



BACHELOR OF SANITARY ENGINEERING

CURRICULUM AT THE FACULTY OF HEALTH STUDIES IN MOSTAR

2022.

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I. INTRODUCTION

The curriculum of the undergraduate university study of Sanitary engineering is the result of the regular review process, which began with the Decision of the Senate at the session held on 26 February 2022 (No. 01-993-1 / 22). The regular revision procedure was carried out according to the Rulebook on the procedure of adopting new and regular revisions of existing study programmes (No. 01-993-1/22). It stipulates that the Committee coordinates a revised curriculum. The Committee also includes student representatives and external users, and the scientific-teaching/artistic-teaching council of the organizational unit submits their proposal to the University Senate for adoption.

In order to involve all stakeholders in the process of improving the study programme, a public hearing was held on 14 July 2022 (No. 01-1086/22).

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

In addition to the conclusions of the public debate, the recommendations of the Expert Committee from the last institutional accreditation in 2020 were taken into account. The recommendations include practical work outside the University (where applicable), application 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 at the center of the teaching process.

Also, during the development of the curriculum, all strategic tasks in the strategic area of education from the University Development Strategy 2017-2023, which relate to the curriculum and teaching process, were carried out (more in the chapter "3.1. Connection to the University Development Strategy").

In addition, when making decisions on the type of changes, all relevant statistical data and survey results collected and conducted in the period since the last revision/adoption of the study programme were analyzed on June 2, 2022 (No. 01-3666/21).

Taking into account all the above, the following changes have been made in this revised curriculum in comparison to the existing one. The changes can be classified into seven categories: amendment of course titles (this group also includes the reconstruction of individual courses that before included a wide range of materials with a large number of teaching hours, and are now separated), amendment of course hours and ECTS points, amendment of course hours within the existing course schedule, rotation of existing courses within the semester/study year, elimination of outdated compulsory courses for the profession, and introduction of new compulsory courses that contribute to the acquisition of competences and learning outcomes defined by the EU occupational standard, and amendment of course status (elective/compulsory).

The undergraduate university study programme of Sanitary Engineering studies solving of public health problems. Therefore, a study programme was created that includes all segments of the eco-system and factors affecting the human health. In cooperation with other health profiles, environmental factors that can have a harmful effect on the health of the individual and the wider community should be observed, defined and resolved, and general and targeted health education of the population should be carried out in order to improve the health of the wider population.

Since the programs and projects for the improvement and protection of the environment, adopted by the WHO, the United Nations Environment Program (UNEP), the Food and Agriculture Organization of the UN (FAO) and other UN bodies are more technical than medical in nature, the Expert Committee on the education of engineers for environmental health (ECEEH, 1967) emphasized the need for the education of sanitary engineers and sanitary personnel in the ministries of health that would effectively deal with the problems of water supply, waste management, food hygiene, control of disease vectors, improvement of living conditions, etc. Aware of the importance of prevention and preservation of health in the rapidly changing environment we live in, and recent phenomena of greenhouse gases, climate change, genetically modified food, upcoming epidemics of new pathogens, as well as new technological solutions of the growing industry that have yet to show an impact on human health, the Faculty of Health Studies accepts the challenge of training personnel whose main task is to preserve and improve the human health.

After completing their studies, students find work in segments described by the aforementioned laws, namely inspection services, part of hygiene-epidemiological and microbiological teams, in a laboratory for chemical and microbiological testing of foods and general-use items, in laboratories for chemical and microbiological testing of all types of water, in laboratories for testing waste, soil, air and ecotoxicology using highly sophisticated equipment, and in sanitary engineering units, on disinfection, desinsection and deratisation jobs, and sterilization units.

2. GENERAL INFORMATION ON THE STUDY PROGRAM

Study program	Sanitary engineering
Cycle	1 st cycle (undergraduate study)
Type	University study
Scientific area	Biomedicine and healthcare
Scientific field	Public health and health protection
Academic title	Bachelor of sanitary engineering
EQF qualification level	6
Duration of study program	3 years, 180 ECTS
Total number of ECTS credits	3 years/180 ECTS
Language	Croatian language
Mode of study	Full time/part time
Institution administering study programme:	University of Mostar
Home Institution:	University of Mostar, Faculty of Health Studies
Objectives of the study program	<p>Achieve in students general and specific knowledge and skills necessary for preserving and improving the health of the individual, family and society, as well as disease prevention by applying measures to maintain the hygienic-sanitary and epidemiological level in the working and living environment of people</p> <p>train students to observe, define and remediate environmental factors that can have a harmful effect on the health of individuals and the wider community, and carry out general and targeted health education of the population in order to improve the health of the wider community</p>
Competencies of the study programme	<ul style="list-style-type: none"> - Conceptual and procedural understanding of the fundamental laws of natural sciences that enable a scientific approach to problem solving in the field of sanitation, and basic knowledge about the structure and function of the human body in disease prevention and improving health - Ability to assess the impact of environmental factors on human health and apply health protection measures - - Conceptual and procedural understanding of the basic principles of implementing health and sanitary supervision, including supervision of food safety - Ability to analyze the microbiological quality of drinking, surface and waste water, recreational water, as well as system analysis from the scope of sanitary activities, and carrying out supervision over public and individual water supply facilities - Ability to supervise waste disposal facilities - Ability to implement pest control measures (disinfection, disinsection and deratization) - Implementation and supervision of hygienic and technical protection measures, implementation of preventive sanitary supervision in construction - Ability to apply methods of molecular biotechnology for the purpose of assessing possible risks to human health - Participation in the production, processing, packaging and distribution, preparation and use of healthy and nutritionally valuable food; safety at Work; work in the laboratory; work in the internal HACCP team; work in the quality system maintenance unit

	<ul style="list-style-type: none"> - Ability to communicate with community members for understanding and problem solving from the scope of sanitary activities - Understanding of basic ethical principles and legal regulations that apply to environmental and occupational health
<p>Learning outcomes of the study programme</p>	<ol style="list-style-type: none"> 1. Applies knowledge and methods from natural and medical sciences to the extent that it enables a scientific approach in the field of sanitary engineering (FZSSIB-IU-1) 2. Describes and investigates risk factors for human health from acquired knowledge in chemistry and applies them with appropriate procedures (FZSSIB-IU-2) 3. Applies physical and chemical methods in environmental monitoring and interprets them from experimentally obtained data (FZSSIB-IU-3) 4. Applies acquired knowledge on the structure and function of the human body in disease prevention and health promotion (FZSSIB-IU-4) 5. Describes individual food ingredients and relates them to chemical reactions and changes in metabolic processes, as well as the structure of biologically important molecules (FZSSIB-IU-5) 6. Applies ethical, legal and business guidelines while implementing health and sanitary supervision (FZSSIB-IU-6) 7. Applies legal regulations and professional guidelines from the field of health and non-health activities to the field of sanitary engineering (FZSSIB-IU-7) 8. Defines the agents of the disease, the sources and route of transmission, the course of the disease, as well as their prevention and treatment (FZSSIB-IU-8) 9. Identifies environmental factors for the purpose of disease prevention and health protection (FZSSIB-IU-9) 10. Ensures food safety by applying knowledge of processing procedures, food quality assessment and ensuring health safety in order to preserve health (FZSSIB-IU-10) 11. Identifies different types of responses to toxic stimuli (FZSSIB-IU-11) 12. Organizes and implements public health campaigns aimed at prevention and health promotion (FZSSIB-IU-12) 13. Implements sophisticated molecular technologies in sanitary engineering (FZSSIB-IU-13) 14. Implements primary, secondary and tertiary prevention against infectious and non-infectious diseases (FZSSIB-IU-14) 15. Implements and uses recent achievements in disinfection, disinsection and deratization in the control of infectious diseases (FZSSIB-IU-15) 16. Uses information technology and databases and applies appropriate statistical methods for the purpose of supplementing knowledge and skills (FZSSIB-IU-16) 17. Applies methods from the field of sanitary engineering in monitoring the microbiological integrity of drinking, surface and waste water, and water for recreation (FZSSIB-IU-17) 18. Creates a structured text using basic medical and health terminology, elaborates professional health topics and presents

	professional works in a foreign language (FZSSIB-IU-18)
Opportunity after graduation	After successful completion of undergraduate studies, students are offered the opportunity to work in: health care institutions; communal and public companies and bodies of state administration and local self-government (primarily the sanitary inspection); institutions authorized to work with poisons and to implement disinfection, disinsection and deratization measures; institutions for control food quality, water and air, and assessment of the impact of various activities on the environment; food and pharmaceutical industry; trading companies; teaching/scientific research institutions; private practice, as well as continuing education at graduate studies.
Accreditation	The University of Mostar received a Decision on Institutional Reaccreditation on 14 January 2020 from the competent Ministry of Education, Science, Culture and Sports of the HNŽ on the recommendation of the Agency for Development of Higher Education and Quality Assurance of B&H, after which the University was registered in the State Register of Accredited Higher Education Institutions.

3.1. Connection with the University development strategy

In the Development Strategy of the University of Mostar 2018 - 2023 in the strategic field of education, several strategic goals are related to the curriculum and its elements.

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

- Task 1: clearly define the objectives and anticipated learning outcomes of each study programme and harmonize the content of the study programme with them, following the appropriate level of the European Qualifications Framework and the qualification standard
- Task 2: Introduce a transparent and consistent process of revision and improvement of study programmes with the participation of students and other stakeholders
- Task 5: ensure realistic allocation of ECTS credits, through a defined system of ECTS coordination at all study levels
- Task 6: improve the interdisciplinarity of all study programmes by enabling elective courses at the university level.

Objective 3 refers to the development of a wide network of teaching bases, including organizations from different fields of activity, to establish cooperation that will enable the connection of practice, science, art, and higher education. The following tasks arise from it:

- Task 2: increase the number of hours and the share of teaching practice in the study programmes and the share of ECTS credits acquired by it
- Task 3: increase the number of bachelor/master papers related to the topic and content.

Key strategic postulates of the Faculty of Health Studies that lead to realization of the vision while respecting the mission and academic values of the University are modern study programmes that will be directed towards the development of a wide range of competencies, as well as education and activities that will be directed towards the development of the economy, society and culture.

University studies at the Faculty of Health Studies of the University of Mostar enable the establishment of a system of continuous training, refresher training and acquisition of latest cognitions, as well as constant monitoring and recognition of the priorities of healthcare needs in the country and the European environment. At the first level (undergraduate studies), training is focused on basic education. A special strategic goal is basic skills training necessary for independent work performance, and this includes a three-year education with a load of 180 ECTS-points, after which the student is awarded a title of bachelor.

3.2. Compliance with the achievements of a certain scientific/artistic area and labor market and connection with the standards of occupations/qualifications

Objectives, competencies, and learning outcomes at the level of the study programme are defined in a way that is in line with the achievements of a particular Biomedicine and healthcare area and labor market and related to the standards of occupations/qualifications. To harmonize with the achievements of the particular Biomedicine and healthcare, the representatives of teachers in the Committee for the development of the revised curriculum and other teachers who participated in the development of syllabi for each course took into account current achievements and trends in scientific area Biomedicine and healthcare, field Public health and health protection, branch Sanitary engineering relating to the university undergraduate study programme of Sanitary engineering.

Also, student representatives and external users were appointed to the Committee for the development of the revised curriculum to harmonize with the labor market. Public hearing was organized with the participation of experts from practice and economics, and their suggestions were taken into account in the development of the curriculum.

Since no occupational standard or qualification standard has been defined at any level in B&H, the following documents have been taken into account:

- Bologna Declaration. The European Higher Education Area. The Bologna Declaration, a joint declaration of The European Ministers of Education convened in Bologna 19 June 1999
- Goal 18 WHO – development of human resources in healthcare till 2010
- Healthcare for all in 2021, WHO
- Confederation of EU Rectors' Conferences and the Association of European Universities. The Bologna Declaration on the European space for higher education: an explanation
- Joint declaration on harmonization of the architecture of the European higher education system Paris, Sorbonne, 1998
- The Decision of the Council of Ministers of Bosnia and Herzegovina on the Adoption of the Road Map for Implementation of the EU Directive 2005/36/EC and 2013/55/EU on Regulated Profession (Official Gazette of B&H, no. 10/16),
- Law on Healthcare (Official Gazette of the Federation of B&H No. 41/10 and 75/13),
- Rulebook on internships and professional exams for health professionals (Official Gazette of the FB&H, 51/17),
- Rulebook on Amendments to the Rulebook on internship and professional examination of healthcare workers.

Jobs/competencies/learning outcomes from all the above documents are implemented in the competencies and learning outcomes at the level of the study programme listed in chapter "2. General information about the study programme". They are realised in core courses, in order to ensure that all students achieve them with the acquired qualification. The coverage of these learning outcomes at the level of the study programme with the learning outcomes at the level of core courses is presented in the chapter "3.12. Matrix of learning outcomes".

3.3. Comparability with study programmes in the country and abroad

Study programme performed at the Sanitary engineering department and the development of sanitary engineering as a profession are in line with European standards, and the study programme is based on close cooperation with other institutions of a similar profile in the Republic of Croatia. Comparability is reflected exclusively in the competencies and learning outcomes at the level of study programmes and in the duration of studies, while the study programme retains its specifics mainly through the structure, course names, and ECTS credits.

3.4. Openness to Student mobility

Student mobility is defined by the Rulebook on international mobility, which refers to administrative support for students, student mobility documents, insurance, method of application, the procedure for recognizing mobility and information package. The unique recognition methodology is defined at the 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 on mobility programmes and accompanying forms on the University's website and through the Vice Dean for Quality and Inter-Institutional Cooperation who forwards information from the International Office to student representatives.

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

The Rulebook on Study of the University of Mostar defines the right to enroll in undergraduate, graduate, and integrated study programmes, which is done through a public competition. The Senate, at the proposal of the scientific-teaching / artistic-teaching council of the organizational unit, and with the consent of the Governing Board of the University and the competent Ministry of Education, Science, Culture and Sports of the Herzegovina Neretva County, announces a public tender. It is published on the website and bulletin board of the Faculty of Health Studies, which contains information on the conditions for enrolment, entrance examination, tuition fees, criteria for selecting candidates, and other information. When transferring from

other study programmes, a request is submitted to the dean Faculty of Health Studies, and the appropriate committee decides on the possibilities and conditions for enrolment.

Applicants who enroll at the Faculty, and during their previous education did not study Latin for at least 1 year, must enroll in the Latin language course in the first year of study with the load of 20 hours of lectures and pass the same course before enrolling in the first year of study.

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

Conditions for enrollment in the next semester and year of study are defined by the Rulebook on Study of the University of Mostar and the general act of the Faculty of Health Studies.

The study program is completed by writing and defense of final thesis worth 5 ECTS credits. The procedure of the defense and thesis's methodology are defined by Rulebook on Study of the University of Mostar and the general act of the Faculty of Health Studies.

3.7. Organization of the study programme

The study is organized as a three-year study programme for a total of six semesters. Classes are organized in a block system, and detailed schedules are disclosed per semester and study group. In accordance with the principles of the Bologna Declaration, the proposed study program is structured and evaluated with ECTS credits. Study programs are divided into study years and semesters. In accordance with ECTS credits, one academic year of the study program is worth 60 ECTS, or 30 ECTS credits for one semester.

Students can study as full-time or part-time students. Full-time students are those who study according to the full-time teaching schedule. The amount and type of classes that part-time students are required to attend and the alternative workload for the part of classes they are absent is defined by the syllabus of each course.

Summer clinical practice is a mandatory form of the teaching process that is carried out in accordance with the study curriculum and the annual study plan.

As a rule, the student performs clinical practice at the University Clinical Hospital Mostar as a constituent unit of the University of Mostar, the Healthcare Center Mostar or some other teaching base with which the Faculty has a contractual agreement, according to the schedule established by the competent Committee. With the approval of the Committee, a student can also perform the clinical in an institution or company that has an organizational unit that deals with professional tasks that are in line with the professional profile of his studies. During clinical practice, the student performs the skills prescribed by the study plan listed in the clinical practice booklet. Successful fulfillment of the above-mentioned obligations is a condition for semester verification and enrollment in the next semester/year of study.

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 student workload of 5400 hours. According to the Rulebook on the procedure for adopting new and regular revisions of existing study programmes (No. 01-993-1/22), only core courses are listed in the curriculum, while electives are adopted in the annual curriculum for each academic year. Therefore, the table will show 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 work only in core courses.

The student is obliged to choose one of the offered foreign languages (English or German), which are offered in the second, third and sixth semesters, with 1,5 ECTS credits in the 2nd semester, 2 ECTS credits in the 3rd and 2 ECTS credits in the 6th semester. Regardless of the foreign language the student chooses, they acquire competencies and learning outcomes defined at the level of the study programme in accordance with the EU directive.

In relation to the total number of ECTS credits, a sum of ECTS credits acquired in elective courses is 8 ECTS, and the student can choose a total of 8 elective courses. Besides core and elective courses at the level of the study programme and at the level of organizational unit, i.e., in addition to 30 ECTS credits per semester, a student can choose university elective courses from the list adopted by the Senate each academic year, which are recorded in diploma supplement. The purpose of elective courses at the study programme level is a more

detailed elaboration of learning outcomes already acquired in core courses but following student preferences. The purpose of university elective courses is to acquire competencies not provided by the study programme, but that can help students achieve competitiveness in the market and contribute to building one's personality through education.

Table 3.8.1 Representation of teaching load, hours of theory and practice, and the share of workload in the undergraduate university study programme of Sanitary engineering

Form of teaching	1 st year	2 nd year	3 rd year	Total	%
Lectures	350	310	285	945	18 %
Practicals	360	385	350	1095	20 %
Seminars	230	180	245	655	12 %
Summer clinical practice	300	300	330	930	17 %
Independent work	560	625	590	1775	33 %
Total	1800	1800	1800	5400	100 %

Table 3.8.2 The share of workload in the study programme in relation to the theoretical and clinical training of the undergraduate university study of Sanitary engineering

Load type	Number of hours	Share %
Theoretical teaching	1600	44%
Clinical teaching	2025	56%
Total	3625	100%

In the three years of the undergraduate study of midwifery there are active classes and independent student work of 5400 hours. Student independent work of 1775 hours includes the time a student needs for independent study of the subject, preparation of seminars, mid-terms, final tests, preparation and writing of final and diploma theses, not counting contact hours with the teacher (lectures, seminars, practicals, and professional practice). Load of independent work is defined in the syllabus of each individual course.

The undergraduate university study programme of Midwifery consists of six modules with 36 compulsory and 8 elective courses, midwifery summer clinical practice at the end of each year of study in the duration of 930 hours, and the final thesis of 150 hours.

Eight elective courses 4,4% of the total program points. The decision on elective courses to be taken in the current academic year is ruled by the Scientific Teaching Council of the Faculty of Health Studies in accordance with the needs for the improvement of the teaching program.

Table 1. Structures of the undergraduate university study programme of Sanitary engineering with shares of forms of teaching, clinical practice and independent work

1 st year									
1 st Winter semester									
Course code	Course title	Teaching hours			I. In total teaching	II. Clinical practice	III. Independent work	Load hours (I.+II.+III.)	ECTS
		L*	P*	S*					
FZSSIB101	Biology and human genetics	25	20	20	65	0	55	120	4
FZSSIB102	Basics of mathematics	45	0	30	75	0	45	120	4
FZSSIB103	Biophysics	30	30	0	60	0	30	90	3
FZSSIB104	Chemistry I	50	50	30	130	0	80	210	7
FZSSIB105	Anatomy and histology	15	30	20	65	0	55	120	4
FZSSIB106	Physiology and pathophysiology	30	20	20	70	0	50	120	4
FZSSIB107	Medical informatics	10	25	5	40	0	20	60	2
FZSSIB108	Pathology	5	10	5	20	0	10	30	1
Total		210	185	130	525	0	345	870	29
ECTS compulsory courses									29
ECTS elective courses									1
ECTS TOTAL									30

1 st year									
2 nd Summer semester									
Course code	Course title	Teaching hours			I. In total teaching	II. Clinical practice	III. Independent work	Load hours (I.+II.+III.)	ECTS
		L*	P*	S*					
FZSSIB210	Chemistry II	50	50	30	130	0	110	240	8
FZSSIB211	Biochemistry	25	30	15	70	0	50	120	4
FZSSIB212	Health ecology	25	45	30	100	0	35	135	4,5
FZSSIB213	Foreign language I	10	20	10	40	0	5	45	1,5
FZSSIB214	Communication skills	10	10	5	25	0	5	30	1
FZSSIB215	Summer practice I	0	0	0	0	300	0	300	10
Total		120	155	90	365	300	205	870	29
ECTS compulsory courses									29
ECTS elective courses									1
ECTS TOTAL									30

2 nd year									
3 rd Winter semester									
Course code	Course title	Teaching hours			I. In total teaching	II. Clinical practice	III. Independent work	Load hours (I.+II.+III.)	ECTS
		L*	P*	S*					
FZSSIB317	Microbiology and virology	40	30	20	90	0	120	210	7
FZSSIB318	General and special epidemiology	30	40	30	100	0	80	180	6
FZSSIB319	Food hygiene and technology	20	30	15	65	0	25	90	3
FZSSIB320	Public health	40	30	30	100	0	50	150	5
FZSSIB321	Foreign language II	10	20	10	40	0	20	60	2
FZSSIB322	Instrumental methods	20	30	10	60	0	60	120	4
FZSSIB323	Basics of biomedical statistics	10	30	0	40	0	20	60	2
Total		170	210	115	495	0	375	870	29
ECTS compulsory courses									29
ECTS elective courses									1
ECTS TOTAL									30

2 nd year									
4 th Summer semester									
Course code	Course title	Teaching hours			I. In total teaching	II. Clinical practice	III. Independent work	Load hours (I.+II.+III.)	ECTS
		L*	P*	S*					
FZSSIB425	Hygiene and nutrition	20	50	20	90	0	60	150	5
FZSSIB426	Water technology and analysis	30	40	10	80	0	70	150	5
FZSSIB427	Waste management	20	40	10	70	0	50	120	4
FZSSIB428	Occupational medicine	25	15	10	50	0	40	90	3
FZSSIB429	Bioethics	15	0	0	15	0	15	30	1
FZSSIB432	Summer practice II	0	0	0	0	300	0	300	10
Total		110	145	50	305	300	235	840	28
ECTS compulsory courses									28
ECTS elective courses									2
ECTS TOTAL									30

3 rd year									
5 th Winter semester									
Course code	Course title	Teaching hours			I. In total teaching	II. Clinical practice	III. Independent work	Load hours (I.+II.+III.)	ECTS
		L*	P*	S*					
FZSSIB533	Basics of scientific research work	15	35	10	60	0	30	90	3
FZSSIB534	Infectology	30	20	30	80	0	55	135	4,5
FZSSIB535	Chemical and microbiological analysis of food	15	35	15	65	0	55	120	4
FZSSIB536	Ionizing and non-ionizing radiation	15	30	0	45	0	35	90	3
FZSSIB537	Health care legislation	30	0	20	50	0	40	90	3
FZSSIB538	Molecular medicine and biotechnology	25	30	40	95	0	55	150	5
FZSSIB539	Hygiene and supervision of facilities and processes	35	50	30	115	0	50	165	5,5
Total		165	200	145	510	0	320	840	28
ECTS compulsory courses									28
ECTS elective courses									2
ECTS TOTAL									30

3 rd year									
6 th Summer semester									
Course code	Course title	Teaching hours			I. In total teaching	II. Clinical practice	III. Independent work	Load hours (I.+II.+III.)	ECTS
		L*	P*	S*					
FZSSIB642	Vector control and disinfection, disinsection and deratization measures	20	30	20	70	0	50	120	4
FZSSIB643	Foreign language III	10	20	10	40	0	20	60	2
FZSSIB644	Toxicology	30	20	35	85	0	35	120	4
FZSSIB645	Management in healthcare	30	0	20	50	0	40	90	3
FZSSIB646	Summer practice III	0	0	0	0	330	0	330	11
FZSZAB653	Final thesis	0	50	0	0	0	100	150	5
Total		90	120	85	245	330	245	870	29
ECTS compulsory courses									29
ECTS elective courses									1
ECTS TOTAL									30

L – lectures, P - practicals, S* - seminars

3.9. Optimal number of enrolled students with regard to space, equipment and number of teachers

Enrolment quotas before the beginning of each academic year are adopted by the Governing Board of the University, at the proposal of the Senate, and with the consent of the competent ministry.

Students can study as full-time or part-time students. Full-time students are those who study according to the programme with a full teaching schedule. Part-time students are students who attend the study programme in addition to work or other activities.

3.10. Resources needed for conducting the study program

Teachers from the University and teachers from reference higher education institutions in academic ranks from the relevant scientific area, field, and branch participate in the implementation of the study programme. Data on the structure of teaching staff by rank and education, gender and age structure, scientific research productivity, mobility, and project activities of teaching staff are regularly monitored through the bodies from the quality assurance system. These data are processed at the level of the study programme and organizational unit, and are published in annual reports.

In terms of physical resources for the implementation of study programmes, the Faculty of Health Studies has classrooms with classic and modern audio-visual equipment, a cabinet equipped with multimedia and video equipment, a TV system, IT equipment with a maximum of two students per computer, a library - an IT center, and a microbiological research laboratory. Healthcare cabinet with simulation models and clinical skills cabinet. Clinical hospital wards with equipment for performance of health care. The Faculty of Health Studies has a Clinical Skills Cabinet equipped with highly sophisticated models - simulators.

Based on the signed cooperation agreements, the resources of other institutions are also used for the performance of the undergraduate university study programme of Sanitary engineering: University Clinical Hospital Mostar, the Institute of Public Health, the Health center Mostar, and School of Medicine of the University of Mostar.

3.11. Quality assurance of the study program

The purpose, goal, 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 permanent bodies of the quality assurance system at the university level: the Quality Assurance and Improvement Committee and the Office for Quality Assurance and Improvement. The Faculty of Health Studies is operated by the Quality Assurance and Improvement Committee, which consists of the Vice Dean for Teaching, the Quality Coordinator, and the representative of the teaching staff, the student representative, and the representative of the administrative and technical staff. The Quality Coordinator Faculty of Health Studies is also a member of the Quality Assurance and Improvement Committee. The Rulebook defines the competencies and activities of each body from the quality assurance system. Bodies from the quality assurance system carry out regular activities defined by the University Quality Assurance Manual at the University of Mostar, which relate to conducting surveys and monitoring and data processing. Based on the implemented activities, annual reports are prepared at the level of the study programme, organizational unit, and the University.

3.12. Learning outcomes matrix

IU-study program IU-course	FZSSIB -IU-1	FZSSIB -IU-2	FZSSIB -IU-3	FZSSIB -IU-4	FZSSIB -IU-5	FZSSIB -IU-6	FZSSIB -IU-7	FZSSIB -IU-8	FZSSIB -IU-9	FZSSIB -IU-10	FZSSIB -IU-11	FZSSIB -IU-12	FZSSIB -IU-13	FZSSIB -IU-14	FZSSIB -IU-15	FZSSIB -IU-16	FZSSIB -IU-17	FZSSIB -IU-18
IU-FZSSIB101	x			x		x							x			x		
IU-FZSSIB102	x																	
IU-FZSSIB103	x		x	x					x				x					
IU-FZSSIB104	x	x																
IU-FZSSIB105				x														
IU-FZSSIB106	x			x														
IU-FZSSIB107																x		
IU-FZSSIB108	x			x				x	x		x	x						
IU-FZSSIB210	x	x	x		x													
IU-FZSSIB211	x	x		x	x								x					
IU-FZSSIB212			x						x									
IU-FZSSIB213																		x
IU-FZSSIB213/A																		x
IU-FZSSIB214						x										x		x
IU-FZSSIB215					x			x	x	x			x		x			
IU-FZSSIB317								x						x	x			
IU-FZSSIB318	x					x		x	x			x		x		x		
IU-FZSSIB319					x		x			x								
IU-FZSSIB320						x	x	x	x			x		x		x		
IU-FZSSIB321																		x
IU-FZSSIB321/A																		x
IU-FZSSIB322	x		x															
IU-FZSSIB323		x							x							x		
IU-FZSSIB425		x		x	x		x	x		x								
IU-FZSSIB426	x		x			x											x	
IU-FZSSIB427	x					x										x		
IU-FZSSIB428		x				x			x		x							
IU-FZSSIB429						x												
IU-FZSSIB432	x					x	x	x			x	x		x			x	

IU-study program	FZSSIB -IU-1	FZSSIB -IU-2	FZSSIB -IU-3	FZSSIB -IU-4	FZSSIB -IU-5	FZSSIB -IU-6	FZSSIB -IU-7	FZSSIB -IU-8	FZSSIB -IU-9	FZSSIB -IU-10	FZSSIB -IU-11	FZSSIB -IU-12	FZSSIB -IU-13	FZSSIB -IU-14	FZSSIB -IU-15	FZSSIB -IU-16	FZSSIB -IU-17	FZSSIB -IU-18	
IU-course																			
IU-FZSSIB533																	x		x
IU-FZSSIB534		x						x	x	x		x		x					
IU-FZSSIB535						x				x									
IU-FZSSIB536	x	x	x						x										
IU-FZSSIB537						x	x												
IU-FZSSIB538	x			x				x					x				x		
IU-FZSSIB539							x		x	x		x							
IU-FZSSIB642						x	x		x							x			
IU-FZSSIB643																			x
IU-FZSSIB643/A																			x
IU-FZSSIB644											x			x	x	x			
IU-FZSSIB645						x	x					x							
IU-FZSSIB646					x	x	x		x	x			x		x		x		
IU-FZSZAB653																			

4. STUDY PLAN

1 st year							
1 st Winter semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L	P	S		
FZSSIB101	Biology and human genetics	Compulsory	25	20	20	0	4
FZSSIB102	Basics of mathematics	Compulsory	45	0	30	0	4
FZSSIB103	Biophysics	Compulsory	30	30	0	0	3
FZSSIB104	Chemistry I	Compulsory	50	50	30	0	7
FZSSIB105	Anatomy and histology	Compulsory	15	30	20	0	4
FZSSIB106	Physiology and pathophysiology	Compulsory	30	20	20	0	4
FZSSIB107	Medical informatics	Compulsory	10	25	5	0	2
FZSSIB108	Pathology	Compulsory	5	10	5	0	1
ECTS for core courses							29
ECTS for elective courses							1
ECTS IN TOTAL							30

1 st year							
2 nd Summer semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L	P	S		
FZSSIB210	Chemistry II	Compulsory	50	50	30	0	8
FZSSIB211	Biochemistry	Compulsory	25	30	15	0	4
FZSSIB212	Health ecology	Compulsory	25	45	30	0	4,5
FZSSIB213	Foreign language I	Compulsory	10	20	10	0	1,5
FZSSIB214	Communication skills	Compulsory	10	10	5	0	1
FZSSIB215	Summer practice I	Compulsory	0	0	0	300	10
ECTS for core courses							29
ECTS for elective courses							1
ECTS IN TOTAL							30

2 st year							
3 rd Winter semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L	P	S		
FZSSIB317	Microbiology and virology	Compulsory	40	30	20	0	7
FZSSIB318	General and special epidemiology	Compulsory	30	40	30	0	6
FZSSIB319	Food hygiene and technology	Compulsory	20	30	15	0	3
FZSSIB320	Public health	Compulsory	40	30	30	0	5
FZSSIB321	Foreign language II	Compulsory	10	20	10	0	2
FZSSIB322	Instrumental methods	Compulsory	20	30	10	0	4
FZSSIB323	Basics of biomedical statistics	Compulsory	10	30	0	0	2
ECTS for core courses							29
ECTS for elective courses							1
ECTS IN TOTAL							30

2 st year							
4 th Summer semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L	P	S		
FZSSIB425	Hygiene and nutrition	Compulsory	20	50	20	0	5
FZSSIB426	Water technology and analysis	Compulsory	30	40	10	0	5
FZSSIB427	Waste management	Compulsory	20	40	10	0	4
FZSSIB428	Occupational medicine	Compulsory	25	15	10	0	3
FZSSIB429	Bioethics	Compulsory	15	0	0	0	1
FZSSIB432	Summer practice II	Compulsory	0	0	0	300	10
ECTS for core courses							28
ECTS for elective courses							2
ECTS IN TOTAL							30

3 st year							
5 th Winter semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L	P	S		
FZSSIB533	Basics of scientific research work	Compulsory	15	35	10	0	3
FZSSIB534	Infectology	Compulsory	30	20	30	0	4,5
FZSSIB535	Chemical and microbiological analysis of food	Compulsory	15	35	15	0	4
FZSSIB536	Ionizing and non-ionizing radiation	Compulsory	15	30	0	0	3
FZSSIB537	Health care legislation	Compulsory	30	0	20	0	3
FZSSIB538	Molecular medicine and biotechnology	Compulsory	25	30	40	0	5
FZSSIB539	Hygiene and supervision of facilities and processes	Compulsory	35	50	30	0	5,5
ECTS for core courses							28
ECTS for elective courses							2
ECTS IN TOTAL							30

3 st year							
6 th Summer semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L	P	S		
FZSSIB642	Vector control and disinfection, disinsection and deratization measures	Compulsory	20	30	20	0	4
FZSSIB643	Foreign language III	Compulsory	10	20	10	0	2
FZSSIB644	Toxicology	Compulsory	30	20	35	0	4
FZSSIB645	Management in healthcare	Compulsory	30	0	20	0	3
FZSSIB646	Summer practice III	Compulsory	0	0	0	330	11
FZSZAB653	Final thesis	Compulsory	0	50	0	100	5
ECTS for core courses							29
ECTS for elective courses							1
ECTS IN TOTAL							30

L – lectures, P* - practicals, S*- seminar

