VILNIUS UNIVERSITY

Physical Sciences

Second cycle study programme

CHEMISTRY (Code – 621F10001)

SELF EVALUATION REPORT

Vice Rector of Vilnius University …….. doc. dr. Nijolė Radavičienė
(signature)

Head of Self-Evaluation Group …….. prof. dr. Saulutė Budrienė
(signature)

Vilnius
2016 May

Data on the Study Programme

Title of the Study programme	*Chemistry*
State code	621F10001
Study area	*Physical sciences*
Study field	*Chemistry*
Type of studies	*University studies*
Level of studies	*Second cycle*
Language of instruction	*Lithuanian*
Form and duration of studies	*Full-time, 2 years*
Extent of study programme (in credits)	*120 credits*
Minimal admission requirements	*Bachelor degree in Chemistry,*
Degree and /or qualification awarded	*Master's Degree in Chemistry*
Programme registration date	*19/05/1997 Order No. 565*

Self-evaluation group and responsibilities

#	Name and contacts	Position	Responsibilities
1	Saulutė Budrienė, dr.	Vice dean, Faculty of Chemistry, professor at Department of Polymer Chemistry	Coordination of the analysis of the programme. Summarizing of the information about aims, competences and learning outcomes and structure of the programme.
2	Artūras Katelnikovas, dr.	Assoc. professor at Department of Analytical and Environmental Chemistry	Summarizing of the information about the academic staff and programme management.
3	Giedrė Nenartavičienė, dr.	Senior specialist at Dean's office	Summarizing of the information about the study process.
4	Vida Vičkačkaitė, habil. dr.	Professor at Department of Analytical and Environmental Chemistry	Summarizing of the information about aims, competences and learning outcomes and structure of the programme.
5	Aldona Beganskienė, habil. dr.	Vice dean, Faculty of Chemistry, professor at Department of Inroganic Chemistry	Summarizing of the information about the material resources.
6	Henrikas Cesiulis, dr.	Professor at the department of Physical chemistry	Summarizing of the information about the academic staff and programme management.
7	Albertas Malinauskas, habil. dr.	Senior research fellow, professor at Department of Organic Chemistry, Center for Physical Sciences and Technology	Analysis of the aims, competences and learning outcomes and structure of the programme.
8	Dominykas Juknelevičius	Student of the programme Chemistry	Summarizing of the information about the study process and student's support.

Work Schedule of the Self-Evaluation Group

Jobs performed	Date
Collection of data for self-evaluation	December 2015 – January 2016
Compilation of initial text of Self-Evaluation Report	March 2016
Discussions of the text of the Self-Evaluation-Report	March – April 2016
Presenting of the Self-Evaluation-Report to the teachers and social partners, analysis of questions and comments	April 2016
Preparation of the final version of the self-evaluation report	25 May 2016

Contents

Appendices

1. Course Units Descriptions
2. List of Teaching Staff
3. Teacher profiles
4. Data on projects
5. Data on new equipment
6. List of Erasmus agreements
7. Data on Erasmus Practice
8. List of students' Master Thesis
9. Summary of the Conclusions of the Previous Evaluation
10. Survey results

Abbreviations

LO – Learning Outcomes
SPC – Study Programme Committee

Introduction

1. Vilnius University is oldest and largest higher education institution in Lithuania, established in 1579. Since establishment Vilnius University plays significant role in cultural and scientific development of Lithuania. Vilnius University currently has 23 core academic (or equivalent divisions) including 12 Faculties, 2 Institutes with faculty rights (Foreign languages, International relations and political sciences), 5 research institutes (Applied Research, Mathematics and Informatics, Theoretical Physics and Astronomy, Biotechnology and Biochemistry), and 4 inter-faculty Study and research centers (Centre of Oriental Studies, Religious Studies and Research Centre, Centre for Gender Studies, Sports and Health Centre). In 2016, there were 3634 employees working at the University, of which 1334 represented the teaching staff and 448 research workers. 256 University staff members hold Professor's degree, 451 associate professors. In 2016, there were 20487 students studying at the University of which 11257 were first cycle, 2864 integrated studies students, 3600 second cycle students, 863 doctoral students and 803 residents. More detail information about University subdivisions may be found in: www.vu.lt/en/about-us/structure/departments.

2. First Department of Chemistry at Vilnius University was established in 1784 when Chemistry course was started to deliver for medical students. Separate Faculty of Chemistry was established in 1944. Now Faculty of Chemistry consists of 6 departments (Analytical and Environmental Chemistry; Inorganic Chemistry; Physical Chemistry; Organic Chemistry; Polymer Chemistry; Applied Chemistry). Each department has its own area of scientific research and that is reflected in the name of department. Scientists of our faculty works in areas connected with development of chromatographic and electromigrational methods of analysis, electrochemical adsorption, interfacial processes, synthesis and investigation of functional inorganic and organic compounds, hydrophilic polymers and biopolymers. Faculty of chemistry delivers three first cycle study programs (Biochemistry, Chemistry, Nanomaterials chemistry), three second cycle study programs (Biochemistry, Chemistry, Nanomaterials chemistry) and one third cycle study program (Chemistry). The pedagogical work of the teaching staff is connected with the area of their scientific research. For example, the subjects that are related to organic chemistry are delivered by the teaching staff from the Department of Organic Chemistry and so on. Study programmes are not attached to a specific department. All staff participates in delivery of all study programmes and is responsible for courses connected with specific area. Subjects from other study areas are taught by the teaching staff from a relevant faculty, e.g., the Faculty of Mathematics and Informatics, the Faculty of Physics or the Institute of Foreign Languages. Some elective courses can be provided in other faculties as well.

3. Faculty staff consists of 19 professors, 17 associate professors, 10 lectors. Total number of all cycles students in the faculty is about 600.

Chemistry master study programme was registered 19/05/1997 Order No 565. Last time this study program passed external evaluation in 2011 and was accredited in 1 August 2012. Evaluation was done by Lithuanian Centre for Quality Assessment in Higher Education. Program was evaluated positively and got accreditation for 6 years. Summary of evaluation report is presented in Appendix 9. In order to increase industrial/technological direction after external evaluation new course of Biotechnology was introduced. Information connected with functions and accreditation of chemical laboratory is included into course Quality Assurance in Chemical Analysis. In 2015-2016 academic year informal course "Validation of Analytical Methods" was presented. This course was prepared and taught by social partners from Thermofisher Scientific. What concerns suggestion to create separate programme of Conservation and Restoration, elective courses from the field of conservation and restoration were included in each semester and students who had this specialization in Bachelor studies are able to elect these courses.

1. Analysis of the programme
1.1. Aims, competences and Learning Outcomes

4. Aim of the study programme "Chemistry" is to train specialists who have knowledge and understanding that is founded upon and extends that of the Bachelor's level in chemistry and that provides a basis for originality in developing and applying ideas within a research context, have competences that fit them for employment as professional chemist in chemical and related industries or in public service, have attained a standard of knowledge and competence which will give them access to third cycle programmes.

5. Competences to be developed and learning outcomes of the study programme are presented in detail in Table 2. Those involve:

A. Development of the cognitive competences directly related to the science of chemistry.

B. Formation of the practical competences to investigate materials.

C and D are associated with the development of general competences, which are accomplished through activities related to chemistry.

Table 1. Competences and Learning Outcomes of the Second Cycle of Study Programme "Chemistry" (Master)

Competences to be developed	**Programme Learning Outcomes The graduates will demonstrate:**
A. Ability to perform scientific research and to solve problems, connected with synthesis, analysis and application of materials, ability to work in interdisciplinary areas	A1. Understanding of the newest achievements in the chemical theories, ideas and principles; their critical assessment and application in problem solving. A2. Ability to integrate knowledge from various fields of chemistry to solve unknown problems. A3. Ability to apply knowledge and understanding to the solution of qualitative and quantitative problems of an unfamiliar nature. A4. Ability to explain the principles of modern methods used for the synthesis and characterization of substances.
B. Ability to select and apply investigation methods of the materials, to interpret the obtained results of investigation, to evaluate the reliability of the results of research.	B1. Ability to perform complex, non-standard laboratory procedures and use the equipment for synthesis and analysis of substances. B2. Ability to follow work safety requirements to ensure safe behavior in the chemistry laboratory. B3. Ability to interpret data obtained from laboratory observations and measurements. B4. Ability to work in the interdisciplinary areas and use the knowledge of different scientific fields in practical work.

C. Ability to identify and predict the ways of solution of a problem, to solve problems of unfamiliar character, to collect, to generalize and critically evaluate scientific information and its reliability, to understand the responsibility for the decisions taken.	C1. Ability to formulate problems of practical activities, plan and design the progress of the activity, and control its performance. C2. Ability to analyze, make generalizations and critically evaluate scientific and practical information. C3. Ability to make innovative decisions and evaluate social consequences.
D. Ability to study continuously and autonomously, to evaluate critically the novelties, to perform under circumstances when lacking sufficient information and instructions, to present information to audiences with various degree of knowledge.	D1. Ability to communicate both orally and through the written word in proper Lithuanian and English. D2. Ability to present the results of a scientific research both orally and through the written word for specialist and non-specialist audience. D3. Readiness to study continuously and autonomously, ability to evaluate critically the novelties in the field of chemistry and related sciences, ability to improve and update knowledge and skills and to seek new ones.

6. Links of learning outcomes with specific courses in the study programme are presented in chapter "Structure of Programme".

7. After successful completion of this study program graduates may continue education in third cycle study programmes or start to work in chemistry related enterprises. Qualification of Master of Chemistry diploma holder corresponds 7th Lithuanian qualification level.

1.2. Posting of the information about the study programme

8. The aims and learning outcomes of the Study programme are formulated in compliance with the "Tuning" methodology (http://www.unideusto.org/tuningeu/) and European Chemistry Thematic Network methodology (http://ectn-assoc.cpe.fr/chemistry-eurolabels/). Learning outcomes of study programme were reformulated in 2011 when group of faculty teaching staff participated in project devoted to implementation of European Credit Accumulation and Transfer System in Lithuania. Learning outcomes were discussed with participants and foreign experts of this project.

9. Information about the study programme, the aims and learning outcomes of the studies are posted on the Internet in Lithuanian and English:
www.vu.lt/kviecia/

http://www11002.vu.lt/studijos/studiju-programos/magistranturos-studijos/programa/1148-chemija

https://www.aikos.smm.lt/en/StudyProgramm/Study-Programmes/_layouts/15/Asw.Aikos.RegisterSearch/ObjectFormResult.aspx?o=PROG&f=ProgEn&key=4369&pt=of&ctx_sr=5IZ1qevECMyS2FAXdAxU28X02mM%3d

10. Special sections for students and applicants are available on the website of the Faculty of Chemistry:

http://www.chf.vu.lt/informacija-stojantiems/

11. Consultations on the study programmes are also provided online:

http://www.vu.lt/kviecia/klausk/

12. Study programmes are presented for potential applicants during the Open Door events held in September - October at Vilnius University and at the exhibition „Studies" (Lithuanian Exhibition Centre LITEXPO) in February. Every year Vilnius University publishes catalogue of study programs "Vilnius University invites". Information about studies are posted also on Facebook account:

https://www.facebook.com/events/779731232159100/

1.3. Formulation of the study programme outcomes

13. The aims and learning outcomes of the Study programme are formulated in compliance with the "Tuning" methodology (http://www.unideusto.org/tuningeu/) and European Chemistry Thematic Network methodology (http://ectn-assoc.cpe.fr/chemistry-eurolabels/). In 2010 – 2011 a group of Faculty teaching staff participated in project devoted to implementation of European Credit Accumulation and Transfer System in Lithuania. As a part of this project a survey of professional field was accomplished. On the basis of project information and activities the learning outcomes of study programme were discussed with participants of this project and with foreign experts who were participating in this project. Since the completion of the project goals and learning outcomes of the study programme has not been reformulated.

1.4. The place of study programme among other programmes

14. Students may receive Chemistry Master degree when studding "Applied Chemistry" master programme at Kaunas Technological University and "Nanomaterials Chemistry" master programme at our faculty. Study programme "Chemistry" continues developing deep understanding of all main branches of chemistry with orientation into developing research competences of students.

1.5. Strengths and weaknesses of the study programme

15. The aims and learning outcomes of the study programme are well defined and clear. They are formulated in compliance with the "Tuning" methodology and European Chemistry Thematic Network methodology.

16. Information about the study programme, the aims and learning outcomes of the studies are posted on the Internet in Lithuanian and English. Study programme is presented for potential applicants during various the Open Door events, in catalogue of master study programs of VU.

17. The study programme is oriented into development of research competences of students. Master programme provides students with general skills and skills important for their career in various fields of chemistry.

18. The aims and learning outcomes are consistent with the type of study, cycle and level of qualifications.

19. The title of the study programme, learning outcomes and programme content match each other.

2. Structure of the Programme

2.1. Syllabus, compliance with general requirements, links with learning outcomes

20. Table 2 illustrates how the Study programme complies with general requirements approved by Ministerial order No. V- 826 (3 June 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).

Table 2. Compliance of the study programme with the general requirements

Requirement	In programme
Extent of the second cycle study programme 90-120 credits.	120 credits
The number of courses studied per semester must not exceed 5.	4 - 5 courses per semester.
Independent work should comprise at least 30% of course workload.	More than 60%
Courses in the field of study must be in a higher level than for the first cycle studies and comprise at least 60 credits.	65 credits for courses in the field of chemistry
Elective courses for more deep specialization should not exceed 30 credits.	25 credits for scientific research work in narrow specialization.
Workload of the Master Thesis not less than 30 credits.	30 credits

Table 3. Syllabus of the Study Programme "Chemistry" (Master)

Legend: C – credits; L – lectures; T/S – tutorials, seminars; LW – laboratory work; Ind. – independent work.

I semester

Course	C	Hours				
		L	T/S	LW	Ind.	Total
Scientific research work I	4		6	60	40	106
Electives A	21					
Chemical Kinetics	7	32	32		123	187
Advanced Inorganic Chemistry	7	32	32		123	187
Organic Reaction Mechanisms	7	32	16		139	187
Mechanisms of Polymerization Reactions	7	32	32		123	187
Electives B	5					
Quality Assurance in Chemical Analysis	5	32	16		85	133
Protecting of Functional Groups in Organic Chemistry	5	32	32		69	133
Methods of Investigation and Prevention of Biodeterioration of the Materials of Cultural Heritage	5	32	16		85	133
Polymer solutions	5	32	16		85	133
Electrochemical Impedance Spectroscopy	5	32	8	8	85	133
X-ray diffraction analysis	5	11	37	16	69	133

Chemistry of Sorbents	5	32		32	69	133
Drug Design	5	32	16		85	133
Total per semester	**30**					**800**

II semester

Course	**C**	**Hours**				
		L	T/S	LW	Ind.	Total
Scientific research work II	6		6	100	54	160
Electives A	14					
Biotechnology	7	24		24	139	187
Environmental chemistry	7	32	16		139	187
Metal corrosion	7	32		32	123	187
Selected chapters of thermodynamics	7	32	16	0	139	187
Electives B	10					
Methods of Electrochemical Analysis	5	32	0	32	69	133
Heterocyclic chemistry	5	32	16	0	85	133
Solid state chemistry	5	32	16	32	53	133
Electrochemistry of coordinative compounds	5	32	16	0	85	133
Cultural Heritage Conservation Theory	5	32	16		85	133
Nanobiotechnology in the analytical chemistry	5	32	0	32	69	133
Inorganic Biochemistry	5	32	32		69	133
Organometallics	5	32	16	0	85	133
Synthesis of heterochain polymers	5	32	0	32	69	133
Characterization of Polymers	5	32	0	32	69	133
Liquid chromatography	5	32	0	32	69	133
Applied electrochemistry	5	32	16	0	85	133
Total per semester	**30**					**800**

III semester

Course	**C**	**Hours**				
		L	T/S	LW	Ind.	Total
Scientific research work III	15		10	270	121	401
Electives	15					
Gas chromatography	5	32	0	32	69	133
Electrochemical Kinetics	5	32	16		85	133
Chemistry and Physics of *f*-elements	5	32		16	85	133
Protecting of Functional Groups in Organic Chemistry	5	32	32		69	133
Imunoanalysis	5	32		16	85	133
Solid-phase reactions	5	32	32		69	133
Modern organic synthesis	5	32	32	0	69	133
Electronic structure of inorganic materials	5	32	16	0	85	133
Non-equilibrium systems	5	32	16	16	69	133
Polymer coatings	5	32	0	16	85	133

Polymer Solutions	5	32	16		85	133
Selection of Conservation Methods according to their Compatibility with Techniques of Works of Art	5	32	16	0	85	133
Chemistry of Sorbents	5	32		32	69	133
Application of Total Internal Reflection Ellypsometry and Surface Plasmon Resonance	5	32		16	85	133
Spectroscopic methods of analysis	5	32	0	32	69	133
Supramolecular chemistry	5	32	16	0	85	133
Drug design	5	32	16	0	85	133
Total per semester	**30**					**800**

IV semester

Course	**C**	**Hours**				
		L	T/S	LW	Ind.	Total
Final Thesis	30		10	200	590	800
Total per semester	**30**					**800**

Table 4. Links between the Study programme learning outcomes and courses

1st semester	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3
Scientific research work I	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Electives A														
Chemical Kinetics	+	+	+						+	+	+		+	+
Advanced Inorganic Chemistry	+	+	+	+	+					+	+	+		
Organic Reaction Mechanisms	+	+			+				+	+	+			+
Mechanisms of Polymerization Reactions	+	+		+			+	+	+	+		+	+	
Electives B														
Quality Assurance in Chemical Analysis		+	+					+		+	+			+
Protecting of Functional Groups in Organic Chemistry	+	+	+	+					+	+	+		+	+
Methods of Investigation and Prevention of Biodeterioration of the Materials of Cultural Heritage	+	+			+		+	+	+	+	+	+	+	+
Polymer solutions		+	+	+	+			+	+	+		+		
Electrochemical Impedance Spectroscopy	+		+	+		+	+	+	+	+		+	+	+
X-ray diffraction analysis				+	+	+	+			+		+		
Chemistry of Sorbents		+	+	+		+	+	+	+	+		+	+	
Drug Design		+						+	+	+	+		+	+
2nd semester	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3
Scientific research work II	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Electives A														
Biotechnology		+		+	+	+	+	+		+				+
Environmental chemistry		+					+	+		+				+
Metal corrosion	+	+	+	+										
Selected chapters of thermodynamics	+	+	+	+										
Electives B														
Methods of Electrochemical Analysis	+	+	+		+	+	+	+	+	+	+			+
Heterocyclic chemistry	+	+						+	+	+			+	+
Solid state chemistry	+	+						+	+	+				
Electrochemistry of coordinative compounds	+			+	+		+			+				+

Cultural Heritage Conservation Theory		+					+			+				+
Nanobiotechnology in the analytical chemistry		+	+	+	+	+	+	+	+	+	+		+	+
Inorganic Biochemistry	+	+							+	+			+	
Organometallics	+	+		+			+	+	+	+	+		+	+
Synthesis of heterochain polymers	+			+	+	+	+	+	+	+		+	+	+
Characterization of Polymers		+	+	+	+		+	+	+	+		+	+	
Liquid chromatography		+	+	+	+	+	+		+	+		+		+
Applied electrochemistry	+	+	+	+										
3rd semester	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3
Scientific research work III	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Electives														
Gas chromatography			+	+	+					+				+
Electrochemical Kinetics		+	+	+					+	+			+	+
Chemistry and Physics of *f*-elements		+	+	+	+	+	+	+		+				+
Imunoanalysis		+	+			+	+	+	+	+	+		+	+
Solid-phase reactions	+	+		+			+		+	+	+	+	+	+
Modern organic synthesis	+	+		+						+	+	+	+	+
Electronic structure of inorganic materials	+		+						+	+				+
Non-equilibrium systems	+	+	+	+	+		+	+	+	+	+	+	+	+
Polymer coatings					+	+	+	+	+	+		+	+	+
Selection of Conservation Methods according to their Compatibility with Techniques of Works of Art		+	+											+
Application of Total Internal Reflection Ellypsometry and Surface Plasmon Resonance		+	+				+	+	+	+				+
Spectroscopic methods of analysis			+	+	+		+			+				+
Supramolecular chemistry	+	+	+	+						+				+
4th semester	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3
Master Thesis	+	+	+	+	+	+	+	+	+	+	+	+	+	+

2.2. Programme arrangement principles

21. Length of study programme – 2 years, total student's workload – 120 credits. All courses in the master programme are elective. At 1-3 semesters students have to elect 3 – 4 courses. Also they have to carry out scientific research and prepare report on this research work. The report on research work should be uploaded inti Informational System for plagiarism check and evaluation and presented in the department. The fourth semester is dedicated only for scientific research during which the student finalizes the research started earlier, generalizes the findings and prepares the final Master's paper. Students have possibility to choose courses from the quite wide list. Course is delivered if at least 5 students choose it. Some courses are delivered every second year for 1st and 3rd semester students. This allows to assemble group of students that is sufficient for delivering course. One course in each department could be delivered even when smaller number of students elected that course (this course should be important for the study field of that department). Students are also allowed to attend courses in other faculties if they have interest in some specific area. Mostly courses from Faculty of Physics are elected as an additional option of the study programme. From the beginning of the first semester each student gets his individual scientific advisor. Student consults with the scientific advisor when selects courses and topics for research work. The elective courses, individual scientific advisor and individual research work let individualize studies at the master level programme.

2.3. Study methods, contact and independent workload

22. Like in the first cycle programmes, students have lectures, tutorials and laboratory works. Also students have research work that is conducted in the laboratory of the scientific supervisor. Amount of laboratory work, connected with theoretical courses, in the second cycle studies is significantly smaller than in the first cycle. Practical training switches mostly into individual research work. Amount of independent workload comprises 60% of all student's workload (Table 5) (in this calculation research work in the laboratory is assigned to the contact workload).

Table 5. Sudent workload distribution

Semester	Contact hours (percentage)			Total contact hours (percentage)	Independent work hours (percentage)
	Lectures	Seminars / Tutorials	Laboratory work, research work.		
1	128 (16%)	48 (6%)	60 (7.5%)	236 (29.5%)	564 (70.5%)
2	128 (16%)	48 (6%)	156 (19.5%)	332 (41.5%)	468 (58.5%)
3	96 (12%)	80 (10%)	318 (39.8%)	494 (61.2%)	306 (38.2%)
4	0	10 (1.2%)	200 (25%)	210 (26.2%)	590 (73.8%)
Total	**352 (11%)**	**186 (5.8%)**	**734 (22.9%)**	**1272 (39.7%)**	**1928 (60.3%)**

2.4. Master thesis

23. For preparation of Master Thesis students have all 4th semester. Also they conduct research that leads towards the Master Thesis every semester and prepare semester reports on research work. (There were discussions that research work projects could be done in different laboratories and only final semester would be assigned to Master thesis preparation. But this idea was rejected.) The Master Thesis must be orally defended by each student publicly in the presence of a Thesis Examination Committee that consists of five members (appointed by the Rector) and a reviewer. Chairman of the committee must be an external member (invited from other institutions). Reviewer should have read the thesis in its final form and submit his/her report at least two days before the defense. Thesis Examination Committee, after evaluation of student's ability to express verbally his/her research objectives, methodological approach, primary findings and present research-based conclusions, establishes the final grade. General Vilnius University rules for preparation of Graduation thesis are published http://www.vu.lt/site_files/SD/Studentams/st._reglamentuojantys_dok/Rasto_darbu_rengimo_gynimo_kaupimo_tvarka_11_27.pdf . More specific advices are given in Faculty website http://www.chf.vu.lt/mokomoji-medziaga/ (Rašto darbų rengimo metodiniai nurodymai – Instructions for preparation written papers).

2.5. Strengths and weaknesses of the study programme

24. The curriculum is designed in accordance with formal regulations and oriented to give students a high level of knowledge and skills.

25. The contents of courses match master level of education and gives possibility to achieve learning outcomes.

26. The student's workload is distributed evenly between semesters. Approximately 60% of workload goes for contact studies, and half for individual studies.

27. Big part of total student's workload is designated for the research work. Research work is connected with scientific research conducted by student's advisor. Some students prepare scientific publications during their Master studies. Students who showed exceptional scientific achievements, innovative thinking and prepare publications are awarded special higher level diploma (Magna Cum Laude diploma).

28. The students have possibility to individualize their studies because all courses are electable. Also they have possibility to take courses in other faculties (instead of courses in the syllabus).

29. The content of the study programme meets the level of modern chemistry science, all teachers deliver courses that are directly linked with their scientific interests and activities. Contents of the courses are constantly updated following the global trends of research and development as well as the needs of Lithuanian science and economics.

30. Some courses (Chemical Kinetics, Quality Assurance in Chemical Analysis, Biotechnology, Metal Corrosion, Methods of Electrochemical Analysis) are delivered by social partners, specialists in that specific area.

Weaknesses and actions of improvement

31. Masters' programme can not involve foreign students, because courses are taught in Lithuanian. There is no consensus if it is necessary to start deliver courses in English. Incoming Erasmus students are taught by supervising professor individually.

32. There are no courses taught by visiting professors (this would be too expensive for the programme; only separate lectures are delivered by visiting professors).
Some courses are delivered for very small groups; this is uneconomical. Where is possible, courses are delivered every second year for I and II year students together, but this cannot be done for 2nd semester courses.

3. Academic Staff

3.1. General characteristics of the teaching staff

33. List of teaching staff is presented in Appendix 2. Teaching staff profiles are presented in Appendix 3. Some information about teaching staff participation in scientific projects is presented in Appendix 4.

34. In this programme participate 28 teachers. 15 of them are professors, 9 associate professors, 3 lectures, holders of dr. degree, 1 lecturer without degree. According regulations at least half of workload from field of study should be delivered by scientists. In the Programme 27 teachers out of 28 are scientific degree holders and they are delivering main part of student's workload.

3.2. Employment, age and turnover of teaching staff

35. The University selects persons for the academic and research positions by way of public competitions for a five-year term of office. Such competitions at faculties are organized and the employees are assessed by the attestation commission set up by the Rector. Attestation commission makes decision by taking into account number of scientific papers published in scientific journals, participation in scientific conferences, preparation of scientific monographs, elaboration of patents, participation in research projects, publishing of study material. According regulations of Vilnius University person over 65 years is not allowed to participate in competition for academic position. Their contract may be prolonged maximum for two 3-years long terms by Rectors decision.

36. Distribution of teaching staff by age is presented in Table 6. The average age of the teachers involved in the Programme is approximately 49 years. On the basis of data in Table 6 it may be concluded that recruiting of young scientists and turnover of teaching staff is satisfactory.

Table 6. Distribution of teaching staff by age

Age	<30	30-39	40-49	50-59	60-69	>70
Number of teachers	0	8	3	10	8	0

3.3. Teaching staff competences and workload

37. In 2009, the Rector by his Order approved the *Introductory training programme of newly admitted employees (teaching staff).* The purpose of the programme is to introduce employees of the University to key functioning principles of the University, possibilities for information provision, internal rules and regulations, as well as the relevant requirements. Ordinarily such training sessions are held twice per year. *The University Lecturer Manual*, drafted in 2012 provides information to newly-recruited lecturers on work at the University, helping the lecturers to smoothly integrate in the University community.

Table 7. Numbers of publications, prepared by scientists of Faculty of Chemistry

	01	02	03	04	05	06	Total
2011	8	7	71	11	81		178
2012	8	13	62	14	69	2	168
2013	1	4	57	9	64		135
2014	2	10	71	17	78	1	179
2015	7	12	74	15	92	1	201
Total	**26**	**46**	**335**	**66**	**384**	**4**	**861**

Publication types:

01	**Books:** Monographs, studies, textbooks, dictionaries.
02	**Summaries** (PhD thesis summaries, summaries for habilitation procedure)
03	**Scientific papers** (journals in list of ISI Web of Science)
04	**Scientific papers in materials of conferences.**
05	**Conference abstracts**
06	**Patents**

38. Workload for the teaching staff on average is about 300 contact hrs. per year (including all study programs). Moreover, the teachers supervise the students' work on the final (graduation) paper, mark written assignments, so the real pedagogical workload is heavier. In addition to pedagogical work, all teachers do scientific research and participate in various scientific research projects. In table 7 are presented publication numbers and in Appendix 4 information about participation in projects.

3.4. Mobility of teaching staff

39. Teaching staff members participate in scientific and pedagogical internships that are funded by Erasmus program and by scientific projects (Table 8). When professors from other universities are visiting Faculty, they are giving at least one lecture about their university and research. But we don’t have visiting teachers who deliver full module or course. Inviting of foreign teachers for giving full course is too expensive.

Table 8. Number of teachers that had internship in designated years

Titles	2011		2012		2013		2014		2015	
	LT	Abroad	LT	Abroad	LT	Abroad	LT	Abroad	LT	Abroad
Professors		4		3		3		1		1
Assoc. Prof.		4		4		1		1		2
Lecturers, dr.		2		4		4		1		2
Lecturers										
Assistants		2		2		3		2		2

3.5. Strengths and weaknesses of the programme

40. The teaching staff is well-qualified, experienced and exceeds formal requirements. The teaching staff is very active at academic community in local and international area. Young scientists are involved in teaching process.

41. The distribution of teachers according age is quite even and teacher turnover is satisfactory.

42. The teachers develop their professional skills by participating in various projects and programs with partners abroad. Part of the teachers participated in qualification courses organized by the University.

43. The teaching staff is active in research and in preparation and granting of scientific projects. Staff members conduct a high quality research. According number of scientific publications teachers of Faculty are leaders in the University. Educational activities of the teachers are connected with the fields of their research.

44. In 2011-2012 several electronic teaching books for master program courses were prepared by the teachers of Faculty.

45. The staff is usually willing to help students; teachers are available for consultations during their working time.

Weaknesses and actions of improvement

46. Pedagogical skills of teaching staff should be improved. Now in the University new project of so called "University teachers academy" is under the creation process. Faculty teaching staff should be encouraged to participate in this "Academy" after launching of this project. Other way is to organize meetings and training sessions for Faculty teachers with experts in the field of Educational Sciences, which present the new training methods of the opportunities and benefits.

47. Only small number of teachers uses possibilities of Moodle system in delivering their courses. General information about this system was presented in all teaching staff meeting. It is necessary to talk with teachers individually to encourage to use these possibilities.

4. Material resources

4.1. Premises used for teaching process and number of working places

48. In Table 9 information on auditoriums at Faculty of Chemistry is presented. 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. Nearly in all places of the Faculty students may use WIFI internet connection by using Eduroam account.

49. Master program students perform their research in scientific laboratories, but in some cases educational laboratories are also used. Information about teaching laboratories is presented in Table 10. For the research and preparation of Master thesis students use facilities of scientific laboratories (Table 10).

Table 9. Auditoriums used for teaching at Naugarduko str. 24

Name of auditorium	Area, m^2	Number of working places	Equipment
Prof. Kazys Daukšas Auditorium	172	110	Multimedia, wired and wireless audio equipment
Auditorium of Inorganic Chemistry	162	110	Multimedia, wired and wireless audio equipment
Auditorium of Analytical Chemistry	48	32	Multimedia
Auditorium of Physical Chemistry	52	45	Multimedia
Auditorium of Organic Chemistry	62	50	Multimedia
Auditorium of Polymer Chemistry	47	30	Multimedia
Prof. Andrius Sniadeckis Auditorium	40	25	Multimedia
Prof. Theodor Grotthuss Auditorium	42	24	Multimedia

50. 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. There are 6 classes in this center, each class has 9 computerized work places.

Table 10. Teaching laboratories

#	Teaching laboratory	Number of working places	Area, m^2	Area per one working place, m^2
1.	Laboratory of Analytical and Environmental Chemistry	50	80	1.6
2.	Specialized Laboratory of Analytical and Environmental Chemistry	20	46	2.3

3.	Laboratory of Inorganic and General Chemistry	35	105	3
4.	Organic Chemistry Laboratory No. 1	30	70	2.3
5.	Organic Chemistry Laboratory No. 2	12	34	2.83
6.	Laboratory of Physical Chemistry	26	56	2.15
7.	Laboratory of Polymer Chemistry	12	46	3.83
8.	Specialized Laboratory of Polymer Chemistry No. 1	12	45	3.75
9.	Specialized Laboratory of Polymer Chemistry No. 2	12	44	3.67
10.	Specialized Laboratory of Electrochemistry	5	24	4.8

Table 11. Research laboratories where students run experiments for their final thesis.

#	Research laboratories at Naugarduko str. 24	Number of working places	Area, m^2	Area per one working place, m^2
1.	Laboratory of Sol-gel Chemistry, rooms 237 (prof. A. Kareiva) and 247 (prof. A. Beganskienė)	12	85.46	7.1
2.	Laboratory of Carboneous Materials, room 202 (prof. J. Barkauskas)	5	49.65	9.9
3.	MOCVD laboratory, rooms 1-3 (prof. A. Abrutis)	5	75.56	15.1
4.	Centre of Nanotechnologies and Material Science (Nano Technas), rooms 225, 226 (prof. A. Ramanavičienė)	8	60.98	7.6
5.	Laboratory of Liquid Chromatography (prof. A. Padarauskas)	6	51.38	8.6
6.	Laboratory of Gas Chromatography (prof. V. Vičkačkaitė)	6	49	8.2
7.	Laboratory of Spectral Analytical Methods, (prof. S. Tautkus)	7	52.46	7.5
8.	Laboratory of Electrochemical Research, rooms 102, 108 (prof. H. Cesiulis)	10	76.44	7.6
9.	Laboratory of Biosensors, rooms 101, 105 (prof. A. Ramanavičius)	8	59.78	7.5
10.	Laboratory of Synthesis of Carbocyclic Compounds and Stereochemistry, room 215 (doc. E. Orentas, room 216 (prof. A. Žilinskas)	10	78.5	7.9
11.	Laboratory of Synthesis of Heterocyclic Compounds, rooms 152, 217 (prof. S. Tumkevičius), 117 (prof. V. Masevičius)	15	140.08	9.3

12.	Laboratory of Organic Synthesis, room 113 (prof. I. Čikotienė)	12	79.25	6.6
13.	Laboratory of Synthesis and Characterization of Polymeric Compounds, rooms 248, 249, 251 (prof. R. Makuška)	25	140.21	5.6
14.	Material Science Laboratory, rooms 159-163 (doc. S. Šakirzanovas)	15	146.46	9.8
15.	Electrochemical Laboratory, room 204 (prof. V. Daujotis, prof. R. Raudonis)	6	44.61	7.4

51. National Center of Physical and Technological Sciences was opened in March 2016. Total area of this center is 27 thousand square meters. Center is located in Sauletekio str. 3. There starts to operate the largest and most modern research base in Lithuania and the Baltic states. There are 46 research laboratories. Infrastructure of these laboratories will be available not only to scientists and students, but also business representatives. In these laboratories over 700 scientists and students will be able to perform their experiments simultaneously. For creation of this center 69 million EUR was spent. In this center 1785 m^2 area is designated for scientists and students of Chemistry Faculty. Laboratories of Organic chemistry, Polymer chemistry, Inorganic functional materials, Chemical analysis and sensors, Electrochemical material science and Active coatings are starting their activities in this new modern center (Table 12).

Table 12. Chemistry laboratories in National Center of Physical and Technological Sciences.

#	Research laboratories (Sauletekio str. 3)	Number of working places	Area, m^2	Area per one working place, m^2
1.	Laboratories of Organic and Polymer Compounds, rooms E309-E316	25	460	18.40
2.	Laboratories of Synthesis and Characterization of Inorganic Functional Materials, rooms E407-E412, E422, E423	20	341	17.05
3.	Laboratories of Chemical Analysis and Sensors, rooms E413-E416, E437	16	245	15.31
4.	Laboratories of Electrochemical Material Science, rooms E438, E439	12	103	8.58
5.	Laboratories of Active Coatings, rooms C024-C026	5	52	10.40

Table 13. Renovation of teaching laboratories and auditoriums (2011-2015)

#	Room	Works performed and financial costs in €
1.	Laboratory of Inorganic and General Chemistry	Overhaul renovation in 2011–2012 (17000 €) and new furniture, hoods and so on (52000€)
2.	Various places of the Faculty	Installation of WiFi connection (7240 €)
3.	Auditorium of Inorganic Chemistry	Floor renovation, new multimedia (8640 €)
4.	Prof. Kazys Daukšas Auditorium	Audio-video equipment (2610 €)

4.2. Equipment for studies

52. In period of 2011-2015 Faculty of Chemistry participated in projects funded by Lithuanian governement and by EU („Saulėtekio slėnis (valley of sunrise)“, LaMaTech, „Darnioji chemija (sustainable chemistry)“, „Biotefa“). Nearly 5 million Euro of projects funds were spent for acquiring new equipment for the laboratories. This equipment is used for laboratory works and for research during preparation the final thesis. List of new equipment bought in 2011-2015 years is presented in Appendix 5.

4.3. Library and books

53. Vilnius University library has it's subdivisions in each faculty. Such subdivisions have reading room and library holdings that are collected on the basis of the study programmes and research fields of the faculty. The holdings of Vilnius University library materials are available to all the students and academic staff of Vilnius University and other persons who have a membership card.
54. Library of Faculty of Chemistry has reading hall for 32 students. 6 places are computerized. Since autumn 2012 there is also a wireless access to the Internet not only in the reading room, but nearly in all area of Faculty of Chemistry. Access to internet is supported by EDUROAM service. To update the holdings of the Library of Faculty of Chemistry with study literature, approximately 6000 € are allocated annually.
55. A new brand National Open Access Scholarly Communication and Information Center as part of VU Library has been opened in 2013 at the VU Saulėtekis Campus. Reading rooms in this center are open 24 hour per day.
56. From any computer connected to university computer network, it is possible to access all e-resources available at the Vilnius University Library. Detailed list of full-text databases could be found at: http://www.mb.vu.lt/istekliai/index.php?browse=db . These databases could be accessed using VPN service as well (from home). All dormitories of University of Vilnius are connected to University computer network, so students living in dormitories have possibility to access these resources directly from their room computers.
57. New printed books are added each year to library stock (amount of funds for purchasing books for the reading room of Faculty of Chemistry are presented in Table 14. Electronic materials for studies prepared by the teachers of the Faculty of Chemistry are posted on the faculty website http://www.chf.vu.lt/mokomoji-medziaga/. For some courses e-materials are posted at server of virtual learning center of Vilnius University (vma.esec.vu.lt (protected by passwords)).

Table 14. Finances spent for the purchase of books

Year	2011	2012	2013	2014	2015
€	9300	10400	6500	10100	6000

58. Each year teachers are asked to present information about necessary books and level of necessity. Preference is given to books for the compulsory courses.

4.4. Strengths and weaknesses of the programme:

59. The most of auditoriums and laboratory facilities were partially or completely repaired or reconstructed, a large part of laboratory equipment was replaced.

60. All auditoriums are equipped by multimedia systems, the biggest auditoriums also are equipped with stationary and wireless audio equipment.

61. In most areas of Faculty WIFI connection to internet is available.

Over the past five years the Faculty of Chemistry have improved infrastructure and technical opportunities for students to use modern materials synthesis and characterization equipment.

62. Faculty of Chemistry has several laboratories in new Centre of Physical and Technological Sciences. Facilities of this laboratories will be used for preparation of Bachelor thesis.

63. University library subscribes for big list of scientific databases that could be accessed from computers at the University, at dormitories and from home (in that case needs to install Virtual Personal Network).

64. Students and staff may use library resources by taking books to home or in the reading rooms at the Faculty, at the central library or new Centre of Scientific Communication.

64. Funds of Faculty Library is constantly updated with new textbooks (mostly in English).

Weakness of the programme

66. In some occasions due to financial procedures we had temporary interruptions in subscription to some scientific databases.

5. The studies process

5.1. Admission for a study programme

67. Graduates who have completed a first cycle study programme in Chemistry, Biochemistry, Material Science or Chemical Engineering and hold Bachelor's Degree in the field are qualified to apply for admission to the second cycle Chemistry study programme. Admission to the second cycle studies is carried out on a competitive basis. The list of applicants is made up according to the competition score. The information for the score is derived from the first cycle diploma and its supplement. The competition score is composed of the grades in Analytical Chemistry, General Chemistry, Physical chemistry, Inorganic Chemistry, Organic Chemistry, Polymer Chemistry, Quantum Chemistry, Biochemistry and the Bachelor thesis paper. In case applicant don’t have such subject, similar subjects substitute required subject. The data about admission to the programme are presented in Table 14.

Table 14. Numbers of applications and admitted students.

Year	Applications as the first priority	Applications as the I-VI priority	Total number of applications	Students admitted to the programme
2011	36	44	44	23
2012	35	45	45	29
2013	42	52	52	39
2014	29	49	51	33
2015	34	49	50	32

Table 15. Information about dropout numbers

Legend: SF – state funding P – paying by themselves

Year of admission	Number of admitted students	Dropout numbers				
		1st year of studies	2nd year of studies	Year of graduation	Total	Dropout percentage
2015	SF: 32	2		2017		
	P: 0					
Total	32	2			2	6.25
2014	SF: 33	2	1	2016		
	P: 0					
Total	33	2	1		3	9.09
2013	SF: 39	3		2015		
	P: 0					
Total	39	3			3	7.6
2012	SF: 29	2		2014		
	P: 0					
Total	29	2			2	6.8
2011	SF: 23	2	1	2013		
	P: 0					
Total	23	2	1		3	13.04
Total for all period	**SF: 156**	**11**	**2**		**13**	
	P: 0					
	SF + P 156	**11**	**2**		**13**	**8.33**

5.2. Dropout rates

68. Information about dropout numbers and reasons are presented in table 15 and 16. Total dropout rate is low.

Table 16. Dropout reasons

	Year of study	Year of admition					Total
		2015	2014	2013	2012	2011	
Due to low academic results	I						
	II						
Due to personal reasons	I	2	2	3	2	2	**11**
	II		1			1	**2**

5.3. Organization of study process and academic support

69. Information about studies and consultations are given by Study directorate (at level of University), by members of dean's office (coordinator of studies, vice-deans), teachers and representatives of Student Union. Students may ask questions on special consultation website www.klausk.vu.lt. Those questions are answered by members of Study directorate or faculty.
70. Information concerning organization of studies, study mobility, financial support, timetables (next semester timetables are announced two months before the end of current semester) are presented in webpage of faculty www.chf.vu.lt and informational system of Vilnius university (password protected). Students who failed to pass exam have possibility to take it one more time at the beginning of the next semester (free of charge). If they fail again, they have to take this course next year (when this course is delivered again). For rehearsal of the course students have to pay. In the case the academic debts exceed a limit of 15 credits, the student is removed from the list of students, and may recover his student status only after he eliminates all academic debts while undertaking the studies as a course attender. Students of the final year may be allowed to eliminate their academic debts not later than until the beginning of the last examination session, i.e., they are provided an opportunity to complete the studies in the same academic year. In case students do not agree with the procedure of examination or the assessment of their performance, they have a right to appeal in writing to the Appeal commission.
71. Students who encounter health problems may take a break up to two years. Maternity leave can be provided up to 3 years. Also students may take 1-year break if they have some other personal problems.
72. Student Union take very active care about student's wellbeing, transferring student traditions from generation to generation, organizing free time.

5.4. Student's support: scholarships, dormitories

73. Part of the students (about 12-15%) gets scholarships based on the academic performance. Scholarships are of two kinds: simple (57 €) and increased (95 €). Students from deprived backgrounds may be granted a social scholarship. Those are distributed through the Students' Union. Best students can seek some special scholarships (Thermo Fisher Scientific, Martyno Yčo, Eileen and Vincent Kadis, Gražina Romualda Klimavičius, and some other). Some financial support is provided for students' events,

sports equipment, etc. States Study Foundation provides special loans for students. Information about these loans are given in the webpage of the University.
Students whose living place is not Vilnius, may get dormitory. Students from deprived families and students with disabilities may get discount for their living in dormitory.

74. University's Health and Sport's Centre provides 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.

5.5. Student's scientific and artistic activities

75. 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 discus in sections.

76. A part of Students' Union is Chemistry students' scientific society that unites students who are interested in popularizing chemistry science and its ideas to the general public. Members of this society visit various schools, present our faculty and the science of chemistry to them, organize excursions to our university laboratories.

77. In the faculty we have section of Association for Promotion of the Olympiads in Natural Sciences. Members of this association participate in organizing committee (organizing free time during Olympiads) and in scientific committee (preparing theoretical and practical tasks, grading of participant's exams).

78. Faculty of Chemistry together with Centre of Informal Youth Education organizes extramural chemistry school for secondary school students. Students of Faculty participate in organizing activities and in teaching process of this school. University students have possibility to read lectures, lead seminars and laboratory works for secondary school students.

79. Student Union organizes several events for faculty members. Those are celebration of matriculation of freshmens, freshmen camp, parade on occasion of opening academic year, celebration of chemistry days, celebration of Student Union birthday. Student Union publishes their newspaper "Acetonas" (https://issuu.com/csklp/docs).

80. In Vilnius University there are several artistic collectives for students (choruses, orchestras, theaters, folk's groups and others). Those are coordinated by University's Center of Culture (http://www.kultura.vu.lt/)

81. Sports activities are coordinated by Sports and Health Centre (http://www.ssc.vu.lt/). This Center has three sports bases in different places of Vilnius where students may train.

5.6. Student mobility

82. Student mobility (Erasmus studies, Erasmus practice and other) is coordinated by Section of International Programs. In faculty vice-dean for academic affairs is responsible for student mobility. Number of students participating in mobility programmes is limited by number of scholarships. Every semester Faculty gets 3-5 scholarships for Erasmus studies (1-2 for Chemistry master students) and approximately 8-12 scholarships for Erasmus practice (3-5 for Chemistry master students). List of Erasmus agreements is presented in Appendix 6. List of students participated in Erasmus practice is given in Appendix 7.

5.7. Assessment of students

83. Academic achievements of students are assessed in accordance with the *Procedure for the assessment of*
student achievements: (http://www.vu.lt/site_files/SD/Studentams/Studiju_pasiekimu_vertinimo_Tvarka_12.21.pdf) that defines the general principles for the assessment of academic achievements of degree students and attenders, responsibilities of persons participating in the assessment, their rights and duties. All information concerning assessment is given in University webpage: http://www.vu.lt/studijos/studentams/egzaminu-sesija.

84. 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.
85. A cumulative assessment scheme is applied in most courses. Assessment of the control work and colloquies makes up 30-40% of the final evaluation. The weighting of the final exam amounts to 60-70% of the final mark. Concrete principles of assessment of students' achievements are described in the description of a specific course.

86. 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 student 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.

5.8. Monitoring of career of graduates

87. Vilnius University, together with other Lithuanian higher education institutions in 2014 launched special informational system for monitoring career of graduates (webpage www.karjera.lt). This system receives information from various official sources (including social insurance) and from surveys of graduates. Statistical information about employability and studies of graduates is accessible for authorized users only. Students, graduates and employers are invited to register in career monitoring system and to use it as a place for looking and offering jobs and practice places. Also they are asked to answer periodical questionnaires. Information about further studies and employability of first cycle Chemistry graduates (after 6 and 36 months after graduation) are presented in table 17.

Table 17. Percentages of graduates that are continuing studies and employed

Year of graduation	2011		2012		2013		2014		2015	
Number of months after graduation	6	36	6	36	6	36	6	36	6	36
Continue studying, %	50.0	54.17	28.21	30.77	35.0		24.14		40.0	
Employed, %	83.33	83.33	87.18	82.05	80.0		72.41		80.0	
Employed and continue studying, %	37.50	45.83	28.21	28.21	20.0		17.24		26.67	

5.9. Strengths and weakness of the programme:

Strengths:

88. Admission of students to the programme is competitive and based on marks in Bachelor diploma supplement. The admission rules are consistent with the nature of the studies and skills required from the students.

89. Students are encouraged to participate in exchange programme.

90. Students are able to join students' organization.

91. Students are able to get scholarships based on their academic results or social scholarships.

92. This programme enables students to acquire enough knowledge and skills for future career and studies in PhD programmes in Lithuanian or foreign universities.

93. In most courses cumulative assessment system is applied. Students are assessed during semester and in final exam. Students may appeal to special commission if they do not agree with final assessment.

94. The informational system for monitoring career of graduates was launched.

6. The Management of the Programme

6.1. Quality assurance

95. One of the strategic goals of our University is formation of study quality culture. The Studies department prepared *Quality Manual* (http://skvis.vu.lt/pub/book/qme/topic/10298445) where detail descriptions of responsibilities of all study process participants are presented "*VU Study Program Regulations"* and "*VU Regulations of Studies"* obligate Study Programme Committee to monitor quality of studies and to initiate changes when those are necessary. Committee of Study programme consists from university teachers and representatives of Student Union and social partners. Committee operates according "*Study Program Committee Regulations*" and is responsible to Faculty Council.

6.2. Study programme management

96. Study program is managed by Study Programme Committee. Members of this Committee are S. Budrienė, J. Barkauskas, A. Brukštus, A. Ramanavičius, E. Juzeliūnas (senior research fellow, Center of Physical Sciences and Technology), D. Juknelevičius (Student Union representative). The Study Programme Committee is responsible for design of Curriculum and monitoring responses of university teachers, students, graduates and employers about study programme. Changes in the Curriculum are suggested by Study Program Committee and confirmed by Faculty Council. The course unit descriptions at first are approved by corresponding department (e.g. Organic chemistry by Department of organic chemistry) and then confirmed by Study Programme Committee. The heads of departments are responsible for the quality and implementation of the courses related to the profile of the department. The implementation of the study programme is administered by the Dean's Office – the Dean, Vice Dean of Academic Affairs and the Coordinator of studies. The matters related with administration of the programme are discussed during weekly meetings at the Dean's Office.

97. A plan of study is designated for every newly enrolled student group with the University information system. Under this plan the information system generates examination rolls, sends messages to students and faculty members about the planned events related with studies (deadlines for selection of electives, examination dates, etc.). The student can log in into the system and find out what his/her plan of studies is, check the assessment grades, enroll into the elective courses. Overall, the plan should not change till the completion of the whole cycle of Bachelor studies. Correction in the programme must be made before a new admission. However, if the Committee for studies takes a decision to alter an ongoing programme, a reasoned request is submitted to the Directorate of Studies of Vilnius University to obtain permission to change the plan of studies.

98. The Faculty has the Student Union. Representatives of the Student Union are members of the Faculty Council, the Study Programme Committee and the Appeals Commission. Once per semester Student Union representatives and Faculty administration organize a meeting where various problems are discussed.

99. Social partners take part in the development the study programme in several ways, as follows: 1) indicating the problems of the programme during the official meetings, such as conferences, seminars, the so-called science days at the enterprises; 2) discussing the content of the programme and the constitutive courses during informal meetings; 3) joining the Committee of the study programme; 4) participating in Thesis Examination Committee (mostly as a chairman of a committee); 5) as a lecturers of some courses.

100. At the end of the semester students are offered an e-questionnaire, in which they are asked: 1) to assess satisfaction with the studies in general; 2) to assess the content of each course and the teacher's skills. Questionnaires are prepared by VU Quality Management Centre. The results of the survey (Appendix 10) are analyzed by administration, teacher and chairmen of Programme Study Committee. Results about satisfaction with the studies in general are posted on intranet. Regulations of acquisition of feedback posted on webpage: http://www.vu.lt/site_files/SD/SK/SP_dalyviu_GR_tvarka.pdf .

6.3. Strengths and weakness of the programme:

Strengths:

101. Design of the study programme is in hands of SPC. For implementation of study programme is responsible Deans office and Heads of departments. The responsibilities are described in the University documents.

102. Feedback from students is collected: by using the on-line surveys organized by Vilnius University after each semester (in the survey students express their opinion on studies in general and about individual

teachers); by organizing meetings of students' representatives and administration (in the middle of each semester).
103. According on-line surveys in general students are satisfied with the studies at the Faculty.
104. Social partners participate in management of the programme as a members of Thesis examination committee, practice supervisors, SPC members, as e lecturers of some courses, in activities of Alumni organization.