

Overview Report for the field of Mathematics and Statistics

Names of the programmes	<i>Finance and Insurance Mathematics (612G17001)</i> <i>Mathematics and Didactics of Mathematics (621G10002)</i> <i>Applied Statistics (621G31001)</i>
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The study programmes mentioned above were evaluated by a team of international experts who conducted site visits during the period Tuesday 18th to Thursday 20th of November 2014. The first two, a Bachelors study programme in *Finance and Insurance Mathematics* and a Masters study programme in *Mathematics and Didactics of Mathematics*, were reviewed at Vilnius University on the Tuesday and Wednesday respectively and the third, a Masters study programme in *Applied Statistics*, was reviewed at Vilnius Gediminas Technical University on Thursday 20th November 2014. The visits incorporated all required meetings with different academic and public groups, including the administrative staff of the respective faculties at the two institutions, the various staff responsible for preparing the self-assessment documents, teaching staff of the study programmes, students on the study programmes, graduates, and social partners. The expert group reviewed a selection of student theses and other student work that was made available during their visits. The expert team also inspected various support facilities including classrooms, laboratories, and libraries as well as the computer provision.

All graduates from these study programmes were highly regarded and highly valued by employers. The study programmes were meeting the needs of sections of the labour market in Lithuania; these included primarily the financial, economic, and teaching sectors. The social partners all spoke positively about the programmes. From the perspective of the expert team, the overall impression of the study programmes was positive. Many students interviewed during the visits took part in the discussions in a very active way, and appeared open minded, critical and yet supportive but overall very capable.

The programme aims and outcomes were generally clearly defined and well presented. The aims took into account both of the requirements of the global and of

the European labour markets as well as local needs within Lithuania. The learning outcomes were intended to assure that the graduates were flexible and prepared for careers within the industry or an academic framework.

Generally admission requirements and the organization of the study process were well defined and set at a suitable level; this generally created the feeling that students were well equipped for the various initial classes and there was the expectation that they could proceed to graduation.

The curriculum and the study programmes themselves were being constantly improved taking into consideration feedback from social partners and students. The curricula design met legal requirements; the contents and teaching methods were generally appropriate for the achievement of intended learning outcomes. The teaching staff were all well qualified academically and often had many years of pedagogical experience. However, there was scope for the institutions to make greater efforts to ensure the ongoing pedagogical competence of all their staff and in particular the young staff who would become the agents of real change.

The teaching staff on the various programmes met the legal requirements. They were generally engaged in research relevant to the subjects being taught. In all these study programmes, there was a strong element of applied activity and consequently requirements for students to become acquainted with applications of mathematics or statistics; there was scope for staff generally being more strongly involved in relevant applications, e.g. with business or with industry. Staff also tended to have some international experience through attendance at workshops or conferences or through Erasmus-supported visits to foreign institutions, but this aspect of their activities could be strengthened with benefit to the study programmes. Such activity could be seen as providing greater opportunities for high quality collaborative research and opening up greater possibilities for student exchanges. However, it was noted that when students were in employment – and this was often the case especially with Masters students - lengthy visits to foreign institutions were not feasible.

The teaching and learning equipment was satisfactory; students had access to computer laboratories and libraries. Generally students would benefit from more up-

to-date English language materials (books, journals and other teaching resources), more up-to-date equipment, more inspiring teaching environments and greater attention to internationalisation in all its forms.

The student practice was adequate and was often related to the work of the final thesis. However, generally students wished to see increases in the practical part of the programme; this was particularly true of the Masters study programme on teaching.

The responsibilities of the programme management were generally clearly defined at all levels. Semester-based evaluation and analysis of the examination results and academic year-based analysis of student's opinions were significant parts of the quality monitoring and management systems. However, the concept of academic standards did not feature strongly in discussions during the visits of the expert team. There was scope for staff developing the ability to defend their academic standards; one aspect of this could be to undertake comparisons with the academic standards of equivalent institutions (both national and international).

Generally there were well-established networks of contacts with employers and graduates to enable continuous tuning of the study programmes according to the changing requirements of the local labour market. However, these social partners were often graduates and had very close ties with the institution. There was scope for choosing social partners so that they could bring a diversity of views and experiences including international perspectives that would be used to further enrich the study programmes.

Particular issues arose in relation to each of the three study programmes:

- For the Bachelor study programme in *Finance and Insurance Mathematics*, there was a need to strengthen the student exposure to finance and insurance in especially in the early years so that the high quality students entering the programme could gain increased familiarity and confidence with the application areas

- The title of the study programme on *Mathematics and Didactics of Mathematics* had changed its name on 23rd January 2014, having previously been entitled *Teaching of Mathematics and Informatics*; the original programme had attracted a teaching qualification but due to changes in the legal requirements for teaching at high school, the new degree did not attract such an award. Accordingly there was now a need for a greater focus on preparation for teaching in the college sector or for entering research. The institution was still coming to terms with the changes
- Students on the Masters programme on *Applied Statistics* were very supportive of their study programme, which was viewed positively by the expert team; it had a primary focus on economics and finance. However, the expert team drew attention to an even broader, richer and exciting set of possibilities associated with the advent of ‘big data’ and encouraged the institution to draw the attention of students to these new and exciting opportunities

In conclusion, the study programmes in mathematics and statistics meet educational and specific national and international requirements. There was some scope for elements of imaginative leadership and innovation being used to further strengthen and reap the full benefits of education in mathematics and statistics in Lithuania. Given the fundamental importance of these topics, it would be important that such efforts received support and encouragement.