changes. If not, they can escalate the conflict to the upper hierarchical levels who regularly get at a solution.

The evaluation panel identified four main problem areas with regard to programme management that need to be resolved urgently. Firstly, the documents submitted for the current evaluation by MRU (i.e. SER; the annexes; the extended version of annex 2, which the evaluation panel received during the site visit; and the response to the draft version of the evaluation report) were inaccurate and contradictory. Secondly, MRU has reorganised several times recently. Whilst the staff members understand that this is sometimes necessary, the evaluation panel would urge stability for the staff going forward as continual reorganisations can be disruptive. In the current situation it is very important to ensure appropriately qualified staff (see 2.3 teaching staff) and to foster team working. Thirdly, it is equally important to ensure that there is a good balance between professors in the business and informatics area (currently professors in business dominate), all of them feeling responsible for research and teaching in business informatics. This is on the one hand appropriate for a study programme in the informatics study field, and on the other hand a prerequisite for acquiring research projects in business as well as informatics areas and thus being able to better involve students in research activities. Fourthly, as mentioned above the staff did not come across as a fully integrated team, not least because of the heterogeneity of the subject area covering informatics, mathematics and business, because of the two parallel tracks, the English one and the Lithuanian one, and because of the large number of staff members with an hourly-based contract. The evaluation panel would strongly encourage the faculty to set up mechanisms to enhance communication between the teaching staff beyond a joint board of studies, since the staff should be working together on a daily basis to ensure a consistent student experience and consistent outcomes for the students.

There are a lot of regulations and activities to evaluate the Business Informatics bachelor programme at MRU, and SER lists in addition an impressive number of quality assurance measures that are implemented, but not quite clear in which way these processes and measures are systematically utilized to improve and advance the study programme, and what the criteria are to draw conclusions and to take actions in certain directions.

With regard to external evaluations it can be said that some of the recommendations of the SKVC evaluation three years ago lead to modifications of the programme (e.g. communicating the study programme to high school students in order to attract more suitable students; re-defining some top-level competences; improvement of course descriptions; moving some computer science courses to the first year; adding some courses like "Corporate Finance" etc.; and setting up the Social Innovations Laboratory network), other recommendations of the evaluation at that time did not have consequences.

III. RECOMMENDATIONS

1. Improve the learning outcomes:
 - so that the competences and learning outcomes are consistent within all documents;
 - so that the development of analytical and scientific thinking is referred to more explicitly;
 - consider including an understanding of organisations and their dynamics, as proposed by ACM/AIS curriculum guidelines;
 - consider including more innovation related learning outcomes so that innovation is better reflected in the programme learning outcomes.
2. Revise the programme aims so that they reflect MRU's intention to prepare students for a master programme.
3. All bachelor theses need to be brought up to the same standard with regard to their authors' discussions of their work in a scientific context, referencing appropriate journal articles etc. to ensure that they are set in an appropriate scientific context. Furthermore, ensure that the grading of the theses meets international criteria and standards.
4. Improve the curriculum:
 - by including modern web technologies, HCI and responsive design etc. ;
 - by making mathematics in the first semester a compulsory course (without choice) instead of an „optional course“ to ensure it provides the same foundation for all students;
 - by adapting the course unit „specialised programming languages“ either by introducing other languages or by making it an optional course, since it still focuses on microcontrollers, and microcontroller programming is not really core material for Business Informatics students.
5. Put a lot more emphasis on student engagement with research activities and involve them with the research activities of the staff.
6. Improve the qualifications and the composition of the teaching staff to ensure learning outcomes and to meet legal requirements
 - by increasing the number of staff with a PhD (especially in the informatics and IT subjects);
 - by improving the balance between professors in the business and informatics areas, since currently professors in business dominate;
 - by ensuring that at least half of the subjects in the study field are taught by scientists who have a scientific PhD,
 - by encouraging teaching staff whose research activities are focussed on the Baltic area to enhance their international scientific activities;

7. Improve the communication between the teaching staff to ensure consistent delivery of learning outcomes
 - by setting up mechanisms to enhance communication between the teaching staff, who do not come across as a fully integrated team yet, beyond a joint board of studies, since the staff should be working together on a daily basis to ensure a consistent student experience and consistent outcomes for the students;
 - by establishing formal, and fostering informal, meetings of the teachers of the same course units in the English and the Lithuanian tracks, where different, who should work together to ensure consistent teaching content, assignments and assessment standards.
 - by establishing stability for the staff going forward (after a period of several reorganizations) in order to ensure an appropriately qualified staff base which meets the legal acts, who can focus on enhancing their core academic activities of research and teaching and team working.
8. Although this is a Business Informatics programme, students do take core informatics subjects and projects in that area so they should have access to the ACM and IEEE digital libraries as is considered the international standard for students in the informatics study field.
9. Increase the efforts to actively encourage students to participate in student mobility programmes (Erasmus, international summer schools).
10. Ensure to submit consistent and up-to-date documents when applying for evaluation.

IV. SUMMARY

The programme aims to educate computer science professionals with sound knowledge in business information infrastructure issues, business information systems and in the ICT-related organization of business management and informational processes. 23 learning outcomes of the programme refer to 5 corresponding competences (2 generic ones and 3 subject specific ones). However the learning outcomes need enhancing in some key areas: Analytical and critical thinking as well as the ability of a student to apply a scientific approach in solving problems, likewise an understanding of organizations and their dynamics is also missing from the learning outcomes. The programme aims do not reflect MRU's intention to prepare students for a masters programme. An important indicator for the achievement of learning outcomes are the bachelor theses: Their quality with regard to discussing the theses in a scientific context, to referring to scientific journals etc. varies within a wide range. That means that only some of the students achieve learning outcomes at an appropriate standard.

The curriculum offers English and Lithuanian routes through the degree and combines IT with business management subjects. The business side and its interdisciplinary character are a strength of the study programme; and according to social partners the combination of business and computing is well received by industry. In response to the previous evaluation, some core informatics subjects were moved to the first year. However some important topics are missing in the curriculum like modern web technologies, HCI and responsive design. Mathematics in the first year should be a compulsory course unit to ensure all students have the same foundation for their future studies. The emphasis put on microcontroller programming is not core material for Business Informatics students and should be reviewed. The curriculum, too, does not succeed in fostering students' engagement with research activities or involving them with the research activities of the staff.

Due to inconsistent information provided by MRU before, during and after the site visit, the evaluation panel cannot make a clear statement if MUR satisfies the legal regulations, which require at least half of the subjects in the study field to be taught by scientists who have a scientific PhD, however if the most favourable scenario is applied then the threshold is met. Nevertheless this is an area that requires strengthening. Amongst the professors, those in business dominate and most computer science subjects are taught by teachers paid on an hourly-based contract, which is not appropriate for a study programme in the informatics field. Most professors demonstrate international activities through their publications, however some only focus on the Baltic area. Not least due to the heterogeneity of the subject area covering the fields

of informatics, mathematics and business, the two parallel tracks (English and Lithuanian), and the large number of staff members with an hourly-based contract, the staff do not come across as a fully integrated team – which is identified as a specific weakness of the programme by the evaluation panel. The student-to-staff ratio is quite generous compared to international standards.

The facilities and learning resources are very good and the premises provide an inspiring and friendly atmosphere. Accessibility and support for handicapped students are good. The IT equipment is good in terms of quality and quantity. The library has very user-friendly opening hours and is well equipped – except for the missing free access to the ACM and IEEE digital library for both students and staff, which is considered an international standard in the informatics study field. Most of the information on the website is available in Lithuanian and in English. MRU's networking with industry and their connections to start-ups are good. The recently established Social Innovation Laboratories Network is an excellent instrument for fostering cooperation between MRU and enterprises, but does not currently appear to be an appropriate instrument for involving students in research activities.

Student support at MRU is widespread and appears to be good. The assessment system of students' performance is clear and appropriate. Especially the assessment processes to authenticate student work submitted are very thorough. Two weak points were identified: Different staff teach the same course units in the English and in the Lithuanian tracks, however, they do not always work together. So it is not ensured that all students learn the same content or that they are assessed according to the same criteria. Although it was recommended by the previous evaluation report from 2013 the evaluation panel observed that students are not especially engaged with the research or actively encouraged to participate in research activities.

There are a lot of regulations and activities to evaluate the study programme and to enhance quality, however, it is not clear in which way these processes and measures are systematically utilized to improve and advance the study programme. The main instruments for improving the study programme are collecting opinions of students, graduates and social partners. MRU sees the cooperation with Middlesex University, for the English track, also as an important factor of quality assurance, although it is not quite clear if this cooperation already had considerable impact on the programme design and realisation. The evaluation panel identified four main areas with regard to programme management which need to be resolved urgently: Firstly, the documents submitted for the current evaluation by MRU were inconsistent in many cases. There is a great need for improvement in future. Secondly, after a period of several reorganisations the staff need to have a period of stability that should be used to improve the qualifications of the

teaching staff and also to foster team work. Thirdly, to ensure a good balance between professors in the business and the informatics areas (currently professors in business dominate). Fourthly, the faculty should establish mechanisms to substantially enhance communication between the teaching staff to form a fully integrated team, that works together to ensure a consistent student experience and consistent outcomes for the students.

V. GENERAL ASSESSMENT

The study programme *Business Informatics* (state code – 612I10006) at Mykolas Romeris 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	2
2.	Curriculum design	3
3.	Teaching staff	2
4.	Facilities and learning resources	4
5.	Study process and students' performance assessment	3
6.	Programme management	2
	Total:	16

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

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

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

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

Grupės vadovas: Team leader:	Liz Bacon
Grupės nariai: Team members:	Helmar Burkhart
	Gerald Steinhardt
	Vaidas Repečka
	Vytautas Mickevičius

**MYKOLO ROMERIO UNIVERSITETO PIRMOSIOS PAKOPOS STUDIJŲ
PROGRAMOS VERSLO INFORMATIKA (VALSTYBINIS KODAS – 612I10006)
2016-06-23 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-148 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Mykolo Romerio universiteto studijų programa *Verslo informatika* (valstybinis kodas – 612I10006) vertinama **teigiamai**.

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

* 1 – Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)

2 – Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

3 – Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)

4 – Labai gerai (sritis yra išskirtinė)

<...>

IV. SANTRAUKA

Programos tikslas – rengti kompiuterių mokslo profesionalus, turinčius išsamių verslo informacijos infrastruktūros, verslo informacinių sistemų ir su IKT susijusių verslo vadybos bei informacinių procesų organizavimo žinių. 23 programos studijų rezultatai yra susiję su 5 atitinkamomis kompetencijomis (2 bendrojo pobūdžio ir 3 susijusiomis su konkrečiu dalyku). Tačiau studijų rezultatus reikia tobulinti keliose esminėse srityse: studijų rezultatuose neminimas analitinis ir kritinis mąstymas, studento gebėjimas taikyti mokslinius metodus sprendžiant problemas, taip pat organizacijų bei jų dinamikos suvokimas. Programos tikslai neatspindi MRU siekio parengti studentus magistro studijų programai. Svarbus studijų rezultatų pasiekimo rodiklis yra baigiamieji bakalauro darbai: labai skiriasi jų kokybė atsižvelgiant į baigiamųjų darbų mokslinį kontekstą, nuorodos į mokslinius leidinius ir kt. Tai reiškia, kad tik kai kurie studentai pasiekia tam tikro standarto studijų rezultatų.

Studijų turinys dėstomas anglų ir lietuvių kalbomis, jame sujungiami IT ir verslo vadybos dalykai. Verslo dalykai ir tarpdalykinis pobūdis yra programos stiprioji pusė; pasak socialinių partnerių, verslo ir kompiuterijos suderinimas šalies ūkio sektoriuje vertinamas teigiamai. Po ankstesnio vertinimo kai kurie pagrindiniai informatikos dalykai buvo perkelti į pirmuosius studijų metus. Tačiau studijų turinyje trūksta kelių svarbių temų, pavyzdžiui, modernių tinklo technologijų, HCI ir prisitaikančiojo dizaino. Pirmaisiais metais matematika turi būti privalomas dalykas, kad būtų galima užtikrinti, jog visiems studentams suteikiamas vienodas pagrindas jų būsimums studijoms. Mikrovaldiklių programavimas nėra Verslo informatikos studentų pagrindinis dalykas ir todėl jį reikėtų peržiūrėti. Taip pat studentai nėra skatinami atlikti mokslinių tyrimų veiklą ir neįtraukiami į personalo vykdomą mokslinę veiklą.

Dėl prieš ekspertų apsilankymą, jo metu ir po jo MRU pateiktos nenuoseklios informacijos vertinimo grupė negali aiškiai nustatyti, ar MRU atitinka teisinius reglamentus, pagal kuriuos reikalaujama, kad bent pusę studijų krypties dalykų turi dėstyti mokslininkai, įgiję mokslų daktaro laipsnį, tačiau, pritaikius patį palankiausių scenarijų, šis slenkstis peržengiamas. Nepaisant to, tai sritis, kurią reikia tobulinti. Profesoriai daugiausia dėsto verslo sritį, o kompiuterių mokslo studijų dalykus dėsto dėstytojai, kuriems mokamas valandinis atlygis. Tai netinkama informatikos srities studijų programai. Dauguma profesorių vykdo tarptautinę veiklą skelbdami publikacijas, tačiau kai kurie dirba tik Baltijos valstybių regione. Ypač dėl studijų dalykų srities, kuri apima informatiką, matematiką ir verslą, nevienalytiškumo, dėl to, kad studijų medžiaga teikiama paraleliai tiek anglų, tiek lietuvių kalba, ir dėl didelio personalo narių, kurie dirba pagal valandines darbo sutartis, skaičiaus personalas nėra visiškai integruota komanda, o tai vertinimo grupė traktuoja kaip išskirtinę programos silpnybę. Palyginti su tarptautiniais standartais, studentų ir personalo santykis yra gana geras.

Patalpos ir materialieji išteklių yra puikūs, patalpose sukuriama draugiška ir įkvepianti atmosfera. Neįgalūs studentai gali lengvai patekti į patalpas. Kokybės ir kiekybės atžvilgiu IT įranga yra gera. Bibliotekos darbo valandos tinkamos, jos įranga puiki, išskyrus tai, kad nei studentai, nei personalas negali nemokamai prisijungti prie ACM ir IEEE skaitmeninės bibliotekos, kas laikoma informatikos studijų srities tarptautiniu standartu. Dauguma informacijos svetainėje pateikiama lietuvių ir anglų kalbomis. MRU bendradarbiavimas su pramone ir jo ryšys su verslą pradedančiomis įmonėmis yra pakankamas. Neseniai įsteigtas Socialinių inovacijų laboratorijų tinklas yra puiki priemonė bendradarbiavimui tarp MRU ir įmonių vystyti, tačiau šiuo metu nėra tinkama priemonė, kuri skatintų studentus vykdyti mokslinių tyrimų veiklą.

Pagalba studentams MRU plačiai teikiama ir yra gana aukšto lygio. Studentų darbo vertinimo sistema aiški ir tinkama. Taikomas ypač kruopštus vertinimo procesas, siekiant nustatyti studento pateikto darbo autorystę. Nustatytos šios dvi silpnybės: tuos pačius studijų dalykus anglų ir lietuvių kalbomis dėsto skirtingi dėstytojai, tačiau jie ne visada bendradarbiauja. Todėl neužtikrinama, kad visi studentai išmoktų tą patį turinį arba kad jie būtų vertinami pagal tokius pačius kriterijus. Nors ankstesnėse 2013 m. vertinimo išvadose buvo rekomenduota, vertinimo grupė pastebėjo, kad studentai neypatingai įtraukiami į mokslinių tyrimų veiklą ir nėra aktyviai skatinami dalyvauti tiriamojame veikloje.

Studijų programa vertinama ir jos kokybė gerinama vadovaujantis daugeliu reglamentų ir vykdant įvairią veiklą, tačiau neaišku, kaip sistemiškai naudojami šie procesai ir priemonės studijų programai gerinti bei tobulinti. Pagrindinės priemonės, padedančios tobulinti studijų programą, yra studentų, absolventų ir socialinių partnerių nuomonės atsiklausimas. MRU nuomone, bendradarbiavimas su Midlsekso universitetu angliškai dėstomai programai yra svarbus kokybės užtikrinimo faktorius, nors nėra pakankamai aišku, ar toks bendradarbiavimas jau turėjo reikšmingą poveikį programos modeliui ir jo realizavimui. Vertinimo grupė išskyrė keturis pagrindinius klausimus, susijusius su programos vadyba, kuriuos reikia skubiai spręsti: pirma, dabartiniam vertinimui MRU pateikė daugeliu atvejų nenuoseklius dokumentus. Ateityje juos reikės nemažai tobulinti. Antra, po kelių reorganizacijų personalui reikia užtikrinti stabilumo laikotarpį, kuris turėtų būti išnaudojamas dėstytojų kvalifikacijai kelti ir komandiniam darbui įsisavinti. Trečia, reikia užtikrinti palankią pusiausvyrą tarp verslo ir informatikos dalykus dėstančių profesorių (šiuo metu yra daugiau profesorių, dėstančių verslą). Ketvirta, fakultetas turėtų nustatyti mechanizmus, kurie pakankamai pagerintų dėstančiojo personalo komunikavimą, kad būtų galima suformuoti darbo grupę, kuri dirbtų kartu siekdama užtikrinti nuoseklią studentų patirtį ir vienodus jų studijų rezultatus.

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III. REKOMENDACIJOS

1. Tobulinti studijų rezultatus:
 - tam, kad kompetentingumas ir studijų rezultatai visuose dokumentuose būtų nuoseklūs;
 - tam, kad analitinio ir mokslinio mąstymo plėtra būtų aiškiau išdėstyta;
 - apsvarstyti klausimą dėl organizacijų ir jų dinamikos suvokimo įtraukimo, kaip tai siūloma padaryti ACM/AIS studijų turinio gairėse;

- apsvaistyti klausimą dėl labiau į inovacijas orientuotų studijų rezultatų įtraukimo tam, kad inovacijos būtų geriau atspindėtos programos studijų rezultatuose.
2. Peržiūrėti programos tikslus ir į juos įtraukti MRU tikslą – parengti studentus magistro programai.
 3. Visi baigiamieji bakalauro darbai turi būti vertinami pagal tą patį standartą, atsižvelgiant į jų autorių diskusijas apie jų darbą moksliniame kontekste, atitinkamų leidinių straipsnių naudojimą ir kt. siekiant užtikrinti, kad darbai būtų parengti tinkamame moksliniame kontekste. Be to, užtikrinti, kad tokių baigiamųjų darbų vertinimas pažymiu atitiktų tarptautinius kriterijus ir standartus.
 4. Tobulinti studijų turinį:
 - įtraukiant modernias tinklo technologijas, HCI ir prisitaikantį dizainą bei kt.;
 - padarant matematikos dalyką privalomą (be galimybės pasirinkti) pirmąjį semestrą vietoj pasirenkamojo studijų dalyko, taip siekiant užtikrinti, kad visi studentai turėtų vienodą pagrindą;
 - pritaikant studijų dalyką „Specializuotos programavimo kalbos“, įvedant kitas kalbas arba padarant jį pasirenkamuoju studijų dalyku, kadangi daugiausiai dėmesio jį dėstant skiriama mikrovaldikliams, o mikrovaldiklių programavimas Verslo informatikos programos studentams nėra pagrindinė mokymosi medžiaga.
 5. Kur kas daugiau dėmesio skirti studentų mokslinės tiriamosios veiklos užsiėmimams ir įtraukti juos į personalo mokslinę veiklą.
 6. Kelti dėstytojų kvalifikaciją ir jų korpuso sudėtį, kad būtų užtikrinti studijų rezultatai ir būtų tenkinami teisiniai reikalavimai:
 - didinant personalo, turinčio daktaro laipsnį (ypač informatikos ir IT srityse), skaičių;
 - palaikant pusiausvyrą tarp dėstytojų, dėstančių verslo ir informatikos temas, kadangi šiuo metu dominuoja dėstytojai, susiję su verslo sritimi;
 - užtikrinant, kad bent pusė temų šioje studijų srityje būtų dėstoma mokslininkų, turinčių mokslų daktaro laipsnį;
 - skatinant dėstytojus, kurių mokslinė veikla koncentruojama Baltijos valstybėse, išplėsti savo mokslinę veiklą iki tarptautinio lygio.
 7. Tobulinti komunikaciją tarp dėstančiojo personalo, kad būtų užtikrinti nuoseklūs studijų rezultatai:
 - nustatant mechanizmus, gerinančius komunikaciją tarp dėstytojų, kurie dar nėra tapę visiškai integruotos darbo grupės nariais už jungtinės studijų tarybos ribų, nes personalas turėtų kasdien dirbti kartu, siekdamas užtikrinti nuoseklią studentų patirtį ir pasiekimus;
 - numatant formalius ir puoselėjant neformalius to paties studijų dalyko, dėstomo lietuvių ir

anglų kalbomis, dėstytojų susitikimus, jei tie dėstytojai skiriasi, kai dėstytojai turėtų dirbti kartu, siekdami užtikrinti nuoseklų dėstytojų turinį, užduotis ir vertinimo standartus;

– užtikrinant stabilumą personalui (po kelių reorganizacijų laikotarpio) tam, kad būtų sudaryta atitinkamai kvalifikuoto personalo, kuris atitinka teisinius reikalavimus, bazė, kad dėstytojai galėtų susitelkti į savo esminę mokslinę akademinę veiklą, dėstytojų ir darbą grupėje.

8. Nors tai yra Verslo informatikos studijų programa, studentai pasirenka pagrindinius informatikos dalykus ir vykdo projektus šioje srityje, todėl jiems turėtų būti suteikta prieiga prie ACM ir IEEE skaitmeninių bibliotekų, kas laikoma studentų, studijuojančių informatiką, tarptautiniu standartu.
9. Didinti pastangas aktyviai skatinti studentus dalyvauti studentų judumo programose (Erasmus, tarptautinėse vasaros stovyklose).
10. Užtikrinti, kad, siekiant gauti įvertinimą, būtų pateikiami atitinkami ir naujausi dokumentai.

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