STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Kauno technologijos universiteto

STUDIJŲ PROGRAMOS *INFORMATIKA*
(valstybinis kodas – 621I10003)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF *INFORMATICS (state code – 621I10003)*
STUDY PROGRAMME

At Kaunas University of Technology

Review' team:

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Išvados parengtos anglų kalba

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	***Informatika***
Valstybinis kodas	621I10003
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Informatika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antroji
Studijų forma (trukmė metais)	Nuolatinės (2)
Studijų programos apimtis kreditais	120 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Informatikos magistras
Studijų programos įregistravimo data	2007-02-19

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	***Informatics***
State code	621I10003
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	February 19th, 2007

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I. INTRODUCTION

1.1. Background of evaluation process

The evaluation of on-going study programmes is based on the **Methodology for Evaluation of Higher Education Study Programmes,** approved by the Order No 1-01-162 of 20th December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter, SKVC). 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 the Self-evaluation Report prepared by a Higher Education Institution (hereafter, the HEI); 2) a visit of the Review Panel at the higher education institution; 3) preparation of the evaluation report by the Review Panel and its publication; 4) follow-up activities.*

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

The programme is **accredited for 6 years** if all evaluation areas were 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 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.	Additional information supplied on request on teaching staff and their qualifications

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

The Kaunas University of Technology (KTU), evolved from the Higher Education Courses established in 1920, consists of 9 faculties, the library, 10 research institutes as well as departments of administration and support. The KTU academic staff consists of 2250 employees (including 1525 full-time employees). KTU has 10,350 students (7,514 Bachelor, 2,377 Master and 412 doctoral students). 460 foreign students are currently enrolled in the KTU.

The KTU offers 132 study programmes (52 Bachelor, 62 Master, 17 Doctoral programmes and 1 non-degree study programme, 39 of which are taught in English). KTU conducts studies of the first, second and third cycles in six main fields: technological, physical and social sciences, arts, humanities and biomedicine.

The assessed second cycle study programme "Informatics" is provided by the academic staff of the Faculty of Informatics. The Faculty was founded in 1977 and it consists of five academic departments and two research centres: Department of Applied Informatics, Department of Information Systems, Deparment of Computer Science, Department of Multimedia Engineering, Department of Software Engineering, Centre of Information Systems Design Technology, and Centre of Real Time Computer. In accordance with the Lithuanian system of the study areas classification the Informatics (national classification code I100) belongs to the study field of the Physical Sciences. Teachers and researchers of all five departments of the Faculty of Informatics take part in the Programme, providing academic courses and research activities. KTU Faculty of Informatics staff consists of applied mathematics, multimedia, cyber security, cloud computing and software development professionals, who are engaged in numerous research and development projects. High scientific research and software implementation competences of the Faculty enable the staff to take responsibility to educate the master-level students by providing the adequate knowledge and abilities.

The Informatics Master's degree Programme (IMDP) concentrates on Computational Informatics, as a sub-area of general Informatics. It emphasizes the usage of computational methods, modelling and simulation techniques and information technologies for subjects of computational intelligence, computer graphics and virtual reality, signal processing, data mining and processing, business informatics and semantics as well as, internet technologies such as cloud computing and cyber security.

The Panel also wishes to point out that some meetings were not as fruitful as expected because of the large number of participants, many of whom did not contribute to the discussion, even after prompting. This was certainly the case for the meetings with the students and with the teachers. It would help to select smaller numbers of participants and to ask them to prepare in advance the information they wish to convey about the workings of the institution.

1.4. The Review Panel

The Review Panel (here after known as the Panel) was composed according to the *Description of the Review Team Member Recruitment*, approved by the Order No 1-01-151, 11/11/2011 of the Director of the Centre for Quality Assessment in Higher Education. The visit to the HEI was conducted by the Panel on December 6th, 2016.

1. **Ms. Barbara Howell (Chair of the Team)**

Associate Dean at Coventry University (Faculty of Engineering, Environment and Computing), United Kingdom of Great Britain and Northern Ireland.

2. **Prof. Dr. Ernst Wilhelm Mayr**

Emeritus of Excellence at Technical University of Munich, Germany.

3. **Prof. Dr. Sirje Virkus**

Professor of Information Science at Tallinn University (School of Digital Technologies), Estonia.

4. **Mr. Simonas Razminas**

Head of Quality at Adform, Lithuania.

5. **Mr. Rytis Koncevičius**

Doctoral student at Kaunas University of Technology (Building Services System field), Lithuania.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The Study Programme aims and intended learning outcomes are suitable and adequate for the Master level study programme of informatics.

The Panel was able to confirm that the Study Programme is positively evaluated by social partners and students. The Programme aims and learning outcomes are defined according to the public needs and the needs of the labour market. The Panel found that KTU master studies of Informatics are aligned with bachelor studies of Informatics and other bachelor programmes within the Faculty of Informatics.

However, during the Panel visit the learning outcomes of the Study Programme were not available online because of the updates of the KTU website. The programme management team was not aware of that and assured the Panel that learning outcomes were accessible online before the Panel visit.

The Panel confirms that the aims of the Study Programme are well defined and learning outcomes are at a satisfactory level. However, some improvements and further developments are suggested. The Panel believes that learning outcomes are not yet used as a tool to develop the programme to its full potential. In order to improve learning outcomes the following **recommendations** are suggested to decrease the number of learning outcomes and to connect each learning outcome more closely to at least by one subject (avoid ones that have soft or indirect touch points only).

The Panel confirms that the Study Programme aims and learning outcomes are consistent with the type and level of studies.

> The name of the Study Programme, its learning outcomes, content and the qualifications offered are compatible with each other. However, a few suggestions for further improvement are **recommended** to include subjects that will help students to develop teamwork and leadership skills (or to remove or change learning outcome D4 which is formulated as follows: ability to work in and lead a team, which can consist of different people with competences in different areas).

Also to include topics that are related to big data and infrastructure as a code (suggested by social partners).

The Panel strongly supports the suggestions of social partners mentioned above. Another option would be to focus only on multimedia, since this Study Programme appears to be mainly related to it. This would correlate with the previous Panel comments about the misleading generic name of the programme - Informatics. According to the curriculum, this Study Programme seems to be mainly focused on multimedia.

The Panel is satisfied to see that the learning outcomes are impacted and organized according to the EQANIE recommendations, but suggests making the next step in mastering those. The Panel believes that learning outcomes will be adjusted significanctly when they are organized according to the newest version of EQANIE recommendations.

2.2. Curriculum design

The Study Programme is in pursuance with relevant legal acts and regulations; it has been carried out in accordance with the KTU academic regulations, and has been informed by the general development plans of the KTU and the requirements of the labour market and general legislative and guiding documents for higher education and research in Lithuania and in Europe. The curriculum developers are aware of the relevant legislation and policies in Europe. The Study Programme fits the international ACM and IEEE recommendations for computer science studies. The curriculum design is guided also by research and development trends in the field.

The Study Programme comprises 120 ECTS credits distributed over the two year duration of the Study Programme. The courses are spread evenly across the semesters and their content is consistent with the type and level of studies i.e.each semester has 30 credits. The average study load is spread evenly over the entire study programme duration.

The Study Programme consists of the mandatory study subjects (78 ECTS credits), alternative and elective subjects (12 ECTS credits) and the preparation/implementation of the final work (30 ECTS credits). Preparation for the final work lasts four semesters: the study subjects “Computer Science Research Work”, “Computer Science Task Analysis and Specification”, “Information Technologies Solution Implementation and Experimental Study” (6 ECTS credits each) are dedicated to give students understanding and abilities to organise scientific workflow, to plan their time, to work independently, in accordance with the timetable; to collect, analyse and organize information; to prepare presentations and to present their own work results. Finally, the

subject "Final Degree Project" (Thesis) has 30 credits and is aimed to finalise all research and design work into a coherent scientific product.

The structure of the Study Programme facilitates the process of logical acquisition of knowledge and skills, moving from introductory courses to specialist courses, from more general to specific, from simpler subjects to more complex courses. The Study Programme is available both in Lithuanian and in English.

The content of the courses is consistent with the type and level of studies. The scope of the Study Programme is sufficient to ensure learning outcomes. A matrix form in the Self Evaluation Report (SER0 clearly demonstrates how each study subject provides learning outcomes of the Study Programme. The matrix is revised and improved every year, in order to verify if the aim of every course is consistent with the aim of the programme and if there is coherence and continuity among the courses. The proportion of obligatory, alternative and elective study subjects matches the requirements and allows successful attainment of the study objectives.

The methods of teaching and learning and assessment employed in the courses in general are appropriate for the achievement of the course and programme intended learning outcomes. A range of instructional methods are used and supported by ICTs according to the SER [SER, p. 16, para 58] as well as to the course programmes. However, it was evident from the student meetings that traditional teaching and learning methods were dominant and the overall approach is very transmissive, with an emphasis on lectures. A number of initiatives do exist, but they appear to be mostly due to individual teachers and they are based mostly on intuition, not on true knowledge of current pedagogy. Meetings with students, alumni and teachers confirmed this. There was little evidence of systematic sharing of best practices among teachers. However, the Panel were of the opinion that the Study Programme provides enough opportunities for practical work. This was confirmed by the students themselves.

It was also evident that the workload of academic staff is very high leaving little time to improve their teaching strategies and methods. Despite the heavy workloads of academic staff, students praised the accessibility of teaching staff and the student-friendly atmosphere, providing evidence of a positive staff-student collaboration. The **recommendation** is that the KTU teachers should be made more aware of alternative teaching strategies and methods, specially geared towards the different types of learning outcomes aimed for and taking into account different learning styles; periodical occasions should be created for sharing best practices among all teachers within the the Faculty and more broadly KTU. KTU should also periodically verify

that teachers do use the most effective teaching and learning strategies and approaches for their courses.

It was not always clear that the content of the Study Programme reflects the latest thinking in science and technologies. The references of the course programmes were not always the most recent and did not reflect always current developments. Employers and social partners also suggested the inclusion of recent developments in the field of Informatics within the Study Programme (e.g. big data, linked data, open data, Internet of things, infrastructure as a code).

In summary, the name of the Study Programme, its intended programme and courses learning outcomes, content, and qualifications offered are altogether compatible with each other. The evidence from student, alumni and staff meetings together with the internal self-assessment report indicates that the degree objectives are achieved. The meetings with students revealed the positive value of the curriculum updates introduced. The suggestions of the previous accreditation in 2013 have been implemented as appropriate. The Study Programme now provides more flexibility, i.e. the number of electives has significantly increased allowing for personalized study plans according to the interests of the students. However, this problem partially persists within the current programme, because of the today's practically oriented needs of IT companies.

2.3. Teaching staff

The teaching staff of the KTU Master in Informatics comprises 20 lecturers (3 lectors, 11 associate professors, and 6 professors). From the supplied information (SER, as well as additional information supplied on request by the Panel) it was not possible to determine who is a full-time or part-time teacher of the institution (here: KTU Informatics) and, in the case of part-time, to what percentage. The Panel believes that such information should be included in the next SER Academic Staff Summaries. Of course, many of the teachers contribute not only to the (second cycle) Master in Informatics programme, but also to other study programmes, for example the (first cycle) Bachelor in Informatics. The Panel has to complain about the fact that in the listing of the academic staff (SER: annex IV) the names are in many cases not given as "surname name" as stated in the column header. This fact does not necessarily facilitate the work of the Panel. In the future, more care should be taken in this respect.

The age distribution of the teaching staff appears appropriate, though, in particular with respect to the rapid development (both scientific as well as technological) in the area it would be very

desirable to increase the proportion of younger faculty members. Several steps in this direction have been taken already (in comparison to the previous report), but the Panel suggests that this issue should remain on the agenda of the university and the department. It should also be noted in this respect that the average age for the lecturers, as given in the SER, is about 45years.

As judged from the information provided (SER), the legal requirements concerning the teaching staff are satisfied. All 20 members of the teaching staff have a doctoral degree (resp. PhD). The same conclusion applies to the requirement concerning the proportion of the number of study field subjects taught by teachers with a scientific degree (by a wide margin).

Looking at the qualifications of the teachers for the individual courses as well as for the Study Program as a whole, there seems to be no noticeable problem with regard to ensuring the learning outcomes.

Clearly, the number of available teachers is related to the teaching load of the individual teachers (which, of course, varies depending on their employment). While the Panel is convinced that the (present) number of teaching staff is adequate to ensure the learning outcomes, this comes with a serious proviso. The actual teaching load (as communicated in the meeting with staff, and (hopefully) adjusted to the employment level) seems to be 920h/yr, considerably more than the regular numbers. It should be noted that the teaching load can in principle be negotiated on an annual bases, depending on other income.

The panel supported the goal to adapt to changes in the field of technology as a consequence of high staff turnover.

With respect to professional development, comments from the teaching staff were positive in general. The department and the university offer good opportunities regarding professional development, internationalization and the acquisition of research projects. The department has a project funded by the EU, and many/most of the research projects are on the faculty/department level. Again, the big problem here is that, as was stated more or less unanimously, the big teaching load considerably hampers efforts to acquire and perform competitive research projects.

The department has a research budget of about 800 T€, including the Horizon project mentioned above. Most smaller projects have to do with projects connected with local industry (and, of course, specific courses), related to the Study Programme.

In summary, the overall impression is positive, with the exception of (for which the faculty obviously cannot be blamed) teaching load which appears overly high. Given the general

performance of the Study Programme (and its relevance to IT academic education in Lithuania), serious efforts for improvement should be taken here, e.g. by providing additional financial support for hiring faculty.

2.4. Facilities and learning resources

Overall, the premises for studies (buildings, classrooms, laboratories), the teaching and learning equipment (laboratory and computer equipment, consumables) are adequate both in their size and quality. There are three types of classrooms: auditoriums, computer classes, and laboratories - in total, 34 different classrooms can be employed. All auditoriums and computer labs are equipped with overhead projectors, connected to a desktop computer, two laboratories have smart screens. The Faculty of Informatics also has an Audio-visual Technology Training Centre (Multimedia Technology Training Laboratory and Video Studio Training Laboratory), Mobile Solution Laboratory, and Cisco Laboratory. In cases when additional workplaces are required, the Faculty also rents computer labs. Halls are made into comfortable areas for students to relax or work.

The Panel had the opportunity to visit several laboratories, which appeared to be modern and up-to-date. There is a range of equipment, hardware and software available for the students. Well-equipped laboratories provide good support for learning and teaching. Internet connection are sufficient and the wireless network is accessible through the premises. Information and communication technologies are introduced extensively in all aspects of teaching and learning. The teaching and learning process is supported through the electronic platform Moodle. KTU has also has a Distance Learning Technologies Research Laboratory which provide resources to enhance the teaching/learning experience of both the teaching staff and of the students.

In addition, there are several software tools available for students that can be downloaded for home use to perform specific tasks related to the Study Programme. Students may also acquire licenses for various products and software. These privileges are granted by signed agreements between KTU and the respective software developers.

KTU has adequate arrangements for practical work. Practice may also be performed in social partner sites i.e. companies closely collaborating with the Faculty. Students may either choose practical training locations on their own or rely on suggestions provided by the University.

There is a central library within the KTU, which on brief inspection appeared well organised, giving access both to print-based and electronic resources. Teaching materials (textbooks,

reference books, monographs, periodical publications, databases) are adequate and accessible. KTU library belongs to the Lithuanian Academic Libraries Network (LABT) and can use their joint resources. KTU central library subscribes to about 30 international databases, such as: Web of Science, SpringerLINK, BMJ Journals Online Collection, Emerald Engineering eJournals Collection, Oxford University Press Journals and others. The library computers can be used to access public internet sites and restricted subscriptions and databases as well. The majority of study materials can be accessed via the Internet in digital form. Librarians periodically provide lectures and workshops regarding electronic knowledge database usage tools and methods, and provide resource search consultations. Students also may use multifunctional printing device for printing or copying any learning material. The library has a reading room with 120 seats. However, it seemed that more student workplaces are needed, especially during the exam period therefore the Review Panel **recommends** considering additional spaces to meet the demand.

KTU uses the common study information system which supports the study process at the University: administration of study programmes and modules, student records, planning and administration of teachers' pedagogical workload and other.

KTU has an intranet – Document Management System (DMS) which enables teaching staff to manage the functions of their respective Study Programme, i.e. task management, management of agreements, reports of work trips in Lithuania and abroad, financial reports, trainings on the procedures of applying for, confirmations and rejection of work trips, etc.

For distance learning KTU uses in addition to Moodle a video conference system Vidyo, video lecture transmission systems, Adobe Connect and ViPS. The lectures are not only broadcasted online, but also recorded. If students are not able to virtually participate in the class during the broadcast sessions, they can watch the class at any other time on the Internet. Adobe Connect and ViPS systems ensure the interactive participation of students in classes from any workplace in Lithuania or abroad. Live broadcasts of classes or their recordings can be watched on smartphones or tablets. Students and teachers use a common system to login into all systems and resources, thus access to the study information system, Moodle, Vidyo, ViPS, Office365 and other resources is available though one account.

Meetings with students, alumni and teachers confirmed that facilities and resources for teaching and learning are adequate. Some students mentioned that the technology could sometimes be better, but were generally satisfied.

In conclusion, the variety as well as quantity of learning facilities and resources is sufficient to achieve the learning outcomes of the Study Programme.

2.5. Study process and students' performance assessment

Admission of the students is administered by the University Admission Committee. There are no entrance examinations for the Informatics master‘s degree programme. Admission requirements do not differ from other similar programmes and are based on common principles of KTU. Students are enrolled only if they come from the same or adjacent study areas.

The organisation of the study process ensures an adequate and appropriate provision enabling the achievement of the expected learning outcomes.

The students of the Study Programme are encouraged to participate in research carried out at the Faculty and some students participate in the projects carried out at the department. The students are encouraged to publish their work and present the results at conferences.

Students have opportunities to participate in student mobility programmes, such as ERASMUS. Student mobility on a national level is still low, but is increasing slowly i.e in 2014 (0) and in 2015 (6) students according to SER [table 12, para 122]. An ERASMUS programme coordinator is in place to provide students with support.

The University ensures an adequate level of academic and social support. The University student support system is functioning well. For example, individual study plans are provided for students with good academic performance or have special circumstances. Students are provided with all the needed information concerning the university study programme.

During the visit, students confirmed that the assessment system of students' performance is clear and adequate. Students find all the information on the KTU website clear and detailed, and were satisfied with the communication they receive from tutors about assessment.

The Panel were also made aware that the study programme and the students from the programme met the specialist needs of the companies the programme supports.

The Panel would **recommend** to promote mobility opportunities more widely and encourage the students to share their experience and the benefits of mobility and how these activities can help students' careers, how they could improve their learning and language skills and how the exposure to other societies and cultures can help them to develop social skills.

2.6. Programme management

Responsibility for decisions and monitoring of implementation of the programme are clearly allocated as described in the SER. The Vice Rector has ultimate administrative and quality assurance oversight of programmes supported by the Studies Office including the Departments of Study Management, Study Quality Assurance and Development, Student Affairs and other administrative units. Studies and Academic Culture Committee advises Senate on the approval of programmes with Senate holding ultimate responsibility of the approval of opening or closure of programmes. Essential changes to programmes are agreed by the University Study Programme Committee and Studies Office in conjunction with approval by Faculty Council.

The University Study Programme Committee consisting of no more than 9 members representing the different field of study and chaired by the Vice-Rector for Studies reviews the quality of existing programmes and overseas new programmes [Doc A507-UNIVERSITETINIO STUDIJŲ PROGRAMŲ KOMITETO NUOSTATAI].

At Faculty level, in 2015 the university introduced the Field Study Programme Committee (SPC), which were formally introduced in 2016. The SPC is coordinated by an elected Manager and comprises faculty members, social partners and students. The ISP is responsible for the content and quality of the programme and also of the process of annual review the structure and content of programmes.

The Council of the Faculty of Informatics, comprising 17 members of which 20% are students has responsibility for the approval of new programmes. Study subjects are certified by the Heads of Department, with the SPC Manager, together with the Programme Manager and Head of Department participating in the programme.

During the visit the Panel confirmed the organisation and nature of the deliberative committee structures and their composition (Meeting Senior Management, Staff responsible for SER). The Panel were satisfied that the committees work as expected and noted the adhoc nature of the field committee enabling senior management to be responsive to day to day issues with no set agenda. The Vice Dean also produces a report that can be presented to the SPC however this does not happen on a systematic basis. It is therefore **recommended** that a report evaluating the programme, based on a standard template is produced for presentation to the field committee as a set agenda item.

Information and data on the implementation of the Study Programme are regularly collected and analysed. Stakeholder feedback is collected mid semester, end of semester and after graduation from students, graduates, teachers and employers at the University level to evaluate study subjects, programmes teachers and aspects of academic life. The Alumni met suggested that they had not yet been involved in curriculum design and the university had not been in regular contact with them. The Panel would encourage greater involvement with their Alumni. The teaching staff, Employers and Social Partners met all indicated that they do have some opportunities to feed into the programmes. The student met confirmed that they completed questionnaires about the module and course, talk to their student representative who attend committees or go directly to their teachers. The student gave the example of an increase in modules in response to their feedback.

Round table feedback from students is also considered by Faculty Administration and members of the Study Programme Committee. The Senior Managers met during the evaluation visit confirmed these take place.

The Academic Information System (AIS) on the University website is one of the main repositories for the collection and storing of feedback from students with access provided to teachers, IF SPC Managers and Faculty Administrators.

The outcome of internal and external evaluations of the programme are used for the improvement of the programme. Employers as well as social partners take part in the process of programme quality assessment and improvement. The Employers commented on their involvement with the University as guest speakers and they are also consulted if there is a change to a programme.

The programmes undergo periodic certification, which can be from 1-3 years. The Panel confirmed external review takes placed and noted that the programme had been approved for 3 years.

Study Programme Committee members had benchmarked their programmes against other national Lithuanian institutions however the Panel felt that greater use could have been made of international benchmarks. The Panel therefore **recommend** international benchmarking takes place as part of the evaluation process.

A recommendation from the previous evaluation report for the programme required further engagement of teaching staffs in the decision making process [SER: Annex VII]. Lecturers who

are not part of the SPC or Deans Office receive feedback though Departmental meetings. The staff met confirmed that if they had a new idea for a programme they would discuss this with the Head of Department and suggestions for minor changes could be discussed at programme committee. Example of changes were given therefore the Panel were satisfied that staff were making a greater contribution to the decision making process.

The Panel heard of involvement by companies for the confirmation of changes to a programme, providing new facilities and giving lectures, however would suggest greater use could be made of their views on curriculum content during the design, re-design and review processes.

Internal Quality Assurance oversight is governed by the KTU Quality Guide, which considers areas such as the management and administration, student support, infrastructure and human resources, research and applied activities monitoring, and analysis and improvement process [SER pg 37, para 170]. The Quality Guide further describes a University's quality assurance model based on the higher education quality assurance guidelines and regulations as well as their importance and appropriateness for the European Foundation for Quality Management Excellence Model (EFQM TM) criteria.[Doc UQGR2014].

From reading the SER, meetings with staff, students, alumni and social partners, reviewing additional documentation on the committee structure and quality guides, the Panel viewed that overall KTU has mechanisms in place for the effective and efficient internal quality assurance of the Postgraduate Informatics Programme. Therefore the panels assessment of the programme management is rated as a three.

2.7. Examples of excellence

1. The department and the university offer good opportunities regarding professional development, internationalization and the acquisition of research projects.
2. There is a range of equipment, hardware and software available for the students with well-equipped laboratories provide good support for learning and teaching.

III. RECOMMENDATIONS

1. In order to improve learning outcomes the following recommendations are suggested: a) to decrease the number of learning outcomes; b) to connect each learning outcome more closely to at least by one subject (avoid ones that have soft or indirect touch points only).
2. To include subjects that will help students to develop teamwork and leadership skills (or to remove or change learning outcome D4 which is formulated as follows: ability to work in and lead a team, which can consist of different people with competences in different areas).
3. To include topics that are related to big data and infrastructure as a code (suggested by social partners).
4. The teachers of the Study Programme should be made aware of alternative teaching and learning strategies, specially geared towards the different types of learning outcomes aimed for and taking into account different learning styles; periodical occasions should be created for sharing best practices among all teachers within the institution. The Faculty should also periodically verify that teachers do use the most effective teaching and learning strategies and approaches for their courses and that these activities are effectively aligned with the learning outcomes.
5. To consider reducing staff teaching load in order to free up time for academic staff to pursue research and development, personal development and focus more on the quality of teaching and learning.
6. The KTU should consider creating additional student workplaces in the Library to provide opportunites for student efficent work, especially during the exam period.
7. Greater promotion of mobility opportunites amongst the students and to encourage students to share their experience and the benefits of these programmes.
8. The Faculty should set up procedures to periodically and systematically assess the effectiveness of its study programmes, quality assurance processes and organizational structures and develop a strategic plan indicating when important milestones will be reached.

9. The Faculty should establish mechanisms for international benchmarking to take place as part of the evaluation process.

IV. SUMMARY

The Study Programme aims and intended learning outcomes are well defined and suitable and adequate for the Master level study programme of informatics. The Programme aims and learning outcomes are defined according to the public needs and the needs of the labour market. The Panel‘s general impression is that KTU has a good grasp of the needs of the employment market and that it indeed aims its study programmes at fulfilling those needs. However, some improvements and further developments are suggested.

The name of the Study Programme, intended learning outcomes, content, and qualifications offered are altogether compatible with each other. The evidence from student, alumni and staff meetings together with the internal self-assessment report indicates that the degree objectives are achieved. The meetings with students revealed the positive value of the curriculum updates introduced. The suggestions of the previous accreditation in 2013 have been implemented as much as possible. The Study Programme now provides more flexibility -- the number of electives has significantly increased allowing for personalised study plans according to the interests of the students. English language alternatives are also available as suggested by the previous Panel. From meetings with the teachers, the Panel could not verify that teachers are aware of many non-traditional teaching strategies or of students learning styles. The overall approach is very transmissive, with an emphasis on lectures. A number of initiatives do exist, but they appear to be mostly due to individual teachers and they are based mostly on intuition rather than current educational knowledge. There is little evidence of systematic sharing of best practices among teachers. Therefore some improvements and further developments are suggested.

Looking at the qualifications of the teachers for the individual courses as well as for the Study Programme as a whole, there seems to be no noticeable problem with regard to ensuring the learning outcomes. The Panel found no evidence to suggest that the number and the qualifications of teachers would not adequately cover all disciplines taught. The overall impression is positive, except for the challenges around the teaching load, which appears high. Given the general performance of the Study Programme, efforts for improvement should be taken here, e.g. by providing additional financial support for hiring faculty.

The variety as well as quantity of learning facilities and resources is sufficient to achieve the learning outcomes of the Study Programme. The Panel got the clear impression that the study programme provides many, indeed enough, opportunities for practical work. This was confirmed

by the students themselves. However, some improvements and further developments are suggested.

The organisation of the study process ensures an adequate provision of the programme and the achievement of the expected learning outcomes. The University ensures an adequate level of academic and social support. Students confirmed that they receive adequate and timely feedback on their assessments and examinations. A small number of students have taken advantage of the opportunity to study abroad within the ERASMUS programme. The Panel suggests to promote mobility programmes among students and to encourage students to share their experience and the benefits of these programmes.

From reading the SER, meetings with staff, students, alumni and social partners, reviewing additional documentation on the committee structure and quality guides, the Panel viewed that overall KTU has mechanisms in place for the effective and efficient internal quality assurance of the Postgraduate Informatics Programme. However, some improvements and further developments are suggested.

The Panel was told several times during the site visit that many issues could be handled informally because most people know each other well since the Faculty is still a rather small unit. The Panel feels that, in view of current size and of its expected growth, the Faculty should accept that important issues need to be handled systematically, in a collaborative way, by bodies appointed for this purpose and with explicit responsibilities and achievable outcomes. Informal goes only so far.

During several meetings, the Panel got the impression that there seems to be a general view, within the Faculty, that both management and quality assurance issues would be identified and solved at source when they arise. The Panel feels strongly that more systematic and proactive approach should be taken to reasure the university of transparent monitoring and review takes place.

The Panel wishes to thank everybody who participated in the evaluation process of KTU, with a special mention for the efficient help provided by the SKVC personnel.

V. GENERAL ASSESSMENT

The study programme *Informatics* (state code – 621I10003) at Kaunas University of Technology is given a 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	3
2.	Curriculum design	3
3.	Teaching staff	3
4.	Facilities and learning resources	4
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	**19**

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;
2 (satisfactory) - meets the established minimum requirements, needs improvement;
3 (good) - the field develops systematically, has distinctive features;
4 (very good) - the field is exceptionally good.

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Grupės nariai: Team members:	Prof. Dr. Ernst Wilhelm Mayr
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