SKVC

STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

VYTAUTO DIDŽIOJO UNIVERSITETO

TAIKOMOSIOS INFORMATIKOS **STUDIJŲ PROGRAMOS (621I13003)**

VERTINIMO IŠVADOS

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EVALUATION REPORT

OF *APPLIED INFORMATICS* **(621I13003)**

STUDY PROGRAMME

AT VYTAUTAS MAGNUS UNIVERSITY

Grupės vadovas: Team leader:	Prof. Philippos Pouyioutas
Grupės nariai: Team members:	Prof. Manfred Nagl
	Dr Eleni Berki
	Mr Adomas Svirskas
	Mr Justinas Petravičius

Išvados parengtos anglų kalba
Report language - English

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	***Taikomoji informatika***
Valstybinis kodas	621I13003
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Informatika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antroji
Studijų forma (trukmė metais)	Nuolatinė (2 m.)
Studijų programos apimtis kreditais	120 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Taikomosios informatikos magistras
Studijų programos įregistravimo data	Lietuvos Respublikos švietimo ir mokslo ministro 2007 m. vasario 19 d. įsakymu Nr. ISAK-225

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INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	***Applied Informatics***
State code	621I13003
Study area	Physical Sciences
Study field	Informatics
Kind of the study programme	University Studies
Study cycle	Second
Study mode (length in years)	Full-time (2 years)
Volume of the study programme in credits	120 ECTS
Degree and (or) professional qualifications awarded	Master of Applied Informatics
Date of registration of the study programme	19 of February 2007, under the order of the Minister of the Ministry of Education and Science of the Republic of Lithuania No. ISAK-225

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I. INTRODUCTION

The procedures of the external evaluation of the Vytautas Magnus University (hereafter, VMU) *Applied Informatics* Masters (2nd cycle) study programme were initiated by the Centre for Quality Assessment in Higher Education of Lithuania nominating the External Evaluation Peer Group (hereafter, EVPG) formed by the head, Professor Philippos Pouyioutas (Professor of Computer Science and Vice Rector, University of Nicosia, Cyprus), Professor Manfred Nagl (Emeritus Professor of Software Engineering, RWTH Aachen University, Germany), Dr Eleni Berki (Adjunct Professor of Software Quality and Formal Modelling, University of Tampere, Finland), Mr Adomas Svirskas (Freelance IT Consultant and Researcher, Institut Eurécom, Sophia-Antipolis, France), employer representative and Mr Justinas Petravičius (Vilnius Gediminas Technical University, Lithuania), student representative.

For the evaluation the following documents have been considered:

1. Law on Higher Education and Research of Republic of Lithuania;
2. Procedure of the External Evaluation and Accreditation of Study Programmes;
3. Methodology for Evaluation of Higher Education Study Programmes;
4. General Requirements of the Master Degree Study Programmes.

The basis for the evaluation of the study programme is the Self-Evaluation Report (hereafter, SER), prepared in 2013, its annexes, the main recommendation of the EVPG of the 2007 evaluation of the study programme and the response of the university, and the site visit of the EVPG to VMU on 5 November 2013. The SER report was prepared by senior staff of the Department of System Analysis of the Faculty of Informatics, which offers the programme, as well as staff from the Department of Applied Informatics of the Faculty of Informatics, a Masters student and a social partner. The SER gave some indications for strengths and weaknesses of the study programme. Therefore, there was some self-reflection addressed. The site visit incorporated all required meetings with different groups: senior administrative staff, the SER group, teaching staff, students of all years of study, graduates and employers. The EVPG evaluated various support services (classrooms, laboratories, library, computer facilities), examined students' final works, and various other material. After the EVPG discussions and additional preparations of conclusions and remarks, introductory general conclusions of the site visit were presented. After this site visit, EVPG met to discuss and agree the content of the report, which represents the EVPG's consensual views.

II. PROGRAMME ANALYSIS

1. *Programme aims and learning outcomes*

As stated in the SER, the aim of the *Applied Informatics* Masters study programme is to prepare broad-minded highly qualified information technology (IT) specialists, capable of:

a) *"accomplishing analysis of large amounts of different-purpose data (texts, signals, etc.) by applying adequate data mining methods and tools, and designing data analysis components for specialized IT products on modern computer platforms;*

b) *formalizing and analysing business and manufacturing processes by applying informatics methods, simulating the behaviour of complex systems, designing adaptive and intellectual systems;*

c) *performing R&D activities, resuming with doctoral studies in Lithuanian and foreign universities and research institutions."*

The aims of the study programme (readily available online[1]), while broadly in line with the notion of applied informatics (very vague notion per se), are basically limited to only two areas – data analysis and business process analysis. Notions of complex/adaptive/intellectual systems are too broad and vague to distinguish this study programme from the rest and make it attractive for potential candidates. The study programme aims need to be more focused and structured.

The name of the programme is *Applied Informatics*. That is quite unspecific and general. It sounds as if any topic from practical or applied informatics can be chosen or any combination of topics. Instead, the programme is a combination of (somehow arbitrarily selected) compulsory courses and specific fields (thematic areas): *combination of data analysis/ mining and business/ manufacturing processes*, with the possibility to specialize in (mostly) one of them. So, either the name for the whole programme should be re-visited or the programme should extend the possibilities for combinations in the future by also allowing other applied areas to be chosen and combined.

The study programme intended learning outcomes in general correspond to the programme aims and are in line with the requirements of the seventh level European Qualifications Framework. However, some of the programme intended learning outcomes are not properly supported by the courses (study subjects), for example:

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[1]Applied Informatics, VMU, http://www.vdu.lt/en/studies/degree-studies/master-ma/applied-informatics/

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a) "Knowledge of professional development of commercial and social IT products using modern computer platforms, and estimation of their demand, impact and relevance to users, enterprises or organizations." – such intended learning outcome is currently not supported by courses covering modern developments of the IT field, such as IT as a Service, Cloud Computing, Service Oriented Systems, etc. Without such courses, which are commonly present in many similar study programmes across the world, it is not possible to prepare specialists with the knowledge and skills mentioned in this learning outcome.

b) "Ability to apply data mining techniques for the analysis of diverse data (sound, ECG, EEG)." – this intended learning outcome is not supported by courses covering Big Data, High Performance Computing, application of Cloud Computing to data science field, etc. Such courses are essential and should be included into curricula in order to prepare skilled specialists with ability to apply data mining techniques for analysis of diverse data.

2. Curriculum design

The study programme was redesigned after the last accreditation in 2007 and, as it was mentioned before, has a specific profile – it is a *combination of data analysis/ mining and business/ manufacturing processes*. It consists of 120 ECTS credits: 72 ECTS credits are assigned to study field courses (thus satisfying the minimum required which is 60 ECTS credits); 18 ECTS credits are assigned to elective courses (less than the maximum allowed which is 30 ECTS credits); 30 ECTS credits are assigned to the writing and presentation of the final project/Masters thesis (satisfying the minimum required which is 30 ECTS credits). The courses are spread evenly across the semesters and their content is consistent with the type and level of studies. All courses are 6 ECTS credits each, except the thesis, which is 30 ECTS credits. Thus a student in order to complete the study programme has to take 15 courses plus the thesis. 5 courses are taken every semester during the first 3 semesters (i.e. 30 ECTS credits per semester), whereas the thesis is taken during the last (4th) semester. Thus all Bologna process requirements (min 90 ECTS credits for 2nd cycle study programmes and 30 ECTS credits per semester) are satisfied. Out of these 15 courses, as stated before in terms of ECTS credits, 12 courses are core and 3 courses are electives. Out of the 12 core courses, 3 courses are: *Research Project 1*, *Research Project 2* and *Research Project* 3, which together with the final project work (Masters thesis) provide for a *specialization* in the study programme. The assessment methods are more or less appropriate for the achievement of the intended programme and course learning outcomes.

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As it was stated, Master theses are prepared through the sequence of the 3 courses: *Research Project 1*, which serves for problem analysis and literature studies, *Research Project 2,* which provides for method development and solution design, and finally, *Research Project 3*, which provides for steps in the direction to the overall solution. The thesis itself then brings everything together, and makes the presentation and discussion. This model is kind of specific for Lithuania. It was argued that this model facilitates a successful end of Masters studies in the situation of "remote students", mostly working in companies. Theses are often done in cooperation with industry, the students not seldom start their first job in the company with which the thesis was produced. Although many theses have a practical background, it was argued that they also have to contribute somehow to research. On the other hand, working in parallel to preparing the thesis weakens the scientific level of theses, as the department argues.

In what follows, the EVPG provides remarks, suggestions, and recommendations to improve the study programme.

The research-orientation of the study programme can be improved and should be installed on a broad basis: the students should be aware what research is done in the faculty, the appreciation of research-orientation should be enlarged, as students in a research-oriented programme get a deeper technical education, more soft skills, more independence etc., which also upgrades the chances for a career in the long run. That appreciation is to be augmented also for staff members (in this case the environment has to be changed as well to allow for research in a broader sense and using more time) and for the employers. This is, especially, true for those students who later enrol in a PhD programme after they start working in industry. In order to achieve this goal, there should be much more freedom for the student to build up a personalized study plan by choosing and selecting more freely what is interesting for him/her and contributes to a specific personal profile. The EVPG found good examples of strength in research. This, however, should be the majority or even the standard. There is for example, a co-operation between VMU, Kaunas University of Technology, and Vilnius University in the form of a Masters Student Research Work Conference, which the EVPG found interesting.

It seems that also the consciousness of companies in that direction has to be enhanced. The EVPG heard from employers on one side that it is not important what degree a student has, and on the other side the contradicting statement that for specific tasks employers need a Master, or even a PhD. The EVPG also heard that industry likes to have people with a short education and at the same time there were complaints that the graduates miss some soft skills which are important for projects, especially those which contribute to the long-term success of a company.

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As the department has quite close relations to industry, there is a chance to change the mind of industrial people in the above-mentioned direction.

The internationalization of the study programme should be augmented as well. Examples for improvement are a better cooperation with institutions from abroad with respect to teaching and research, attracting more students and more staff from abroad, sending more Lithuanian students abroad, VMU staff going abroad for teaching and research (this seems to develop), the faculty and departments taking part in more international research projects, a bigger number of courses to be offered in English or even the whole programme to be offered in English for foreign students. The EVPG found some promising examples in these directions but not a broad appearance.

Finally, the EVPG found the structure of the programme unclear, the description of the study programme unattractive, and the aim not properly described.

1. The structure is not clear: what courses, which relations, contents of courses, names of courses and consistency with their contents, courses in which semester, where to choose electives, which standard profile is given and which individual profiles can be selected, some patterns for electives and specialization which are often used, etc.

2. The programme is not well described: as mentioned above the study programme gives the impression of being combined due to availability of some courses and not due to certain vision of a profile and collecting specifically courses in a proper order, which contribute to this profile.

3. The aim and the graduates' profile are not really made clear: even more, the aim, profile, competences of graduates, the attractiveness of the programme, and the chances and career perspectives of the graduates are not well described. In order for the programme to be competitive and to attract students it has to be much better. By reading the description in the SER and on the University website, the members of the EVPG were not convinced.

3. Staff

There are 15 teachers in this Master study programme and the student staff ratio seems to be very good taking into consideration the following information. The group size for the subjects' lectures is up to 20 students, while: i) for the seminars the group size is up to 20 and ii) during practical work/tutorial in computer laboratories the group size is 10-15, depending on the number of computers in the laboratory. Thus, students could have appropriate attention and teachers are not, currently, threatened by work overload.

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The average age of the 15 experienced staff that are occupied in the Master programme's activities is 50 years and rather demonstrates an even distribution: there are 4 teachers in the group of up to 40 years, 5 teachers of 40 to 50 years, 3 teachers 50 to 60 years and 3 teachers above 60 years. Moreover, the staff have carried out relevant to their taught subjects research or have an average of 10 years practical experience in the subject area. Last, the average teaching experience is 16 years.

In terms of related qualifications, an overall summary based on the Master programme's self-evaluation report, reveals the following: 93% of the teachers have a Doctor of Science degree (no less than 80% required); 87% of courses are taught by teachers who do research in the field of the taught subject (no less than 60% required); 37,5% of all subjects are taught by professors (no less than 20% required).

The staff of the study programme is in general homogeneous regarding nationality. The teaching staff members are quite dynamic and versatile in teaching and to some extent in their research. That fact alone makes the Masters study programme quite strong in offering traditional knowledge and potential R&D initiatives in the applied informatics subject fields. Obviously, the staff members are experienced and very competent in: i) integrating their teaching and research interests and ii) strengthening collaborative research and teaching activities (e.g. co-teaching, co-authoring) among them.

The number of women among the staff, at many levels, was positively noticed. Considering gender representation and equal opportunities' policies, this is a particular strength of the Masters study programme in comparison to other higher education institutes and similar IT and informatics study programmes in Lithuania and Europe.

Past and current students and social/industrial partners seem to have had a meaningful collaboration with the staff members and they work together in many interesting activities. Common projects in the spirit of life-long learning and research, while joining together academic knowledge and industrial experience is one of the highlights of this collaboration and the Masters study programme in general.

The staff members seem to enjoy the group and developmental culture. It seems that there is collaborative empowerment and participative innovation activities among the staff members in all managerial levels. For now the staff members also seem to be satisfied with their work conditions regarding task allocation, time arrangement for research and teaching duties, knowledge fit, ethical fit and flexible modes of work. Nevertheless, it seems to be a fear/tension

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for future increased teaching and perhaps duties' overload. Perhaps this fear is explained in the self-evaluation report (comment 50), outlining that by the fact that the teaching load for some teachers may become quite big, taking into account all the programmes they are involved, due to the rather small size of the faculty. The staff number, however, seems to be proportional to the current needs of delivering the taught subjects of the particular Masters in *Applied Informatics* study programme. The provisional plans for increasing the staff number and paying even more attention to the future student-staff ratio are positive steps towards alleviating any worries for the future among some staff members.

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

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

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

Internal feedback mechanisms and quality procedures among staff members could bring valuable exchanged feedback and other opinions for different teaching and learning methods and tools, research results and potential application/applicability, and other issues. Feedback through

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teaching/tutorial observations can enrich the lecturers' experiences, enhance the staff relations and increase the teaching quality.

An anonymous and detailed survey on staff's job satisfaction (an informal one was carried out in the past) could enrich all the above observations and could give the necessary data to the administrative and management staff for possible informed action for improvement and possible necessary changes or reforms, if needed.

4. Facilities and learning resources

Overall, the premises for studies, buildings, classrooms, laboratories, library and the teaching and learning equipment are in general more than adequate both in their quantity, size and quality. Classrooms are equipped with computers and projectors. Computer equipment and the network are sufficient, properly administered and secured. Internet connection is sufficient and wireless network is accessible through the premises. There is a diversity of equipment, technology platforms and software available for the students. The Informatics and Natural Sciences Library is adequate in terms of space and resources (hard copy and access to electronic material and databases). It is used as an alternative/supplementary to the Central Library and other departments' libraries.

Moodle is used for e-learning support and all teaching staff members use Moodle. The department has also developed an Intranet allowing internal communication, receiving grades, etc. Students reported that they are happy with the facilities and learning resources and the e-learning platform.

However the following observations were made:

1. The Library is open on weekdays at 08.00-17.00 and only once a month on a Saturday;
2. The computer labs are sometimes kept locked and one has to borrow a key from staff offices in order to gain access;
3. Some benches in some classrooms and labs are not very modern and comfortable;
4. Some computers in classrooms/computer labs were not very modern and running the latest versions of software;
5. In general, the number of sockets (in public spaces and classrooms) for students to power their laptops is not as big as one would expect.

To this end, the EVPG recommends that computers and software are continuously upgraded and be state-of-the-art, especially those resources dedicated for the Masters study programme.

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Certain labs should also be modernized in terms of the benches so as to provide ergonomic and comfortable access to the computers. Finally, the opening hours of the library should be extended both during weekdays but also on Saturdays and open access to the labs should be provided (if this is not possible for all labs, at least for some ones; for the rest a more modern and efficient way of gaining access should be provided. i.e. possibly gaining access through cards and definitely not though borrowing the key).

In order to promote and support Problem Based Learning (PBL) and collaborative work, there is a need to further improve the availability of space that support this kind of learning activities and also provide an adequate number of power sockets in public and learning spaces. Finally, in order to solicit feedback from all users, the Department could carry out an annual questionnaire requesting feedback with regards the facilities and resources.

5. *Study process and student assessment*

In general, the study process ensures an adequate provision of the programme and the achievement of the intended learning outcomes. The admission requirements are well founded. The development of clearer programme description in both print and electronic form (through the website) would help attracting more students. Offering the programme in English would also help in recruiting international students and create an international environment for home students. Finally the department could consider offering the programme in e-learning mode.

Students have opportunities to participate in student mobility programmes. However, as pointed out during the meetings, students of this programme do not participate in mobility programmes because the majority of them have jobs. So the EVPG recommends further promoting mobility programmes and encouraging students to participate in such schemes.

More effort needs to be put in order to further engage students in research activities. To this end, the teaching staff is encouraged to engage students in the research projects (through the thesis and/or relevant assessment work during their courses).

Most students work in companies in parallel to their studies, which causes some difficulties. There are some actions necessary: (a) students to be convinced to put their studies as a priority over their work or alternatively, (b) the department develops study plans, which are planned to run in parallel to students' work in industry (from their structural form, their schedule, their profile etc.). As there is a close relation between the department, the alumni, and the employers

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– stronger than at many places – there is the chance for, namely, to change the students' behaviour. This would also be useful for employers, if they think in a long-term time scale.

In general the department is recommended to enhance the students learning experience by promoting further a student-centred learning environment. To this end, Problem Based Learning (PBL), collaborative work, further and deeper exposure to research should be used. Furthermore, in order to improve the students' social and soft skills, as well as language, communication and presentation skills, students should be encouraged to participate in out-of-class social activities organised by the Department/Faculty/University.

6. Programme management

The main responsibility for the programme management and review is with the Study Programme Committee (SPC), which includes all relevant stakeholders, namely, staff, students, alumni and social partners/industry representatives, all very well qualified and appropriate for the committee's job. More precisely, the SPC includes highly ranked professors from more than one relevant department, alumni and industry representative and a Doctoral degree student.

The work of SPC is overseen and executed by the Faculty Board and the department respectively. Various other Units/Offices are also involved in this process, such as the Office of Academic Affairs, the Quality and Innovation Center, Vice Rector for Studies Office, Library and Office of Student Affairs. Thus a good hierarchical structure exists for ensuring proper programme management.

Programme management is regulated by the VMU Studies regulation and the VMU Study Programme Update Policy. These documents however are not available on-line or provided as annexes in the report, for one to check/comment on their content and on the adherence and compliance of SPC with the said regulations.

The programme seems however to be managed and reviewed with the involvement of all stakeholders, namely, teaching staff, students, alumni and employers, though the SER is quite brief and does not address adequately the various methods of getting and utilizing the feedback and suggestions of all stakeholders. Questionnaires for evaluating the courses and teachers and various fora for teachers, students, alumni, and industry/social partners are used to solicit feedback.

Programme assessment takes place every 3 years taking into consideration various data gathered by SPC from the VMU Quality and Innovation Center, which provides quality assurance

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services within the University. The findings and recommendations of the SPC are discussed by the Department and the Faculty Board and the Dean of the Faculty.

The following however were observed during the meetings with the various stakeholders:

1. The input of the students in the writing of the SER seems not to be representative of all the students' body. No formal meetings had taken place between the student representative and the students, in order to solicit feedback from the students and report back to them and keep them informed.

2. The staff reported that they had/have no input on the design of the student questionnaire which is centrally delivered and solicits input from the students with regards to the courses and teaching staff. Furthermore, the staff reported that the questionnaire is very general and does not address issues specific to the study programme.

3. Social partners seem active in the running of the programme (practicum, thesis defence, providing feedback and funding in terms of equipment and computers). The industry-academia link seems to be a strong aspect of the Department. However the process of engaging the social partners in programme management and review needs to be more formally documented and implemented.

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III. RECOMMENDATIONS

1. The Department is recommended to make the aims of the study programme more focused and structured and to refine its intended learning outcomes. Furthermore the profile, description and career prospects of the graduates of the programme should be made clearer.

2. The Department is recommended to update the curriculum by adding courses/topics addressing state-of-the-art developments, such as: High Performance Computing, Big Data, Cloud Computing, IT as a Service and Service Oriented Systems. This indeed is in line with the recommendation to either revisit the name of the programme, or provide more flexibility to the programme by adding more courses and increase the number of electives, allowing thus for personalized study plans according to the interests of the students and also making it more attractive to prospective students.

3. The Department is recommended to enhance the research-orientation of the programme in order to meet the vision of a research university. The staff needs to engage further in research and research projects and collaborations and engage the students more in their research work and projects.

4. The Department is recommended to enhance the internalization of the programme in order to attract more students. To this end, the staff needs to engage more in exchange visits for teaching and research, attract more visiting staff from abroad and offer more courses and the programme in English. The Department could also consider offering the programme in e-learning mode.

5. The Department is recommended to consider to further deploy motivating factors for the staff in terms of: i) providing more time availability for research and ii) securing more financial support for conferences, workshops and other similar activities' (e.g. pedagogic seminars) attendance and participation.

6. The Department is recommended to carry out regularly an anonymous and detailed survey on job satisfaction in order to further improve the work conditions of the staff and implement changes or reforms, if needed.

7. The Department is recommended to continuously upgrade their computers and software, replace some old computers and software and provide more comfortable and ergonomic sitting places in certain labs and classrooms. The Department is also recommended to provide open access to computer labs and extend the opening hours of the Library to evening on weekdays and every Saturday.

8. The Department is recommended to enhance the students learning experience by promoting further a student-centred learning environment, by further utilizing Problem

Based Learning (PBL) and collaborative work and engaging students further and deeper in the research activities of the staff.

9. The Department is recommended to encourage students to participate in out-of-class social activities organised by the Department/Faculty/University in order to improve their social and soft skills, as well as language, communication and presentation skills.

10. The Department is recommended to continue the improving of the quality assurance process and formalize the involvement of the stakeholders in receiving feedback and reporting back to them.

IV. SUMMARY

The study programme *Applied Informatics* provides quite good 2nd cycle qualification. The intended programme learning outcomes are in line with the requirements of the seventh level European Qualifications Framework and in general correspond to the programme aims. They need however, to be more clearly defined and expressed. Furthermore, some of the programme learning outcomes are not properly supported by the courses and do not address some modern state-of-the-art developments in the area of applied informatics, such as High Performance Computing, Big Data, Cloud Computing, IT as a Service and Service Oriented Systems. Thus, they need to be refined based on the above observations.

The study programme is structured and designed according to the formal and legal requirements, satisfying all Bologna process directives. The learning/assessment methods, as stated in the course syllabi, are appropriate for the achievement of both the intended programme learning outcomes, as well as the intended course learning outcomes. The curriculum of the programme should be enriched however, to include courses on state-of-the-art topics/areas as suggested in the previous paragraph. Having said this, the name of the programme is quite unspecific and general. Thus, either the name should be re-visited or the programme should extend the possibilities for combinations in the future by also allowing other applied areas to be chosen and combined. Once the name/programme are reviewed, clearer description of the programme should be developed. Finally, the internalization and research orientation of the programme should also be enhanced. The EVPG believes that all the aforementioned suggestions will make the programme more attractive and increase the number of students.

The staff of the programme is in general homogeneous regarding nationality, and have an even distribution regarding age. The teaching staff members are quite dynamic, experienced, competent and versatile in teaching and to some extent their research. They seem to enjoy the group and developmental culture. It also seems that there is collaborative empowerment and participative innovation activities among the staff members in all managerial levels. The Department is recommended to consider to further deploy motivating factors for the staff in terms of: i) providing more time availability for research and ii) securing more financial support for conferences, workshops and other similar activities' (e.g. pedagogic seminars) attendance and participation.

The premises for studies, buildings, classrooms, laboratories, library and the teaching and learning equipment are more than adequate both in their quantity, size and quality. The classrooms, library and Computer labs are all well equipped. Computer equipment and the

network are sufficient, properly administered and secured. Internet connection is sufficient and wireless network is accessible through the premises. There is a diversity of equipment, technology platforms and software available for the students. However there is room for improvements, especially with regards of modernizing facilities, upgrading both hardware and software and providing better access to computer labs and longer opening hours for the Library. The Department is thus recommended to keep modernizing and improving the facilities and resources and to provide additional appropriate space for collaborative learning activities.

The study process ensures an adequate provision of the programme and the achievement of the programme and course intended learning outcomes. The admission requirements are well founded. Students have opportunities to participate in student mobility programmes, although for various reasons they do not do so. More effort needs to be put in order to further engage students in research activities. To this end, the teaching staff is encouraged to engage students in the research projects (through the thesis and/or relevant assessment work during their courses). The department needs also to address the issue of studies/work priority as students who have a job, especially during their thesis work, have conflicting priorities. In general the department is recommended to enhance the students learning experience by promoting further the student-centred learning environment. To this end, Problem Based Learning (PBL) and collaborative work should be further promoted.

The programme is managed and reviewed according to standard and established methods and techniques that involve all stakeholders, namely, teaching staff, students, alumni and employers. However this needs to improve and to be carried out using more formal way. All stakeholders are very willing and need to get more actively involved in the review and improvement of the programme. Furthermore the process for receiving feedback from the stakeholders does not seem to be formally recorded, especially when it comes to informing back the stakeholders with regards to actions taken based on their feedback. The department is thus recommended to further develop the programme management and review process, as well as the quality assurance mechanisms and to have an auditable system in place.

V. GENERAL ASSESSMENT

The study programme *Applied Informatics* (state code – 621I13003) at Vytautas Magnus University is given **positive** evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	2
2.	Curriculum design	2
3.	Staff	3
4.	Material resources	3
5.	Study process and assessment (student admission, study process student support, achievement assessment)	3
6.	Programme management (programme administration, internal quality assurance)	3
	Total:	**16**

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

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

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

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

Grupės vadovas:
Team leader: Prof. Philippos Pouyioutas

Grupės nariai:
Team members: Prof. Manfred Nagl

Dr Eleni Berki

Mr Adomas Svirskas

Mr Justinas Petravičius

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VYTAUTO DIDŽIOJO UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ PROGRAMOS *TAIKOMOJI INFORMATIKA* (VALSTYBINIS KODAS – 621I13003) 2014-01-22 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-49 IŠRAŠAS

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Vytauto Didžiojo universiteto studijų programa *Taikomoji informatika* (valstybinis kodas – 621I13003) vertinama **teigiamai**.

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

Studijų programa *Taikomoji informatika* yra suteikiama ganėtinai gera antrosios studijų pakopos kvalifikacija. Programos numatomi studijų rezultatai atitinka Europos kvalifikacijų sąrangos septintąjį lygmenį, taip pat studijų programos tikslus. Vis dėlto numatomi studijų rezultatai turėtų būti aiškiau apibrėžti ir pateikiami. Be to, kai kurie programos numatomi studijų rezultatai neatsispindi studijų dalykuose ir neatitinka naujausių informacinių technologijų tendencijų taikomosios informatikos srityje: itin našūs kompiuteriai (angl. High Performance Computing), didieji duomenys (angl. Big data), debesų kompiuterija (angl. Cloud Computing), IT kaip paslauga ir į paslaugas orientuotos sistemos (angl. IT as a Service and Service Oriented Systems). Todėl juos reikėtų peržiūrėti atsižvelgiant į aukščiau paminėtus pastebėjimus.

Studijų programa sudaryta, vadovaujantis formaliais teisės aktų reikalavimais, atitinkančiais Bolonijos proceso dokumentus. Mokymosi / vertinimo metodai, kaip nurodyta studijų dalykų aprašuose, yra tinkami siekiant tiek programos, tiek studijų dalykų numatomų studijų rezultatų.

Studijų kokybės vertinimo centras

Nepaisant to, programos sandara turėtų būti patobulinta dėstant studijų dalykus modernia tematika, kaip siūloma ankstesnėje pastraipoje. Taip pat atkreiptinas dėmesys, kad studijų programos pavadinimas yra ganėtinai nekonkretus ir apibendrintas. Dėl šios priežasties arba studijų programos pavadinimas turėtų būti peržiūrėtas, arba programa turėtų suteikti galimybes įvairioms programos sandaros kombinacijoms, taip sudarant sąlygas pasirinkti kitas taikomąsias sritis. Peržiūrėjus studijų programos pavadinimą arba visą studijų programą, reikėtų parengti aiškesnį programos aprašą. Galiausiai, reikėtų didinti programos tarptautiškumą ir orientaciją į mokslinius tyrimus. Ekspertų grupė yra įsitikinusi, kad visi paminėti siūlymai turi įtakos didinant studijų programos patrauklumą ir atitinkamai studentų skaičių.

Studijų programos personalas, tautybės atžvilgiu, yra homogeniškas, taip pat pasižymi tolygiu pasiskirstymu vertinant iš amžiaus perspektyvos. Akademinis personalas apibūdintinas kaip ganėtinai dinamiškas, patyręs, kompetentingas ir įvairiapusis. Dėstytojai mėgaujasi grupinio darbo ir tobulėjimo kultūra. Taip pat atkreiptinas dėmesys, kad personalas turi galimybę bendradarbiauti ir dalyvauti inovacinėje veikloje visais vadovybės lygmenimis. Katedrai rekomenduojama apsvarstyti galimybę toliau skatinti personalo motyvaciją: i) skiriant daugiau laiko mokslinių tyrimų vykdymui ir ii) teikiant daugiau finansinės paramos dalyvavimui konferencijose, seminaruose ir kituose panašaus pobūdžio renginiuose (pvz., pedagoginiams seminarams).

Studijoms skirtos patalpos, pastatai, auditorijos, laboratorijos, biblioteka, taip pat dėstymo bei studijų įranga yra gera kiekybės, dydžio ir kokybės atžvilgiu. Auditorijos, biblioteka ir kompiuterių klasės yra gerai aprūpintos. Kompiuterinė įranga ir tinklas yra pakankami, tinkamai administruojami ir apsaugoti. Interneto ryšys yra pakankamas. Bevielis interneto ryšys veikia visose patalpose. Studentai gali naudotis įvairia įranga, taip pat ir programine bei technologinėmis platformomis. Vis dėlto vertinant materialiuosius išteklius pastebimos ir tobulintinos sritys, ypatingai patalpų modernizavimo, techninės ir programinės įrangos atnaujinimo bei suteikiamos laisvos prieigos prie kompiuterių klasių bei ilgesnių bibliotekos darbo valandų užtikrinimo atžvilgiais. Dėl to katedrai rekomenduojama tęsti patalpų ir išteklių modernizavimo ir tobulinimo procesą ir suteikti papildomas tinkamas patalpas bendradarbiavimu grindžiamoms studijoms.

Studijų procesas užtikrina tinkamą programos vykdymą ir numatomų studijų rezultatų pasiekimą. Priėmimo reikalavimai yra tinkamai nustatyti. Studentams yra suteikiamos galimybės dalyvauti judumo programose, tačiau dėl įvairių priežasčių studentai tokiose programose nedalyvauja. Turėtų būti dedama daugiau pastangų siekiant skatinti studentus dalyvauti mokslo

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tiriamojoje veikloje. Šiuo tikslu dėstytojai yra skatinami įtraukti studentus į mokslo tiriamuosius projektus (rengiant baigiamuosius darbus ir (arba) studijuojant atitinkamus studijų dalykus – kaip vertinimo dalį). Katedra taip pat turėtų spręsti studijų ir (arba) darbo prioriteto klausimą, kuomet studentai, kurie dirba (ypač baigiamojo darbo rengimo metu) susiduria su problema, kuriai veiklai skirti prioritetą. Apskritai, katedrai rekomenduojama plėtoti studentų mokymosi patirtį toliau kuriant į studentą orientuotą mokymosi aplinką, dėl šios priežasties studijų procese ir toliau turėtų būti skatinamas probleminis mokymasis ir darbas kartu.

Studijų programa yra vykdoma ir peržiūrima atsižvelgiant į dokumentuose nustatytus standartus, metodus bei priemones, kurie įtraukia visus socialinius dalininkus, t. y., dėstytojus, studentus, absolventus ir darbdavius. Vis dėlto šis procesas turėtų būti atliekamas formaliau. Anot socialinių dalininkų, jie dar aktyviau noriai prisidėtų prie studijų programos kokybės vertinimo bei gerinimo. Iš socialinių dalininkų gautas grįžtamasis ryšys nėra formaliai įtvirtinamas; suinteresuotosios šalys nėra informuojamos apie veiksmus, kurių buvo imtasi remiantis jų pateiktu grįžtamuoju ryšiu. Todėl katedrai rekomenduojama toliau tobulinti studijų programos vadybą ir vertinimo procesą, taip pat kokybės užtikrinimo mechanizmus ir garantuoti patikrinamos sistemos buvimą.

III. REKOMENDACIJOS

1. Katedrai rekomenduojama studijų programos tikslus apibrėžti labiau koncentruotai ir struktūrizuotai, taip pat peržiūrėti numatomų studijų rezultatų formuluotes (tobulinimo aspektas). Be to, turėtų būti aiškiau pateikiamas studijų programos profilis, studijų programos aprašymas ir absolventų karjeros galimybės.

2. Katedrai rekomenduojama atnaujinti studijų programos sandarą papildant ją studijų dalykais / temomis, susijusiomis su moderniomis technologijomis: itin našūs kompiuteriai (angl. High Performance Computing), didieji duomenys (angl. Big Data), debesų kompiuterija (angl. Cloud Computing), IT kaip paslauga ir į paslaugas orientuotos sistemos (angl. IT as a Service and Service Oriented Systems). Iš tiesų, minėtoji rekomendacija sietina su siūlymu dar kartą peržiūrėti studijų programos pavadinimą arba suteikti programai daugiau lankstumo dėstant daugiau studijų dalykų, padidinant laisvai pasirenkamų dalykų skaičių, taip sudarant galimybę studijuoti pagal individualius studijų planus, atsižvelgiant į studentų interesus, ir kartu paverčiant studijų programą patrauklesne potencialiems studentams.

Studijų kokybės vertinimo centras

3. Katedrai rekomenduojama programą labiau orientuoti į mokslo tiriamąją veiklą, kad ji derėtų su mokslinių tyrimų universiteto vizija. Todėl personalas turėtų toliau vykdyti mokslinius tyrimus ir dalyvauti mokslo tiriamuosiuose projektuose, bendradarbiauti ir labiau įtraukti studentus į minėtąją veiklą.

4. Siekiant didinti studentų skaičių, katedrai rekomenduojama labiau orientuotis į tarptautiškumą. Siekiant šio tikslo personalas turėtų aktyviau dalyvauti dėstymo ir mokslinių tyrimų mainų programose, reikėtų pritraukti daugiau dėstytojų atvykstančių iš užsienio ir dėstyti daugiau studijų dalykų ir (arba) visą studijų programą anglų kalba. Katedra taip pat galėtų apsvarstyti galimybę vykdyti studijų programą elektronine forma.

5. Katedrai rekomenduojama apsvarstyti galimybę toliau skatinti personalo motyvaciją: i) skiriant daugiau laiko mokslo tiriamajai veiklai ir ii) užtikrinant daugiau finansinės paramos dalyvavimui konferencijose, seminaruose ir kituose panašaus pobūdžio renginiuose (pvz., pedagoginiams seminarams).

6. Katedrai rekomenduojama reguliariai ir užtikrinant anonimiškumą atlikti išsamias apklausas apie darbuotojų pasitenkinimą darbu, kad būtų galima gerinti personalo darbo sąlygas ir, jei reikia, įgyvendinti pokyčius ar reformas.

7. Katedrai rekomenduojama nuolat atnaujinti kompiuterius ir programinę įrangą, pakeisti kai kuriuos senus kompiuterius ir programinę įrangą, taip pat kai kuriose konkrečiose laboratorijose ir auditorijose pasirūpinti patogesnėmis, ergonominėmis sėdimomis darbo vietomis. Katedrai taip pat rekomenduojama suteikti atvirą prieigą prie kompiuterių laboratorijų bei pratęsti bibliotekos darbo laiką – iki vakaro darbo dienomis ir kiekvieną šeštadienį.

8. Katedrai rekomenduojama didinti studentų mokymosi patirtį toliau plėtojant į studentą orientuotą mokymą, panaudojant probleminio mokymosi (angl. Problem Based Learning (PBL)) ir komandinio darbo metodus, taip pat labiau įtraukiant studentus į akademinio personalo vykdomą mokslo tiriamąją veiklą.

9. Katedrai rekomenduojama skatinti studentus užsiimti socialine veikla, kurią organizuoja katedra / fakultetas / universitetas tam, kad jie gerintų savo socialinius, kalbos, bendravimo, pristatymo ir kitus ne techninius įgūdžius.

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10. Katedrai rekomenduojama tęsti kokybės užtikrinimo proceso tobulinimą bei formalizuoti socialinių dalininkų dalyvavimą teikiant grįžtamąjį ryšį ir informuojant juos apie tai, kokie pakeitimai buvo atlikti.

<…>   _____

Paslaugos teikėjas patvirtina, jog yra susipažinęs su Lietuvos Respublikos baudžiamojo kodekso[2] 235 straipsnio, numatančio atsakomybę už melagingą ar žinomai neteisingai atliktą vertimą, reikalavimais.

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[2] Žin., 2002, Nr.37-1341.

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Studijų kokybės vertinimo centras