



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Šiaulių universiteto
STUDIJŲ PROGRAMOS INFORMATIKA
(valstybinis kodas - 621110007)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF INFORMATICS *(state code - 621110007)*
STUDY PROGRAMME
at Šiauliai University

Experts' team:

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Išvados parengtos anglų kalba
Report language – English

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Informatika</i>
Valstybinis kodas	621I10007
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Informatika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antroji
Studijų forma (trukmė metais)	Nuolatinė - 2 metai
Studijų programos apimtis kreditais	120 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Informatikos magistras
Studijų programos įregistravimo data	2001-08-02 Nr. 565

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	Informatics
State code	621I10007
Study area	Physical Sciences
Study field	Informatics
Type of the study programme	University studies
Study cycle	Second
Study mode (length in years)	Full-time (2)
Volume of the study programme in credits	120 ECTS
Degree and (or) professional qualifications awarded	Master of Informatics
Date of registration of the study programme	02/08/2001, Order of the Minister of Education and Science of LR No. 565

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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.	Thesis marking criteria
2.	Annex 3_2 Workload of teachers in master study programme Informatics in academic year 2015 –2016

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

Šiauliai University provides all three cycles of qualifications across a range of disciplines however it does not have a PhD provision in the field of informatics. The university has recently been reorganised and is now composed of: three faculties, 2 institutes, library, Department of Studies and other divisions. The main self-government and management authorities at the University are the Council, the Senate, the Rector, and Students’ Representative Office. All structural academic divisions are guided by the regulations approved by

ŠU Senate, ŠU Statute, ŠU Strategic Plan of Development for 2009-2020, Law on Higher Education and Research of the Republic of Lithuania, as well as by other legal documents of the Republic of Lithuania and the European Union.

The master study programme in Informatics is managed by the Informatics, Mathematics and E-Studies Institute of Šiauliai University (IMESI) which is composed of 3 departments: Software Systems, Computer Systems and Mathematics. It also includes the E. Studies Centre and Information Systems Department. All the departments of the Institute are now part of the Faculty of Technologies, Physical and Biomedicine Sciences. The two cycles of studies at the Institute are as follows: bachelor (Informatics, Information Technologies, Mathematics and Mathematics of Finances) and master (Informatics and Mathematics). The implementation of Informatics master study programme is monitored by the Department of Software Systems (former the Department of Informatics), has been assessed in 2010, evaluated in 2013, and accredited for a period of three years on each occasion. This is the third evaluation.

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 05/04/2016.

- 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. Vaidas Repečka**, *UAB Minatech Co-Founder, Director, Lithuania.*
- 5. Vytautas Mickevičius**, *PhD student of Informatics study programme, Vytautas Magnus University, Lithuania.*

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

Lithuania has high demands for IT professionals both at the Bachelor and Master level. Therefore it is important that study programs are successful both qualitatively and quantitatively. In this section we report on our qualitative findings.

The subject learning outcomes of this Master of Informatics study are satisfactory. They are published on the university website and cover five areas of activity as outlined in the SER p. 7-8: knowledge and its application, research abilities, special abilities, social abilities, and personal abilities. They also meet the needs of both the local and international IT labour markets, many local companies also being international organisations. The students have confirmed that they know where to find the table of learning outcomes.

The aims of the programme have been updated since the last review; the study programme's target is to be "able to conduct analytical research and apply the results in creating and developing the systems of distributed software" as well as "to apply the theories of informatics, new technologies of projecting and modelling of systems" (p 6). Table 1.2 (p 7) gives more in-depth information such as A4 (parallel and concurrent algorithms and systems), A5 (data and network security) A6 (data mining and data management technologies), and A9 (modern computer architecture). The review team supports these outcomes, which are part of a modern, general-purpose driven informatics education. However the panel did not find evidence to support the statement that "the distinctive feature of the programme is clear with a focus on optimization and data analysis methods for distributed systems." (p 9). The review team recommends following the approach of a broad direction of the study programme, not specialization. This will be further discussed in section 2.2.

In the previous 2013 review, the programme management had been asked to focus on data mining applications which is now treated as a specific subject: P175M102 Methods of Data Mining.

We have identified a deficiency regarding the implementation of the learning outcomes in the Master thesis. Whilst the practical work the students actually do for the thesis appears to be appropriate, the analytical parts of their work (as evidenced by the written theses reports) are too short and lack depth. The students are also not setting their work in an appropriate scientific context and referencing relevant academic and scientific literature. Most theses reports tend to cite software guides which have helped the students solve particular practical problems during the software development process and not academic journals, and this needs to change in order to meet

international standards. As a result of these two issues, the review team felt that the marking of the theses were too high. The 2013 evaluation recommendation "Quality of master theses need substantial improvement" still holds. One area of improvement is to encourage more master students to use English as thesis language as it would improve publication opportunities and enhance international visibility. So far, a few Master students publish work but mostly only in the local University Journal.

2.2. Curriculum design

The curriculum meets the Lithuanian legal acts. For example, the programme is 120 ECTS credits in total spread over 2 years' full-time study. In the first three semesters, 4 study field subjects are taught (5 being the maximum required), all subjects have 6 ECTS credits (3 being the minimum required). The Master thesis is 30 credits, which meets the minimum threshold required (25% out of the 120 ECTS in total).

The subjects identified for each year of the study programme are appropriate and in general the curriculum meets the learning outcomes as defined. However, the review team as well as employers interviewed suggest that a more general computer science Master degree is more useful to reduce the risk of specialising in an area no longer relevant. While the SER team assesses the programme design as "perfectly implements the orientation to the application of the methods of the optimization and data analysis for distributed systems" (p 11), the review team (like the 2013 evaluation team) assesses the defended specialization as weak.

The programme design must also be discussed in the light of the number of students. The number of graduates (p 23) is rather small (4 in 2014, 6 in 2015), and both the review panel and the employers felt that a broader computer science education has more potential to change this.

A range of teaching methods are employed on the programme including lectures, self-study, group work, cases analysis, and practical laboratory work. Teaching and learning is supported through the Moodle Virtual Learning Environment and includes the use of modern technologies such as video conferencing with Adobe Connect, which supports distance learning delivery. An example of good practice is the annual meeting in March with social partners (employers, alumni etc.), students and managers to discuss curriculum issues and plan for changes, in addition to more ad hoc conversations throughout the academic year. This formal meeting allows all stakeholders to hear each other's thoughts and debate compromise solutions where appropriate which is good. An example of changes which have led to updates in the curriculum, at the suggestion of employers,

was the redesign of a compulsory study subject (now: Modern Software Development Methods) and a new elective subject of the third semester (Business Systems Models and Design).

The ACM/IEEE Curriculum Guidelines from 2013 (<http://www.acm.org/education/CS2013-final-report.pdf>) introduced new knowledge areas. For example the basics of concurrency and parallelism should now be taught at the Bachelor level ("*Understanding parallel processing is becoming increasingly important for computer science majors and learning such models early on can give students more practice in this arena.*"). If our recommendations given in the evaluation report of the Bachelor programme are followed, then the subject P175M454 (Concurrent Programming) for instance could be updated. In addition to the shift of material from the master to the bachelor level, the list of languages discussed requires modernization (for instance ADA is of no relevance today; topic 7 in P175M454). Another course P175M153 (Distributed Software Design) seems to be too focused on a specific tool (aka Lotus Domino).

Another area for improvement is the topic of security. Whilst it is referred to in various contexts in the learning outcomes, the Programme Study Committee may find it useful to refer to European accreditation recommendations on security content for non-security specialist informatics degrees www.eqanie.eu/media/cybersecurity-principles-learning-outcomes-whitepaper.pdf. Although aimed at the bachelor level, it can also be useful at masters given students may not have gained all this knowledge in their bachelor degree.

Finally, as stated above, the content and reports of the Master thesis are weak and need to be improved. Practical work as part of a Master thesis is good, as it demonstrates the level of achievement of a student at the end of their degree. However, it should be documented more fully and set within an appropriate scientific context and this criteria should be taken into account when awarding the final grade for the thesis. Embedding student thesis work in the research of the staff more fully should help raise standards. It is noted that the institution does not have a PhD programme which would also help however, it has begun research cooperation within a cluster of about 4 institutions and there may be potential links there which could further support and help raise the standards of the theses.

2.3. Teaching staff

According to annex 2_1 there have been 9 teachers active on the programme in 2015-16 and the staff base is stable (only 2 changes compared to 2012). When discussing the ratio between the number of teachers and the number of students, a slightly different number of teachers (7 teachers)

has been reported for 2015-16 (Table 3.1). The SER claims an improvement of the cost-effectiveness of the programme as the student to teacher number has increased. A ratio of 12:7 is favourable for students, but it cannot be considered cost-effective as it is far away of government recommendation (13:1).

Permanent teachers give the majority of master courses. This could be approved only after the site visit because Annex 2_3 was forgotten in the SER and had to be requested later. Remark: The task of the review team was slowed down by such inaccuracies and omissions in the SER, whose overall presentation is considered to be unsatisfactory.

100% of the volume of study subjects are taught by scientists (Doktor or Doctor Habilitatus), which nicely fulfils the legal requirement of 80% teaching with a scientific degree. 10 out of 23 lectured subjects are given by scientists having a Professor degree, which again clearly fulfils another legal requirement.

Whilst the staff formally teaching on the study programme meet the Lithuanian legal requirements and are adequate to support the learning outcomes of the programme, the team felt that the research activities could be more extensive. Only a few staff members participate in international conferences, and the majority of scientific activities listed in Annex 2.2 were only in *Šiauliai* or other Lithuanian sites. It was noted that academic staff have some allocated time for research activities which is good and also that the amount of research time awarded to a member of staff could be varied at the discretion of the Head of Department. Some staff appear to have fairly high teaching loads and are not research active (based on the lack of a publication listed in their CVs). It was noted that the university had set up a research institute in the past year and in principle this is very welcome. Whilst it is still early days for the institute, the panel was concerned about the disconnect between this new research institute and the teaching, and the risk that it may remove existing research from the faculty, thus reducing the potential to expose students to leading edge research which is important at the bachelor level. If it is possible for the research institute staff to remain in the faculty, and for a virtual institute for multidisciplinary work and bidding to be formed, then this may be a better solution. If not, then the panel would urge the university to find mechanisms to ensure that staff in the research institute retain strong links with both faculty staff and students. As has been identified in a previous evaluation, the panel would also like to encourage the academic staff to enhance their English skills given so much of the scientific literature and many international conferences and online webinars etc. are in English, they may be missing out. From the Annex 1 Subject descriptions we have seen that both Lithuanian and English (Russian rarely) are used as teaching languages. In the Master courses the usage of English should be accentuated.

Staff development within the faculty and university is well supported. Sometimes project funding is used however there are mechanisms within the university and the faculty for staff to request development and these requests are supported the vast majority of the time. In terms of mobility, staff have the opportunity for travel under the Erasmus+ scheme. 20-30% of academic staff from the master programme regularly travel abroad using these funds. However, it was noted that no foreign academic staff visited the university to participate in the study programme.

2.4. Facilities and learning resources

The review panel was given a tour of the facilities and learning resources. All classrooms were fully functional, have projectors for presentations and met the requirements for a learning environment however the review team felt that the atmosphere in some rooms did not provide an inspiring educational experience. There are a range of different sized classrooms, the largest having a capacity of 80 seats and two classrooms have the capacity to record live lectures for streaming and recording purposes. The institution also has a modern hall which has the capacity to provide simultaneous translation in 3 languages if needed. 12 lecture rooms and laboratories are reserved for informatics students and are shared at the bachelor and master level.

The university provides the same software on all machines through the use of virtual servers. They also provide all students with licensed software for their own laptops. All classrooms have access to generic software and teachers can access subject discipline software in addition. Some of the hardware however is rather old, there were a small number of labs with machines from 2007 and 2010. Whilst in principle this need not necessarily be an issue if the machines are used as dumb terminals, it was clear from student feedback that the speed of the computer systems was an issue for them and this is a significant problem which needs addressing urgently. In terms of the process of upgrading the software, teachers submit their requirements for the following year, a list is produced which is then reconciled in a discussion with all teachers. A good range of specialist IT facilities exist, for example there is an isolated network for students to experiment with Cisco networks.

The library is very modern and was built in 2008. It is open to the public as well as students however the public cannot remove books which is good as this ensures they are available for staff and students which is the primary purpose of the library. The collections contain about half a million items and provide access to 25 databases, in addition to other open access resources, is provided for staff and students. It was however noted that the collections currently do not provide

access to the ACM and IEEE digital libraries and this was noted in the last report. These digital libraries are considered core to the informatics field however it was understood that negotiations to restore these works to the library were well underway and expected to become available in May 2016. The library resources are provided in a range of languages, about 35-40% are in English, some are in Russian, and the remainder in Lithuanian. The policy, which the review team support, is to purchase online books and journals where possible as this provides more flexible access to staff and students. Within the library there is a general reading room where books cannot be removed. The university also provide some small individual working rooms to provide a quiet area for staff and some students to work, in addition to group working rooms for students. The library also provides childcare facilities for staff and students who can leave their children for up to 4 hours to attend classes/ work.

2.5. Study process and students' performance assessment

The study programme is well organised and clear information is provided to students about their study plans. The level required for admission to the programme is appropriate and publicly available. The number of students from 2010-2015 has been stable but consistently rather low (8-12 students). The drop-out rate differs over the years. While it was substantial in years 2010-2012 (25%) and 2013-2015 (43%), it was zero in years 2011-2013 and 2012-2014. Main reasons for drop-outs are family circumstances (p 19).

Students were extremely positive about their experience such as the teacher support, including out-of-hours help from both full-time and part-time staff, and the quality of the teaching and extra-curricular activities. Apart from the speed of the hardware they were very happy with the resources available to them. Students experience a good range of assessments and are provided with an assessment schedule, criteria for grading assessments and prompt feedback on their work etc. They also confirmed that staff are very rigorous in authenticating their work through vivas etc. The institution has made good progress in addressing the distance learning problems raised in the last review, investing in Moodle, and helping staff to develop their pedagogic skills in this area including the use of technology for teaching such as Adobe Connect. The university is very experienced in distance learning delivery and according to the SER (p. 14) the complete master programme can be studied in distant mode.

In terms of mobility, students have the opportunity for travel under the Erasmus+ scheme. In the years 2013-2016 6 students have participated in mobility programs with Greece and Czech Republic. 4 incoming students (India, Sri Lanka, Ukraine) have been welcome since spring semester 2014 (page 19-20 in SER). Students expressed a view that they would like a wider range

of countries and institutions to choose from in terms of Erasmus mobility and, both the faculty and university should devote some resource to expanding Erasmus networks.

Whilst students have some opportunities to participate in research activities, these are currently limited and should be extended, particularly with staff in the research institute.

For the last three years employer demand for the students is high. Graduate employment is satisfactory as the duration of work search is 1-3 months only (p 23 / topic 115). Students are working locally, in other cities nationally and in international companies, in a range of sectors such as data centres and in the banking industry.

2.6. Programme management

The university has a good and effective quality management. The quality procedures for the management of the study programmes are agreed by the university and assured at four levels: the university level, faculty level, department level and the study programme level. At programme level, there is a committee which takes oversight of the programme and every March meets with all the stakeholders i.e. staff, social partners (alumni and employers), students and managers and all parties felt they had adequate input to the programmes, an example being enhanced teaching of security as suggested by one of the employers. The output is an action plan which is then published on the web and implemented.

Students are asked for feedback at the end of each semester and the issues are being fed into the study programme committee for debate. Students do not however have to wait for formal mechanisms to provide feedback, they are in a constant informal dialogue with staff. In addition the Dean made it clear he is very keen to help and will always speak directly to students if useful.

Our major concern is the lack of a visible informatics research. Research activities for master-level teaching staff are essential in order to educate and guide students in modern computer science. Programme management must eventually trigger an informatics research strategy and set up better incentives for staff to establish more externally funded research and development projects. A particular chance for improvement is to review the interaction with the new research institute to ensure links to master-level staff and master students are not lost.

Some of the recommendations from the 2013 have been implemented for example, the Moodle optimisation, formal procedures for getting feedback from students and a reduction in the subject

main references to a reasonable size however there are some on-going issues that have yet to be addressed. These are: access to ACM/IEEE digital libraries which is in hand, actions to increase number of students, and better Erasmus exchange opportunities for master students.

III. RECOMMENDATIONS

1. Review the standards for the master theses to ensure that work is set in an appropriate scientific context.
2. Ensure that there are strong links between the new research institute and the faculty staff and students, and that there are opportunities to collaborate with the research cluster set up with other universities.
3. Upgrade the hardware and/or optimize the software configuration management to provide sufficient speed of access to software for students.
4. Renew full text access to ACM and IEEE digital libraries.
5. Ask staff and students which countries they prefer for a potential Erasmus exchange and try to increase the number and variety of Erasmus partners..
6. Adapt learning outcomes and curriculum with the goal of establishing a broader, modern study programme (reduced specialization).
7. Review the security content in core subjects.
8. Implement more formal mechanisms to ensure teachers share best practice and discuss standards for teaching, and the setting / marking of assessments.
9. Establish better marketing initiatives to increase the number of master students.

IV. SUMMARY

The Informatics study programme provides students with a grounding in traditional computer science topics and the learning outcomes are appropriate for the programme and subjects as defined and have a sufficient breadth across the field of computer science. Learning outcomes are publicly available and meet the needs of both international and local IT markets however the implementation of the thesis learning outcomes are not at the required standard.

In terms of the content the programme, overall it is suitable for the field of study however, it would be strengthened by the inclusion of more security and legal issues in the core subjects, and the masters theses should provide more evidence that the practical work undertaken has been thoroughly evaluated in a scientific/ academic context, in accordance with international standards. The main area for improvement is the implementation and grading of the masters thesis learning outcomes.

The staff are well qualified and the department has a good but cost-intensive student-staff ratio which enables them to provide good academic and personal support to students. The university has set up a new multidisciplinary research centre in the past year which is an excellent initiative. However, there is a risk that these research staff may become disconnected from the faculty and the students, so mechanisms to foster integration and joint working are strongly encouraged. The English abilities of both the staff and students should be further strengthened to ensure they are at a sufficient level to enable access scientific literature and international conferences etc. In the Master courses the usage of English as teaching language should be accentuated.

In terms of resources, the library is very good with a good range of facilities, reading rooms, small rooms for individual and group work and childcare facilities. The only missing items are access to the ACM/IEEE Digital Libraries which the university is already renegotiating to purchase. In terms of hardware and software, there is a good range and includes several specialist labs which are available to students. Virtualised software is used to provide a consistent experience across the campus and for use on students' personal laptops. There is however an urgent need to upgrade the campus hardware as the speed is insufficient.

Students are provided with very thorough and complete information on their study process and student performance is good. The Assessment process is managed well with a good variety of assessment types being utilised. Students receive clear specifications, grading criteria and timely

feedback. The processes used to authenticate authorship of student work were noted as very rigorous. The assessment process could however be improved through enhanced discussion between staff, regarding the setting and marking of assessments, in order to ensure consistent standards and marking of student work.

Overall the programme is managed well, there are satisfactory procedures in place for reviewing the content and a formalised process for gathering input from all stakeholders such as alumni and employers, and the students. Responses are documented and published. However, programme management must eventually trigger an informatics research strategy and set up better incentives for staff to establish more externally funded research and development projects. A particular chance for improvement is to review the interaction with the new research institute to ensure links to master-level staff and master students are not lost.

V. GENERAL ASSESSMENT

The study programme *Informatics* (state code – 621I10007) at Šiauliai 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	2
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	2
	Total:	15

*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

**ŠIAULIŲ UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ PROGRAMOS
INFORMATIKA (VALSTYBINIS KODAS – 621I10007)
2016-06-07 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-135 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Šiaulių universiteto studijų programa *Informatika* (valstybinis kodas – 621I10007) 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	2
	Iš viso:	15

* 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

Informatikos studijų programa suteikia studentams pagrindą tradicinio kompiuterių mokslo temomis, o studijų rezultatai atitinka programą ir apibrėžtus studijų dalykus, taip pat pakankamai plačiai apima kompiuterijos mokslo sritį. Studijų rezultatai skelbiami viešai, jie atitinka tiek tarptautinės, tiek vietos IT rinkų poreikius, tačiau baigiamųjų darbų įgyvendinimo studijų rezultatai neatitinka nustatytų standartų.

Kalbant apie studijų programos turinį, bendrai jis yra tinkamas šiai studijų kryptčiai, tačiau pagrindiniai jo dalykai galėtų būti papildyti apsaugos ir teisės temomis, o baigiamuosiuose magistro darbuose turėtų būti teikiama daugiau įrodymų, kad atliktas praktinis darbas buvo atidžiai įvertintas moksliniame ar akademiname kontekste pagal tarptautinius standartus. Pagrindinė sritis, kurią reikia tobulinti: baigiamųjų magistro darbų studijų rezultatų įgyvendinimas ir vertinimas.

Personalas yra pakankamai kvalifikuotas, o santykis tarp personalo ir studentų katedroje taip pat pakankamas, bet išlaidų požiūriu brangus, todėl personalas studentams gali suteikti puikią akademinę ir asmeninę pagalbą. Praeitais metais universitetas įsteigė naują daugiadalykį mokslinių tyrimų centrą, kuris yra puiki iniciatyva. Tačiau kyla rizika, kad šie moksliniai darbuotojai gali nutolti nuo fakulteto ir studentų, todėl itin skatinama nustatyti mechanizmus, kaip didinti integraciją bei bendrą darbą. Tiek personalui, tiek studentams derėtų toliau gilinti anglų kalbos žinias siekiant, kad jų anglų kalbos lygis būtų pakankamas literatūrai skaityti, dalyvauti tarptautinėse konferencijose ir kt. Derėtų pabrėžti anglų kalbos kaip dėstomosios kalbos vartojimą magistro programos studijų dalykuose.

Materialiniai ištekliai bibliotekoje yra labai geri, joje pakanka patalpų, skaityklų, nedidelių patalpų individualiam ir grupiniam darbui, taip pat patalpų, kuriose galima palikti vaikus. Vienintelis dalykas, kurio trūksta, – prieiga prie ACM/IEEE skaitmeninių bibliotekų, dėl kurios įsigijimo universitetas derasi iš naujo. Kalbant apie aparatinę ir programinę įrangą, universitete yra platus jos pasirinkimas, taip pat įsteigtos kelios specialiosios laboratorijos, kuriomis gali naudotis studentai. Visoje universiteto teritorijoje veikia virtuali programinė įrangą, ja studentai taip pat gali naudotis asmeniniuose nešiojamuosiuose kompiuteriuose. Tačiau reikia skubiai atnaujinti universiteto aparatinę įrangą, nes ji nėra pakankamai greita.

Studentams teikiama labai išsami informacija apie jų studijų procesą, studentų rezultatai yra aukšti. Vertinimo procesas valdomas gerai, jam naudojamas įvairių tipų vertinimas. Studentams laiku teikiamos aiškios instrukcijos, vertinimo kriterijai ir grįžtamasis ryšys. Procesai, naudojami studentų darbų autorystei autentifikuoti, buvo įvertinti kaip labai tikslūs. Tačiau vertinimo procesą būtų galima tobulinti skatinant diskusiją tarp personalo narių apie vertinimo nustatymą ir balų skyrimą tam, kad būtų užtikrinta, jog studentų darbai vertinami taikant vienodus standartus.

Apskritai, programos vadyba vykdoma gerai, taikomos tinkamos procedūros programos turiniui peržiūrėti ir formalūs procesai, skirti visų socialinių dalininkų, tokių kaip buvę studentai ir darbdaviai bei studentai, indėliui. Atsakymai dokumentuojami ir skelbiami. Tačiau programos vadyba ilgainiui turėtų nustatyti informatikos mokslinių tyrimų strategiją ir sudaryti geresnes schemas, kad personalas galėtų vykdyti daugiau iš išorės finansuojamų mokslinių tyrimų ir plėtros projektų. Pagrindinė sritis, kurią reikėtų tobulinti, – ryšiai su naujuoju mokslinių tyrimų institutu, siekiant užtikrinti, jog nebūtų prarastas ryšys su magistrantūros studijų programos personalu ir magistrantūros studentais

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III. REKOMENDACIJOS

1. Peržiūrėti magistro baigiamųjų darbų standartus, siekiant užtikrinti, kad darbai atitiktų reikiamą mokslinį kontekstą.
2. Užtikrinti, kad tarp naujojo mokslinių tyrimų instituto ir fakulteto personalo bei studentų būtų palaikomi stiprūs ryšiai, taip pat kad būtų galimybės bendradarbiauti su mokslininkų grupėmis, sudarytomis kartu su kitais universitetais.
3. Atnaujinti aparatinę įrangą ir (arba) optimizuoti programinės įrangos konfigūravimo valdymą, kad studentai galėtų naudotis pakankamai greitai veikiančia programine įranga.
4. Atnaujinti galimybę įvesti visą tekstą ACM ir IEEE skaitmeninėse bibliotekose.
5. Pasiteirauti personalo ir studentų, kurias šalis jie pasirinktų savo potencialiai Erasmus mainų programai, ir stengtis padidinti Erasmus partnerių skaičių bei įvairovę.
6. Pritaikyti studijų rezultatus ir studijų turinį, siekiant sudaryti platesnę, modernią studijų programą (susiaurinta specializacija).
7. Peržiūrėti pagrindinių studijų dalykų apsaugos turinį.
8. Įgyvendinti formalesnius mechanizmus, siekiant užtikrinti, kad dėstytojai dalytųsi gerąja praktika ir aptartų dėstyimo standartus, nustatytų, ar teikia vertinimus.
9. Tobulinti rinkodaros iniciatyvas, siekiant padidinti magistrantūros studentų skaičių.

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