



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus universiteto  
**STUDIJŲ PROGRAMOS**  
*NANOTECHNOLOGIJOS IR MEDŽIAGOTYRA (612F10003)*  
**VERTINIMO IŠVADOS**

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**EVALUATION REPORT**  
*OF CHEMISTRY OF NANOMATERIALS (612F10003)*  
**STUDY PROGRAMME**  
at Vilnius University

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Išvados parengtos anglų kalba  
Report language - English

## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Nanotechnologijos ir medžiagotyra</i>
Valstybinis kodas	612F10003
Studijų sritis	Fiziniai mokslai
Studijų kryptis	Chemija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirma
Studijų forma (trukmė metais)	Nuolatinė (4)
Studijų programos apimtis kreditais	240
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Chemijos bakalauro laipsnis
Studijų programos įregistravimo data	2011-05-31

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## INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Chemistry of Nanomaterials</i>
State code	612F10003
Study area	Physical sciences
Study field	Chemistry
Type of the study programme	University studies
Study cycle	First
Study mode (length in years)	Full time (4)
Volume of the study programme in credits	240
Degree and (or) professional qualifications awarded	Bachelor's Degree in Chemistry
Date of registration of the study programme	May 31 <sup>st</sup> , 2011

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## **I. INTRODUCTION**

### ***1.1. Background of the evaluation process***

The evaluation of on-going study programmes is based on the **Methodology for evaluation of Higher Education study programmes**, approved by Order No 1-01-162 of 20 December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC).

The evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: *1) self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI); 2) visit of the review team at the higher education institution; 3) production of the evaluation report by the review team and its publication; 4) follow-up activities.*

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

The programme is **accredited for 6 years** if all evaluation areas are evaluated as “very good” (4 points) or “good” (3 points).

The programme is **accredited for 3 years** if none of the areas was evaluated as “unsatisfactory” (1 point) and at least one evaluation area was evaluated as “satisfactory” (2 points).

The programme **is not accredited** if at least one of evaluation areas was evaluated as "unsatisfactory" (1 point).

### ***1.2. General***

The Application documentation submitted by the HEI follows the outline recommended by the SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI before, during and/or after the site-visit:

No.	Name of the document
1.	Action plan for enhancement 2011
2.	Action plan for enhancement 2013

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

Vilnius University is oldest and largest higher education institution in Lithuania, with a long history of teaching and research in chemistry. The present University Faculty of Chemistry was established in 1944, and consists of six departments (Analytical and Environmental Chemistry; Inorganic Chemistry; Physical Chemistry; Organic Chemistry; Polymer Chemistry; Applied Chemistry). Each department has specific scientific research interests and groups, consistent with the name of department. Specialist research areas include: instrumental methods of analysis, electrochemical adsorption, interfacial processes, synthesis and investigation of inorganic and organic compounds, hydrophilic polymers, and biopolymers.

The Faculty of Chemistry delivers three first cycle study programs (Biochemistry, Chemistry, and Nanomaterials Chemistry), three second cycle study programs (Biochemistry, Chemistry, and Nanomaterials Chemistry), and one third cycle study program (Chemistry). Teaching staff within the Faculty of Chemistry contribute to the delivery of chemistry courses connected with their areas of scientific research. Subjects from other study areas are taught by the teaching staff from the relevant faculty, e.g., the Faculty of Mathematics and Informatics, the Faculty of Physics, or the Institute of Foreign Languages. Some additional elective courses are provided by other faculties. The current Faculty of Chemistry staff has 19 professors, 17 associate professors and 10 lecturers. The total number of students in the Faculty is approximately 600 for all cycles.

Nanomaterials Chemistry study programme is a new study programme in Faculty of Chemistry. It was evaluated by Lithuanian Center for Quality Assessment in Higher Education and started to deliver in 2011. The last time the Nanomaterials Chemistry study programme has passed external evaluation in 2013 and was accredited for 3 years.

### ***1.4. The Review Team***

The review team was completed according *Description of experts' recruitment*, approved by order No. 1-01-151 of Acting Director of the Centre for Quality Assessment in Higher Education. The Review Visit to HEI was conducted by the team on *November 11, 2016*.

- 1. Prof. Laurent Counillon (team leader)** Professor in University Nice Sophia Antipolis (France);
- 2. Dr. Domingo Cantero Moreno**, University of Cadiz, Science Faculty (Spain);
- 3. Dr. Elizabeth Briggs**, Retired Head of the School of Chemical and Life Sciences, University of Greenwich (United Kingdom);
- 4. Prof. Jan Lundell**, Professor, Head of the Department of Chemistry Director of the Central Finland LUMA (STEM) Center (Finland);
- 5. Dr. Šarūnas Zigmantas**, Head of Quality Control Sector, *Teva Sicor Biotech* (Lithuania);
- 6. Mr. Benas Balandis**, Student of Master programme in Chemistry at Lithuanian university of health and sciences (Lithuania).

## **II. PROGRAMME ANALYSIS**

### ***2.1. Programme aims and learning outcomes***

The study programme Nanomaterials Chemistry is well structured; and competences to be developed are well aligned with the learning outcomes of the study. The programme aims to train specialists who would have “a good grounding in the core areas of chemistry and nanomaterials chemistry as well as background in mathematics and physics, have practical skills necessary for work in chemical laboratory, have generic skills in the context of chemistry which are applicable in many other contexts, have attained a standard of knowledge and competence which will give them access to second cycle programmes”. The Nanomaterials Chemistry programme aims and learning outcomes are accessible to the public via the internet. The link [www.vu.lt/kviecia](http://www.vu.lt/kviecia) is user friendly, and gives all the general information about the course, including full study programme, expected learning outcomes, and developed skills.

Competences to be developed are well aligned with the learning outcomes of the study. The programme aims and learning outcomes address the needs of the general public, and of the labour market. Many aspects of the programme provide an appropriate foundation for professional and industrial employment.

The programme aims and learning outcomes of the Nanomaterials Chemistry study programme is compliance with the “Tuning” methodology and European Chemistry Thematic Network methodology. In Lithuania, the Chemistry Bachelor degree may also be received when studying “Applied Chemistry” in Kaunas Technical University and “Chemistry” programme at Vilnius University Faculty of chemistry. Students of “Nanomaterials Chemistry” are expected to develop deep understanding of all main branches of chemistry with additional focus in nanomaterials chemistry.

The name of the programme has been changed from “Nanotechnology and Materials Science” to “Chemistry of Nanomaterials”. During program evaluation in 2013 the experts found the original programme name misleading with respect to the materials science part: “The programme name “Nanotechnology and Material Science” is not fully captured in the current study programme. Certainly, graduates from this study programme will exhibit a strong combination of skills in chemistry and nanotechnology, but the material science component is not developed in current academic curriculum. The committee recommends that this issue be addressed by either adjusting the programme curriculum or changing the programme name so that it more appropriately reflects the goals and structure of the programme.” The experts’ recommendation was taken into consideration and the current program title is in line with the programme aims and learning outcomes.

The qualification of Bachelor of Chemistry diploma holder corresponds to the 6<sup>th</sup> Lithuanian qualification level. After successful completion of the Nanomaterials chemistry study programme graduates may continue education in the second cycle study programme or start career chemistry related industrial entities. The programme continues to provide knowledge, skills, and competences for further study at higher levels for Masters’ and Doctorate qualifications.

### ***2.2. Curriculum design***

The programme curriculum design meets legal requirements and in line with general requirements approved by Ministerial Order No. V- 501 (9 April 2010) of the Ministry of Education and Science of Lithuania and “Descriptor of the study field of chemistry” approved on 15 July 2015 (Ministerial order No. V-808).

The programme comprises of 240 ECTS credits that are evenly distributed over 8 semesters (30 credits per semester). Study subjects’ themes are horizontally aligned and not repetitive. This was also confirmed during the meetings. The study subjects are logically distributed over the course time. First semesters are dedicated to introductory courses in

chemistry as well as basic courses in other fields such as mathematics and physics, the middle of study is focused on the specialized courses in chemistry such as Organic Chemistry and Physical Chemistry, and the end of the study programme gives students time for practice (15 credits VII semester), and preparation of the graduation paper (15 credits, VIII semester). Throughout the study programme students select at least 3 courses from General University Education block.

The Nanomaterials Chemistry study programme lacks identity. This fact was clearly emphasized by the current students and alumni. Although the level of the studies is high and gives a solid educational background for the graduates, the Nanomaterials Chemistry programme is still too close to Chemistry programme. It was found that some nanotechnology courses like Chemical Thermodynamics in Nanotechnologies are essentially the same as related for the Chemistry programme courses, except for a few topics. Some courses like Quantum Chemistry and Crystal Chemistry were started to be delivered separately for Nanomaterials Chemistry students, but this is not sufficient to create programme identity. Students and alumni suggested that the programme should be more multidisciplinary, and thought that some chemistry courses should be replaced by physics and biology related courses. Based on this observation, Study Programme Committee (SPC) and faculty should revise the curriculum and create a more distinguishable, multidisciplinary study programme that would develop separate identity from the well- established and recognized Chemistry Study programme.

During the 2013 evaluation, students expressed desire for an introductory course on the subject, and for “support in introductory Physics course.” The reason students demanded an introductory course in Physics is because there is a very different level of Physics teaching in Secondary schools, and some students did not have sufficient background. Also, students expressed a strong desire to broaden the nature of the electives. These requests have been captured in the updated curriculum of the study programme: “Introduction to studies for Nanomaterials Chemistry students” was introduced in semester 1 (5 credits) that includes introductory Physics course. Students could choose generic electives courses from General University Electives scheme that covers a broad range of complementary training. However, students noted that most popular electives as business and management courses are hardly available since they always overbooked.

The programme offers a good balance of the theoretical and practical teaching, as well as practice in industry and final graduation work. It should be noted that many students pursue practice abroad via the Erasmus programme that is very popular and highly supported by the faculty. Teaching staff taking seriously practical student work - 8 cooperation agreements with different social partners have been signed. It should be noted that many students pursue practice abroad via Erasmus programme that is very popular. Students were highly satisfied with the practice in Lithuania as well as abroad. Social partners were satisfied with the knowledge level that students receive during studies.

### ***2.3. Teaching staff***

The Nanomaterials Chemistry study programme is provided by the staff meeting legal requirements. Chemistry faculty are well qualified, and most of the staff members are highly active in the research.

The qualifications of the teaching staff are adequate to ensure learning outcomes. In general students were satisfied with staff qualifications and the support that they receive when needed. However, it was emphasized that in some selective cases teachers are using inappropriate teaching methods to deliver the subject, for example reading the lecture notes throughout the course. Also, it was found that only limited information on the study programme subjects is available online. The experts suggest that teachers should consider more interactive teaching methods, introduce e-learning, and more engagement with students when selecting teaching approach.

The teaching staff of Chemistry of Nanomaterials study program meets all legal requirements. Overall 44 teachers participate in this programme, 15 of them are professors, 16 associated professors, 11 lectures and 2 PhD students. All teachers deliver lectures that are connected to their direct field of research. Teaching staff is highly active in research, and the scientific outcome (in publications and books) could be considered as high. In 2009 the Rector approved the Introductory training programme of newly admitted employees (teaching staff) that is mandatory for all newcomers. Based on the evidences provided, it may be concluded that teaching staff competences are fully adequate to ensure learning outcomes.

Workload for the teaching staff is about 300 hours per year. This number is even higher since most teachers supervise their students on the final graduation work that is not included in calculation of teaching workload. In addition to the teaching duties, all university staff should perform scientific research. The number of contact hours is high and should be reduced to ensure quality teaching, and better balance with the research.

The University selects persons for the academic and research positions by way of public competitions for a five-year period. The competition is managed by an Attestation Commission, set up by the Rector. Most of the teaching staff is selected from inside of the Faculty, appointments from outside are extremely rare. Persons, over 65 years old are not allowed to participate in the competition. The average teachers' age is 46 years, and turnover rate could be considered as satisfactory. PhD students are involved in the teaching process with the goal of grow a new generation of university teachers.

All newly appointed teachers receive an introductory training programme, with additional information including rules and regulations in the University Lecturer Manual. Programme teachers participate in the various exchange programmes with universities abroad. However, none of the external scientists are willing to come to Vilnius University to deliver a full course, probably because of the lack of appropriate financial resources provided by the University.

All teaching staff of Faculty of Chemistry is involved in the research activities that are related to the teaching courses are delivered. Students are encouraged to join the research groups well before BA thesis work, and some students start doing their research during the second year of their education. Nanotechnology related research field should be further strengthened by developing current staff as well as attracting new perspective researchers.

#### ***2.4. Facilities and learning resources***

The Faculty of Chemistry has a number of well-equipped auditoriums for giving general lectures. Lectures in Physics subjects are delivered in the Grand Auditorium of Physics of the Faculty of Physics (Sauletekio str. 9), which is equipped with demonstration facilities. Elective general courses are given at the auditoriums in other faculties. The overall premises dedicated to teaching are fully adequate for giving quality lectures. For educational purposes, students can use the computer class set up in the Digital Science and Computing Centre of the Faculty of Mathematics and Informatics which is in the same campus as Faculty of Chemistry. In the Faculty of Chemistry students may use WIFI internet connection.

Adherence to safety and health protocols was lacking in some laboratories that were visited, including breaches of basic safety rules in several laboratories. While there were some Lithuanian language safety instructions inside large undergraduate laboratories, there was no international signage on laboratory doors to inform of the need to wear safety glasses and laboratory coats, and of prohibitions on eating and drinking. Such signs reinforce verbal and written instructions prior to working.

Although the building of the faculty of chemistry is quite old, the laboratories have been recently renovated and equipped with new modern technique. In the period 2011- 2015, nearly 5 million euro has been spent for acquiring new equipment for the laboratories. Also, in March 2016, National Center of Physical and Technological Sciences was opened. The total area



of this center is 27000 m<sup>2</sup> and 1785 m<sup>2</sup> area is designated for scientists and students of Faculty of Chemistry.

The Faculty of Chemistry has adequate arrangements for the students' practice. Student practice takes place in the 7th semester of the study programme. Practice comprises of 15 credits. Review team also saw evidence of students participating in Erasmus practice. The Faculty of Chemistry has eight current cooperation agreements with different social partners in Lithuania. Students may also find their own placements. Some students accomplish their practice in various institutions abroad using the Traineeships within the framework of the Erasmus + programme. Overall, students are satisfied with their practice exercise, and support from the faculty. Some students would consider a longer practice period that would allow them to obtain more experience and skills.

Vilnius University library has a subdivision in the Faculty of Chemistry. The holdings of Vilnius University library materials are accessible by all the faculty members and students. The library of the faculty has a reading hall for the 32 students, and 6 of them are computerized places. Library holdings are updated annually; approximately 6000 euros are spent each year. Vilnius University library e-resources and scientific databases are accessible from all computers connected to the University network as well as at dormitories and from home (via VPN).

### ***2.5. Study process and students' performance assessment***

The admission for a study programme of the first cycle "Nanomaterials Chemistry" is implemented according to the rules for the admission for the first level studies of Vilnius University. The students' admission requirements are well defined and publicly available. The number of admitted students remains constant since the programme started, ranging from 20 to 31 and it is not effected by drastically reducing student number in Lithuania overall. However, the selection of Nanomaterial Chemistry as a first choice significantly reduced in 2015 (35 in 2014, and only 19 in 2015). Although the number of admitted students into the programme remains unchanged, this fact should be taken seriously.

The dropout rate is relatively high, 20-25%, and it is not reducing since the programme start. The main reason is that some students move to other disciplines within Vilnius University that presumably were a higher choice during admission. Faculty is aware of the high dropout rate and takes actions to engage students during first semesters. For example, the Introductory Physics course has been introduced to prepare students for studies who did not have sufficient Physics education in the last years of high school.

The study programme staff ensures an adequate provision of the programme and the achievement of the learning outcomes. The organization of the study process is well defined in the SER, and clearly defines the actions for students if they fail to pass the exam, if they have debts, or decided to make a break in the study programme. The University Appeals procedure is in place, but it not widely used, since most disagreements are settled within the Faculty of Chemistry. There are all general means provided to achieve learning outcomes – lectures, seminars, practical work, practice, and research work.

Vilnius University, in cooperation with Kaunas Technological University and Klaipėda University, organizes annual conferences for chemistry and chemical technology students where students present their research and discuss in sections. The Faculty of Chemistry, together with Centre of Informal Youth Education, organizes extramural chemistry school for secondary school students. Students of the Faculty participate in organizing activities and in the teaching process of the school. University students have the possibility to read lectures, lead seminars and laboratory works for secondary school students.

The Students' Union takes active care of the students' wellbeing, organizes various events, and introduces freshmen into Faculty student life. In Vilnius University, there are several

artistic collectives for students (choruses, orchestras, theaters, folk groups and other cultural activities).

The number of students participating in mobility programmes is limited by the number of available scholarships. Every semester the Faculty receives 3-5 scholarships for Erasmus studies and approximately 8-12 scholarships for Erasmus practice. Funds for Erasmus practice are higher and Faculty students are very active in this field. Because some other faculties are not able to exploit all allocated scholarships, VU Nanomaterials chemistry BA students have access to a very high number of scholarships for Erasmus practice.

Some of the students (about 12-15%) gets scholarships based on their academic performance. Scholarships are of two kinds. Students from deprived backgrounds may be granted a social scholarship. Those are distributed through the Students' Union. The best students can seek some special scholarships (Thermo Fisher Scientific and some others). Some financial support is provided for students' events, and sports equipment. States Study Foundation provides special loans for students. Information about these loans are given in the webpage of the University.

The University's Health and Sport's Centre provides the possibility to attend various sports classes, to participate in wellness programmes. At the Center of Psychological Innovations and Research students may get professional psychological consultation. Information about studies and consultations is given by the Study directorate (at University level), by members of Dean's office (coordinator of studies, vice-deans), teachers and representatives of Student Union. Students may ask questions on the special consultation website. Questions are answered by members of Study directorate or faculty.

The general assessment of students' performance is clear and adequate. The assessment of the achievements in studying a course is planned and performed by the lecturer of the subject in accordance with the information provided in the description of the course. Contents of the course, requirements and time table are presented by lecturer during the first lecture. Students' honest studying is ensured by continuous oral defense of laboratory works, pedagogical staff observes students' work in laboratory. Observation is conducted during colloquies and examinations to prevent cheating. Campaigns against cheating were organized in cooperation with the Students' Union during which students' representatives observed examinations. To verify the independence of the written assignments, a plagiarism check programme operates within the University information system, which compares the written paper with other students' papers registered within the system.

However, the expected outcome of the final thesis and the grading is system is not clearly defined. The marks for the thesis are given by consensus agreement of the members of the thesis committee. The thesis grading criteria should be defined and available for students, advisors and thesis defense committee. About 60 % of the graduates are employed after 6 months after graduation. The percentage of employed graduates slightly decreased over the years. About 65 % of the graduates continue their studies in the Second cycle. Moreover, 30 % percent of the graduates continue their studies and are employed at the same time. The Nanomaterials Chemistry programme gives a solid background for the students and prepares them for future career.

## **2.6. Programme management**

Responsibilities of the programme management are clearly defined. Vilnius University Studies department prepared *Quality Manual* where detail descriptions of responsibilities of all study process participants are presented "*VU Study Program Regulations*" and "*VU Regulations of Studies*" obligate the Study Programme Committee to monitor quality of studies and to initiate changes when those are necessary. The Study Programme Committee consists of University teachers, student representatives and social partners. The Committee

operates according to “*Study Program Committee Regulations*” and it reports to Faculty Council. The improvement of a particular programme is in the hands of the department responsible for the teaching activities. For example, the Department of Organic Chemistry manages the Organic Chemistry course.

However, the review team found that SPC does not function effectively, the meetings are not held regularly, there is no clear study programme management documentation like action plans, reports, and meeting minutes. Also, feedback for the students should be very clear, make them believe that very voice is listened to, and constant improvements for the programme are performed. The review team suggest that the role of the SPC in the management process should be improved.

The information and data on the implementation of the programme are regularly collected. At the end of each semester students are asked to answer e-questionnaire, where they express their opinion on the studies overall, content of each course and the teacher’s skills. The questionnaire is prepared by the University Quality Management Center. The results of the survey are analyzed by the administration, course teachers, and chairmen of Programme Study Committee. However, the students’ participation in the survey is relatively low.

The outcomes of internal and external evaluations of the programme are only partially used for the improvement of the programme. There is no clear mechanism of how data from internal evaluations is collected, analyzed, and what are the measures taken for improvement. Alarmingly, some students said that majority of the Faculty does not use survey results for improvement, especially of teaching methods. The Faculty is quite slow with implementing changes. For example, the need of introductory course in Physics was well known and it took several years to implement this change. The review team found that Faculty and in particular SPC should be much more proactive in managing the programme improvement process based on the outcomes of evaluations.

Social partners take a part in the development of the programme. Social partners provide feedback to the Study Programme Committee, and participate in the Thesis Examination Committee. The involvement of the social partners should be further increased in programme development, and they should be more involved in the teaching process.

The internal quality assurance measures are not sufficiently effective and efficient. The role of the SPC should be much more effective in the overall study programme management process. The SPC needs to fulfil the requirement to meet twice per year, document all the actions taken and give feedback for students and teachers.

### III. RECOMMENDATIONS

1. Nanomaterials Chemistry programme is too similar with well-established and recognized Chemistry Study programme. Faculty should revise curriculum and create more distinguish, multidisciplinary study programme, in 3<sup>rd</sup> and 4<sup>th</sup> year introducing more nanoscience related Physics and Biology courses instead of chemistry courses.
2. Faculty should enhance the curriculum by making available electives in business and management for majority of the students.
3. The Faculty should ensure that teaching quality is improved for those teachers who need to develop more interactive teaching skills.
4. Faculty should further empower all teachers use E-learning environment during teaching process.
5. The Faculty should strengthen laboratory safety and health culture in the faculty. Health and safety aspects should be emphasized throughout all educational process.
6. Faculty should strengthen Nanotechnology related research field by developing current staff as well as attracting new perspective researchers.
7. The Faculty should ensure that students are aware of the how the grading criteria and percentage weightings of each component of the final thesis are assessed. Students should receive feedback on how the final thesis mark is aggregated.
8. The role of the SPC should be much more effective in the overall study programme management process. The SPC needs to fulfil the requirement to meet twice per year with student participation.
9. The SPC should have formal committee minutes which document information and analyse student data, together with action plans which are tracked and reviewed for implementation and completion, to assist the internal quality assurance process.
10. The SPC should provide formal feedback to students on responses to issues they raise and on actions implemented to give students a real sense of engagement with Faculty plans for improvement.

## IV. SUMMARY

The Nanomaterials Chemistry study programme is well balanced, defining clear and realistic learning outcomes. The programme provides good coverage of fundamental chemistry as well as gives general knowledge in nanomaterials science. The information about the study programme, its aims and learning outcomes is available online, it is informative and useful for prospective students. The title of the study programme is aligned with the programme content.

Although the level of the studies is high and students receive a good level of education in the chemistry field, the study programme in Nanomaterials Chemistry lacks identity separate from the Chemistry programme. The curriculum of the Nanomaterials Chemistry programme needs to be revised. The programme should be more multidisciplinary, and chemistry related courses may be replaced with physics and biology related courses.

Teaching staff in the Faculty of Chemistry is highly qualified. All the teachers participate in research activities, and encourage students to join research groups. The staff is fully capable to enable students to reach study programme aims and learning outcomes. However, based on the students and alumni feedback, it was found that some teachers should improve their teaching approach, and develop more interactive teaching skills. Most of the staff should more effectively use e-learning environment.

The Faculty of Chemistry has well equipped auditoriums, teaching laboratories, and research laboratories where students work on their final thesis. The faculty and students benefited greatly from the newly opened National Centre of Physical and Technological Sciences that it is the largest research base in the Baltics. Arrangements for Practice placements are very well organised with social partners, and appreciated by students. Library books and databases are sufficient to support studies. More attention to safety and health regulations is needed in all laboratories in the Main building, and particularly to signage to ensure universal adherence to good laboratory practice.

The admission process to the Nanomaterials Chemistry study programme is transparent. The student number enrolled in the programme remains constant despite highly the reduced number of students in Lithuania overall. Students are encouraged to join research groups after the second year of their education. In most cases students are supported during their education process. Student mobility is actively encouraged and well supported through the Erasmus programme. The dropout rate remains quite high and Faculty should be more proactive in engaging students from the first semester. Although the student assessment system during educational process is clear, the expected outcome of the final thesis and the grading system is not defined and should be improved.

The VU Quality Manual describes clearly responsibilities for implementation and regulations of the study programmes. The Study Program Committee (SPC) is responsible for programme design, monitoring the quality of the programme and initiating changes. The Faculty collects course surveys at the end of each semester and aggregates the survey data. However, the outcomes of internal and external evaluations of the programme are only partially used for the improvement of the programme. The Study Programme Committee should be more proactive in study programme management, and lead a continuing improvement process.

## V. GENERAL ASSESSMENT

The study programme *Chemistry of Nanomaterials* (state code – 612F10003) 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	3
5.	Study process and students' performance assessment	3
6.	Programme management	2
	<b>Total:</b>	<b>16</b>

\*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. Laurent Counillon (team leader)

Grupės nariai:

Team members:

Dr. Domingo Cantero Moreno

Dr. Elizabeth Briggs

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Mr. Benas Balandis