



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus universiteto  
**STUDIJŲ PROGRAMOS**  
*CHEMIJA (612F10001)*  
**VERTINIMO IŠVADOS**

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**EVALUATION REPORT**  
**OF CHEMISTRY (612F10001)**  
**STUDY PROGRAMME**  
at Vilnius University

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Išvados parengtos anglų kalba  
Report language - English

## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Chemija</i>
Valstybinis kodas	612F10001
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	1997-05-19 Nr. 565

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## INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Chemistry</i>
State code	612F10001
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	19/05/1997 Order No. 565

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## **I. INTRODUCTION**

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

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

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

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

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

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

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

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

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

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

No.	Name of the document
1.	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.

The BA Chemistry commenced as a four-year study program in 1997. It underwent external evaluation by the Lithuanian Centre for Quality Assessment in Higher Education in 2011, and was accredited for six years in February 2012.

The program has undergone an important change since receiving accreditation from the National Credit system into European Credit Accumulation and Transfer System ECTS. Since the last evaluation, a new course in Introductory Studies has been introduced, together with electives from the central General Education courses. The University has refurbished some auditoriums and teaching laboratories, and purchased substantial amounts of new equipment for teaching and research.

#### 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 10<sup>th</sup> November 2016.

- 1. Prof. Laurent Counillon (team leader)** Professor in University Nice Sophia Antipolis (France);
- 2. Prof. Dr. Domingo Cantero Moreno**, Professor in 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 QC Sector, Quality control in *Teva pharmaceuticals* (Lithuania);
- 6. Mr. Benas Balandis**, Student of Master programme in Chemistry at Lithuanian university of health and sciences (Lithuania).

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

The programme aims and learning outcomes are well defined, clear, and publicly accessible in Lithuanian and English. The BA in Chemistry programme aims to train specialists with knowledge and competences in core areas of chemistry to enable students to attain standards appropriate for progression to second cycle programmes, and for employment in scientific laboratories in industry or other institutions. There is an appropriate development of knowledge (underpinned by theoretical mathematics and physics), practical and generic skills, and articulation of competences linked to learning outcomes. The programme aims, competences and learning outcomes are mapped using four competences linked to learning outcomes. The mapping details how cognitive competences in chemistry are developed together with the formation of related practical laboratory skills. Development of key general competences such as critical evaluation of chemical information, problem solving, qualitative and quantitative analysis, communication skills, team working and professional activities are also mapped effectively to learning outcomes. Overall, the programme enables the Faculty of Chemistry to achieve the programme aims and to maintain high academic standards.

The programme aims and learning outcomes are based on the academic and professional requirements, public needs, and the needs of the labour market. Aims and learning outcomes respond to “Tuning” methodology and European Chemistry Thematic Network methodology. Many aspects of the programme provide an appropriate foundation for professional and industrial employment.

The programme aims and learning outcomes are consistent with the type and level of studies and the level of qualifications offered. The BA in Chemistry may be awarded also for the Applied Chemistry programme (Kaunas Tech. U) and for Nanomaterials Chemistry at VU. The programme encompasses all the core subject areas of a traditional chemistry degree, and additionally in conservation and restoration chemistry: these provide opportunities for diverse further specialisation. There is a pathway enabling students to qualify as chemistry teachers.

The name of the programme, its learning outcomes, content, and the qualifications offered are compatible with each other. Since the last review, VU has transferred its programme and courses to the ECTS framework. The programme continues to provide knowledge, skills, and competences for further study at higher levels for Masters’ and Doctorate qualifications. Thus, the programme aims and learning outcomes are consistent with the subject discipline, first cycle and level of qualification.

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

The curriculum design of the Bachelor in Chemistry four- year programme comprises 240 ECTS credits and complies with legal requirements. The curriculum is designed to ensure that theoretical chemical knowledge is developed with underpinning in mathematics, physics and informatics, together with some English language courses, and provides a high level of knowledge and skills. In the current year, an Introductory Physics course has been introduced to provide a more fundamental basis and approach for further study in an area which some students have found to be difficult. The intention is to ensure better vertical integration with subsequent core physics courses. To ensure that new students are better prepared for their studies, the Faculty has designed a first semester Introduction to Studies course which includes study regulations, a study programme presentation, work safety and informatics. The review team consider that, while this course should benefit the current new students, **the Faculty should be more proactive in providing laboratory safety and health information to all its students.** For improved horizontal integration, Analytical Chemistry 1 is now a second semester course instead of fourth semester; and Spectroscopy is a sixth semester course instead of fourth semester. Curriculum design encompasses practical laboratory skills and competences, together

with a range of transferable skills. While such generic electives are available through the General University Electives scheme, they are rarely available because of high demand and are not perceived to focus on areas related to chemistry.

Study subjects and courses are spread evenly and well balanced over eight semesters with appropriate credit loading in each semester: their themes are not repetitive. Core chemistry courses are developed over the first two years, with more advanced topics in the third year. The final year offers specialisation in analytical, organic, inorganic, physical, polymer, and restoration and conservation chemistry. Relevant pre-requisite courses underpin specialist advanced courses, culminating in a two-month practice (semester 7) and the Bachelor thesis (semester 8).

The content of the subjects and courses is consistent with the type and level of the studies. The structure and curriculum are aligned with a programme in chemistry at the specified level, with core and advanced subjects and a range of electives for specialisation. A small number of students study a chemistry degree programme which leads to qualification as a chemistry teacher through electives in education. All students take a minimum of three General University Electives which involve broader interest areas.

The content and methods of the subjects and courses are appropriate for the achievement of the intended learning outcomes. More advanced and specialist courses have relevant pre-requisites to enable students to achieve the learning outcomes. There is a comprehensive programme map of courses linked with intended learning outcomes demonstrating where these will be achieved. The balance between study methods and contact teaching and independent workload (approximately 50:50) is good. Teaching methods range from large group lectures (reducing in size for problem solving or specialised courses); tutorials and seminars; and experimental laboratory work. Practical groups have a maximum 13 students, working individually or in pairs; and in the final year there is individual supervision for student thesis work. Students confirmed that they appreciate the links that are made between theoretical lectures and practical work.

The scope of the programme is sufficient to ensure learning outcomes. Learning outcomes are identified using four sub-sets: ability to apply theoretical knowledge; practical laboratory and instrumental methods; critical evaluation of chemical information, data and problem solving; and communications skills. The final year practical training (Practice) for 2 months and the work undertaken to present the Bachelor thesis require the overarching achievement of learning outcomes across a broad range of knowledge and skills development. Arrangements and regulations for Practice and the Bachelor thesis are available on the VU and Faculty of Chemistry websites. Social partners confirmed that students generally work well in their laboratories, and have appropriate knowledge to support practical skills that are developed during the Practice period.

The content of the programme generally reflects the latest achievements in science and technologies, particularly in the advanced chemistry electives. However, students who met the team suggested that the Faculty should enhance the curriculum by introducing electives in business and management, and improve English language skills, to prepare them specifically for employment as chemists in industry or related scientific institutions. Although electives in business and management are available in the General University Electives scheme, students reported that they are usually over-subscribed, difficult to access and not sufficiently focused on scientific employment. VU courses for the specialist study of conservation and restoration offer students a unique learning opportunity. The Practice course taken in industry or other scientific institutions provides opportunities to experience chemical developments and technologies in modern use, or through study abroad traineeships (Erasmus + programme). Students who met the team following Erasmus studentships spoke highly of the added value of their studies abroad and the effective organisation of the Erasmus programme by the Faculty. VU has eight current cooperative agreements in Lithuania. A small number of faculty teachers are engaged in funded Erasmus internships abroad for professional development.

### *2.3. Teaching staff*

The BA in Chemistry programme of study is provided by the staff meeting legal requirements. Evidence from teaching staff profiles, together with a list of faculty scientific projects, demonstrates that staff are well qualified and nearly all are research active. Projects represent the wide range of chemical fields of study, with both national and international research studies funded mainly by the Research Council of Lithuania or the European Union. Total publications in 2015 reached 201, continuing a commendable and rising publications rate.

The qualifications of the teaching staff are adequate to ensure learning outcomes. Faculty have relevant subject expertise to deliver the programme so that learning outcomes are met. Although there are opportunities available to assist staff in developing their teaching skills, student feedback suggests that they are not very satisfied with the quality of some teaching. This was confirmed during the student meeting, where some teachers were praised for their effective teaching but **others were considered to need to develop more interactive and pedagogical teaching skills**. Students would appreciate more teaching in English, but the review team learnt that this is a challenge for the Faculty because the financial overheads are prohibitive.

The number of the teaching staff is adequate to ensure learning outcomes. The Faculty of Chemistry currently employs 65 teachers (17 professors, 15 associate professors, 13 lecturers and, 15 PhD students: an adequate number to ensure that learning outcomes are met. Teaching staff are currently assisted in laboratory work and tutorials by a small number of PhD students. In addition to their teaching and research duties, staff offer support to student learning through consultations.

Teaching staff turnover is able to ensure an adequate provision of the programme. Faculty members are selected by public competition for academic and research positions for three years, with possibility of extension for three years (but not exceeding 65 years of age). The age distribution curve shows a satisfactory average of 44 years. There is an average workload of 300 contact hours, although the real number of contact hours is significantly increased by final year graduation paper supervisions, and assignment marking. Despite their high workload, students confirmed that many lecturers are readily accessible to discuss academic problems. However, some students were disappointed with lack of support from certain lecturers.

The Faculty of Chemistry need to be more proactive to create conditions for the professional development of the teaching staff necessary for the provision of the programme. **In addition to supporting staff to improve their teaching skills, further development of staff use of the virtual learning environment is required to enhance teaching and learning activities**. Newly appointed staff receive an introductory training programme, with additional information including rules and regulations in the University Lecturer Manual.

All teaching staff of the programme are involved in research directly related to the study programme being reviewed. Research is a key strength of the Faculty of Chemistry, covering a wide range of interests and specialisations. Students are encouraged to join research groups, which exposes them to the beneficial overarching research culture of the Faculty.

### *2.4. Facilities and learning resources*

The premises for studies are generally adequate both in their size and quality. There has been considerable investment in refurbishment and updating of lecture rooms and laboratories in the old main building. Additionally, the Faculty of Chemistry has benefitted significantly from an allocation of research laboratories within the new (March 2016) National Centre of Physical and Technological Sciences. Students also use Faculty of Physics facilities, and computer facilities in the Digital Science and Computing Center (Faculty of Mathematics and Informatics). Almost all areas have WiFi connectivity. The self evaluation identifies that there is still a shortfall in the number of lecture rooms and laboratories which has adverse effects on student



timetables. **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.**

The teaching and learning equipment (laboratory and computer equipment, consumables) are adequate both in size and quality. Considerable Government and EU funding streams have recently been used to purchase modern equipment including instrumentation for undergraduate teaching and research work. New instrumentation has enabled staff to increase the range of chemical techniques available to students studying the BA programme.

The VU BA in Chemistry programme has adequate arrangements for students' practice. In the seventh semester students have practice for two months (September and October) comprising 15 credits of professional practical training. Practical training may be undertaken in Lithuanian industrial and scientific research settings. A significant number of students benefit from working in scientific institutions abroad using the Traineeships within the framework of the Erasmus + programme. VU and the Faculty of Chemistry have eight current cooperation agreements with different social partners in Lithuania. Students may select from the list of available placements, or may find their own practice partners. Practice is governed by a formal signed learning agreement between the receiving institution, the student, and the Faculty of Chemistry. Mentors are appointed at the institution and from the Faculty of Chemistry. Learning outcomes from the practice experience include: the application of knowledge; adapting to new environments, instrumentation, and technologies; appreciation of different experimental techniques and their limitations; development of critical evaluation of data and analysis of relevant scientific literature. Students expressed favourable opinions about their practice experience and commented that it was well organized.

Teaching materials (textbooks, books, periodical publications, databases) are adequate and accessible. Students also have 24-hour access to reading rooms in the VU National Open Access Scholarly Communications and Information Centre. The review team find out that library material is up to date. Generally, students are satisfied with the number of library spaces and the availability of textbooks for their courses. Library resources can be accessed from all VU computers, and from students' homes and dormitories.

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

The admission requirements are well-founded, although not all students admitted select Chemistry as their first choice which impacts on the dropout rate. Students are admitted by applying VU rules using a weighted subject formula based on prior performance: the majority are state funded. Competitive entrance scores are satisfactory (although privately funded scores are considerably lower than for the state funded group). The dropout rate is partly related to the ability of students to change to a higher priority programme without financial penalty, although some students leave for other personal reasons. The Faculty of Chemistry has introduced an Introduction to Studies course to offer more support to freshmen with the intention of reducing the dropout rate. The new Introductory Physics course has been introduced to prepare students for their studies, partly to address the needs of those who may not have studied Physics in the final stage of high school.

The organisation of the study process generally ensures an adequate provision of the programme and the achievement of the learning outcomes. Students experience a range of teaching methods (lectures, tutorials, seminars, projects, and laboratory practical work) and consult with faculty to help them to progress, although not all faculty are fully engaged in the consultation process.

This lack of engagement with students was reported to be a feature of one department, resulting in students avoiding research in that departmental specialism. Class sizes are

appropriate for the different teaching methods. **Rather low numbers of faculty use the virtual learning environment to support achievement of learning outcomes.** VU has sound arrangements for the provision of pastoral support to enhance student learning opportunities. There are clear rules for procedures for students who fail and repeat a course, and for the management of student debt. The University Appeals procedure may be used where students disagree with an assessment or examination result and students confirmed that they are aware of the how to make an appeal.

Students are encouraged to participate in research, applied research, sporting, and other extracurricular cultural activities. VU cooperates with Kaunas Technical University and Klaipeda University and holds an annual conference for presentation and discussion of student research. Students are invited to join research groups after the second year of studies. The Faculty of Chemistry together with the Centre of Informal Youth Education organizes extramural chemistry for school students, for example, VU students may deliver lectures, lead seminars and laboratory work for secondary school students. The Students' Union is active in organizing a freshmen camp, a parade at the start of the academic year, and a chemistry day. There is a Chemistry students' scientific society (part of the SU) which communicates aspects of chemistry more widely to schools and the public, and organises visits to VU laboratories. The Students' Union also organises many social events, particularly for freshmen year students.

Students have opportunities to participate in student mobility programmes. Several students reported that they had taken advantage of Erasmus mobility funding to work abroad, which they appreciated as valuable learning experiences. Mobility programmes are managed by the VU Section of International Programs and Studies Department, and the Faculty vice-dean for academic affairs. Typically, approximately three - five scholarships for studies and a further eight - twelve for practice are awarded by the Faculty, which receives a disproportionately high number because other faculties do not take up their allocated share. In 2014, eight students from the BA programme and, most recently, in 2015 six students used mobility scholarships for practice abroad.

VU Study Directorate and the Faculty of Chemistry ensure an adequate level of academic and social support. Scholarships and student loans afford some financial support, particularly for students from deprived backgrounds. There is appropriate access through the VU Health and Sports Centre for health and wellness issues, with further opportunities to receive professional psychological consultations at the Centre of Psychological Innovation. Students are permitted to interrupt studies if necessary. The VU also maintains a supporting role to first year students to resolve arising problems. VU provides dormitory accommodation for students who live outside Vilnius, those from deprived backgrounds, and students with disabilities.

The assessment system of students' performance is clear, adequate, and publicly available. Assessment based on the course description is planned and performed by the course lecturer, who informs students about the content and assessment requirements during the first lecture. The assessment process is cumulative with formal phased assignments (30 - 40%), laboratory work (10%), and final examination (50 - 60%). Students can obtain feedback on tests to enable them to improve their understanding. Academic integrity is ensured through oral defence and supervision of practical work and examinations. Written assignments are verified using plagiarism detection software. Students informed the review team that they understand the Appeals procedure. Student practice reports are orally defended in the Practice Examination Committee using published VU regulations. The final Bachelor thesis is similarly defended at a Thesis Examination Committee which has an external appointed chairman. Guidance to students on the preparation of the thesis and assessment protocols is available on the VU and Faculty of Chemistry websites. The review team examined a sample of final theses which were generally high quality. A small number were written in scientific English to a good standard. **However, while students are aware of the components of the final thesis that are awarded marks, they did not know how the grading criteria and percentage weightings of each component are assessed. Students receive no feedback on how the final thesis mark is aggregated, and in future the review team agreed that clarification on grading criteria should be improved.**

Professional activities of the majority of graduates meet the programme providers' expectations. Students, graduates, and social partners are invited to register in the career monitoring system and to complete questionnaires, which are used to provide opportunities for employment and practice places. Employment and further study data collected for BA Chemistry graduates, 6 and 36 months after graduation, show a good employment record. The programme enables students to acquire knowledge and skills for futures careers and Masters' programmes at home and abroad.

## **2.6. Programme management**

Responsibilities for decisions and monitoring of the implementation of the programme are clearly allocated. The VU Quality Manual describes responsibilities for implementation and regulations of the programme. The Study Program Committee (SPC) is responsible for programme design, monitoring the quality of the programme and initiating changes. However, the review team learnt that **there are few formal documents recording the deliberations, decisions and monitoring of the programme on an annual basis.** There is evidence that some enhancements were planned and implemented, for example, revisions to the curriculum and increased book purchases. **Students commented that the SPC does not work effectively, they do not feel engaged with programme management and there is a lack of communication about Faculty developments.**

Information and data on the implementation of the programme are regularly collected and analysed. The VU management information system ensures that all students have an agreed programme of studies following enrolment, with access to student assessment grades and facility to register electives. Students complete course evaluation questionnaires at the end of each semester and the satisfaction levels are aggregated to give percentage ratings. Data for the last nine semesters was provided to the review team, showing an overall satisfaction rate in Autumn 2015/2016 of 73.5% based on a 85.8% participation rate

The outcomes of internal and external evaluations of the programme are only partly used for the improvement of the programme. Student representatives may provide feedback to Faculty Council, and students complete an e-questionnaire to assess satisfaction with studies, course content and teaching quality. The most recent surveys show relatively high levels of satisfaction with some aspects of the BA programme. There was less satisfaction with teaching quality in the last survey (61.3%), and some serious concern about the lack of encouragement for students to express their opinions (48.6%). These two issues do not seem to be under active review, and should be addressed formally by the SPC. The review team considered that the Faculty has been disappointingly slow in addressing the recommendations of the previous external review. Notably, **there has been little progress on staff development to improve interactive teaching skills.** Some curriculum developments have taken at least four years to introduce.

The evaluation and improvement processes involve stakeholders. Social partners are involved as members of the SPC; raise problems relating to the programme in meetings and through regular events; and discuss course and programme content informally. However, **the Faculty might wish to involve social partners more formally in guest lectures, visits to companies and institutional laboratories, and in workshops about competencies required in the workplace.**

The internal quality assurance measures are currently not sufficiently effective and efficient. **The SPC needs to fulfil the requirement to meet twice per year with student participation. Formal committee minutes which document information and analyse student data, together with action plans which are tracked and reviewed for implementation and completion, would greatly assist the internal quality assurance process. Such formal monitoring of enhancement plans would promote a quality assurance culture within the Faculty. Feedback to students on responses to issues they raise and on actions implemented would give students a real sense of engagement with Faculty plans for improvement.**

### **III. RECOMMENDATIONS**

1. The Faculty should enhance the curriculum by introducing electives in business and management, and improve English language skills, to prepare them specifically for employment as chemists in industry or related scientific institutions.
2. The Faculty should ensure that teaching quality is improved for those teachers who need to develop more interactive teaching skills using an appropriate educational training programme.
3. In addition to supporting staff to improve their teaching skills, further development of staff use of the virtual learning environment is required to enhance teaching and learning activities.
4. The Faculty should be more proactive in providing laboratory safety and health information to all its students. There is need for adherence to safety and health protocols using international signage on laboratory doors to inform of the need, for example, to wear safety glasses and laboratory coats, and of prohibitions such as eating and drinking.
5. 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.
6. The Faculty is encouraged to involve social partners more formally in guest lectures, visits to companies and institutional laboratories, and in workshops about competencies required in the workplace.
7. The SPC needs to fulfil the requirement to meet twice per year with student participation.
8. 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.
9. 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**

Programme aims and learning outcomes of the BA in Chemistry at Vilnius University enable the Faculty of Chemistry to deliver sound academic standards for progression to Masters' and Doctorate studies, and for future employment.

The comprehensive mapping of course learning outcomes with programme learning outcomes is well developed. The Faculty has implemented some helpful curriculum changes to provide better vertical and horizontal integration of courses. Students have suggested that there should be more emphasis on developing English language skills, and new electives in business and management to prepare them for future chemical industry and related laboratory work.

Well qualified and highly research active staff enable students to achieve appropriate level learning outcomes, and encourage students to take part in research groups. Based on course surveys and student feedback, there remains a need for some teachers to develop interactive teaching skills as a part of an educational staff development programme to improve teaching quality. Such a programme should also provide opportunities for staff to engage effectively with the virtual learning environment.

The Faculty of Chemistry has benefitted significantly from an allocation of research laboratories, where BA students may work on the final thesis, within the new (March 2016) National Centre of Physical and Technological Sciences. New equipment for instrumental analysis has been purchased recently to extend the range of available techniques. 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, particularly to signage to ensure universal adherence to good laboratory practice.

The study process conforms to the normal range of activities of a Chemistry programme. Engagement of students in research activities is encouraged early in the programme and is a strength of the Faculty of Chemistry approach to developing knowledge and learning. Assessment practice is clearly defined and understood by students. Student mobility is actively encouraged and well supported through the Erasmus+ programme. Central student social support is available to assist students with non-academic problems, with much active participation from the Students' Union. Generally, students benefit from academic consultations which they find helpful, although this good practice is not consistent across the departments. Students are unclear about the grading criteria and percentage weightings for the marking of the Final thesis, on which no formal feedback is given by staff. There is scope for the Faculty to make more formal use of social partner involvement in course delivery, workshops, and industry laboratory visits to develop workplace competencies.

Internal quality assurance processes are weak. The VU Quality Manual describes clearly responsibilities for implementation and regulations of the programme. 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. The SPC does not appear to meet with formal documented minutes as frequently as required, and there is no evidence of how student survey data is analysed to inform decisions or actions to address underlying student concerns. Relatively low student satisfaction with teaching quality does not appear to have resulted in improvement plans. Annual monitoring of the programme using feedback to produce enhancement plans is lacking, which results in extremely slow progress in programme development.

## V. GENERAL ASSESSMENT

The study programme *Chemistry* (state code – 612F10001) 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	4
2.	Curriculum design	3
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>18</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. Dr. Laurent Counillon (team leader)

Grupės nariai:  
Team members:

Prof. Dr. Domingo Cantero Moreno

Dr. Elizabeth Briggs

Prof. Dr. Jan Lundell

Dr. Šarūnas Zigmantas

Mr. Benas Balandis