STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

VILNIAUS UNIVERSITETO

STUDIJŲ PROGRAMOS *FINANSŲ IR DRAUDIMO MATEMATIKA (612G17001)* VERTINIMO IŠVADOS

EVALUATION REPORT OF *FINANCE AND INSURANCE MATHEMATICS (612G17001)* STUDY PROGRAMME

at VILNIUS UNIVERSITY

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	***Finansų ir draudimo matematika***
Valstybinis kodas	612G17001
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Matematika
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (4 metai)
Studijų programos apimtis kreditais	240
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Finansų ir draudimo matematikos bakalauras
Studijų programos įregistravimo data	2001-08-02

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	***Finance and Insurance Mathematics***
State code	612G17001
Study area	Physical Sciences
Study field	Ma
Kind of the study programme	University studies
Study cycle	First
Study mode (length in years)	Full-time (4 years)
Volume of the study programme in credits	240
Degree and (or) professional qualifications awarded	Bachelor of financial and insurance mathematics
Date of registration of the study programme	2001-08-02

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I. INTRODUCTION

1.1.Background of the evaluation process

The evaluation of on-going study programme is based on **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 (further – SKVC).

The evaluation is intended to help higher education institutions to improve constantly 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 (further - HEI); 2) visit of the expert team at the higher education institution; 3) production of the evaluation report by the expert team and its publication; 4) follow-up activities.*

On the basis of external evaluation report of the study programme SKVC takes decision to accredit study programme either for 6 years or for 3 years. If the programme evaluation is negative such a programme is not being 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 area 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 provided by HEI before, during and/or after the site-visit:

No.	Name of the document

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

The mission of Vilnius University, taken from the institution's SER, is described as

> *a solemn duty and inalienable right, arising from the past, stimulated by the challenges of the present and passed on to the future generations, to strengthen the cognitive and creative powers of Lithuania and the world, to foster academic as well as spiritual and social values, to educate active and responsible citizens and leaders. This mission is based on the imperatives of academic freedom, responsibility to the Lithuanian nation and Lithuanian state, openness and accountability to society.*

This four-year BA programme on Financial and Insurance Mathematics is administered by the Department of Mathematical Analysis in the Faculty of Mathematics and Informatics. In offering

this study programme, it cooperates closely with the Department of Statistics and Econometric Analysis.

The study programme began back in 1993-94. It had been evaluated by a group of Lithuanian experts in 2007 and overall had been given a positive evaluation and was unconditionally accredited. A Master level programme on this topic was introduced in 2008 and during the academic year of 2012-2013 some 20% of the content of the Bachelor programme was revised, partly to respond to the needs of the international labour market.

The self-evaluation includes mention of a new programme, a revised and updated version of the BA in Financial and Insurance Mathematics, to be introduced in September 2015. The Review Panel learned that this had not been approved at any level within the Institution. In any case, it would address only the study programme in place at the time of their visit.

1.4.The Review Team

The review team was completed according *Description of experts' recruitment*, approved by order No. 1-55 of 19 March 2007 the Director of the Centre for Quality Assessment in Higher Education. The Review Visit to HEI was conducted by the team on *18th November, 2014.*

1. **Prof. Dr. Andrew McGettrick (team leader),** *Chair of ACM Education Board and ACM Education Council, Member of ACM Education Board, BCS representative to the General Assembly of IFIP, the International Federation for Information Processing, Ph.D. in Pure Mathematics, Cambridge University, United Kingdom.*

2. **Prof. Dr. Jose Maria Sarabia,** *Professor of Quantitative Methods in Business and Economics, Professor of Statistics and Operational Research (University of Cantabria), Spain.*

3. **Prof. Dr. Manuel Samuelides,** *Full Professor in Applied Mathematics, Ecole Nationale Suprieure de l'Aeronautique et de l'Espace (SUPAERO), Toulouse, Head of Applied Mathematics Department (1978 to 2006), Joint position as senior scientist in ONERA (French National Agency for Research in Aeronautics and Space) (1988 to present), France.*

4. **Doc. Dr. Vytautas Janilionis,** *Dean of Faculty of Mathematics and Natural Sciences at Kaunas University of Technology, Lithuania.*

5. **Mr. Benas Gabrielis Urbonavičius,** *student at Kaunas University of Technology, Lithuania.*

During their visit to the Institution, the Review Panel met with the Faculty administrative staff, with those staff who had responsibility for the production of the self-evaluation report, with the staff teaching on the study programme, with students, with alumni and with social partners. On the previous day the Panel had met staff from the faculty administration.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The main aim of the study programme is, to quote from the Institution's self–evaluation report (SER), 'to give a mathematical-economic education, appropriate for work in the sphere of finance and insurance or for further Master's study'. In the view of the Review Panel, this aim is eminently reasonable, the intention being that graduates gain employment in the financial sector.

The intended learning outcomes are classified under general competences and subject specific competences. The general competences include abstract and critical thinking as well as individual work (communication, planning, scheduling work) and team work. The subject specific competences include making use of the opportunities offered by advances in information technology, the ability to apply knowledge from the field of study subjects and the ability to collect and analyse data arising in the field of study. In discussion about the learning outcomes it is noticeable that the international perspective is absent.

The self-evaluation document reports that the competences were only formulated in 2013, that most of them have already been implemented but that full implementation would not occur until September 2015. The earlier evaluation in 2007 had noted an imbalance in the finance and insurance parts of the programme. It seems, from the SER, that this has still to be fully addressed. The reason for the delay was unclear to the Review Panel.

The programme had been revised in 2012 and the changes that were made were intended as a response to the needs of the international labour market. The changes included making a transition to the ECTS system and modularizing the programme but also providing a concentration of mathematics in the first two years of the study programme; students had complained about the lack of exposure to finance and insurance in the early years and this contributed to the development of a new revised programme that was presented to the Review Panel.

The programme and its learning outcomes are consistent with the type and level of studies, though there could be a greater emphasis in the learning outcomes on the European and international perspective; much of the legal and financial framework is country-dependent. Having said this, the Institution's self-evaluation report does devote some attention to this important international perspective. The name of the study programme is Financial and Insurance Mathematics and this does imply a level of expertise in finance and insurance but the students were uncomfortable with their competences in these areas.

2.2. Curriculum design

The study programme meets the legal requirements. Thus:

- The volume of the programme is 240 credits (at least 210 required);
- Subjects of the field study occupy 220 credits and that includes 13 credits of electives credits (at least 165 required with an additional 30 credits being compulsory/elective to deepen specialization);
- Each module is of size at least 10 credits;
- Practical placement is 18 credits (at least 15 credits required);
- There are not more than 7 courses per semester;
- Preparation of final bachelors thesis is 12 credits (at least 12 credits is required);

- Total number of contact hours is 53%; at least 35% is required.

The students study 60 credits of classes per year, and this includes general university classes. In the first year students take classes in mathematical analysis (15 credits), algebra and geometry (14 credits), discrete mathematics (7 credits) and informatics (14 credits) as well as a foreign language (10 credits); in the second year they take classes in further topics in analysis (12 credits), probability theory and mathematical statistics (12 credits), data structures and algorithms (4 credits), database management systems (4 credits), visual programming (4 credits), microeconomics and macroeconomics (6 credits each) as well as further classes in a foreign language (5 credits). It is a little surprising that in the first two years of the programme there are no classes addressing the topics of finance and insurance.

The Review Panel observed that the first two years of the existing course could be mistaken for the first two years of a study programme in pure mathematics. The Review Panel might have expected to see a curriculum design that reflected the title of the study programme. For instance, there might have been a design based on threads (i.e. sequences of related modules, one in each semester) running through the programme, and these could include a thread for financial and insurance mathematics, a thread for probability and statistics, a thread for informatics; implicit in this is a wish to see a greater commitment to the use of informatics in financial and insurance mathematics. The Review Panel was convinced that such an approach would be possible and the validity of their thinking was confirmed by social partners.

In the third and fourth years there are no further classes in Informatics. In the third year there is a class on econometrics with further compulsory classes in mathematics in differential equations (5 credits), functional analysis (7 credits), random processes (6 credits) as well as classes in financial calculations (4 credits), insurance law (3 credits), risk management (3 credits) survival and demographic models (6 credits). In the first semester of the fourth year there are classes in actuarial mathematics (6 credits), finite population statistics (4 credits), investment theory (5 credits), risk theory (5 credits) as well as elective classes. The work of the final semester is focused on practical training (18 credits) and the final thesis (12 credits). The emphasis on topics on pure mathematics continues into the fifth semester but in the sixth and seventh semesters the classes start to address more directly the topics of finance and insurance mathematics.

The study subjects are spread evenly and appropriately over the period of study and themes are not repeated but are further developed. Moreover, the material is consistent with study at the Bachelor level though the Review Panel would question the emphases in the early years.

In the world of finance and insurance, the rules and practices, and the legal frameworks, change from one country to another and these are likely to change considerably over the next few years with the move towards globalisation and market consolidation. Such information on international finance is not sufficiently included in the current programme.

An important part of the curriculum is the final thesis. This is performed as a group activity. The reason given for this approach was the large number of students on the study programme; the Review Panel was not convinced by this argument and would prefer to see a move towards one student per thesis; undertaking such activity is not uncommon in Lithuania, it would be challenging for these very good students, it would cause them to reflect on the various elements of their study programme and would provide each student with the opportunity to investigate and explore areas of particular interest.

Students expressed the view that they were unprepared for the group activity associated with thesis preparation. This was the one occasion when group work was really required.

Related to this observation about group work, some students could request an individual project and that would typically be granted; in 2013, for instance, an unusually high number of 5 students elected for an individual project. But such students were likely to avoid group work entirely, and so not meet one of the learning outcomes of the study programme.

The scope of the programme does provide a sound education in mathematics (though even then students can avoid group work) but the extent to which it builds student confidence in finance and insurance is highly questionable. Indeed the students expressed the view that they were not at all confident in the areas of finance and insurance. The fact that there are no classes in Informatics beyond the second year must also raise questions since today informatics is crucial in many areas of finance and insurance.

2.3. Teaching staff

According to the SER, the study programme is provided by staff meeting the legal requirements; thus at least half of the study field subjects are taught by scientists. The student/teacher ratio is good (about 10:1) and it should be noted that a typical class size is of 45-55 students.

The qualifications of the teaching staff and their range of expertise are adequate to ensure the learning outcomes. According to the SER, among the lecturers of scientific courses:

- 15 teachers have more than 30 years of pedagogical experience;
- 1 teacher has between 20 and 30 years of pedagogical experience;
- 13 teachers have between 10 and 20 years of pedagogical experience;
- 3 teachers have less than 10 years of pedagogical experience.

Generally, the courses on pure mathematics and theoretical statistics are given by the older teachers, and the courses on applied mathematics, economics and computer science are given by the younger teachers. There have been 8 changes of personnel on courses in the period 2009-2013 and generally these have been caused by changes to workload distribution.

This balance between the older and the younger members of staff is important for the further life and quality of the formation and its adaptation to the changes of the employment market needs. The meeting with the teaching staff shows that the professors of the applied fields are important and active, notably in supervising Bachelor thesis. However, it is important that those staff who are actively engaged in real applications have a strong say in the further development of the study programme.

One teacher has been the president of actuary society. One teacher has worked for a significant time in an insurance company. Another invited lecturer is working now in an insurance company; he is still giving courses and was deeply implied in the committee of evaluation of the Bachelor thesis for a long time. These examples show that having professors employed by social partners is very important to create a good match between learning outcomes, professional skills and labour market needs.

The research activity of the teaching staff is adequate to support the learning outcomes. It is generally important or very important. It is shared between applied subjects (computer science, econometrics, insurance and risk computation, applied statistics) and more theoretical subjects in

the fields of probability theory and statistics. Some very good professors are able to supervise theoretical research and applied research and they play an important part in Lithuanian scientific society.

In the SER, the document itself confesses to insufficient international mobility of the teachers though there have been links with the University of Nantes in France, Kiev University in Ukraine and Malardelen University in Sweden. This mobility has to be reinforced from both sides. The invitation of foreign lecturers is important to give students a broader view of scientific study and to encourage some of them to study abroad. The organization of long term activity (3 months or more) of Lithuanian professors abroad either in research laboratory or in applied research institutes or employers is also very beneficial. The example of the above mentioned invited lecturer is very significant for the contribution of such international mobility to the quality of the formation.

Despite the pedagogical experience of the staff, during a discussion about commitment to pedagogical competency, it became clear that neither the staff nor, in the view of the staff, anyone in the Institution really cared. That was evident in discussions with students, for instance. There was no compulsory teaching course of any kind for new lecturing staff at the Institution, covering for instance lecturing, pedagogy, assessment, teaching group work, supervision.

Students wanted more experience of group work, more practical work and more practical illustrations of theory. In their view staff were not good at the latter. They claimed that staff cannot give applied examples. Moreover, they do not focus on student understanding but rather focus on the delivery of material. In the view of students, staff are typically not passionate about their subject and often do not place an emphasis on helping students to learn.

In conclusion, the teaching staff contributes a lot of resources (pedagogical experience, research, large range of skills) but the quality of their pedagogical formation is questionable and these resources are not sufficiently well used.

2.4. Facilities and learning resources

The faculty is quite well equipped with physical infrastructural facilities like classrooms, laboratories, library, staff rooms, rest room. The number of classrooms, auditoria and computer laboratories are sufficient for successful studies. There are 8 auditoria (total number of seats 1282) and 5 computer laboratories (total number of seats 156). The library reading room has 110 seats. There are 2-4 workplaces for teaching staff in each staff room. The total workspace of premises of the Faculty is 6,818 square meters. There is also a rest room, where students usually read, relax or use self-service cafeteria. However, students certainly need more space for communication, group work and meetings. Additional space would allow the development of a more effective and convenient academic timetable for the students of the Financial and Insurance Mathematics programme. The premises are currently not adapted for people with disabilities.

High speed wireless internet connectivity is available in all buildings. The number of computers in computer laboratories does not correspond to the students' demand. There are not enough computers for all students. During a lecture two or three students would typically share one computer. Students can use various statistical-econometric software like SAS, Eviews, R. A supercomputer facility is available but is not used by students on the study programme.

The Review Panel had a tour of facilities during their visit and this highlighted the following: the equipment was largely out-of-date and was not being used. No students were present in all the

laboratories. As far as the library was concerned, the journals that were available were in Russian; the English journals were available online. The supply of books in English was limited. The library was very quiet with scarcely any students. During the visit it was mentioned that there a new modern library facility did exist but the review team did not have the opportunity to visit this.

At a very basic level, the available software and ICT facilities would basically meet teaching and learning demands. However, in order to improve the quality of studies, additional ICT facilities are necessary (computers, multimedia projectors, new software).

In the programme 15 credits are assigned for students' professional practice at different institutions. The most common places for professional practice are banks (SEB, Swedbank, DnB, Nordea, etc.), insurance companies (Lietuvos Draudimas, ERGO, etc.), investment companies (Finasta, Orion Securities, etc.) In some cases the insurance supervision authority (Bank of Lithuania), audit/consulting/brokerage undertakings (Deloitte, Ernst & Young, AON) or nonfinancial sector entities (e.g., telecommunication companies Teo, Bitė) could be chosen as a place for professional practice.

Professional practices are organized in accordance with the Practice Provisions approved by the Council of the Faculty (on 15 December, 2009). The Faculty staff helps in the preparation of professional practical training agreements. There are two professional practical training supervisors: one is appointed by the practical training institution and the other is nominated by the Department of Mathematical Analysis, usually the supervisor of the Bachelor Thesis. The student prepares the report at the end of the practical training. The supervisor of practical training institution evaluates student’s work. The final grade is assigned after the presentation of the training outcomes and submission of the report to the Department. The practical training is a good opportunity for the students to apply knowledge in practice and in some cases trial themselves at the training institution and they may obtain a permanent employment position at the end of the training.

The ERASMUS+ program offers for the students the possibility to go abroad for practical training, but students do not took this opportunity**.**

The library contains about 75000 various learning resources (books, journals, textbooks) on mathematics, statistics, probability theory, economics, informatics, information technologies, and other subjects in different languages (mostly in English and Lithuanian). The students have access to the licensed electronic databases. The library updates (at the request of the staff or the students) its catalogues and provides a range of services in cooperation with other libraries. Wireless internet connection is available in the library’s reading room.

In the course descriptions provided in the self-evaluation report (annex 1) there is no mention of how many copies of printed books are available at the library or Department, or if printed books are available at the bookstore. Information in the table 4.3 of the SER reveals the problem that there is not enough books for all students of the same courses at the library, so some of them should share the books.

The learning materials developed by the university staff and other methodological materials needed for studies are available online, but there is no unified course management system; the virtual learning environment Moodle is used spasmodically. Parts of the learning materials are accessible via different websites but it is inconvenient for the students.

The students and university staff have access to electronic databases, which are available for academic work or students' learning, but the Review Panel could find no evidence of databases being mentioned in the course descriptions.

2.5. Study process and students' performance assessment

In the self-evaluation report it is claimed that this programme is one of the largest in Vilnius University and the students are amongst the strongest. The reasons for this are claimed to be that the programme is structured into four modules of mathematics, economics, informatics and a speciality. In addition, the programme is seen to offer opportunities for employment in the labour market of the European Union.

Details about admissions requirements are available (70) at the University website www.vu.lt/lt/studijos/priemimas. In general, admission is based on a 'competition score' derived from performance in the school graduation examination. A formula is used to calculate the score and gives a weight of 0.4 to mathematics performance, 0.2 to performance in information technology and 0.2 to performance in each of the Lithuanian language and literature and also foreign language. A 'simple competitive score' uses this formula but is applied only to students who have placed this course as first or second in their choices (of which a total of 12 is permitted); a 'weighted competitive score' takes account of all students. Since 2007 the minimum score for admission has been 10.4. For admission there are state-funded positions (56) and also privately financed positions (11).

Recent admissions statistics show that the number of applicants for state financed places, and in brackets the number of admitted students, was 724 (56), 587 (60), 368 (56) in the years 2011, 2012 and 2013; during those years the ranges of scores were 19.56:23.2, 18.92:22.34 and 16.32:20.78. For self-financed students the corresponding figures were: 136 (20), 135 (27) and 83 (11) with scores being 18.14:19.94, 15.44:18.98 and 15.4:20.08.

In 2014 some 53 students were admitted to the programme, 50 having state funding places and 3 being self-funded. The number of graduating students is typically around 80% of those admitted, though in 2012 the figure was 60% and in 2013 the figure was 73%. For instance, in 2013, 41 students graduated and in 2014 a total of 42 graduated, 41 being from state-funded places and one being self-funded. Drop-out rates across the whole four years tend to be around 2%-3% and are attributed mainly to student request or student debt. Failure to meet academic standards is not seen as a reason for drop-out.

Students wanted more experience of group work, more practical work and more practical illustrations of theory. In one academic year, the class on International Finance was cancelled due to no lecturer being available. But in the view of the students this was a very important topic, they were upset at the cancellation and in their view a replacement lecturer could have been found from another Faculty.

Opportunities for engagement in research are seen to be aligned with the final thesis work. Then the students work under the guidance of a member of staff. There are instances of the best theses leading to a joint publication with the supervisor of an article in the *Lietuvos statistikos darbai* journal. Beyond that, in the meeting with students, the view was expressed that students do not really have the opportunity to become involved in research. There is no information provided about such opportunities.

There are opportunities for students going abroad to study abroad. In 2011 some 9 students went abroad (to institutions such as Technische Universitat Wien in Austria, Athens University in Greece, Universitat Bielefeld in Germany), in 2012 some 16 students went abroad (and destinations included Universita per Stranieri di Perugia in Italy, Universidade Tecnica de Lisboa in Portugal) and in 2103 13 students spent time in another institution e.g. Universitat Basel in Switzerland, Pamukkale University in Turkey. Recently around 6-7% of the students have studied abroad.

The provision of academic support is seen to be in place through the Faculty Internet site. This covers timetables, financial support, and information about the library. The Faculty Students' Office provides information about assessments, the structure of cumulative grades, etc. and consultations with academic staff are available. Moreover, through the Students' Representative Office arrangements are made whereby students from later years provide assistance to first year students. On the social side there are opportunities for engagement in activities such as music, theatre, dance and sports activities.

The process of organising examinations is governed by the VU Study Regulations. Exam timetables are published. If a student is ill, for example, then arrangements can be made for retaking the exam.

The work of the final thesis is done in groups or teams of students, teams being typically of size 2 – 4; however, it is possible for students to undertake individual activity. For instance, in session 2013, 5 students did an individual project. This group approach has been done partly to provide students with relevant experience but also as a way of coping with the large students' numbers, typically around 50. When it comes to the final assessment an individualised component can be produced; this tends to be based on the student's performance during the final presentation. Final thesis assessments are overseen by a Bachelor Thesis Defense Commission. In session 2013, all scores were 8, 9 or 10 with the numbers being 8, 13 and 19.

During the visit the Panel reviewed final theses. There was evidence of a single report of around 30 pages, authored by 4 students attracting full marks, and theses which did not address topics in finance and insurance but rather topics in pure mathematics. The Review Panel had considerable concerns about the academic standards being applied. Moreover, it would like to have seen a move towards individual thesis topics for each student.

More generally the Review Panel did not receive any evidence to convince them that academic standards were being controlled. The idea of concepts such as either internal or external moderation of examinations, of double marking to provide confidence in assessment did not feature at all in discussions or in the self-evaluation report.

Professional activities are addressed within the Practical Training course in the final year. The intention of this is to pull together the knowledge and skills from across the whole study programme and to show their use in solving practical problems. This is arranged in accordance with the Practice Provision approved by the Council of the Faculty of Mathematics and Informatics on December 2009. Typically this is carried out in banks (such as SEB, Swedbank, DnB Nord, the Bank of Lithuania, etc), insurance companies (Lietuvos Draudimas, ERGO, etc), or investment companies.

Dedicated staff are used to ensure that students have a positive experience during their professional practice. For each student there is an academic supervisor (usually the thesis supervisor) from the Department and an industrial supervisor from the host organisation. It is

observed in the self-evaluation report that the Practical Training session often leads to employment for the student.

2.6. Programme management

The Committee of the Finance and Insurance Mathematics study programme has responsibility for the academic health of the programme. The Committee includes several representatives of the Department of Mathematical Analysis, a representative of social partners and a student representative (who has the status of an observer). The Chairman of the Committee initiates discussions with teaching staff, students and other interested parties to solicit views.

The self-evaluation report highlights the fact that the Institution has procedures for monitoring the study programme, study results, pedagogical competence of teaching staff, etc. After each semester students complete a questionnaire. There is a general section and a section with a particular focus on special subjects. Completion rate is around 70%. The special subjects section is seen only by the Head of Department and the lecturer concerned with that class.

Students have provided information about student satisfaction for each semester from Spring 2010 to Autumn 2012; the self-evaluation report states that student satisfaction has consistently been near the top for Bachelor degrees throughout the University. However, discussion with students during the visit of the Review Panel revealed some major concerns; these included concerns about the pedagogical competence of the staff as well as curriculum matters such as the lack of attention to finance and insurance in the early years. In addition, although a revised programme is planned, somewhat surprisingly students have not had the opportunity to express a view about the new programme.

As a result of their visit, the Review Panel gained the view that the internal quality assurance mechanisms were not effective; students were dissatisfied, staff were not concerned about pedagogical considerations and the study programme was in need of change.

During the visit the Review Panel met with alumni. At the meeting, the three attendees were PhD students from the department, one not being an alumni at all. At the meeting with social partners one attended and was very helpful and informative. He held a quarter position with the University, and was a member of the study programme Thesis Committee.

It seems reasonable to take the view that programme management had to take responsibility for the attendances at these meetings. In the view of the Review Panel, there appeared to be no positive or systematic approach to the involvement of either alumni or social partners in supporting the development of this study programme.

Generally the Review Panel was not convinced of any effective involvement of all stakeholders in the development of the study programme. The Review Panel did not meet a sufficiently broad set of concerned stakeholders and it was unclear why the student representative was merely an observer and not a full member of the study programme committee.

Usually graduates of this study programme go to the Master of Finance and Insurance Mathematics at the same University. Also, graduates continue their studies in the programme of Applied Statistics in Vilnius Gediminas Technical University. Some students go to study abroad. The examples include: Erasmus Universiteit Rotterdam, Quantitative Finance (Econometrics and Management Science) (Sirvydas Dagys, 2010-2011); Tilburg University, Quantitative Finance and Actuarial Science (Justinas Brazys, 2009 – 2010, now doctoral student at Roterdam Erasmus

University); London School of Economics and Political Science, U. of London, Risk and Stochastics (Financial Mathematics), (Gediminas Kiveris, 2010 – 2011). There are also examples of students who continue studying abroad at doctoral level.

III. RECOMMENDATIONS

1. The title of the programme, the learning outcomes and the content should be adjusted so that they are mutually compatible.

2. Steps should be taken to ensure the pedagogic competence of the staff teaching on the programme and to ensure this on an ongoing basis.

3. A review of the programme should be undertaken to address weaknesses identified in the report. The Review Panel might suggest an approach to curriculum design that relies on streams. The review should ensure that students are indeed confident in their knowledge of matters related to finance and insurance. (It should be noted that although a revised curriculum had been produced this suffered from many of the frailties of the previous curriculum).

4. The review should seek to address a range of issues that would be important in employment. Included in this would be issues such as the security of information, ethical conduct in the world of finance and insurance, steps to be taken to become a consultant, the role of professional bodies in the world of insurance and finance, working in teams.

5. Mechanisms should be put in place whereby the voice of students is aired and given a sympathetic hearing, and this should be seen to inform the development of the study programme.

6. There should be a greater emphasis on the role of Informatics in the world of financial and insurance mathematics so that this topic is studied beyond the second year. A stream on Informatics might be considered with, for instance, the study of databases featuring.

7. Steps should be taken to adapt the premises for use by students with disabilities.

8. There should be a greater supply of teaching materials (books, journals, etc) in English.

9. Greater emphasis should be given to the international mobility of staff, and this should be seen to benefit the students on this study programme.

10. The Department should make more effective use of a greater range of alumni and social partners, the latter being chosen carefully so that they would bring appropriate insights to the programme and its development.

11. The staff must be encouraged to think about, to clearly identify and to defend the academic standards of their study programme including the standard of work contributing to the final theses. They should also take steps to confirm them, e.g. by some form of internal / external moderation or comparison with the academic standards of institutions, both national as well as international, of equivalent standing.

12. All students should be given experience of group work, and this should occur before the

final semester.

13. Attempts should be made to move to a situation whereby all students undertake an individual thesis.

14. Steps should be taken to provide computing facilities that are up-to-date and appeal to the students. The opportunity should be taken to provide both physical and virtual environments that are stimulating for students and assist them in their learning.

IV. EXAMPLES OF EXCELLENCE (GOOD PRACTICE)*

V. SUMMARY

This Bachelor study programme on Finance and Insurance Mathematics is administered by the Department of Mathematical Analysis in the Faculty of Mathematics and Informatics. Of necessity, the evaluation concentrated on the existing programme but the Review Panel noted that a new and revised programme has been created within the Department but not approved at any level yet.

There were very positive aspects to the programme. The entry standards were high and the programme attracted very strong students of mathematics. Progress was good and on graduation students gained employment. The staff had the reputation of being strong mathematicians and there were important basic ingredients to underpin a very strong programme.

However, some problematic issues emerged during the visit. It transpired that there were issues with the pedagogical competency of the staff. There were concerns about their passion for their subject and about their ability to properly motivate the students in their learning. There were also some concerns with the existing curriculum. The initial years of the programme could have been mistaken for the initial years of a degree in pure mathematics and students lacked confidence in their knowledge of finance and insurance issues. The new programme did address a small number of issues but raised new concerns in the minds of students.

A tour of the resources highlighted that the equipment was dated, often badly dated, and the laboratories were not being used. Likewise the library facilities were not heavily used although nowadays students might be expected to rely mainly on online resources.

Overall, the Review Panel was of the view that the programme could indeed be excellent but it felt, reluctantly, that the Department needed to engage in some serious activities to bring about change. Above all, fresh thinking was needed in the redesign of the study programme.

** if there are any to be shared as a good practice*

VI. GENERAL ASSESSMENT

The study programme *Finance and Insurance Mathematics* (state code – 612G17001) at Vilnius 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	3
2.	Curriculum design	2
3.	Teaching staff	3
4.	Facilities and learning resources	2
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:	Prof. Dr. Andrew McGettrick
Grupės nariai: Team members:	Prof. Dr. Jose Maria Sarabia
	Dr. Manuel Samuelides
	Doc. Dr. Vytautas Janilionis
	Benas Gabrielis Urbonavičius

Vertimas iš anglų kalbos

VILNIAUS UNIVERSITETO PIRMOSIOS PAKOPOS STUDIJŲ PROGRAMOS *FINANSŲ IR DRAUDIMO MATEMATIKA* (VALSTYBINIS KODAS – 612G17001) 2015-01-12 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-5 IŠRAŠAS

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Vilniaus universiteto studijų programa *Finansų ir draudimo matematika* (valstybinis kodas – 612G17001) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	2
3.	Personalas	3
4.	Materialieji ištekliai	2
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

Šią *Finansų ir draudimo matematikos* bakalauro studijų programą vykdo Matematikos ir informatikos fakulteto Matematinės analizės katedra. Buvo privaloma vertinti šiuo metu vykdomą programą, nors vertinimo grupė pažymėjo, kad Katedroje yra parengta nauja patikslinta programa, tačiau ji dar nepatvirtinta jokiame lygyje.

Studijų kokybės vertinimo centras

Programa turi daug teigiamų aspektų. Priėmimo standartai aukšti, todėl programa pritraukia labai stiprius matematikos srityje studentus. Pažangumas yra geras, todėl studentai, baigę programą, nesunkiai randa darbą. Dėstytojai turi stiprių matematikų reputaciją; dėstomi visi svarbūs pagrindiniai dalykai, kurių reikia, kad programa būtų gera.

Tačiau vizito universitete metu pastebėta ir kai kurių problemų. Paaiškėjo, kad yra problemų dėl dėstytojų pedagoginės kompetencijos. Iškilo abejonių dėl jų atsidavimo savo dalykui ir gebėjimo tinkamai motyvuoti studentus studijuoti. Taip pat iškilo keletas klausimų dėl esamo studijų programos turinio. Pirmieji studijų programos metai gali būti klaidingai palaikyti pirmaisiais Matematikos studijų programos metais, studentams trūksta finansų ir draudimo žinių. Naujojoje programoje išspręsta keletas klausimų, tačiau ji studentams iškėlė naujų klausimų.

Apžiūrėjus materialiuosius išteklius matyti, kad įranga pasenusi, dažnai net labai, o laboratorijos nenaudojamos. Biblioteka nėra itin daug naudojamasi, nes šiais laikais studentai, tikėtina, daugiausia naudojasi interneto ištekliais.

Apskritai vertinimo grupė laikėsi nuomonės, kad programa galėtų būti iš tiesų puiki, tačiau reikia pripažinti, kad Katedrai reikia imtis rimtų veiksmų pokyčiams įgyvendinti. Svarbiausia, pertvarkant studijų programą - naujas mąstymas.

<…>

III. REKOMENDACIJOS

1. Programos pavadinimas, studijų rezultatai ir turinys turi būti pakoreguoti taip, kad derėtų tarpusavyje.

2. Imtis priemonių programą vykdančių dėstytojų pedagoginei kompetencijai gerinti ir tai vykdyti nuolat.

3. Reikėtų iš naujo apsvarstyti studijų programą ir pašalinti šiose vertinimo išvadose nustatytus trūkumus. Vertinimo grupė siūlytų studijų turinį sudaryti pagal kryptis. Reikėtų užtikrinti, kad studentai pasitikėtų gautomis finansų ir draudimo žiniomis (reikia pažymėti, kad, nors studijų turinys buvo patikslintas, jame liko daug ankstesnio studijų programos turinio trūkumų).

4. Reikėtų apsvarstyti daug įvairių klausimų, kurie aktualūs įsidarbinant, kaip antai: informacijos saugumas, finansų ir draudimo etika, kaip tapti konsultantu, profesinių įstaigų vaidmuo draudimo ir finansų srityje, darbas komandoje.

5. Įdiegti priemones studentų nuomonei išklausyti, atsižvelgti į jų nuomonę rengiant studijų programą.

6. Daugiau dėmesio skirti *Informatikos* svarbai finansų ir draudimo matematikos pasaulyje, kad šis dalykas būtų studijuojamas ir pasibaigus antriesiems metams. Informatikos dalykas galėtų būti dėstomas, pavyzdžiui, kartu su duomenų bazių funkcijomis.

7. Imtis priemonių, kad patalpos būtų pritaikytos neįgaliems studentams.

8. Turėtų būti daugiau medžiagos anglų kalba (knygų, žurnalų ir t. t.).

9. Daugiau dėmesio skirti dėstytojų tarptautiniam judumui, kuris taip pat būtų naudingas šios studijų programos studentams.

10. Katedra turėtų veiksmingiau išnaudoti platesnį absolventų ir socialinių partnerių spektrą ir pastaruosius atidžiai atrinkti, siekiant, kad jie pateiktų tinkamų įžvalgų dėl šios programos ir jos tobulinimo

11. Būtina skatinti personalą apsvarstyti, aiškiai apibrėžti ir apginti savo studijų programos akademinius standartus, tarp jų ir darbo pasiskirstymą, susijusį su baigiamaisiais darbais. Jie taip pat turėtų imtis veiksmų šiems standartams apginti, pavyzdžiui, atlikti vidinio / išorinio vertinimo balais ar šalies ir tarptautinių panašių institucijų akademinių standartų palyginimą.

12. Prieš pradėdami paskutinįjį semestrą, visi studentai turėtų įgyti grupinio darbo patirties.

13. Stengtis sukurti tokias sąlygas, kad visi studentai individualiai atliktų baigiamąjį darbą.

14. Stengtis aprūpinti šiuolaikiška kompiuterine įranga ir taip pritraukti studentus. Sukurti tokią fizinę ir virtualią aplinką, kuri skatintų studentus ir padėtų jiems studijuoti.

<…>

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

Vertėjos rekvizitai (vardas, pavardė, parašas)