

External evaluation report for:

THIRD-CYCLE CHEMISTRY STUDY PROGRAMME AT FACULTY OF NATURAL SCIENCES AND MATHEMATICS

UNIVERSITY OF BANJA LUKA

Number: 1/01-04-1-2-13/23

Date: March, 27, 2023

Dates of visit: March 14-15 2023

Location: Faculty of Natural Sciences and Mathematics at the University of Banja Luka

Review panel:

Prof. Snezana Zaric. PhD, representative of the academic community, chairman

Prof. Igor Djerdj, PhD representative of the academic community, member

Vesna Matic, representative of business and practice, member and

Danijela Rajic, student representative, member.

Coordinator: Jugoslav Vuk Tepic, PhD

External evaluation criteria for the purpose of initial accreditation: Standards for initial accreditation of higher education institutions and study programs (AVORS, 2021), Rulebook on initial accreditation of higher education institutions and study programs of Republika Srpska (AVORS, 2021), Instructions for preparation of documentation for initial accreditation of higher education institutions and study programs (AVORS, 2021).

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1. Application

1.1. Information about the initial accreditation process

The Faculty of Natural Sciences and Mathematics at the University of Banja Luka applied for the issuance of a licence for the third-cycle study program of Chemistry to the Ministry of Scientific and Technological Development, Higher Education and Information Society of the Republic of Srpska (hereinafter the Ministry). After reviewing the submitted documentation and concluding that the application was valid, the Ministry requested the opinion of the Council for Higher Education of the Republika Srpska (hereinafter: the Council). After obtaining a positive opinion of the Council, the Ministry submitted to the Agency for Higher Education of Republika Srpska (hereinafter: the Agency) a request for external evaluation for initial accreditation of the Chemistry study program which was received on January 8, 2023, and registered under protocol number 1/01-04-1-2/23. The Director of the Agency appointed Jugoslav Vuk Tepić, PhD, as the external evaluation procedure's coordinator for initial accreditation by Decision No. 1/01-04-1-2-1/23 from January 16, 2023. On January 30, 2023, the Agency signed a contract with the University of Banja Luka for external evaluation services for initial accreditation of the Chemistry study program under number 1/01-04-1-2-3/23. The Review Panel for external evaluation was appointed from the List of reviewers of the Agency by the Decision on the appointment of the Review Panel number 1/01-04-1-2-2/23 from January 17, 2023. After concluding the contract with the members of the Review Panel and signing a statement on the absence of conflict of interest all of them were individually provided with data for logging into the Agency's information system where the documentation proving the fulfilment of the standards for initial accreditation is posted and a checklist was set up in which the members of the Review Panel entered all preliminary findings and observations and thus prepared for a visit to the Faculty of Natural Sciences and Mathematics. The process coordinator using official correspondence informed the members of the Review Panel about the external evaluation of study program Chemistry, the technical and organizational details of the visit, the time frame for all phases of external evaluation as well as the recommended work methods for efficient and timely execution of obligations. Also, a tentative date for the visit to the higher education institution was agreed upon and the way in which the members of the Review Panel prepare all the steps during the upcoming

cooperation in the process of external evaluation of the Chemistry study program, and the Review Panel plan and the program of the visit to the study program of the third cycle of Chemistry at the Faculty of Natural Sciences and Mathematics were adopted.

2 External evaluation

2.1 Previous activities

During the preparation for the visit to the Faculty of Natural Sciences and Mathematics at the University of Banja Luka, the Review Panel analyzed the submitted documentation, entered observations, remarks and comments into the Agency's system, and prepared a list of questions to be asked during the visit.

Acting by the agreed scope of work according to individual contracts, the Review Panel made complete preparations for the visit to the Faculty (recorded on the individual accounts of the reviewers in the Agency's system, subject SP Chemistry PMF, UniBL) for external evaluation in the process of initial accreditation, in the agreed period, March 14 and 15. Before the start of the visit, on March 21, 2023, a working meeting of the Review Panel was held and the details of the visit were agreed upon. The formal aspects of the visit have been coordinated with the Faculty of Sciences and Mathematics and listed in the appropriate form, under the title of the document Work plan of the Review Panel and program of the visit to the University of Banja Luka, Chemistry study program.

Also, in the Agency's system, a report on the review of the Chemistry study program was prepared and it was integrated into the final report on external evaluation for the purpose of initial accreditation of the study program.

2.2 On-site visit to the higher education institution

The Review Panel are on based on the findings of the analysis of the submitted documentation and completed additions and corrections of incorrect entries in the Agency's system, prepared the questions for the visit, and immediate insight during a visit to the Faculty of Sciences and Mathematics of the University of Banja Luka, verified the validity of the proof of fulfillment of the requirements of the Standard for Initial Accreditation. The Review Panel, acting in accordance with the agreement reached

before the visit, decided that during the visit the focus of the activities would be on the conditions for conducting research, measuring instruments and apparatus and, in particular, the dissemination of the scientific and research qualifications of teachers and potential mentors. During the visit, without diminishing the importance of that aspect of business, its talked with the management of the Faculty of Sciences and Mathematics, indicating on that occasion the inconsistency of the Rules of Study at the University of Banja Luka and the essential needs for the regulation of doctoral studies. Conversations with the head of the Chemistry study program and academic and non-academic staff related to all aspects of the realization of the study program was in clarifying the way of conducting all phases of the doctoral study, from the application of the candidate to the defense of the final thesis. It was pointed out the need to create a formal document, of an informative nature, which would make it easier for future students who come to the Faculty of Sciences and Mathematics for the first time. Followed by a tour of the premises and resources of the Faculty, which will be used for the implementation of the study program, with a particularly detailed tour of the laboratory space, which is mostly located in a separate building next to the main building of the Faculty, and on that occasion there was a conversation with laboratory technicians, students performing exercises and staff and teachers. After visiting the main facility, the library, with special emphasis on the availability of scientific and professional literature, the analytical part of the visit was completed, and during the work break the Review Panel of reviewers prepared additional elements and presented a preliminary report to the management of the Faculty of Sciences and Mathematics at the final part of the visit, without announcing the outcome of the external evaluation, but with the aim of emphasizing the good aspects of functioning and pointing out, through recommendations for improvement, on the weak sides of the organization and the performance of the third cycle of Chemistry. The Review Panel expressed special respect for the professional attitude of teachers, associates and supporting staff of the Faculty as well as satisfaction with the fact that a small and self-sacrificing, harmonious collective can create an enviable level of quality in the providing of teaching and scientific work from modest resources to the satisfaction and benefit of future students. Details about the participants of all discussions are part of the documentation of the subject of external evaluation and are available in the Agency, SP Chemistry file, PMF Banja Luka.

Also, all aspects of organization, management and provision of necessary resources were discussed in detail, with the fact that the financial plan for the implementation of the study program is made flexibly according to the model of financing by doctoral candidates and with the possibility of carrying out with a smaller number of candidates than the planned admission, and all aspects are well explained and are

in accordance with modern trends in the field of chemistry, that is, polymers, environmental protection and analytical methods in this case. A small number of potential doctoral candidates relaxes the need for institutional cooperation and labor market examination, because it is clear that this profile is employed especially in scientific organizations, although the Faculty has shown itself to be proactive and constructive in this field as well, offering and achieving cooperation with several production organizations from the field of the chemical industry such as the company RS Silikon, Bjelajce. In addition, the members of the Review Panel from among the academic community presented constructive suggestions and advise the teaching staff and the management of the study program on a flexible approach to the implementation of the planned teaching content and research obligations of future candidates and this is specifically stated in Standard 4, the section dealing with weaknesses while the intention of the Review Panel is to understand this as recommendations for improvement in the sense that the higher education institution deems to be expedient and useful.

The Review Panel was convinced of the credibility of the submitted documentation by the Faculty, from supporting the teaching and scientific but also the practical part of the study program, classrooms, appropriate cabinets for experiments, and the library with demonstrated possibilities of using scientific journals. During the final address to the planned head of the Chemistry study program, it was agreed that some evidence of the fulfillment of the standards would be provided, technical and substantive errors and oversights that were additionally requested by the Review Panel and prepared and demonstrated during the visit, posted in the information system of the Agency for Higher Education of the Republika Srpska within seven working days, which was done within the given deadline.

Information about higher education institution:	
Name, address and e-mail address of the institution	Univrsity of Banja Luka Bulevar vojvode Petra Bojovića 1A 78000 Banja Luka info@unibl.org
Web address	www.unibl.org
Name, number and date of the founding act	01-577/07 Law on Amendments to the Law on Higher Education March 29, 2007
Tax Identification Number (PIB)	401017720006
The registration number assigned by the Republic of Srpska Institute of Statistics	01040251
Name, surname and address (name and headquarters) of the founder	Republic of Srpska
Number and date of the decision on the appointment of the person authorized to represent	02/04-3.733-1/18 from March 20, 2018
Visiting organizational units and responsible persons	The Faculty of Natural Sciences and Mathematics at the University of Banja Luka
Contact person	Prof Milica Balaban, PhD
Phone number	051 319-142

Study program that applied for accreditation		
Name of the study program:	Study level	Name (s) of exit qualifications
Chemistry 180 ECTS	Third cycle	Doctor of Chemical Sciences - 480 ECTS

THE HIGHER EDUCATION INSTITUTION

The University of Banja Luka, according to the acts of the Agency for Higher Education of the Republika Srpska, approaches the initial accreditation simultaneously as an institution and in this case the Chemistry study program, in the corresponding calculations according to individual standards, the total resources of the University are taken into account.

Information about the higher education institution

The reviewer should give a brief overview of the presented history and the most important characteristics of the higher education institution, on no more than one page.

The University of Banja Luka is the oldest and largest institution of higher education in the Republic of Srpska and the second largest university in Bosnia and Herzegovina. In the 47-year history, more than 39,650 bachelor's degrees were obtained, more than 2,540 master's and master's theses were defended, as well as more than 760 doctoral dissertations. Many alumni of the University play responsible social roles and represent influential actors in the entire social environment. It is a fact that makes it easier to realize the interest of the University and its role in society. In the long pedagogical tradition, which began long before the foundation of the University, more precisely in 1950, when the Higher Pedagogical School was founded in Banja Luka, valuable experience was gathered in teaching, grading and other forms of work with students. Today, the University of Banja Luka enjoys the reputation of an institution that maintains high academic standards, which primarily attracts our students. Over 15,000 our and foreign students of all three study cycles are currently studying at the University of Banja Luka. Teaching is conducted by 811 full-time teachers and associates. In addition to them, the University employed 170 teachers in supplementary employment, 168 visiting professors from abroad and 121 professional associates for the needs of clinical practice. Administrative and technical support is provided by 559 employees. The University of Banja Luka represents the most important resource of society, a center for the development of knowledge and abilities, culture and ethics and other humanistic and democratic values. The teachers and associates of the University made a huge contribution to political and social life, economy and cultural development, progress and survival of the community. Most university teachers are known to the public, especially experts in certain fields. Individuals are recruited from the university staff for important social positions. Distinguished professors contribute to the formation of institutions and bodies, laboratories and centers, to the adoption of strategies and policies, laws and regulations, participate in the work of commissions, boards and other bodies. The opinion of university professors is sought on important issues, at various forums, debates and forums organized by the public media. University teachers published a large number of printed works, over 500 monographs and textbooks. It is the literature that has been used to spread knowledge across companies and institutions for a long time. Students of other universities also learn from them, experts in practice, bankers, lawyers, engineers, professors use them. University teachers often write or review textbooks for lower levels of education, and define their content and thus participate in shaping the overall education system in the Republic of Srpska. The University traditionally organizes scientific and professional gatherings, exhibitions and other events where achievements in science and culture are presented and exchanged. Each faculty has a scientific meeting, conference or similar annual or biennial event thematically related to the areas it nurtures. Scientific results presented at those events are printed in proceedings. A number of faculties have already noted their own journals that spread new knowledge beyond classrooms and conferences. The Student Parliament of the University of Banja Luka organizes its own scientific and professional gathering "Students meeting science" with international participation (<http://stes.unibl.org/>).

Up to date, 14 have been held. Their example is also followed by the students of certain faculties. In addition to expert conferences, the University also organizes conferences on educational issues and reforms that pave the way and shape the system of higher education in the RS. A wide range of educational disciplines enables the development of versatile personalities, personalities who, in addition to professional skills, also possess general (soft, transferable) skills. With 17 faculties and 65 study programs (only in the first cycle of studies), 66 programs of the 2nd cycle and 15 study programs of the 3rd cycle of studies, the university offers the possibility of acquiring complex knowledge, not only in basic disciplines, but also in bordering and related disciplines. Today, research requires multidisciplinary knowledge because the most significant research takes place at the boundaries of different disciplines. Openness is one of the principles of the University's work. Everything that happens at the University, both good examples and bad ones, is discussed openly with representatives of the media and other interested parties. We believe that it will be recognized in the environment as a virtue and strength that should lead to a fairer and more honest society and raise the reputation and attractiveness of the University. Currently, over 100 agreements signed at the University level and over 150 agreements signed at the level of organizational units are active. The largest number of agreements were signed with partners from the countries of the region (Serbia, Slovenia, North Macedonia, Croatia, Montenegro), then with partners from EU member states (Bulgaria, Greece, Italy, Germany, Poland, Portugal, Romania, Slovakia, Finland, France, the Netherlands, the Czech Republic, Spain), with partners from countries that have special relations with the EU even though they are not members (Switzerland, Turkey), then with partners from the Russian Federation and the People's Republic of China, as well as with several partners from the United States of America, Israel, Belarus, Ukraine, Japan, Algeria and Moldova. In addition to bilateral cooperation, the University is distinguished by membership in numerous international associations and networks and participation in international educational and research projects, which are prerequisites for achieving rich international cooperation. Many of our students continue their master's and doctoral studies in Europe and the world. The number of teachers who earned their doctorates abroad is increasing. There is a tendency to organize doctoral studies in cooperation with other domestic and European universities, as joint studies. Most of the faculties of the University of Banja Luka are located in two campuses, located not far from the banks of the Vrbas River, in the immediate vicinity of the city center. The campuses have dormitories with restaurants, sports fields, student clubs and the University Computer Center. The University of Banja Luka has all the necessary spatial capacities, starting from classrooms and amphitheatres, through reading rooms and libraries, to laboratories and computer rooms. The total area of the classrooms is about 16,000 m², and the laboratory space is about 10,000 m². Most classrooms are equipped with video projectors and computers for displaying digital teaching content. The university has 20 computer rooms with constant internet access. The libraries have around 185,000 books, and they subscribe to 75 scientific journals. Another value is represented by the fact that the University of Banja Luka is a public university, which is mostly financed from the budget of the Republic. As of 2020, full-time students are exempt from tuition fees. This Government policy makes the University accessible to all students, regardless of their financial circumstances. For the University, it is a chance to attract the most talented students and achieve the most valuable exit results. The evolution that the University is going through in recent years is taking place in the scenario of gradual convergence with the European area of higher education. A large number of Tempus and now Erasmus projects directed the development of the University in the directions of a strategic approach to planning and management, the introduction of European quality standards and the harmonization of exit profiles with qualification frameworks. More attention is being paid to the development of human resources, greater investments in laboratory equipment and IT infrastructure are evident, existing facilities are being renovated and new facilities are being built. We are looking for more diverse forms of support for students' curricular and extracurricular activities. Further development and advancement of the University can be achieved by better utilization of the capacities of the integrated university. By unifying the faculties into one legal entity, prerequisites were created for a synergistic (holistic) approach to the development of individual disciplines and

a multidisciplinary approach to teaching and science. Those advantages have not yet been used. The university should make an even greater contribution to economic and social development. In the conditions of the increasingly rapid development of new knowledge and technologies, the role of universities is increasingly important. New technologies, organizational structures and social models are extinguishing numerous low-skilled jobs and opening new ones that require different and more advanced knowledge and skills. The task of the university is to spread current knowledge and technologies and thus maintain the vitality of its community. When starting research, a closer connection with industry is necessary, with the aim of improving industrial production in the form of product and process innovation. At the same time, the University must beware of the trap of falling into the mere commercialization of research results and thus endangering its wider role - attracting the most talented students and training them to perform tasks of different nature and complexity. Highly skilled people will be able to improve existing and found new companies. On a broader social level, the University has a strategic task to achieve a more significant position from which its voice will be better heard, from which it will be easier to point out new developments in the environment and the world, propose changes, criticize bad phenomena and actions, provide assistance in finding better solutions, and all this for a fairer and better life for the citizens of Republika Srpska.

Information about the study programme

The reviewer provides an overview of the study program based on the submitted documentation.

The Faculty of Sciences and Mathematics (PMF), as an independent higher education institution, was founded in 1996, by separating natural and mathematical sciences from the Faculty of Philosophy of the University of Banja Luka. The decision to establish the PMF was made by the National Assembly of the Republic of Srpska on September 12, 1996 (number: 02-1236/96). By decision of the Ministry of Education, Science and Culture, number: 02-1075 dated September 28, 1996., it was determined that the Faculty of Science meets the conditions for starting work and performing activities. The chemistry study program was established in the academic year 1997/98, as the Department of Chemistry. At the 171st session of the Teaching and Research Council held on December 16, 2015. In 2008, a decision was made on the adoption of the proposed innovative Curriculum of the Chemistry Study Program of the first cycle of study at the Faculty of Science and Mathematics in Banja Luka (decision number: 19/3-3657/15). The decision on the re-licensing of approved study programs in the first cycle of studies at the Faculty of Sciences and Mathematics was confirmed by the Senate of the University of Banja Luka, at the session held on December 24, 2015. (decision number: 02/04-4139-84/15), after which the Ministry of Education and Culture of the Republic of Srpska issues a Decision on the fulfillment of the conditions for the implementation of the innovative SP CHEMISTRY with two majors: General major and Teaching major (decision number: 07.050/612 -191-3-2/15 dated June 24, 2016) for the implementation of the innovative study program from the 2016/2017 academic year. years.

The decision on the re-licensing of approved study programs in the first cycle of studies at the Faculty of Sciences and Mathematics was confirmed by the Senate of the University of Banja Luka, at the session held on December 24, 2015. (decision number: 02/04-4139-84/15), after which the Ministry of Education and Culture of the Republic of Srpska issues a Decision on the fulfillment of the conditions for the implementation of the innovative SP CHEMISTRY with two majors: General major and Teaching major (decision number: 07.050/612 - 191-3-2/15 dated June 24, 2016) for the implementation of the innovative study program from the 2016/2017 academic year.

At the 171st session of the Teaching and Research Council held on December 16, 2015. In 2008, the Elaborate on the justification of the establishment and existence of the second cycle of study - master's study of the Chemistry Study Program was also considered, and a decision was made to adopt the proposed Curriculum and Program of the Chemistry Study Program of the second cycle of study at the Faculty of Sciences and Mathematics in Banja Luka (decision number: 19/ 3-3649/15). The decision on the justification of the establishment and existence of the second study cycle - master's study of the Chemistry Study Program was confirmed by the Senate of the University of Banja Luka, at the session held on December 24, 2015. (decision number: 02/04-4139-85/15), after which the Ministry of Education and Culture of the Republic of Srpska issues a Decision on the fulfillment of the requirements for the second cycle of the Chemistry Study Program (decision number: 07.050/612-191-2-2/ 15 of June 15, 2016) from the academic year 2016/2017. and the corresponding Permit for conducting the study program (permit number: 07.050/612-191-2-2-1/15 dated June 15, 2016). At the 194th session of the Teaching and Research Council held on December 14 2017. the Decision was made on amending and supplementing the Curriculum for the II cycle of studies of the Chemistry Study Program in such a way that the elective courses Chromatographic Methods, Synthesis and Characterization of Polymers and Selected Chapters of Physical Chemistry are assigned 5 ECTS credits instead of 6 ECTS credits (decision number: 19/3- 3306/17). The reason for this change was to allow students greater freedom in choosing optional subjects, because most students chose subjects of 6 ECTS points, which resulted in more than 30 ECTS points per semester. This decision was confirmed by the Senate of the University of Banja Luka at the 17th session held on November 30, 2017. (decision number: 02/04-3.3456-16/17). The innovative curricula of the Chemistry Study Program are designed to enable students to acquire both fundamental and disciplinary knowledge in accordance with accepted norms at the European level, as well as the basis of specific knowledge from the most current areas of chemistry, such as: synthesis and characterization of new inorganic and organic compounds with targeted properties, increasing energy efficiency, analytics and, in general, environmental chemistry, design of modern inorganic and organic materials, including polymers and nanomaterials, as well as knowledge of domestic and European standards in the field of chemistry and related disciplines, which are further logically deepened at higher study cycles. The goals of the second cycle of the Chemistry Study Program include and realize four recommendations of the Council of Europe regarding the purpose of higher education: preparing students for active participation in society, preparing for their future careers - contributing to their employment, supporting personal development and creating a broad advanced knowledge base and stimulating research of work and innovation - involving students in projects, patents, competitions, etc. Educational goals and learning outcomes are clearly defined in the document Curriculum and program of the II study cycle. In this sense, students who have completed the first and second cycles of the Chemistry Study Program can respond to the requirements set before them by the introduction of new standards at workplaces in various scientific, educational, industrial and administrative institutions. The study program was created with the active participation of department heads and all its members, as well as students through participation in the session of the Teaching and Research Council of the Faculty of Science. Chemistry students of both cycles are able to study according to a modern educational program with an emphasis on the acquisition of fundamental knowledge, but also the latest scientific and applied achievements in the field of chemistry and related sciences. One of the main goals of SP Chemistry is to encourage creative thinking, problem solving methodology and the use of the most modern information technologies in the process of learning and presenting acquired knowledge. This is why chemistry graduates can easily continue their education at other European universities (Serbia, Switzerland, France, Germany, Slovakia, etc.). Over the past 5 years, eight teachers and four associates employed at SP chemistry have published 47 scientific papers in journals indexed on the Web of Science (WoS) list. It is important to note that the number of published papers increases from year to year, and this year alone (at the time of writing this report) 17 papers have been published or accepted. For comparison, in the period from 2013-2018. 12 WoS papers were presented. The works of SP chemistry

employees achieved 877 citations in the Google Academic citation database over a five-year period (as of 2016). Works were cited 1691 times in the Google Academic citation database, while at the end of 2018 this number was 904. Since 2016, the number of citations in the Scopus citation database is 547. Works have been cited 1156 times in the Scopus citation database. It is important to mention that a significant number of papers have been published in national journals and at national and international scientific conferences. Until 2018, only one laboratory was available for the scientific research work of teachers and associates, which simultaneously served to hold practical exercises as part of the teaching process. Due to the limited space and its poor equipment, experimental work in the field of chemistry at the Faculty was very difficult. During 2017, the auxiliary building of the Faculty was partially renovated, and the conditions were created to equip three more smaller laboratories and prepare them for experimental work by both employed teachers and associates, as well as students for the preparation of final papers of the first and second cycle of studies. The teachers of SP chemistry have a very good cooperation with economic entities that deal with the chemical industry and related economic branches in the entire territory of Bosnia and Herzegovina. Thus, the new space was equipped and almost completely put into operation thanks to the efforts of the SP chemistry teachers, where valuable instruments and furniture were obtained through donations and through cooperation with the economy from the chemical industry. Through funds obtained through national and international projects, the chemistry study program fully equipped five (three new) rooms with laboratory furniture in 2020. Of the more valuable equipment, a vacuum dryer, an oil bath, a thermostat, a dryer with a fan, a balance, a pH meter, an infrared spectrometer with an ATR component and a library of 12,000 spectra, polarimeter, refractometer, nephelometer, complex optical microscope with magnifications up to 2500h and software support, as well as a significant amount of chemicals and accessories, as well as a muffle furnace that can be temperature programmed. Through the Synergy project, with the symbiosis of the relevant Ministry and the industrial partner company "Destilacija" from Teslić, a BET analyzer was acquired in 2021. In 2018, the Ministry of Scientific and Technological Development, Higher Education and Information Society of the Republic of Srpska awarded five projects to SP chemistry, in 2019 two projects, in 2020 four projects and in 2021 until October, two projects. Through participation in international projects, SP chemistry also acquired a significant amount of laboratory equipment. Through the UNESCO/IUPAC/PhosAgro project, a thermal reactor, a cylindrical tube furnace with gas flow control, and a laboratory shaker were acquired. Through the EIT RawMaterials project, SP chemistry received a Randal extractor and a vacuum pump. The complete equipment at SP chemistry disposal is presented in detail on the website of the study program with the mention of the fund and/or donor. Students of the first and second cycles of SP chemistry are very interested in scientific research work in addition to the regular obligations they have in this regard through the preparation of their final theses. There are numerous examples of the participation of SP chemistry students at scientific conferences. Also, SP chemistry supports students in providing appropriate professional practices and training. A large number of coordinating international and national projects, exchanges, post-doctoral research of working teachers and stays of foreign scientists are realized at SP chemistry. The new chemistry study program website was officially presented at the end of 2020, it publishes news about student activities, new equipment and projects, as well as cooperation with industry, international exchanges - in general, about everything important that SP chemistry does and provides in Cyrillic, Latin and English language. Also, on the page are available Information for I and II cycle of study and information on conducting preparatory classes for future freshmen. Interactive content and numerous activities are also posted on SP chemistry social networks, Instagram and Facebook page. In the coming period, the most important tasks are the initiation of the third cycle of studies, and the simultaneous harmonization and innovation of the first and second cycles of studies, especially the teaching direction.

STANDARD 1. GOALS AND CORE TASKS OF THE HIGHER EDUCATION INSTITUTION

1. Goals and core tasks of the higher education institution	Reference
<ul style="list-style-type: none"> Provide a link to the part of the Elaborate that refers to the reasons for the establishment, goals and tasks 	Guideline 1.1.
<p>Link provided (Svrha, ciljevi i osnovni zadaci studijskog programa, Razlozi za osnivanje studijskog programa, 1.1. Zbirni pregled odbranjenih i prijavljenih doktorskih disertacija po starom Zakonu o visokom obrazovanju na Studijskom programu hemija). Also, point 3 of the Elaborate explains in detail the reasons for the requirements of this guideline; the need to train highly skilled personnel in the field of chemistry, that is, rounding off education at the highest level, which contributes to overall social development, is particularly emphasized.</p>	
<ul style="list-style-type: none"> Provide a link to the higher education institution's strategy document and documents that regulate the manner of its adoption and revision (Statute, rulebook, procedure). 	Guideline 1.1.
<p>A link has been posted to the Statute of the University of Banja Luka (published on July 7, 2022) and the Development Strategy of the University of Banja Luka for the period 2017 to 2025, June 2017. The University of Banja Luka has set its goals and basic tasks, which are fully in line with the law. The document Development Strategy of the University of Banja Luka for the period 2017-2025 is attached. where the situation at the University of Banja Luka is described in great detail, as well as the vision, mission, key values and strategic goals of the University's development. The development strategy is given very precisely and in detail with numerous graphic attachments.</p>	
<ul style="list-style-type: none"> Provide a link to the part of the proposed Statute which describes the core tasks of the higher education institution and the decision of the authority that adopted it. 	Guideline 1.2.
<p>A link has been posted to the Statute of the University of Banja Luka from July 2022: Article 2, Article 3, Article 14, Page 52; Consent of the Ministry of Scientific and Technological Development, Higher Education and Information Society of the RS on the Proposal for the Statute of the University of Banja Luka, dated June 22, 2022. It is evident from the above documents that the University of Banja Luka: 1) combines educational and scientific research, professional, i.e. artistic work, and projects of importance for the social community as three components of a unique process of higher education, 2) realizes at least ten different academic study programs from at least four fields of education and 3) performs academic studies in all three cycles."</p> <p>The Ministry of Scientific and Technological Development, Higher Education and Information Society of the RS gave its consent to the Proposal of the Statute of the University of Banja Luka, so that there are legal grounds for the validity of the above-mentioned document.</p>	
<ul style="list-style-type: none"> Provide a link to the institution's documents showing the goals of the higher education institution which are concrete, achievable and measurable (strategy of the higher education institution/study program). 	Guideline 1.3. i 1.4.

The document Strategy for the Development of the University of Banja Luka for the period 2017 to 2025, June 2017, and the Statute of the University of Banja Luka, July 2022, are linked. The concreteness, feasibility and measurability of the goals emerge from the available documentation. The goals are set responsibly and reasonably, taking into account real academic, material and other resources, market indicators and the wishes and plans of future academics.

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| <ul style="list-style-type: none"> • <i>Provide a link to the part of the Elaborate that refers to the analysis of the labour market, i.e. the consultations with interested parties that preceded the preparation of these documents.</i> | <p><i>Guideline 1.1.</i></p> |
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Link provided, ([Analiza potreba tržišta rada, Mišljenje poslodavaca u vezi sa definisanim ishodima učenja, Prilog. Anketa za poslodavce](#)) chapter 3, page 9; institutions where future graduates can be employed are also mentioned, from the Veterinary Institute of the Republic of Srpska, the Institute for Forensic Medicine, higher education institutions and laboratories of various activities.

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| <ul style="list-style-type: none"> • <i>Provide a link to the document that regulates the procedure for adopting, developing and revising study programs</i> | <p><i>Guideline 1.5.</i></p> |
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In the valid Instruction for the development and improvement of study programs, University of Banja Luka, September 2011, which is listed as a reference document, it is explained in detail how the adoption, development and revision of study programs at the University of Banja Luka can be carried out. The Faculty of Sciences and Mathematics, following the procedure, in accordance with the existing laws, which are listed in the Instructions, prepared and carried out the procedure for the preparation of documentation that proves the fulfillment of the standards for initial accreditation, that is, the fulfillment of the conditions for obtaining a work permit.

STANDARD 1. Goals and core tasks of the higher education institution

STRENGTHS:

Realistically set goals in accordance with the estimated needs of the labor market, i.e. employment opportunities, tasks set according to all requirements of strategic and planning documents.

WEAKNESSES:

No significant deviations from the requirements of this standard were observed. The survey should have more respondents.

REQUIREMENTS FULFILLMENT LEVEL	III
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STANDARD 2. THE INTERNAL QUALITY ASSURANCE MECHANISMS

2. The internal quality assurance mechanisms	Reference
<ul style="list-style-type: none"> Provide a link to the document(s) that describe the structure, processes, procedures and resources of the Quality Assurance System of the Higher Education Institution. 	Guideline 2.1.
Links listed and functional, https://www.unibl.org/sr/univerzitet/osiguranje-kvaliteta/sistem-kvaliteta , https://unibl.org/uploads/files/strane/ostali_akti/STRATEGIJA-ZA-OSIGURANJE-KVALITETA.pdf , documents are applied from the institution level.	
<ul style="list-style-type: none"> Provide a link to the documents that describe the establishment, responsibilities and powers of the higher education institution's formal body(s) for quality assurance (Quality Assurance Strategy or Policy). 	Guideline 2.2.
The given link is a comprehensive document that applies to the entire institution - https://unibl.org/uploads/files/strane/ostali_akti/PROCEDURA-ZA-PRACENJE-KVALITETA.pdf	
<ul style="list-style-type: none"> Provide a list of members of the quality assurance committee, ie members of the Quality Assurance Board or Committee (if any). 	Guideline 2.2.
The link shows that the institution has coordinators for all organizational units and members. https://www.unibl.org/sr/univerzitet/osiguranje-kvaliteta/koordinatori-kvaliteta-na-organizacionim-jedinicama	
STANDARD 2. The internal quality assurance mechanisms	
STRENGTHS: A well-established and well-established structure of planning and decision-making, as well as analysis and quality monitoring.	
WEAKNESSES: No weak points were observed.	
REQUIREMENTS FULFILLMENT LEVEL	III

STANDARD 3. THE ORGANISATION OF HIGHER EDUCATION INSTITUTION

3. The organisation of higher education institution	Reference
<ul style="list-style-type: none"> • <i>Provide a link to the proposal for an act on the organization and systematization of workplaces.</i> 	<i>Guideline 3.1.</i>
<p>Like other members of the university, the Faculty of Sciences and Mathematics legally refers to the Rulebook on the internal organization and systematization of workplaces at the University of Banja Luka, September 2022. https://unibl.org/uploads/files/strane/pravilnici/2022/Pravilnik_o_unutrasnjoj_sistemizaciji_i_organizaciji.pdf</p>	
<ul style="list-style-type: none"> • <i>Provide links to decisions on the appointment of temporary management: Board of Directors, senate and acting rector or director.</i> 	<i>Guideline 3.1.</i>
<p>Administration and professional services - Since 2007, the University of Banja Luka has been integrated, with faculties as organizational units. The work of the University is managed by the Board of Directors, the Senate and the Rector. The University has a vice-rector for teaching and student affairs, a vice-rector for scientific research and development, a vice-rector for international and inter-university cooperation, and a vice-rector for human and material resources. The university has a general secretary and a financial director. The seat of all administrative and administrative services of the University is in the Rectorate. The links of the Law on Higher Education and the Statute of the University are provided.</p>	
<ul style="list-style-type: none"> • <i>Provide evidence for the activities of temporary management, adopted acts, curricula and other documentation for initial accreditation.</i> 	<i>Guideline 3.2.</i>
<p>The elaboration on the justification of the performance of SP Chemistry explained that the role of temporary bodies and all necessary activities in preparation for the performance are performed by the existing bodies and bodies of the institution.</p>	
<p>STANDARD 3. The organisation of the higher education institution</p>	
<p>STRENGTHS: Attached are the evidence for adopted acts, curricula and other documentation for initial accreditation.</p>	
<p>WEAKNESSES: No deviations from the requirements prescribed by this standard were observed.</p>	
<p>REQUIREMENTS FULFILLMENT LEVEL</p>	<p>III</p>

STANDARD 4. STUDIES

4. Studies	Reference
<ul style="list-style-type: none"> State the name of the study program, type and degree of study. Submit the entire study program in the manner described in the introductory part 	Guideline 4.1.
<p>The name of the study program, type and degree of study are listed: Chemistry study program, third cycle of academic studies, 180 ECTS, regular studies, 6 semesters. Linked to parts of the Elaborate and explained in detail. The SP structure respects all formal requirements.</p> <p>In accordance with the guidelines related to the most important standard for meeting the conditions for initial accreditation (guidelines 4.1.-4.2.), the study proponent presented evidence that the standard related to the Doctoral study proposal was met. This is primarily evident from the prepared and attached Elaborate of the doctoral study in Chemistry, which is the most important document in the initial evaluation process, and other accompanying attached documents. The establishment of such a study (3rd Cycle) is highly desirable for the following reasons: I) Strategic industrial and technological development of RS; II) Development of the University of Banja Luka by expanding the study program; III) Strengthening the STEM field in the RS (in the study it was shown that only 6% of the total number of doctoral students in the RS are from the STEM field) which simply must follow the trends of strengthening the STEM in industrially developed countries (high GDP countries); IV) Demonstrated need in the current economy of the RS (Veterinary Institute, appropriate chemical and related industry, medical, biological and technological frameworks); V) Personnel development of both the University of Banja Luka and other universities in the RS, Bosnia and Herzegovina and surrounding gravitating countries.</p>	
<ul style="list-style-type: none"> Provide a link to a document that clearly defines the goals, structure and content of the study program, the policy and procedure of student enrollment, learning methods, knowledge assessment methods, learning outcomes and competencies that students acquire. 	Guid3 eline 4.1.1.
<p>Listed 13 links, mostly to the basic document, Elaborat; it is evident from everything that the institution has an established system that the SP in question organized according to all the requirements of this guideline.</p>	
<ul style="list-style-type: none"> Provide a link to the documents that regulate the procedures for the development of study programs (adopting, amending and supplementing study programs, procedures for reviewing and innovating study programs, procedures for ensuring the quality of study programs, consultations with interested parties and the labour market) 	Guideline 4.1.1.
<p>Guideline 4.1.1. Conditions for enrolling in the study program (link to part of the text of the essay - point 2.) It says: "The procedure for enrolling in the doctoral study as well as the way of ranking candidates is regulated by the Rules of Studying in the III Cycle at the University of Banja Luka, from 26 December 2019." Considering that there is a new regulation from 2022, I think it should be referred to.</p>	

According to the Guidelines for developing and improving study programs, when determining goals, it is necessary to take into account: Development predictions in a given area; Country development strategies; Requests of ministries; Chamber requirements; professional associations, etc.; Opinions of teachers and students; Opinions of experts.

The study program was developed in accordance with the current regulations of the Republic of Srpska, but much more in accordance with the needs of the labor market in the Republic of Srpska. In this case, the study program is predominantly a consequence of the analysis and market requirements and is designed according to similar study programs in the region and beyond, so the links to 7 higher education institutions that were used for the analysis and development are provided.

Analyzing the documents from the links, we conclude that the request is fully fulfilled.

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| <ul style="list-style-type: none"> <i>Provide proof of compliance of the study program with the basic quality standards of the institution, as well as proof of its compliance with other study programs that the institution runs.</i> | <p><i>Guideline 4.1.2.</i></p> |
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<https://pmf.unibl.org/wp-content/uploads/2022/12/PMF-STATUT-2022.pdf>

As proof of the compliance of the study program with the basic quality standards of the institution and proof of its compliance with other study programs that the institution carries out, the Statute of the Faculty of Science and Mathematics, University of Banja Luka - the Statute of the Institution only partially shows compliance with the basic quality standards of the institution and other study programs of the Institution, this compliance alone cannot be considered sufficient, so an additional explanation was included in the Elaborate on the justification of starting the Chemistry study program.

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| <ul style="list-style-type: none"> <i>Provide a link to the document that defines the objectives of the study programs and prove the compliance of the study program with this document.</i> | <p><i>Guideline 4.1.3.</i></p> |
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It is a document Elaborate on the justification of starting the Chemistry study program (3.1. Purpose, goals and basic tasks of the study program) and the Statute is linked. <https://pmf.unibl.org/wp-content/uploads/2022/12/PMF-STATUT-2022.pdf>

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| <ul style="list-style-type: none"> <i>Provide a link to the document that prescribes the method of awarding ECTS points to individual courses (Regulations on the formation of ECTS points, determining the course code and the course syllabus).</i> | <p><i>Guideline 4.1.4.</i></p> |
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Linked 7 documents or parts of documents.

In the curriculum, the subjects of the study program are classified by semesters and years of study (2 semesters per academic year), with assigned status (compulsory, elective, optional subject) and assigned ECTS points. At the University, in accordance with the Law, the Statute and the statute of the member University, three-year and four-year studies of the first cycle are conducted, valued at 180 ECTS points, or 240 ECTS points. Allocating credits to individual subjects is not only based on the number of hours of direct teaching, but also on the basis of the curriculum, i.e. the "importance" of the subject itself for the given qualification of graduate environmental protection engineer. The total time required to achieve the planned learning outcomes is observed: the number of hours of direct teaching, the time required for preparing for classes and preparing teaching assignments (preparation and arrangement of materials from classes, exercises or practice; preparation of essays and seminar papers; practical work outside of class) in the curriculum, etc.) and the time needed to prepare for the exam and

take the exam. In the Republika Srpska, the principle of a student's annual workload of 60 ECTS points, within a 40-hour work week, is a legal provision, and is in accordance with European regulations in this area. Starting from the academic calendar of the University, it is assumed that during the year students have 45 working weeks (2 semesters of 15 weeks of teaching and 15 weeks of work in the exam periods of January/February, April, June/July, September and October), which corresponds to the total working student workload of 1800 hours per year.

- Provide a link to a document that indicates the compatibility of the study program with at least three study programs that are run at accredited higher education institutions in countries that are signatories to the Bologna Declaration (one of which is from Republika Srpska).

Guideline 4.1.5.

Given that there is no third cycle of Chemistry in the Republic of Srpska, 7 universities were linked, and this proves the compatibility of the study program with at least three study programs that are conducted at accredited higher education institutions in the signatory countries of Bologna, namely the universities in Belgrade, Novi Sad, Nis, Kragujevac, Sarajevo, Ljubljana and University of Coimbra, Portugal <https://apps.uc.pt/courses/EN/course/701>

- Provide a link to the document that defines the learning outcomes of the study program and explain how they were defined, and what activities preceded their definition.

Guideline 4.1.6. u 4.1.8.

Learning outcomes are defined within each individual subject (Course book) with a special focus on the competencies of graduated students. A link has been posted to the section of the Elaborate, where the learning outcomes at the level of the study program are stated.

- Provide a link to the matrix of the connection between the learning outcomes of individual courses and the learning outcomes of the study program

Guideline 4.1.7.

The matrix of competences was developed based on the curriculum of compulsory and optional subjects, in which the learning outcomes and competences are listed for each subject. Upon completion of the program, the student will achieve competencies, which are listed in the Matrix of Competencies (Elaborate, Table 3), which students acquire by completing individual subjects. Through 4 links, i.e. through the Doctoral Course Book, with corrections on the second link, and the link to the learning outcomes at the end of this study cycle and through the Matrix of Outcomes and Qualifications, proven fulfillment of the requirements of these guidelines.

- Guideline 4.2. List the qualifications acquired by students of the study program.

Guideline 4.2.

Upon completion of the III cycle of studies - Doctoral studies in chemistry and obtaining the academic title of Doctor of Chemical Sciences, students are (Proposal of Diploma Supplement): K1. have mastered theoretical knowledge and experimental skills that enable independent scientific work and further improvement; K2. acquired the ability to work creatively and independently to solve an original scientific problem; K3. mastered the knowledge and skills needed to search and find relevant literature; K4. mastered the techniques of working on instruments in connection with the doctoral thesis; K5. built attitudes about a critical attitude towards the results of their own research and towards the results of other authors; K6. acquired a routine in solving real

problems in the field of chemistry, demonstrating the ability to analyze, synthesize and predict solutions and consequences; K7. developed creativity, the ability to adapt to work in multidisciplinary teams, initiative and professional advancement while respecting ethics in practice, as well as the ability to be involved in the implementation of domestic and international projects and communication in a team at a professional level; K8. gained experience necessary for independent organization and execution of the teaching process, as well as successful mentoring work with students at all levels of study (basic, master's and doctoral); K9. gained experience in solving various tasks in scientific research projects and the ability to model chemical systems and processes; K10. acquired the ability and experience to publish, present and communicate scientific research results to experts and the general public; K11. recognized the need for constant learning and improvement; trained to recognize the need for constant monitoring of modern achievements in chemistry and related scientific fields, as well as for the popularization of science among children and young people. K12. continue scientific research work and development as initiators and carriers of progress in a knowledge-based society, contributing to the permanent development of new techniques, methods, ideas and approaches.

- *Provide a link to the document that prescribes exit qualifications and evidence of compliance of exit qualifications with EQF.*

Guideline 4.2.

Linked to: Rulebook on the list of professional, academic and scientific titles ("Official Gazette of the Republika Srpska", No. 117/2014 and 83/2015 and 120/2018), Law on Titles Acquired Upon Completion of Higher Education ("Official Gazette of the Republika Srpska", number 33/14) and the Law on Amendments to the Law on Titles Obtained Upon Completion of Higher Education ("Official Gazette of the Republic of Srpska", number 63/14)

- *Provide a link to the learning outcomes and explain how the qualifications acquired by students are linked to the learning outcomes.*

Guideline 4.2.

Through chapter 3.7 of the Elaborate, the learning outcomes of the study program are elaborated in more detail by linking competencies and learning outcomes through the specifics of the study program, the most important values, academic content, clearly defining the knowledge and skills that students acquire, the most important intellectual skills and the most useful practical skills (Elaborate, Table 3 - Matrix competence).

STANDARD 4. Studies

STRENGTHS:

- Clearly defined and justified goals for the establishment of the Doctoral study
- Rich and varied study program
- Closed financial structure of studies

WEAKNESSES:

The Review Panel lists the following text as constructive recommendations, created as part of the review of SP as a document and should not be treated as deficiencies!

1. The purpose of the study program (item 3 of the Elaboration): The proposal of this reviewer is to revise the Purpose of the study program in such a way as to add part of the sentence:for work in the development departments of relevant economic entities.

2. Regarding the objectives of the 3rd Study Cycle, it would be good to add or possibly modify the existing ones:

- training candidates to create and write project proposals (Academy) and expert reports (business) and reports of concluded and completed projects.

3. In the Elaborate and the accompanying documentation, the maximum number of enrolled students is 5. In accordance with that assumption, the financial construction and practical implementation of the study program was made. It is also foreseen that due to the relatively small number of enrolled students, part of the teaching of elective courses will take place through consultations with professors.

If this happens, a problem could arise because the number of elective courses is too large for such a number of students. 32 elective courses have been defined, which are designed in a modern way with interesting and useful content in accordance with the fronts of scientific research in various branches of chemistry and related applied sciences. The analysis of individual courses shows their grouping by individual chemical branches, but also a certain degree of overlap. The recommendation would be to analyze the proposed courses in detail, respecting reality, and to reduce their number: 16-20 courses would be enough, and to try to find a way to try to hold classes (live or online) from at least one number of courses. It would also be good to introduce majors in the study up to, say, a maximum of 3 majors in accordance with the very purpose and goals of the Doctoral study. For example, the direction of inorganic, structural and material science (material science), organic and biochemistry (life science) and eventually applied chemistry (applied chemistry). By reducing the number of elective courses and grouping them around research trends (introduction of majors), potential candidates are given a certain vision of the study itself, the perspective of their scientific work and a better transfer of knowledge and experience. In general, the very idea of doctoral studies is a narrow specialization of candidates who, during their duration, should acquire very specific knowledge and skills on the one hand, as well as special skills related to scientific and research work (literature search, definition of problems and hypotheses, problem solving methodology, analysis results and drawing conclusions, which represents added value to a very specific area of research).

4. Compulsory courses: Characteristic courses are provided that represent direct interaction between the mentor and the PhD student, which is generally acceptable. The recommendation would be to introduce 1 course for all enrolled students in the 1st year of study under the general name academic writing, which would be a synthesis of the compulsory course Writing and publication of a scientific paper and the elective course Introduction to Scientometrics, publication models in scientific journals and index services.

5. Meeting the requirements for joining the defense of the doctoral dissertation: This is regulated by Article 34 of the Study Rules for the 3rd cycle of studies, which was adopted by the Senate of the University of Banja Luka for all faculties of the university. According to that article, only 1 scientific paper in a scientific journal indexed in the Web of Science database is sufficient, where the doctoral student must be the 1st author. The recommendation of this reviewer is to modify article 34 because it contains 2 possibilities for meeting the requirements for the defense of the dissertation; in the first possibility it is 1 paper in a journal indexed in WoS, and in the second possibility 3 papers in SCOPUS and related databases. The main problem here is that the SCOPUS citation database is almost equivalent to the WoS citation database (SCOPUS has a slightly wider range of indexed journals), and it would be desirable to make these 2 databases equal. The recommendation would be to make a completely new Rulebook at the level of natural sciences (ideally) or to modify the existing Article 34 to equalize the WoS and SCOPUS bases, but to make the criteria a little stricter and to add the quality (impact factor) of the journal, on way that the paper must be published in a journal in the Q1/Q2 interquartile. It would be ideal to reach some kind of international standard that the PhD student must publish 3 papers as first author (in 3 years of study) in Q1/Q2 journals indexed in WoS/SCOPUS citation databases. However, it is not necessary to introduce such a tightening of the criteria immediately, but gradually over the next 5 years from the moment of issuing the permit for the performance of doctoral studies.

6. Analysis of elective courses - short comments:

1. Rename the subject titled Advanced oxidation procedures and analytical methods for monitoring efficiency to Contemporary (advanced) methods for water purification, because according to the content of the subject, it is a very specific subject related to water purification;
 2. Rename the subject quality control and quality assurance of analytical results to Quality management systems in analytical laboratories.
 3. The course Advanced separation methods - is it intended that students see or learn to use appropriate instruments of the GC-MS type, etc...
 4. Subject Application of thermal analysis methods in stability evaluation of amorphous solid dispersions: the name of the subject sounds unusual, it should be more specific; the content of the course is too large since many parts of the course are taught in the previous lower studies.
 5. Predictive kinetic and thermodynamic models for drug stability; this subject is more suitable for the study of pharmacy and should be dropped;
 6. Subject Electrode-electrolyte interface analysis methods; it is possible to rename it to Advanced electrochemical methods and include Electrochemical impedance spectroscopy (EIS) in the content;
 7. Chemical formulation and characterization of drug delivery systems: Most of the subject content refers to emulsions and fluids, only a small part refers to drug delivery mechanism;
 8. Polymer nanocomposites and hybrid materials - excellent course but with too much content: nanomaterials + polymers. It is also not clear what is meant by hybrid materials;
 9. Materials Chemistry - an excellent subject in line with the trends in materials chemistry. The only question here is how that subject relates to Solid State Chemistry in the 2nd Study Cycle?
 10. Polymer crosslinking: structure, properties and advanced application can be renamed to Advanced polymer chemistry and certainly shorten the content of the course;
 11. Biodegradable polymers is in a certain way connected with the previous course (10) of the same professor. Doubts arise here, should potential interested students enroll in both courses?
 12. Selected chapters in analytical chemistry overlap a lot with the course Electrode-electrolyte interface;
 13. Natural resources and nanotechnology overlaps with course number 1;
 14. Chemistry of lubricants is more appropriate for the study of Chemical Engineering;
 15. Selected topics in the chemistry of natural products: the content of that course is relatively scarce and that subject should be removed from the study program;
 16. Polymeric materials for food packaging should be removed from the program because it is more suitable for chemical technology and related applied sciences;
 17. Psychology of education and effective teaching: Selected topics should be removed from the doctoral study program.
- All of the above are only recommendations that are not any additional accreditation condition, but only guidelines for possible improvement of the study concept itself. It would also be useful and desirable to immediately offer a PhD in Chemistry in English, which will not be a problem due to the expertise and acquired skills of the academic staff.

REQUIREMENTS FULFILLMENT LEVEL

III

STANDARD 5. SCIENTIFIC RESEARCH ACTIVITY

5. Scientific research activity	Reference
<ul style="list-style-type: none"> <i>Provide a link or submit a list of lecturers and associates who are involved in scientific research, professional and artistic projects and the results of scientific research and artistic activity of lecturers and associates in the last five years, including evidence of internationally recognized results in scientific research activity.</i> 	<p><i>Guideline 5 5.1.</i></p>
<p>Linked to: APPENDIX 5.1. List of teachers involved in scientific research and professional projects APPENDIX 5.2. Teacher competence (Tables for all teachers) Corrected attachment 5.2. tables for all teachers The requirements of the guideline are fully met.</p>	
<ul style="list-style-type: none"> <i>Provide a link to the list of the most significant published results of lecturers and associates in the previous 5 years.</i> 	<p><i>Guideline 5 5.1.</i></p>
<p>Over the past 5 years, eight teachers and four associates employed at SP chemistry have published 45 scientific papers in international journals indexed on the Web of Science (WoS) list. It is important to note that the number of published papers increases year by year, and 17 papers were published or accepted in 2021 alone. For comparison, in the period from 2013-2018. 12 WoS papers were published. The works of SP chemistry employees achieved 877 citations in the Google Academic citation database over a five-year period (as of 2016). Works were cited in the Google Academic citation database 1742 times, while at the end of 2018 this number was 904. Since 2016, the number of citations in the Scopus citation database is 598. Works have been cited 1156 times in the Scopus citation database. It is important to mention that a significant number of papers have been published in national journals and at national and international scientific conferences. In the last five years, seven international monographs were published with the affiliation of SP chemistry. In the same period of time, six university (basic and auxiliary) textbooks were published. So far, 19 national projects have been realized or are in the process of being realized at SP chemistry. It must be borne in mind that the requirement that the project coordinator, which is co-financed from the Ministry's funds, has a teaching title, has largely limited the participation of SP chemistry, where the first full-time assistant professor was elected in 2011, and then one successively in 2013 and 2014, two assistant professors in 2017, one in 2019 and one assistant professor in 2020. The academic staff of SP chemistry participates in numerous international projects, either as coordinators or collaborators. The number of coordination projects in the last five years has been constantly increasing. At SP chemistry, activities of several COST actions are also implemented. Although only two industrial projects have been implemented so far, and the third one was approved this year, the teachers of SP chemistry have a very good cooperation with business entities that deal with the chemical industry and related economic branches in the entire territory of Bosnia and Herzegovina. Thus, the new space was equipped and almost completely put into operation thanks to the efforts of the SP chemistry teachers, where valuable instruments and furniture were obtained through donations and through cooperation with the economy from the chemical industry. The competences of teachers and associates of the chemistry Study Program cover a wide range of chemical and related knowledge in theoretical and practical terms. All of this represents a significant potential for the realization of projects of various categories, including projects for various economic subjects. The potential of the chemistry Study Program and representative references are available through the website. The activities of</p>	

SP chemistry are strongly focused on international cooperation. Over the past years, our study program and faculty have been visited by many distinguished guests, and even three ambassadors. Details of scientific research work and cooperation with international and business partners can be found in the PLAN OF SCIENTIFIC RESEARCH WORK OF THE STUDY PROGRAM OF CHEMISTRY at the Faculty of Sciences and Mathematics of the University of Banja Luka for the period 2022-2027 years.

APPENDIX 5.3. List of the most significant published results of teachers and associates in the last five years

APPENDIX 5.4. List of projects realized at SP chemistry

APPENDIX 5.5. List of cooperation agreements

Papers in international journals at SP chemistry

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| <ul style="list-style-type: none"> • Provide a link to the plan of science, research, professional, or art work. | Guideline 5.2. |
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The relevant scientific research plan is shown on the posted link named: [PLAN NAUČNOISTRAŽIVAČKOG RADA STUDIJSKOG PROGRAMA HEMIJA na Prirodno-matematičkom fakultetu Univerziteta u Banjoj Luci za period 2022-2027. godine](#)

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| <ul style="list-style-type: none"> • Provide a link to the proposed act regulating scientific research activity, professional, or art activities.. | Guideline 5.3. |
|---|----------------|

The linked documents are: Rulebook on the Fund for Stimulation and Promotion of Scientific Research and Artistic Work at the University of Banja Luka and the Decision on the Adoption of the Berlin Declaration on Open Access to Scientific Professions, which are acts that regulate scientific research, professional, and artistic activities.

STANDARD 5. Scientific research activity

STRENGTHS:

There is a certain cooperation with economic organizations in the country and the surrounding area, as well as recognition of the need to improve scientific research work. It is necessary for the Institution to set aside certain funds for the improvement of scientific research work, in order for the Faculty's associates to increase their competitiveness in competitions of national and international funds.

1. Clearly defined and current areas of research 2. Realization of numerous scientific projects financed by the competent ministry and several projects with the economy 3. Visible acquired international experience of the involved stakeholders (study stays in Japan and the USA) 4. Dynamic scientific activity of the employees of the Chemistry Department visible through the number and the quality of published works and accompanying scientometric data 5. Ensured coverage of the proposed courses by expert scientific staff, which includes professors abroad.

WEAKNESSES:

1. Relatively weak experimental and analytical capabilities necessary for quality scientific work (unfortunately, this is a common problem of countries with a relatively weak GDP and can eventually be replaced by dynamic international cooperation, the existence of bilateral projects with developed countries and "boarding" into consortia on European projects Of course, one should try to apply as much as possible to all possible projects, including the economy and equip laboratories. Possible recommendation: In such transitive situations, it is not bad to deal with theoretical modeling because it does not require expensive equipment, and it generates publishable results relatively quickly.

REQUIREMENTS FULFILLMENT LEVEL	III
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STANDARD 6. ACADEMIC STAFF

6. Academic staff	Reference
<ul style="list-style-type: none"> Provide a link to a document that provides an overview of the lecturers teaching in the study program. The document should also contain data related to: the type of contract with the higher education institution, the workload of lecturers on the new study program, the total workload of lecturers at the higher education institution, the workload of lecturers at other higher education institutions in the RS/BiH. 	Guideline 6.1. 6.3. 6.5. 6.8.
<p>Link is provided for the following:</p> <p>(6a. Lista nastavnika sa punim radnim vremenom na Univerzitetu u Banjoj Luci 6b. Lista nastavnika sa drugih institucija angažovani po UGOVORU o DJELU na Univerzitetu u Banjoj Luci 6c. Lista nastavnika sa drugih institucija koji će biti angažovani po UGOVORU o DJELU 6d. Hemija Treći ciklus POKRIVENOST NASTAVE 6e. Hemija Treći ciklus Opterećenje nastavnika Ukupno opterećenje nastavnika i saradnika na Prirodno-matematičkom fakultetu u 2022_23 godini Korigovano OPETREĆENOST NASTAVNIKA HEMIJA Korigovano POKRIVENOST NASTAVE HEMIJA)</p> <p>A contract has been submitted for each teacher and a table of the teacher's workload for the study program and the higher education institution is attached. From the submitted documents on teaching coverage and teacher workload, it is evident that 21 teachers are planned for this study program. Out of the total number of teachers employed, 12 teachers or 57% of teachers have a full-time employment contract. Teacher workloads are in accordance with the requirements of this guideline.</p>	
<ul style="list-style-type: none"> Provide a link to the list of lecturers and associates who are hired to teach full-time with whom the higher education institution has concluded employment contracts or employment contracts with delayed effect. The list should contain the data required by the referenced guidelines. 	Guideline 6.3. u 6.5. u 6.7.
<p>The list of teachers and associates on the full-time study program with whom the higher education institution has concluded employment contracts or employment contracts with delayed effect is available and contains the information required by these guidelines.</p>	
<ul style="list-style-type: none"> Provide a link to documents containing the scientific, art and professional qualifications of the teaching staff with whom the higher education institution has concluded employment contracts or employment contracts with deferred effect with evidence of fulfillment of the conditions and criteria prescribed by law and the act regulating the conditions for promotion to academic title. 	Guideline 6.2.
<p>Documents containing the scientific, artistic and professional qualifications of the teaching staff with whom the higher education institution has concluded employment contracts or employment contracts with delayed effect are presented, with evidence of fulfillment of the conditions and criteria for selection into positions.</p>	
<ul style="list-style-type: none"> Provide a link to the list of part-time lecturers and associates with whom the higher education institution has concluded employment contracts or employment contracts with deferred effect with evidence of fulfillment 	Guideline 6.6.

<p><i>of the conditions and criteria prescribed by law and the act that regulates the conditions for promotion to academic title.</i></p>	
<p>A list of part-time teachers and associates with whom the higher education institution has concluded employment contracts or employment contracts with delayed effect with evidence of fulfillment of the conditions and criteria for selection into positions is available.</p>	
<ul style="list-style-type: none"> • <i>Provide a link to the list of lecturers and associates with whom the higher education institution has concluded a contract on supplementary work or a contract on supplementary work with delayed effect</i> 	<p><i>Guideline 6.6.</i></p>
<p>Lists of teachers and associates with whom the higher education institution has a contract on supplementary work or a contract on supplementary work with delayed effect are available.</p>	
<ul style="list-style-type: none"> • <i>Provide a link to the list of lecturers and associates from another higher education institution with whom the higher education institution has an employment contract. In addition to the names of lecturers and associates, the list should also contain data on the workload of lecturers and associates.</i> 	<p><i>Guideline 6.6.</i></p>
<p>A list of teachers and associates from other higher education institutions with whom the higher education institution has concluded an employment contract and data on the total workload of teachers and associates is available.</p>	
<ul style="list-style-type: none"> • <i>Submit in electronic form contracts with lecturers and associates who teach in the study program.</i> 	<p><i>Guideline 6.3.</i></p>
<p>Contracts with teachers and associates covering teaching in the study program are available.</p>	
<ul style="list-style-type: none"> • <i>Submit in electronic form decisions on promotion to academic titles: scientific – teaching titles, artist - teaching, teaching and associate titles.</i> 	<p><i>Guideline 6.1. and 6.2.</i></p>
<p>Submit in electronic form decisions on promotion to academic titles: scientific – teaching titles, artist - teaching, teaching and associate titles.</p>	
<ul style="list-style-type: none"> • <i>Submit in electronic form the decision on the responsible lecturers and associates of the university (for all university members), that is, the college.</i> 	<p><i>Guideline 6.3.</i></p>
<p>Decisions about university teachers and associates (by university members), i.e. higher schools, are visible through the proposed list of teaching coverage (Appendix 7), the structure of the curriculum and through the decisions of faculties and universities.</p>	
<ul style="list-style-type: none"> • <i>Submit a certificate from the Fund for pension and disability insurance on the registration of lecturers and associates who have an employment contract, except for contracts with delayed effect</i> 	<p><i>Guideline 6.6.</i></p>
<p>Submitted PIO Fund certificate on the application of teachers and associates.</p>	

<ul style="list-style-type: none"> • <i>Submit the consent of the higher education institution where the teacher and associate has a full-time employment contract to be able to conclude an employment contract, supplementary work contract or employment contract with the higher education institution that is the applicant for initial accreditation.</i> 	Guideline 6.6.
The consents of the institutions where the teacher and associate have a full-time employment contract are available.	
<ul style="list-style-type: none"> • <i>Submit a list of the workload of associates that should be in accordance with the requirements of the referenced guideline</i> 	Guideline 6.7.
Load of teaching staff (table), Teaching coverage (table) and Load of teachers on all study programs (table) are shown. The workload list of associates (teachers and assistants) is in accordance with the requirements of the referenced guideline.	
STANDARD 6. Academic staff	
STRENGTHS:	
1. Majority of teaching coverage by full-time teachers at the University of Banja Luka (64%); 2. Competence of teachers for lectures in professional subjects as well as for mentoring future doctoral students.	
WEAKNESSES:	
1. The range of achievements of engaged teachers is visible through scientometric data. It would perhaps be advisable in the future when hiring teachers for Doctoral studies to really hire the best possible scientists with higher scientometric data values, this would mostly apply to future mentors. It would also be desirable to make the mentoring conditional on the current management of a suitable research project.	
REQUIREMENTS FULFILLMENT LEVEL	III

STANDARD 7. NON-ACADEMIC STAFF

7. Non-academic staff	Reference
<ul style="list-style-type: none"> • <i>Provide a link to the list of administrative staff that contains information and job titles for which they have a Guideline 7.1. UP-P AVORS 03 full-time employment contract or a full-time employment contract with deferred effect</i> 	Guideline 7.1.
<p>A list of administrative staff containing information and titles of positions for which they have concluded a full-time employment contract or a full-time employment contract with deferred effect is available. Also visible on the links:</p> <p>Službe Prirodno-matematičkog fakulteta 7.2. Spisak administrativnih radnika 7.3. Sistematizacija neakademskog osoblja 2022</p>	

<ul style="list-style-type: none"> • <i>Submit full-time employment contracts or deferred employment contracts for student services administrative staff</i> 	Guideline 7.2.
Posted on link: PRILOG 7.1. Spisak i Ugovori o radu za neakademsko osoblje	
<ul style="list-style-type: none"> • <i>Submit contracts for staff engaged in legal and financial affairs, librarian affairs and information system maintenance affairs.</i> 	Guideline 7.3.
Contracts with the faculty secretary, executors engaged in legal and financial work, librarian work and information system maintenance work were submitted.	
STANDARD 7. Non-academic staff	
<p>STRENGTHS: The faculty has qualified and competent administrative and support staff, both in the student service of the faculty, as well as in administration, finance and the IT sector. The faculty has an employed IT engineer who raised the faculty's information system to a significant IT level. This criterion is met.</p>	
<p>WEAKNESSES: No deviations from the requirements prescribed by this standard were observed.</p>	
REQUIREMENTS FULFILLMENT LEVEL	III

STANDARD 8. STUDENTS

8. Students	Reference
<ul style="list-style-type: none"> • <i>Provide a link to a document that contains an example of a competition for admission to studies (the number of students who enroll, requirements for enrollment, criteria for determining the order of candidates, the procedure for conducting the competition, the method and deadlines for submitting an appeal against the established order, as well as the amount of tuition they pay students whose studies are not financed from the budget).</i> 	Guideline 8.1. and 8.5.
<p>The documents related to the competition for admission to studies with all required elements for 2022/23 have been presented. a year. The Decision of the University Board of Directors on the amount of tuition fees for the academic year 2022/23 was presented. A Guide for freshmen has been prepared for future students. The submitted example of a competition for admission to studies contains all the required elements - the number of students who enroll, conditions for enrollment, criteria for determining the order of candidates, the procedure for conducting the competition, the method and deadlines for submitting an appeal to the established order, as well as the amount of tuition paid by students whose studies are not financed from the budget.</p>	
<ul style="list-style-type: none"> • <i>Specify the planned number of students for enrollment and evidence of compliance of the number of students with spatial and technical-technological conditions, as well as the document which outlines the teaching groups</i> 	Guideline 8.2 and 8.4.

The decision on the adoption of the plan for the enrollment of students at the Faculty of Sciences and Mathematics in the academic year 2022/2023 is presented. The planned number of students for enrollment are available in the submitted decision. Evidence of the compliance of the number of students with spatial and technical-technological possibilities is available in the submitted Elborat, in the part related to space and equipment.

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|--|------------------------------|
| <ul style="list-style-type: none"> • <i>Provide a link to the document that determines the conditions (general and special), that is, the criteria for the classification and selection of candidates for enrollment.</i> | <p><i>Guideline 8.3.</i></p> |
|--|------------------------------|

The document that establishes the conditions, that is, the criteria for the classification and selection of candidates for enrollment, is presented. The conditions and criteria for enrollment are described in the Elaborate on the justification of starting the study program of the first cycle Environmental Protection Engineering (Chapter 9.2).

STANDARD 8. Students

STRENGTHS:

Access policies, processes and criteria for enrollment in the first and second cycle are implemented consistently and transparently. During enrollment, students are ranked according to success. Rankings are made and are exclusively guided by success criteria. A campaign is being implemented in schools as well, where future students are introduced to the work of the institution. Upon completion of the programme, students receive a diploma and a diploma supplement which shows the qualifications they have acquired, including the learning outcomes achieved and the context, level, content and status of the studies they have attended and successfully completed. The positive practice of the institution, applicable to the third cycle of studies, is visible from the above.

1. Clearly defined opportunities to help students with the actual preparation of entrance exams in all subjects.
2. Available literature for preparation as well as examples of previous tests.

WEAKNESSES:

No deviations from the requirements prescribed by this standard were observed.

1. Recommendation to add the document Rules for studying in the third cycle of studies (Guideline 8.3) to the initial part of point 8, because the initial requirements ask for "Methods and deadlines for submitting an appeal to the established order".

REQUIREMENTS FULFILLMENT LEVEL

III

STANDARD 9. FACILITIES AND EQUIPMENT

9. Facilities and equipment	Reference
<ul style="list-style-type: none"> Provide a link to the proof of ownership of the business space where the higher education institution will administer studies, as well as proof that the space meets the appropriate urban, technical-technological and hygienic conditions. 	Guidelines 9.1. and 9.4.
<p>The owner of the University is the Republika Srpska, according to the Law on Higher Education. During the visit to the institution, the Review Panel confirmed the satisfaction of the urban, technical-technological and hygienic conditions for higher education activities.</p>	
<ul style="list-style-type: none"> Provide a link to the list of rooms with surface area in the higher education institution requesting a licence to operate, i.e. in a department outside the headquarters of the higher education institution requesting a licence to operate, including a description of the purpose of the premises and proof of fulfilment of the prerequisites for the teaching and scientific research activities. 	Guidelines 9.2. and 9.10.
<p>The requested list, presentation and description of the space and equipment, and the characteristics and purpose of the same, were submitted. The commission stated that the space meets the criteria for holding classes and that the prerequisites for the teaching and scientific research process are met.</p> <p>Links: Tabela 9.1. Lista prostorija sa površinom na PMF-u PRILOG 9.1. Tlocrt fakulteta (sa prostorijama) PRILOG 9.1 a Izjave o posjedovanju prostornog kapaciteta Prilog 9.2. Oprema na SP Hemija</p>	
<ul style="list-style-type: none"> Provide an evidence that business space is provided for the work and needs of the student service, secretariat and student parliament. 	Guidelines 9.3. and 9.7.
<p>During the visit, the Review Panel visited the premises intended for the student service, the secretariat and the student parliament and found that adequate space was provided for the work and needs of the student service, the secretariat and the student parliament.</p> <p>Also shown on documents: Tabela 9.1. Lista prostorija sa površinom na PMF-u PRILOG 9.1. Tlocrt fakulteta (sa prostorijama) PRILOG 9.1 a Izjave o posjedovanju prostornog kapaciteta</p>	
<ul style="list-style-type: none"> Provide a link to the list of necessary technical equipment that is used in the teaching process, and which ensures teaching in accordance with health and safety standards 	Guidelines 9.4. and 9.6.
<p>The documents LIST OF EQUIPMENT and EQUIPMENT contain lists of the necessary technical equipment used in the teaching process. Teaching is planned in accordance with health and safety standards.</p> <p>Visible on the links: Tabela 9.1. Lista prostorija sa površinom na PMF-u Prilog 9.2. Oprema na SP Hemija Uputstvo o ponašanju u hemijskoj laboratoriji i pravilima bezbjednosti za studente i zaposlene na SP Hemija.</p>	

<ul style="list-style-type: none"> • <i>Submit a certified extract from the inventory book, which, among other things, proves the possession of appropriate technical equipment as well as the required number of computers available to students.</i> 	<p><i>Guidelines 9.5 and 9.9.</i></p>
<p>Documents LIST OF INVENTORY (certified) and TECHNICAL EQUIPMENT prove the possession of appropriate technical equipment. Links: 9.3. IZVOD IZ KNJIGE INVENTARA Prilog 9.2. Oprema na SP Hemija</p>	
<ul style="list-style-type: none"> • <i>Provide a link to a document that proves the coverage of all subjects with appropriate teaching aids and teaching aids for the quality of the teaching process.</i> 	<p><i>Guidelines 9.8.</i></p>
<p>The faculty has a library that is used by teachers, associates and students, and the library also houses a reading room. The reading room is provided with natural and artificial lighting, as well as natural and artificial air conditioning, which represents good prerequisites for unhindered learning and scientific research work. The library has 12,320 library units, and each year a certain number of books are continuously acquired in accordance with the different educational profiles and study programs represented at the Faculty of Sciences and Mathematics. The library fund is qualitatively and quantitatively replenished every year, and as such represents an important scientific research unit. Thus, during 2021, 39 new units were acquired for the library, of which 1 copy was purchased, 28 were donated, and 10 are mandatory copies of final theses (graduate, master's and doctoral). In recent years, new literature has been procured with the aim of ensuring that every subject taught at the faculty is covered by adequate literature. The library also has computers with internet connection that are available to students. Computers at the faculty are networked, and internet access is enabled in the entire facility (WIRELESS connection). Computers and equipment at the faculty are partially renewed and modernized through various scientific research projects led by the Faculty of Sciences and Mathematics, where the research team consists of teachers, associates and students. All of the above provides an opportunity for the effective development of the teaching process and scientific research work at the Study Program of Geography, i.e. the Faculty of Sciences and Mathematics. Electronic (digital) records of library units are planned in the near future.</p> <p>Uredba o uslovima za osnivanje i početak rada VŠU i o postupku utvrđivanja ispunjenosti uslova („Službeni glasnik Republike Srpske“, broj 35/11) Uredba o dopunama Uredbe o uslovima za osnivanje i početak rada VŠU i o postupku utvrđivanja ispunjenosti uslova („Službeni glasnik Republike Srpske“, broj 51/11) Tabela 9.1. Lista prostorija sa površinom na PMF-u PRILOG 9.1. Tlocrt fakulteta (sa prostorijama) PRILOG 9.1 a Izjave o posjedovanju prostornog kapaciteta Prilog 9.2. Oprema na SP Hemija</p>	
<ul style="list-style-type: none"> • <i>Provide a link to a document that lists the resources of the higher education institution for carrying out scientific research activities.</i> 	<p><i>Guidelines 9.11.</i></p>
<p>Within the document LIST OF EQUIPMENT, the resources of the higher education institution for carrying out scientific research work are listed. During the visit, the Review Panel visited the laboratory premises of the faculty and personally verified the fulfillment of the laboratory capacities and determined that the conditions for holding the planned classes in the laboratories were met. The posted links prove compliance with this policy: Prilog 9.2. Oprema na SP Hemija Dostupna oprema Univerziteta u Banjoj Luci</p>	

<ul style="list-style-type: none"> • Provide links to contracts with institutions with which the higher education institution has signed contracts for conducting scientific research activity 	<p>Guidelines 9.11.</p>
<p>Contracts with the institutions with which the higher education institution has signed contracts for the performance of scientific research work have been submitted - visible on the links: PRILOG 5.5. Spisak ugovora o saradnji Sporazumi o saradnji</p>	
<ul style="list-style-type: none"> • Provide a link to a document that proves the possession of equipment for remote teaching (equipment, teaching aids, laboratories, platforms, etc.). 	<p>Guidelines 9.12.</p>
<p>Upon inspection during the visit, it was established that: The Faculty of Sciences and Mathematics uses the Google classroom platform for distance learning. The Google Classroom application is a product of Google and is free for educational institutions that use the Google service. The purpose of the Google Classroom application is the organization of distance learning and the distribution of learning materials in an online environment. The Google Classroom application can be accessed from a computer, laptop, mobile phone and/or tablet. Through Google classroom, the teacher/associate creates a classroom for the subject and through the classroom can share teaching content with students in electronic format, assign assignments, organize online classes and monitor student work. Access rights can be defined for each material, which is placed by the teacher/collaborator. Access rights can be granted to all students in case it is necessary or if it is about individual tasks and/or materials, then it is possible to select a student or a group of students to whom the materials should be available. Through the appropriate forms, students can upload documents or other electronic formats that contain solutions to tasks previously assigned to them. It is possible to integrate other Google tools into the use of the classroom, which can facilitate the teaching process and communication between teachers, colleagues and students. Holding online classes and consultations is possible using the platform for online meetings - Google meet, for which there is a unique link at the classroom level that can be used during the duration of online classes. In addition, it is possible to use Google documents, Google tables and Google presentations, which will help in the implementation of the teaching process. A teacher/collaborator in the same Google Classroom can assign a teaching role to other colleagues, so that together they can coordinate the entire teaching process. Google Classroom can only be accessed by teachers and students who have been invited to join the classroom or have received the appropriate classroom invitation code from the person who created the classroom. Therefore, the security aspect of using the Google Classroom application is at a high level. The teacher/collaborator is responsible for respecting intellectual property rights in the same way as in the case of live work.</p>	
<p>STANDARD 9. Facilities and equipment</p>	
<p>STRENGTHS: The building of the Faculty of Sciences and Mathematics has 3328.17 m². The expected total number of students is 5 per year, that is, 15 in total, so, considering the fact that most of the activities take place through mentoring work with undergraduate students, this standard is fully met. A description of the rooms and their characteristics and purpose are provided. Given that it is a public higher education institution, it is not necessary to provide proof of ownership. The faculty has a solid infrastructure (classrooms, laboratories, reading room), equipped according to standards (video projectors, computer equipment, laboratory equipment). The faculty also has modern software for monitoring classes via the Internet and a significant number of textbooks for students. The faculty has a very well developed IT structure. Depending on the needs, distance learning, e-learning is also used.</p>	

In the period of the outbreak of the Covid-19 pandemic, but also before that period, the teaching staff adopted the e-learning teaching model, which proved to be a very effective and effective way of working with students. The acquisition of new software packages is planned.

WEAKNESSES:

1. Recommendation: in addition to attachment 5.5 List of cooperation agreements, add links to those agreements themselves.

REQUIREMENTS FULFILLMENT LEVEL	III
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STANDARD 10. LIBRARY, TEXTBOOKS AND IT SUPPORT

10. Library, textbooks and IT support	Reference
<ul style="list-style-type: none"> Submit a link to a summary of the number of library units in the higher education institution for which a licence to work is requested (register of library materials in electronic form). 	Guideline 10.1.
<p>The faculty has a library that is used by teachers, associates and students, and the library also houses a reading room. The reading room is provided with natural and artificial lighting, as well as natural and artificial air conditioning, which represents good prerequisites for unhindered learning and scientific research work. The library has 12,380 library units, and every year a certain number of books are continuously acquired in accordance with the different educational profiles and study programs represented at the Faculty of Sciences and Mathematics. The library fund is qualitatively and quantitatively replenished every year, and as such represents an important scientific research unit. Thus, during 2021, 39 new units were acquired for the library, of which 1 copy was purchased, 28 were donated, and 10 are mandatory copies of final theses (graduate, master's and doctoral). In recent years, new literature has been procured with the aim of ensuring that every subject taught at the faculty is covered by adequate literature. The library also has computers with internet connection that are available to students. Computers at the faculty are networked, and internet access is enabled in the entire facility (WIRELESS connection). Computers and equipment at the faculty are partially renewed and modernized through various scientific research projects led by the Faculty of Science, where the research team consists of teachers, associates and students. All of the above provides an opportunity for the effective development of the teaching process and scientific research work at the Study Program of Geography, i.e. the Faculty of Science and Mathematics. Electronic (digital) records of library units are planned in the near future. The library has 12,380 library units, of which 305 are from the field of chemistry</p> <p>APPENDIX 10.1. Inventarna knjiga biblioteke Prirodno-matematičkog fakulteta-SP HEMIJA</p>	
<ul style="list-style-type: none"> Provide a link to an overview of the number and titles of textbooks by scientific field and courses (in Serbian and other languages) that are available to students, including electronic editions. 	Guideline 10.1. and 10.6.
<p>A summary overview of the number and titles by fields and subjects has been submitted. The mentioned literature is posted on the link - 10.2. ZBIRNI PREGLED BROJA UDŽBENIKA PO OBLASTIMA I PREDMETIMA</p>	

<ul style="list-style-type: none"> • <i>Provide a link to the act on textbooks (rulebook or some other act that regulates library materials in terms of having textbooks for the needs of students)</i> 	<p><i>Guideline 10.1. and 10.6.</i></p>
<p>Appropriate legal and official documents were submitted - Law on Higher Education of the Republic of Srpska (Article 70); Rulebook on publishing activities of the University of Banja Luka; Law on library and information activity (Sl.gl.RS no. 44/16); Rulebook on standards and norms in library and information activities (Sl.gl.RS no. 10/20).</p>	
<ul style="list-style-type: none"> • <i>List subscriptions to databases of scientific journals or agreements with institutions that allow direct access to search engines of databases with scientific journals.</i> 	<p><i>Guideline 10.4. and 10.5.</i></p>
<p>Considering that the Faculty of Sciences and Mathematics within the University of Banja Luka does not have continuous subscriptions to databases of scientific journals and that access to search engines of databases with scientific journals is done individually (some professors are reviewers in scientific journals), it is recommended to subscribe to scientific journals with a special with a focus on high-ranking environmental engineering journals to ensure access to the latest research and trends in the field. Seen at the following links: 10.3. Pristup časopisima Hemija 10.4. Pristup bazama Hemija Open Science UNIBL</p>	
<ul style="list-style-type: none"> • <i>Submit a statement on the possession of a reading room with appropriate equipment for monitoring library content, as well as information equipment that is necessary for the teaching process, scientific, research and art activities.</i> 	<p><i>Guideline 10.2. and 10.7.</i></p>
<p>The required proofs of ownership of the reading room were submitted, which was confirmed during the commission's visit. Links with evidence: Табела 9.1. Lista prostorija sa površinom na PMF-u PRILOG 9.1 a Izjave o posjedovanju prostornog kapaciteta 9.3. IZVOD IZ KNJIGE INVENTARA</p>	
<p>STANDARD 10. Library, textbooks and IT support</p>	
<p>STRENGTHS: 1. Textbooks are provided for all offered subjects of the Doctoral study; 2. There is access to a certain number of scientific journals; 3. IT support for access to literature is provided.</p>	
<p>WEAKNESSES: 1. Insufficient access to the highest quality journals in the field of Chemistry: ACS, RSC, Wiley. But of course this is not something that the faculty can solve, but it is under the authority of the State and the competent ministry. Recommendation: try to lobby to find funds at least for certain journals of the above-mentioned publishers.</p>	
<p>REQUIREMENTS FULFILLMENT LEVEL</p>	<p>III</p>

STANDARD 11. FUNDS

11. Funds	Reference
<ul style="list-style-type: none"> Provide a link to the financial plan for the current year and the decision of the temporary management body on the adoption of the financial plan 	Guidelines 11.1. and 11.2.
The financial plan for the current year is available at the link of the corresponding document- Prilog 11. Odluka o usvajanju Troškovnika za akademsku 2022-23 SA PRILOGOM	
<ul style="list-style-type: none"> Provide a link to a bank guarantee in the amount of 50% of the tuition fee for each student, for the continuation and completion of studies in the event of the closure of the institution for which a licence to work is requested or the termination of a specific study program. 	Guidelines 11.2.
The standards guideline applies to private higher education institutions	
<ul style="list-style-type: none"> Provide a link to an agreement with another accredited higher education institution from Republika Srpska on ensuring the completion of studies for students in the event of closure of institution or termination of a specific study program. 	Guidelines 11.3.
The standards guideline applies to private higher education institutions	
STANDARD 11. Funds	
STRENGTHS: The requested documents have been submitted.	
WEAKNESSES: No deviations from the requirements prescribed by this standard were observed.	
REQUIREMENTS FULFILLMENT LEVEL	III

3. Final opinion of the Review Panel

After inspecting the complete submitted documentation, visiting the higher education institution and analyzing all the documents, procedures and ways of functioning of the higher education institution in terms of the operation of the study program, and after completing the assessment process, the following level of fulfilment of requirements of the standards and criteria of the study program was set:

STANDARADS	REQUIREMENTS FULFILLMENT LEVEL
1. Goals and core tasks of the higher education institution	III
2. The internal quality assurance mechanism	III
3. The organisation of higher education institution	III
4. Studies	III
5. Scientific and research activity	III
6. Academic staff	III
7. Non-academic staff	III
8. Students	III
9. Facilities and equipment	III
10. Library, textbooks and IT support	III
11. Funds	III

Based on the overall assessment of the quality of the third-cycle Chemistry study program, the Review Panel's final opinion is that the Faculty of natural sciences and mathematics meets the prescribed requirements of the Standard for Initial Accreditation. The opinion of the Review Panel is also the basis for the Agency to make a recommendation for initial accreditation with the purpose of issuing a licence to operate.

Members of the Review Panel:

Prof. Snezana Zaric, PhD, representative of _____
the academic community, chairman

Prof. Igor Djerdj, PhD representative of the _____
academic community, member

Vesna Matic, representative of business and _____
practice, member

Danijela Rajic, student representative, _____
member