



**PHARMACY
INTEGRATED UNDERGRADUATE AND
GRADUATE
UNIVERSITY
STUDY PROGRAMME CURRICULUM**

Mostar, April 2023

Table of contents

1. INTRODUCTION	3
2. GENERAL INFORMATION ABOUT THE STUDY PROGRAMME	6
3. BASIC CHARACTERISTICS OF THE STUDY PROGRAMME.....	11
4. STUDY PLAN	28

1. INTRODUCTION

The curriculum of the Pharmacy, integrated undergraduate and graduate university study programme, is the product of the regular review process, which was initiated by Senate Decision No. 01-993-1/22 of 26 February 2022. The regular revision process was carried out in accordance with the *Rulebook on the Procedure for Adopting New and Revisions of Existing Study Programmes* (No. 01-993-1/22). The Rulebook stipulates that curriculum revision activities are to be coordinated by a Committee, which shall include student representatives and stakeholders. The Committee's proposal shall be submitted by the Faculty Council of the organisational unit to the University Senate for adoption.

The Faculty of Pharmacy of the University of Mostar, in accordance with the will of the Scientific and Teaching Council, and at the proposal of the Dean of the Faculty, made a decision on the appointment of the Committee for the development of the revised study programme curriculum of the integrated study of Pharmacy. By decision (ed. no. 09-01-274/22 of July 14, 2022) made at the 45th session of the Scientific and Teaching Council of the Faculty of Pharmacy of the University of Mostar, the following Committee was appointed:

1. Prof. Ivica Brizić, Ph.D., President of the Committee
2. Prof. Ivanka Mikulić, Ph.D., representative of the academic staff, member of the Committee
3. Martin Kondža, Ph.D., Assistant Professor, representative of the academic staff, member of the Committee
4. Ivona Ivančić, Ph.D., Assistant Professor, representative of the academic staff, member of the Committee
5. Marko Kvesić, student representative, member of the Committee
6. prim. M.Pharm. Vesna Fideršek, representative of external users, member of the Committee
7. Franjo Jurilj, quality coordinator

To ensure that all stakeholders would be involved in the study programme improvement process, a public hearing was held on 24 March 2023 at 11 a.m. at the Faculty of Science and Education. Representatives of the Committee, representatives of the Faculty, representatives of the University, representatives of the economy and students participated in the public debate.

The conclusions of the public hearing were taken into account during the curriculum development.

Besides the public hearing conclusions, the curriculum revision also took into account the recommendations of the Expert Committee made during the most recent institutional accreditation process in 2020, which recommended the inclusion of practical training outside the University (where applicable), the implementation of legal and internal acts on the minimum share of pre-examination obligations in the final grade of all courses, and the application of modern teaching methods with the student as the focus of the teaching process.

Furthermore, all the strategic tasks in the field of education from the University Development Strategy 2018-2023, which concern the curriculum and teaching process, were carried out during curriculum development (more in chapter "3.1. Alignment with the University Development Strategy").

In addition, when making decisions on this type of changes, all relevant statistical data and survey results, collected and conducted in the period since the last study programme revision/adoption, were analyzed:

- relevant statistical indicators of the Institute for Employment of the founding counties of the University of Mostar, changes in the current ordinances and legal regulations that led to a more liberal pharmacy market and greater demand for a highly educated workforce;
- indicators of the World Health Organization on the shortage of health workers in Bosnia and Herzegovina, especially experts in the field of pharmacy;
- indicators on the age of the population in Bosnia and Herzegovina and the surrounding area, on the continuous growth of companies from the pharmaceutical industry sector;
- about the potential and investments in entrepreneurship in Bosnia and Herzegovina and the integration of Bosnia and Herzegovina into the European health, entrepreneurial and research space.

Taking into account all the above, the following changes have been made in this revised curriculum in relation to the existing curriculum:

- in accordance with the requirements of the modern pharmaceutical profession and based on positive practices in the European Union, the study programme curriculum has been enriched with two new courses - *Biological Chemistry* and *Vaccination in Pharmacy Practice*;

- the study programme curriculum is fully adapted and harmonized with the relevant faculty of this field in the European Union - the Faculty of Pharmacy and Biochemistry of the University of Zagreb;
- the allocation of ECTS points has been improved in the courses *English language* and *Physical education*;
- the course *Economics in Pharmacy* was renamed *Pharmacoeconomics*;
- the course *Analytical toxicology* was renamed in *Toxicology*;
- in accordance with positive practices in the European Union and the results of the ERASMUS+ IQPharm project (Innovating quality assessment tools for pharmacy studies in Bosnia and Herzegovina), the *Objective Clinical Structured Examination* (OSKI) was introduced as a method of taking the Professional Practice course in the tenth semester of the fifth year of the study.

2. GENERAL INFORMATION ABOUT THE STUDY PROGRAMME

Study programme:	Pharmacy
Cycle:	Integrated (1st+2nd cycle)
Type	University study programme
Scientific area:	Biomedicine and Healthcare
Scientific field:	Pharmacy
Academic title:	Master of Pharmacy
EQF qualification level:	7
Duration of the study programme;	5 years (10 semesters)
ECTS:	300
Language:	Croatian language
Mode of study:	Full-time study
Institution administering study programme:	University of Mostar
Department:	University of Mostar, Faculty of Pharmacy
Study programme objectives:	<ul style="list-style-type: none"> - achieve students' knowledge and skills in the design, development, testing and production of medications and other pharmaceutical products, - achieve students' understanding of the pharmacology and therapeutic use of medications, including their mode of action, possible side effects and interactions with other medications, - train students to ensure the safety, effectiveness and quality of medications and other pharmaceutical products through appropriate testing and regulatory supervision, - achieve students' understanding of the importance of promoting appropriate and rational use of medications and other pharmaceutical products, including their selection, dosage and application, - train students to conduct research to identify new medications and treatments for diseases, as well as to improve the safety, effectiveness and quality of existing medications and treatments, - train students to provide pharmaceutical care services to patients, including medication therapy management, medication information and patient education, - achieve students' understanding of medications and their effects on the body and use this knowledge to improve patient care and public health.
Study programme competencies:	<ul style="list-style-type: none"> - operative use of analytical methods and techniques - handling of devices and equipment - laboratory work

	<ul style="list-style-type: none"> - qualitative and quantitative analyses in pharmacy - safe handling of chemical and pharmaceutical materials - risk prediction for pharmaceutical procedures and practice - production of master's and galenic preparations - monitoring and improvement of the production process - assessment and interpretation of laboratory test data - recognition of the basic symptoms and signs of the disease - recognition of medications interactions, unwanted and toxic effects - oral and written communications with patients, doctors, other healthcare professionals and the public - production and dispensing of medications - counseling and information on the effect and correct application of the medication - monitoring the course and outcome of pharmacotherapy - clinical, technical, scientific and communication competences in the field of laboratory diagnostics - the ability to work in diagnostic laboratories in the healthcare system, research laboratories in all fields of biomedicine, industrial laboratories, public health institutions and academic institutions - understanding of human physiology and disease pathophysiology - optimization and performance of laboratory analyses, required in various areas of health care - knowledge of sources of errors and variability of laboratory test results - knowledge of the principles and implementation of good laboratory practice - understanding the clinical significance of changes in the results of laboratory tests
Study programme learning outcomes:	<ul style="list-style-type: none"> - FARFFIIU1: applies basic knowledge of chemistry, biochemistry, molecular biology, physics, mathematics and statistics necessary for defining, analyzing and proposing procedures related to research, development and production as well as analysis and quality control of medications - FARFFIIU2: explains and applies the principles and techniques of common laboratory diagnostic tests, analyzes and interprets the results of laboratory tests to indicate possible diseases, disorders or abnormalities, selects appropriate laboratory diagnostic tests based on the patient's symptoms, medical history and clinical indications, demonstrates expertise in performing basic laboratory tests

	<p>diagnostic tests, applies critical thinking skills to solve technical problems and interpret unexpected test results,</p> <ul style="list-style-type: none"> - FARFFIIU3: applies professional knowledge and skills when advising on pharmacotherapy and conducting pharmaceutical care for patients, respecting the current legal regulations, current health policies and guidelines, and the principles of pharmaceutical ethics and deontology - FARFFIIU4: demonstrates observational, analytical and critical skills in the development and implementation of solutions to practical problems in the production and monitoring of the safe and appropriate use of medications - FARFFIIU5: ensures positive interactions with patients, colleagues, other health professionals and the general public through oral and written forms of communication - FARFFIIU6: with professional and responsible behavior makes a significant contribution in different situations and environments such as interprofessional groups, pharmaceutical environment and professional organizations and committees - FARFFIIU7: as part of the health care team, provides adequate care for patients, which includes informing and counseling patients about the effect and correct use of medications and monitoring the course and outcome of therapy; recognizes clinically significant interactions among medications and works to avoid them; actively participates in disease prevention and health preservation and public health initiatives - FARFFIIU8: selects and applies technological processes and analytical methods, as well as their innovations, and ensures quality in the medication production process by applying the rules of good laboratory and manufacturing practice, as well as relevant European and ISO directives - FARFFIIU9: effectively applies financial, marketing and organizational principles important for independent and team work; participates in and supervises the distribution of medications; plans and implements pharmacy care
--	---

	<ul style="list-style-type: none"> - FARFFIU10: uses information technologies and databases for the purpose of improving professional knowledge and skills and self-education - FARFFIU11: critically evaluates and applies scientific knowledge and available data for the purpose of improving the profession, solving problems, applying new technologies and improving existing ones; preparation of professional and scientific publications; designs and manages professional and scientific projects and programs - FARFFIU12: demonstrates independence in organization, leadership and management, development of strategies and business plans relevant to the profession - FARFFIU13: applies legal and ethical principles of the profession in independent and team work; conducts activities related to continuous professional education and contributes to the development of the profession
Opportunities after graduation::	<p>Masters of pharmacy are qualified to work in public and private pharmacies in the field of dispensing medications, providing advice to patients and other health institutions; in hospital pharmacies, in hospital settings, where they work as part of the healthcare team to ensure that patients receive appropriate medication therapy, they may be involved in the selection, preparation and administration of medications, as well as medication therapy management and patient education; masters of pharmacy work in long-term care facilities.</p> <p>Pharmacists in long-term care facilities, such as nursing homes and assisted living facilities, work with health care providers to ensure that residents receive appropriate medication therapy. Pharmacists in the pharmaceutical industry work in areas such as medication discovery, research and development, regulatory affairs, and marketing. Masters of pharmacy can work in government agencies such as the Agency for Medicines and Medical Devices of Bosnia and Herzegovina, entity and county ministries of health, public health institutes, health institutes, as well as health insurance and reinsurance institutes. Masters of Pharmacy can further develop their science and can work in academic institutions as educators and researchers. Pharmacists may also work as consultants to health care organizations, insurance companies, and</p>

	other entities that require expertise in medication therapy and related matters. In addition, pharmacists find their scope of work in the specialist disciplines of medical biochemistry and laboratory diagnostics in medical-biochemical laboratories.
Accreditation:	The University of Mostar was accredited by the Decision on Institutional Reaccreditation of 14 January 2020 from the relevant Ministry of Education, Science, Culture and Sports of the Herzegovina-Neretva County on the recommendation of the Agency for Development of Higher Education and Quality Assurance of BiH, after which the University was registered in the State Register of Accredited Higher Education Institutions.

3. BASIC CHARACTERISTICS OF THE STUDY PROGRAMME

3.1. Alignment with the Development Strategy of the University of Mostar

The Development Strategy of the University of Mostar 2018-2023 sets out several strategic objectives relating to the curriculum and its elements in the field of education.

Objective 1 stipulates that the University, in cooperation with stakeholders, will design, approve, implement, continuously monitor and improve study programmes at all levels. The following tasks arise from clearly defined learning outcomes relating to labour market needs, in accordance with the European Qualifications Framework (EQF):

- Task 1: To clearly define the objectives and expected learning outcomes of each study programme, and to align them with the content of the study programme in accordance with the relevant European Qualifications Framework level and the qualification standard;
- Task 2: To introduce a transparent and consistent study programme revision and improvement process, in which students and other stakeholders will participate;
- Task 5: To ensure the realistic allocation of ECTS credits using a defined system of ECTS coordination at all study programme levels;
- Task 6: To improve the interdisciplinarity of all study programmes by allowing the student to take elective courses at university level.

Objective 3 concerns the development of a wide network of teaching bases and organisations from different fields, and the establishment of cooperation which will enable the interconnection of practice, science, art, and higher education. The following tasks arise from it:

- Task 2: To increase the number of hours and the share of teaching practicums in the study programmes and their share of allocated ECTS credits;
- Task 3: To increase the number of Bachelor's/Master's theses, whose topics and content are related to teaching practicums.

3.2. Alignment with the achievements of a certain scientific/artistic area, the labour market and professional/qualification standards

The objectives, competencies, and learning outcomes at study programme level are defined in such a way as to align the achievements of a scientific/artistic area and the labour market with professional/qualification standards.

For the purpose of alignment with the achievements of the scientific/artistic field, the representatives of the teachers in the Committee for the development of the revised curriculum and the other teachers who participated in the development of the curricula of a particular course took into account contemporary achievements and trends in the scientific field of biomedicine and healthcare, the field of pharmacy, branches of pharmacy, related to the study of pharmacy.

For the purpose of alignment with the labour market, representatives of students and external users were appointed to the Committee for the development of the revised curriculum, and a public debate was organized in which experts from practice and business took part, whose suggestions were taken into account when creating the curriculum .

Since in Bosnia and Herzegovina there are no occupational standards or qualification standards defined at any level, the following documents were taken into account:

- DIRECTIVE 2005/36/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of September 7, 2005 on the recognition of professional qualifications ("Official Gazette of the European Union," L 255/22)
- Rulebook on internship and professional examination of health workers ("Official Gazette of the Federation of Bosnia and Herzegovina", number 46/10)
- Law on Health Care ("Official Gazette of the Federation of Bosnia and Herzegovina", number 46/10)
- The Master of Pharmacy internship study programme curriculum prescribed by the Federal Ministry of Health *Decision on the standard classification of occupations in the FBiH* ("Official Gazette of the FBiH," Year XI, No. 40, No. 8, 2004), in which the occupation 2224. PHARMACISTS is listed under the category Gender 2. Experts and scientists.

Pharmacists apply pharmaceutical knowledge and theories by preparing, dispensing and by selling ready-made medications, magisterial and galenic preparations. They are engaged in scientific and research work.

These jobs include:

- a) procurement, preparation and dispensing of magisterial and galenic preparations of ready-made medications and infusion solutions;
- b) supply of auxiliary medicinal materials, auxiliary means in treatment medical products, baby food, dietary products, cosmetics and other health protection means;
- c) consulting on the prescription and use of medications and auxiliary medications;
- d) issuance of veterinary medications and means for medical care and protection of animals;
- e) maintaining a register of medications, especially narcotics, poisons and addictive medications;
- f) collecting of data on medications interactions and side effects;
- g) testing and monitoring the quality of medications to determine their purity, strength and time of action;
- h) writing scientific papers;
- i) related jobs;
- j) supervision of other associates.

- In addition to the above-mentioned document, the following documents were also taken into account: *Innovating quality assessment tools for pharmacy studies in Bosnia and Herzegovina (IQPharm)* – overall project report – 618089-EPP-1-2020-1-BA-EPPKA2-CBHE-JP
- Directive 2013/55/EU of the European Parliament and the Council of 20 November, 2013 amending Directive 2005/36/EC on the recognition of professional qualifications and Regulation (EU) no. 1024/2012 on administrative cooperation through the Internal Market Information System ("IMI Regulation"). Text relevant to the EEA
- Law on Pharmacy Activity of the Federation of Bosnia and Herzegovina ("Official Gazette FBiH," 40/2010)

Tasks/competencies/learning outcomes from all the aforementioned documents are implemented in the competencies and learning outcomes of the various study programmes listed in chapter 2. *General information about the study programme* and are implemented in core courses in order to ensure that all students achieve them with the acquired qualification. The coverage of those learning outcomes at the level of the study programme with learning

outcomes at the level of core courses is presented in chapter 3.12. Matrix of *Learning outcomes*.

3.3. Comparability with the study programmes in the country and abroad

The study programme curriculum of the integrated undergraduate and graduate study of Pharmacy is comparable with the study programmes in Bosnia and Herzegovina, as well as with study programmes abroad.

Comparability with study programme curricula in Bosnia and Herzegovina is realized with the study programme curriculum of the Faculty of Pharmacy of the University of Sarajevo.

Comparability with study programme curricula abroad is realized with the study programme curriculum of the Faculty of Pharmacy and Biochemistry of the University of Zagreb.

Comparability is reflected exclusively in terms of competencies and learning outcomes at the level of study programmes and in the duration of studies, while the study programme retains its specificity mainly through the structure, course titles and ECTS credits.

3.4. Openness to student mobility

Student mobility is defined by the *Rulebook on International Mobility*, which sets out administrative support for students, student mobility documents, insurance, application procedure, the mobility recognition procedure and information package. The sole method of recognition is defined at university level by the Senate Decision on the Adoption of a Single Form for the Decision on Recognition of Courses, ECTS Credits, Grades, and Professional Practice during Student Mobility, which is recorded in the diploma supplement.

Students can find information about mobility programmes and accompanying forms on the University's website, and through the Vice-dean for Academic Affairs at the Faculty of Pharmacy of the University of Mostar, who forwards information from the University's Office for International Cooperation to student representatives.

3.5. Conditions for enrolment in the study programme and transfer from other study programmes

The University Rulebook on studying defines the right to enroll at undergraduate, graduate and integrated study programmes, which is carried out through a public call. The Senate, on the proposal of the scientific-teaching/art-teaching council of the organizational unit, and with the consent of the University's Administrative Council and the competent Ministry of Education, Science, Culture and Sports of Herzegovina-Neretva County, announces a public call, which is published in the daily press, on the University's website and on the website and notice board of the Faculty of Pharmacy, and which contains information on the conditions for admission, the class procedure, the amount of tuition fees, the criteria for selecting candidates and other information.

The criteria for enrolling students will be determined by the enrollment procedure. The enrollment procedure is based on:

- evaluation of general success in high school,
- knowledge evaluation based on the entrance exam

Information about the enrollment procedure can be obtained in the University's publications and on the website of the Faculty of Pharmacy of the University of Mostar (<https://farf.sum.ba/>) when announcing the enrollment competition.

When transferring from other study programmes, a request is submitted to the Dean of the Faculty of Pharmacy, on which basis the decision on the possibilities and conditions for enrollment are decided by the appropriate Committee.

3.6. Conditions for enrolment in the next semester and year of study and graduation

The conditions for enrollment in the next semester and senior year of study are defined by the University's Study Rulebook and the regulations and other acts of the Faculty of Pharmacy.

The study programme ends with the writing and defense of a Master's thesis worth 6 ECTS credits.

The manner and procedure of defending the Master's thesis and the methodology of its writing are defined by the Rulebook on Master's thesis and the graduation exam of the Faculty of Pharmacy.

3.7. Study Programme Organization

The study programme is organized in two semesters in the academic year, and classes are conducted according to the schedule of classes through rotations.

Professional practice is carried out in accordance with the defined criteria of the Federal Ministry of health as part of the equipment and premises of the teaching bases of the Faculty of Pharmacy.

3.8. Structure of the study programme

The structure of the study programme is reflected in the number of hours of each type of teaching and teaching in total, the number of hours of practice and the number of hours of independent student work in the total workload of the student, which is 300 ECTS credits, or 9000 hours of work.

According to the *Rulebook on the Procedure for Adopting New and Revisions of Existing Study Programme* (No. 01-993-1/22), only core courses are listed in the curriculum, while elective courses are adopted in the annual curriculum for each academic year. Therefore, the table below will show the number of hours of each class type and total number of classes, the number of hours of practicum, and the number of hours of independent work only for core courses.

In relation to the total number of ECTS points, 10.5 ECTS credits are acquired in elective courses. In addition to core courses and elective courses at the level of the study programme and at the level of the organizational unit, i.e. in addition to 30 ECTS credits per semester, the student can also choose university elective courses, from the list adopted by the Senate each academic year, which are recorded in the student's diploma supplement.

The purpose of elective courses at the level of the study programme is a more detailed elaboration of learning outcomes already acquired in compulsory courses, in accordance with the student's preferences, and the purpose of university elective courses is the acquisition of competencies that are not provided in the study programme, and which the student estimates can make him more competitive on the labour market and contribute to building one's own personality through education.

The structure of the study programme with shares of individual classes, practice and independent work:

Year of study: 1.									
Winter semester: (1.)									
Course code	Course title	Hours of teaching			I. Teaching, in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		I	t	s					
FARFFI101	Introduction to the Study	15	0	0	15	0	30	45	1,5
FARFFI102	Mathematics	30	0	30	60	0	90	150	5
FARFFI103	Cell Biology and Genetics	30	30	15	75	0	135	180	6
FARFFI104	General Chemistry with Stoichiometry I	30	30	30	90	0	120	210	7
FARFFI105	Human Anatomy	30	30	0	60	0	30	120	4
FARFFI106	Physics	30	15	15	60	0	90	150	5
FARFFI107	Physical Education I	0	15	0	15	0	0	15	0,5
In total		165	120	90	375	0	495	870	29
ECTS for core courses									29
ECTS for elective courses									1
ECTS IN TOTAL									30

Year of study: 1.									
Summer semester: (2.)									
Course code	Course title	Hours of teaching			I. Teaching, in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		I	t	s					
FARFFI201	General Chemistry with Stoichiometry II	30	0	15	45	0	90	135	4,5
FARFFI202	Physiology	45	0	30	75	0	105	180	6
FARFFI203	Organic Chemistry I	30	15	15	60	0	105	165	5,5
FARFFI204	Analytical Chemistry I	25	20	10	55	0	95	150	5
FARFFI205	Pharmaceutical Botany	30	15	0	45	0	105	165	5,5
FARFFI206	Physical Education II	0	15	0	15	0	0	15	0,5
FARFFI207	English Language	0	0	25	25	0	5	30	1
FARFFI208	Pharmacy Practice I	0	0	0	0	15	15	30	1
In total		160	65	95	320	15	535	870	29
ECTS for core courses									29

ECTS for elective courses	1
ECTS IN TOTAL	30

Year of study: 2.									
Winter semester: (3.)									
Course code	Course title	Hours of teaching			I. Teaching , in total	II. Hours of practic e	III. Independen t work	Workload hours, in total (I.+II.+III.)	ECTS
		I	t	s					
FARFFI30 1	Analytical Chemistry II	20	25	10	55	0	65	120	4
FARFFI30 2	Organic Chemistry II	30	30	15	75	0	105	180	6
FARFFI30 3	Physical Chemistry I	25	20	15	60	0	90	150	5
FARFFI30 4	Microbiology with Parasitology I	30	15	0	45	0	60	105	3,5
FARFFI30 5	Biochemistry I	35	30	10	75	0	60	135	4,5
FARFFI30 6	Bioethics	10	0	5	15	0	15	30	1
FARFFI30 7	Biological Chemistry	30	15	0	45	0	90	135	4,5
FARFFI30 8	Physical Education III	0	15	0	15	0	0	15	0,5
In total		180	150	55	385	0	485	870	29
ECTS for core courses									29
ECTS for elective courses									1
ECTS IN TOTAL									30

Year of study: 2.									
Summer semester: (4.)									
Course code	Course title	Hours of teaching			I. Teaching, in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		I	t	s					
FARFFI401	Physical Chemistry II	20	25	15	60	0	90	150	5
FARFFI402	Microbiology with Parasitology II	30	15	0	45	0	90	135	4,5
FARFFI403	Biochemistry II	30	0	10	40	0	80	120	4
FARFFI404	Pathophysiology with the Basics of Pathology	60	0	30	90	0	150	240	8
FARFFI405	Nutritional Biochemistry	25	30	5	60	0	90	150	5
FARFFI406	Physical Education IV	0	15	0	15	0	0	15	0,5
FARFFI407	English Language	0	0	25	25	0	5	30	1
FARFFI408	Pharmacy Practice II	0	0	0	0	15	15	30	1
In total		165	85	85	335	15	520	870	29
ECTS for core courses									28,5
ECTS for elective courses									1,5
ECTS IN TOTAL									30

Year of study: 3.									
Winter semester: (5.)									
Course code	Course title	Hours of teaching			I. Teaching, in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		I	t	s					
FARFFI501	Pharmacognosy I	30	45	15	90	0	90	180	6
FARFFI502	Clinical Biochemistry	45	30	15	90	0	120	210	7
FARFFI503	Basics of Hematology with Coagulation	30	15	0	45	0	75	120	4
FARFFI504	Medicinal Chemistry I	45	60	10	115	0	125	240	8
FARFFI505	Pharmaceutics I	30	15	15	60	0	60	120	4
In total		180	165	55	400	0	470	870	29
ECTS for core courses									29
ECTS for elective courses									1
ECTS IN TOTAL									30

Year of study: 3.									
Summer semester: (6.)									
Course code	Course title	Hours of teaching			I. Teaching , in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		I	t	s					
FARFFI601	Medicinal Chemistry II	45	0	10	55	0	95	150	5
FARFFI602	Pharmaceutics II	30	30	15	75	0	105	180	6
FARFFI603	Molecular Biology with Genetic Engineering	40	25	10	75	0	105	180	6
FARFFI604	Pharmacognosy II	30	30	15	75	0	105	180	6
FARFFI605	Molecular Methods in Pharmacy and Biochemistry	15	0	15	30	0	45	75	2,5
FARFFI606	Organization and Management of Medical-Biochemistry Laboratory	15	0	0	15	0	30	45	1,5
FARFFI607	Pharmacy Practice III	0	0	0	0	45	15	60	2
In total		175	85	65	325	45	500	870	29
ECTS for core courses									29
ECTS for elective courses									1
ECTS IN TOTAL									30

Year of study: 4.									
Winter semester: (7.)									
Course code	Course title	Hours of teaching			I. Teaching , in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		l	t	s					
FARFFI701	Pharmacology I	30	0	15	45	0	105	150	5
FARFFI702	Pharmaceutical Analysis I	30	30	15	75	0	105	180	6
FARFFI703	Drug Metabolism	45	30	15	90	0	150	240	8
FARFFI704	Drug Formulation I	30	15	0	45	0	105	150	5
FARFFI705	Immunology	18	4	8	30	0	75	105	3,5
In total		153	79	53	285	0	540	825	27,5
ECTS for core courses									27,5
ECTS for elective courses									2,5
ECTS IN TOTAL									30

Year of study: 4.									
Summer semester: (8.)									
Course code	Course title	Hours of teaching			I. Teaching , in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		l	t	s					
FARFFI801	Pharmacology II	45	15	30	90	0	120	210	7
FARFFI802	Pharmaceutical Analysis II	30	30	0	60	0	105	165	5,5
FARFFI803	Drug Formulation II	30	15	0	45	0	90	135	4,5
FARFFI804	Therapy Systems	15	0	15	30	0	45	75	2,5
FARFFI805	Toxicology	40	10	20	70	0	80	150	5
FARFFI806	Public Health and Social Pharmacy	15	0	15	30	0	45	75	2,5
FARFFI807	Pharmacy Practice IV	0	0	0	0	15	15	30	1
In total		175	70	80	325	15	500	840	28
ECTS for core courses									28
ECTS for elective courses									2
ECTS IN TOTAL									30

Year of study: 5.									
Winter semester: (9.)									
Course code	Course title	Hours of teaching			I. Teaching, in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		l	t	s					
FARFFI901	Prescription Pharmacy	15	30	0	45	0	60	105	3,5
FARFFI902	Cosmetology	30	15	5	50	0	100	150	5
FARFFI903	Clinical Pharmacy and Pharmacotherapy	45	60	0	105	0	105	210	7
FARFFI904	Pharmaceutical Care	30	0	30	60	0	75	135	4,5
FARFFI905	Consultation Skills	10	0	10	20	0	25	45	1,5
FARFFI906	Legislation of Medicinal Products and Medical Devices	15	0	5	20	0	40	60	2
FARFFI907	Health Legislation	15	0	0	15	0	30	45	1,5
FARFFI908	Methodology of Scientific Paper and Biomedical Informatics	15	0	15	30	0	45	75	2,5
FARFFI909	Vaccination in Pharmacy Practice	15	10	15	45	0	42	75	2,5
In total		190	115	80	385	0	515	900	30
ECTS for core courses									30
ECTS for elective courses									0
ECTS IN TOTAL									30

Year of study: 5.									
Summer semester: (10.)									
Course code	Course title	Hours of teaching			I. Teaching, in total	II. Hours of practice	III. Independent work	Workload hours, in total (I.+II.+III.)	ECTS
		l	t	s					
FARFFI1001	Pharmacy Practice	0	0	0	0	960	0	600	24
FARFFI1002	Master's Thesis	0	0	0	0	100	180	300	6
In total		0	0	0	0	900	900	900	30
ECTS for core courses									30
ECTS for elective courses									0
ECTS IN TOTAL									30

3.9. The optimal number of enrolled students with respect to space, equipment, and number of teachers

Enrollment quotas are adopted before the beginning of each academic year by the Governing Council of the University on the proposal of the Senate and with the consent of the competent ministry.

Students can study as a full-time student. Full-time students are those who study according to the programme with full teaching hours. The study costs of full-time students are paid by the students themselves or their costs are paid by the competent Ministry of Education, Science, Culture and Sports of the Herzegovina-Neretva County.

3.10. Resources required for implementation of the study programme

During the implementation of the study programme, teachers from the University and teachers from referent higher education institutions in scientific-teaching titles from the corresponding scientific area, field and branch participate. Data on the structure of the teaching staff according to title and professional training, gender and age structure, scientific research productivity, mobility and project activities of the teaching staff are regularly monitored through the bodies from the quality assurance system. The aforementioned data are processed at the level of the study programme of the organizational unit and are published in annual reports.

Regarding the physical resources for the execution of the study programmes, the following are required:

- Classrooms with a capacity of 30 students,
- Basic computer equipment and infrastructure,
- Laboratories with basic medical-biochemical resources,
- Chemicals and reagents needed to perform practical exercises,
- Consumables and accessories needed for work in the laboratory.

- On the basis of the signed cooperation agreements, the resources of other institutions are also used in the implementation of the study programme/ professional practice:
 - Faculty of Medicine of the University of Mostar
 - Faculty of Health Care Studies of the University of Mostar
 - Faculty of Science and Education of the University of Mostar
 - Faculty of Humanities and Social Sciences of the University of Mostar
 - Faculty of Economics of the University of Mostar
 - Faculty of Agronomy and Food Technology of the University of Mostar
 - University Clinical Hospital Mostar
 - Pharmacy institutions
 - Veterinary Institute of Herzegovina-Neretva County
 - Institute for Public Health of the Federation of Bosnia and Herzegovina

3.11. Study programme quality assurance system

The purpose, objective, structure, operation and areas of evaluation of the Quality Assurance System of the University of Mostar are defined by the Rulebook on the Structure and Operation of the Quality Assurance System of the University of Mostar.

According to the Rulebook, the Quality Assurance System at the University of Mostar consists of the following permanent bodies at university level: the Quality Assurance and Improvement Committee and the Quality Assurance and Improvement Office.

The Faculty of Pharmacy has a Committee for Quality Assurance and Improvement, which consists of the Vice-dean for Academic Affairs, a quality coordinator, a representative of the teaching staff, a representative of the students, and a representative of the administrative and technical staff. The Quality Coordinator of the Faculty of Pharmacy is also a member of the Committee for Quality Assurance and Improvement.

The Rulebook defines the competencies and activities of each Quality Assurance body. Quality assurance bodies carry out regular activities defined by the Quality Assurance Manual at the University of Mostar, which concern the conducting of surveys, monitoring and data processing. On the basis of the activities carried out, annual reports are prepared at the level of the study programme, organisational unit, and the University.

3.12. Matrix of learning outcomes

IU-studijski program IU-predmet	FARF FIU 1	FARF FIU 2	FARF FIU 3	FARF FIU 4	FARF FIU 5	FARF FIU 6	FARF FIU 7	FARF FIU 8	FARF FIU 9	FARF FIU1 0	FARF FIU1 1	FARF FIU1 2	FARF FIU1 3
FARFFI101											X		X
FARFFI102	X												
FARFFI103	X												
FARFFI104	X												
FARFFI105	X												
FARFFI106	X												
FARFFI107													
FARFFI201	X												
FARFFI202	X												
FARFFI203	X												
FARFFI204	X												
FARFFI205	X												
FARFFI206													
FARFFI207					X								
FARFFI208			X										
FARFFI301	X												
FARFFI302	X												
FARFFI303	X												
FARFFI304	X	X	X			X							
FARFFI305		X		X									
FARFFI306					X								X
FARFFI307		X					X						
FARFFI308													
FARFFI401	X												
FARFFI402	X	X	X			X							
FARFFI403		X		X									
FARFFI404	X												
FARFFI405			X	X									
FARFFI406													
FARFFI407					X								
FARFFI408			X		X								
FARFFI501	X			X				X		X			
FARFFI502		X											
FARFFI503		X											
FARFFI504			X	X				X			X		
FARFFI505				X									
FARFFI601			X	X				X			X		
FARFFI602							X						
FARFFI603	X												
FARFFI604	X						X			X			
FARFFI605		X					X						
FARFFI606		X											

FARFFI607		X	X										
FARFFI701			X		X		X						
FARFFI702				X				X					
FARFFI703			X	X				X			X		
FARFFI704				X			X	X					
FARFFI705		X			X		X						
FARFFI801				X	X		X			X	X		
FARFFI802				X				X					
FARFFI803							X	X					
FARFFI804							X						
FARFFI805		X											
FARFFI806					X	X			X			X	
FARFFI807			X										
FARFFI901			X	X	X			X					
FARFFI902			X					X					
FARFFI903							X						
FARFFI904			X				X						
FARFFI905					X								
FARFFI906			X				X						
FARFFI907													X
FARFFI908										X	X		
FARFFI909			X	X			X						
FARFFI100 1			X										

4. STUDY PLAN

Study year: 1.							
Winter semester: (1.)							
Course Code	Course Title	Course Status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI101	Introduction to the Study	Core	15	0	0	0	1,5
FARFFI102	Mathematics	Core	30	0	30	0	5
FARFFI103	Cell Biology and Genetics	Core	30	25	20	0	6
FARFFI104	General Chemistry with Stoichiometry I	Core	30	30	30	0	7
FARFFI105	Human Anatomy	Core	30	30	0	0	4
FARFFI106	Physics	Core	30	15	15	0	5
FARFFI107	Physical Education I	Core	0	15	0	0	0,5
ECTS for core courses							29
ECTS za elective courses							1
ECTS IN TOTAL							30

Study year: 1.							
Summer semester: (2.)							
Course Code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI201	General Chemistry with Stoichiometry II	Core	30	0	15	0	4,5
FARFFI202	Physiology	Core	45	0	30	0	6
FARFFI203	Organic Chemistry I	Core	30	15	15	0	5,5
FARFFI204	Analytical Chemistry I	Core	25	20	10	0	5
FARFFI205	Pharmaceutical Botany	Core	30	15	0	0	5,5
FARFFI206	Physical Education II	Core	0	15	0	0	0,5
FARFFI207	English Language I	Core	0	0	25	0	1
FARFFI208	Pharmacy Practice I	Core	0	0	0	15	1
ECTS core courses							29
ECTS za elective courses							1
ECTS IN TOTAL							30

Study year: 2.							
Winter semester: (3.)							
Course Code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI301	Analytical Chemistry II	Core	20	25	10	0	4
FARFFI302	Organic Chemistry II	Core	30	30	15	0	6
FARFFI303	Physical Chemistry I	Core	25	20	15	0	5
FARFFI304	Microbiology with Parasitology I	Core	30	15	0	0	3,5
FARFFI305	Biochemistry I	Core	35	30	10	0	4,5
FARFFI306	Bioethics	Core	10	0	5	0	1
FARFFI307	Biological Chemistry	Core	30	15	0	0	4,5
FARFFI308	Physical Education III	Core	0	15	0	0	0,5
ECTS for core courses							29
ECTS for elective courses							1
ECTS TOTAL							30

Study year: 2.							
Summer semester: (4.)							
Course Code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI401	Physical Chemistry II	Core	20	25	15	0	5
FARFFI402	Microbiology with Parasitology II	Core	30	15	0	0	4,5
FARFFI403	Biochemistry II	Core	30	0	10	0	4
FARFFI404	Pathophysiology with the Basics of Pathology	Core	60	0	30	0	8
FARFFI405	Nutritional Biochemistry	Core	25	30	5	0	5
FARFFI406	Physical Education IV	Core	0	15	0	0	0,5
FARFFI407	English Language II	Core	0	0	25	0	1
FARFFI408	Pharmacy Practice II	Core	0	0	0	15	1
ECTS for core courses							29
ECTS for elective courses							1
ECTS IN TOTAL							30

Study year: 3.							
Winter semester: (5.)							
Course Code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI501	Pharmacognosy I	Core	30	45	15	0	6
FARFFI502	Clinical Biochemistry	Core	45	30	15	0	7
FARFFI503	Basics of Hematology with Coagulation	Core	30	15	0	0	4
FARFFI504	Medicinal Chemistry I	Core	45	60	10	0	8
FARFFI505	Pharmaceutics I	Core	30	15	15	0	4
ECTS for core courses							29
ECTS for elective courses							1
ECTS IN TOTAL							30

Study year: 3.							
Summer semester: (6.)							
Course code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI601	Medicinal Chemistry II	Core	45	0	10	0	5
FARFFI602	Pharmaceutics II	Core	30	30	15	0	6
FARFFI603	Molecular Biology with Genetic Engineering	Core	40	25	10	0	6
FARFFI604	Pharmacognosy II	Core	30	30	15	0	6
FARFFI605	Molecular Methods in Pharmacy and Biochemistry	Core	15	0	15	0	2,5
FARFFI606	Organization and Management of Medical-Biochemistry Laboratory	Core	15	0	0	0	1,5
FARFFI607	Pharmacy Practice III	Core	0	0	0	45	2
ECTS for core courses							29
ECTS for elective courses							1
ECTS IN TOTAL							30

Study year: 4.							
Winter semester: (7.)							
Corse code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI701	Pharmacology I	Core	30	0	15	0	5
FARFFI702	Pharmaceutical Analysis I	Core	30	30	15	0	6
FARFFI703	Drug Metabolism	Core	45	30	15	0	8
FARFFI704	Drug Formulation I	Core	30	15	0	0	5
FARFFI705	Immunology	Core	18	4	8	0	3,5
ECTS fore cor courses							27,5
ECTS for elective courses							2,5
ECTS IN TOTAL							30

Study year : 4.							
Summer semester: (8.)							
Course code	Corse title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI801	Pharmacology II	Core	45	15	30	0	7
FARFFI802	Pharmaceutical Analysis II	Core	30	30	0	0	5,5
FARFFI803	Drug Formulation II	Core	30	15	0	0	4,5
FARFFI804	Therapy Systems	Core	15	0	15	0	2,5
FARFFI805	Toxicology	Core	40	10	20	0	5
FARFFI806	Public Health and Social Pharmacy	Core	15	0	15	0	2,5
FARFFI807	Pharmacy Practice IV	Core	0	0	0	15	1
ECTS for core courses							28
ECTS for elective courses							2
ECTS IN TOTAL							30

Study year: 5.							
Winter semester: (9.)							
Course code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI901	Prescription Pharmacy	Core	15	30	0	0	3,5
FARFFI902	Cosmetology	Core	30	15	5	0	5
FARFFI903	Clinical Pharmacy and Pharmacotherapy	Core	45	60	0	0	7
FARFFI904	Pharmaceutical Care	Core	30	0	30	0	4,5
FARFFI905	Consultation Skills	Core	10	0	10	0	1,5
FARFFI906	Legislation of Medicinal Products and Medical Devices	Core	15	0	5	0	2
FARFFI907	Health Legislation	Core	15	0	0	0	1,5
FARFFI908	Methodology of Scientific Paper and Biomedical Informatics	Core	15	0	15	0	2,5
FARFFI909	Vaccination in Pharmacy Practice	Core	15	10	15	0	2,5
ECTS for core courses							30
ECTS for elective courses							0
ECTS IN TOTAL							30

Study year: 5.							
Summer semester: (10.)							
Course code	Course title	Course status	Teaching hours			Practicum	ECTS
			l	t	s		
FARFFI1001	Pharmacy Practice	Core	0	0	0	960	24
FARFFI1002	Master's Thesis	Core	0	0	0	100	6
ECTS for core courses							30
ECTS for elective courses							0
ECTS IN TOTAL							30