



*MASTER OF SANITARY ENGINEERING*

*CURRICULUM AT THE FACULTY OF HEALTH STUDIES IN MOSTAR*

2022.

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## I. INTRODUCTION

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The curriculum of the graduate university study programme of Sanitary engineering is the result of the regular review process, which began with the Decision of the Senate at the session held on February 26, 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 July 14, 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, 2021 (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The changes can be classified into seven categories: amendments to mode of study (full time/part time), elimination of outdated/irrelevant courses for the profession and introduction of courses that contribute to the acquisition of competences and learning outcomes defined by the EU occupational standard, amendments of course titles, amendments of course hours and ECTS points, introduction of new elective courses.

The essence of the title of sanitary engineer is in the preservation and improvement of health of the individual, family and society, as well as the prevention of diseases, which is carried out by applying measures to maintain the hygienic-sanitary and epidemiological level in the working and living environment of people. 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 identified, defined and prevented, and general and targeted healthcare 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 in environmental health (Geneva, 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., as a consequence of the adoption of the Global Strategy, the Action Plan for Environmental Health for Europe was adopted (Environmentalist Action Plan for Europe, WHO/EURO and CEC, Copenhagen, 1999). Among the objectives, it was pointed out that education should be provided at all levels in order to develop personnel who will deal with environmental health.

Masters of sanitary engineering should be trained to deal with new risks for the environment and human health, caused by various agents present in air, water, soil and food, as well as potentially harmful physical factors. The World Health Organization's global strategy for health and the environment (WHO Global Strategist for Health and Environment, 1993) is based on the understanding of health as an essential component of self-sustainable development that can only be achieved through careful and concentrated action in all segments of society. This strategy provides a unique framework within which WHO can determine the complex links between health, environment and sustainable development, and rely on intersectoral and interdisciplinary collaboration as a basis for progress. The work of sanitary engineers as a multidisciplinary health profile is certainly one of the links in that system.

Upon completion of graduate studies, the student would obtain the academic title of Master of Sanitary Engineering, and would be qualified for independent and creative work in a large number of different areas such as sanitary inspection jobs, deratization, disinfection, and disinsectization jobs, work with poisons, food industry, food, water and air quality control, assessment of the impact of various activities on the environment, occupational health and safety, tourism, and other. In addition, the graduate has the opportunity to continue education in scientific training, work as part of the hygiene-epidemiological and microbiological team, work in the laboratory for chemical and microbiological testing of foodstuffs and consumer goods, in laboratories for chemical and microbiological testing of all types of water, in laboratories for waste testing, soil, air and ecotoxicology using highly sophisticated equipment, and in sanitary engineering units, deratization, disinfection, and disinsectization jobs, and sterilization units.

Such experts would be trained to independently or in teams prepare and propose programs and projects that would control environmental factors harmful to human health and perform supervision and evaluation of the effectiveness of the implemented measures.

This type of an expert would be qualified to work within the health care system, with a special focus on protecting the population from the negative effects of the environment, protect the environment from potentially negative effects of human activity, and improve the quality of the living environment.

## 2. GENERAL INFORMATION ON THE STUDY PROGRAM

<b>Study program</b>	Sanitary engineering
<b>Cycle</b>	2 <sup>nd</sup> cycle (graduate study)
<b>Type</b>	University study
<b>Scientific area</b>	Biomedicine and healthcare
<b>Scientific field</b>	Public health and health protection
<b>Academic title</b>	Master of Sanitary Engineering
<b>QF-EHEA qualification level</b>	7
<b>Duration of study program</b>	2 years, 120 ECTS
<b>Total number of ECTS credits</b>	2 years/120 ECTS
<b>Language</b>	Croatian language
<b>Mode of study</b>	Full time/Part time
<b>Institution administering study programme</b>	University of Mostar
<b>Home Institution</b>	University of Mostar, Faculty of Health Studies
<b>Objectives of the study program</b>	<ul style="list-style-type: none"> <li>- train experts to preserve and improve the health of the individual, family and society, and disease prevention by applying measures to maintain the hygienic-sanitary and epidemiological level in the working and living environment of people,</li> <li>- train students for management of public health teams and healthcare process management, as well as collaborative work in scientific, clinical and laboratory research (projects, communication, presentation) at higher education institutions,</li> <li>- train students for health promotion in a healthcare institution and the community,</li> <li>- train students for application of the sanitary engineering principle based on evidence during work, as well as constant learning and acting in the role of mentor and teacher,</li> <li>- train students to implement and manage the quality system in healthcare institutions, various test laboratories, and the food industry,</li> <li>- train qualified experts for the work and management of various test (analytical) and diagnostic laboratories, alongside application of standard methods and guidelines for test and diagnostic laboratories,</li> <li>- train qualified staff to participate in planning, creation and supervision of the implementation of preventive and anti-epidemic measures, as well as leading teams related to deratization, disinfection, and disinsectization activities</li> <li>- train qualified staff for work and management of hygiene-epidemiological service units and different departments of public health institutions</li> <li>- train qualified staff for testing and assessing water quality (of all types), as well as testing and ensuring the safety of drinking water, and wastewater treatment.</li> </ul>
<b>Competencies of the study program</b>	<ul style="list-style-type: none"> <li>- planning, organization and management of human and material resources, and support systems in the field of public health and sanitary engineering, and management of complex work processes</li> </ul>

	<ul style="list-style-type: none"> <li>- management of the quality system in healthcare institutions, different test laboratories, and quality systems within the food industry</li> <li>- participation in the work and management of units in sanitary epidemiological services and various departments of public health institutions</li> <li>- participation in the work and management of various test (analytical) and diagnostic laboratories, application of standard methods and guidelines for test and diagnostic laboratories</li> <li>- participation in planning, development and supervision of the implementation of preventive and anti-epidemic measures, as well as leadership in teams related to preventive and anti-epidemic activities</li> <li>- participation in the planning, organization and implementation of microbiological, physical, physico-chemical, and chemical testing of food, consumer goods, all types of water, including sea, air and soil, and analyzes and interprets the obtained data in accordance with legal provisions when preparing expert opinions</li> <li>- participation in the preparation of plans and the implementation of measures and programs for the improvement of health of individuals, families and society, as well as prevention of diseases, with the application of measures to maintain the hygienic-sanitary and epidemiological level in the working and living environment of people</li> <li>- coordination of a public health team</li> <li>- keeping sanitary documentation</li> <li>- participation in scientific and research work, education of students of sanitary engineering and related professions</li> <li>- application of effective communication skills and ethical principles of public health</li> <li>- application of infection control measures and other safety measures at work assessment of environmental quality and health, including environmental standards for air and water quality, and their effects on the individual, community and global health</li> </ul>
<p><b>Learning outcomes of the study program</b></p>	<ol style="list-style-type: none"> <li>1. Manages department, clinic or institution resources and support systems in the field of public health and sanitary engineering (FZSSIM-IU-1)</li> <li>2. Manages the quality control system within healthcare institutions, testing and diagnostic laboratories, and the food industry (FZSSIM-IU-2)</li> <li>3. Manages public health departments, sanitary-epidemiological services, units, and teams for deratization, disinfection, and disinsectization activity, test (analytical) and diagnostic laboratories, and other institutions (FZSSIM-IU-3)</li> <li>4. Keeps sanitary documentation (FZSSIM-IU-4)</li> <li>5. Organizes education for the improvement of knowledge in the field of public health and sanitary engineering (FZSSIM-IU-5)</li> <li>6. Participates in scientific research work (FZSSIM-IU-6)</li> <li>7. Educates students of sanitary engineering and related professions (FZSSIM-IU-7)</li> <li>8. Applies effective communication skills with users, staff and associates (FZSSIM-IU-8)</li> </ol>

	<ol style="list-style-type: none"> <li>9. Supervises and controls the performance of disinfection, disinfestation, <i>deratization</i> (FZSSIM-IU-9)</li> <li>10. Adapts communication to the needs of the interlocutor and the situation (FZSSIM-IU-10)</li> <li>11. Participates in the planning, creation and adoption of preventive and anti-epidemic measures, and manages teams for the implementation of preventive and anti-epidemic measures (FZSSIM-IU-11)</li> <li>12. Prepares plans and implements measures and programs for improving the health of individuals, families and society, and disease prevention, with the application of measures to maintain the hygienic-sanitary and epidemiological level in the working and living environment of people (FZSSIM-IU-12)</li> <li>13. Uses a computer to perform work tasks and communicate with colleagues (FZSSIM-IU-13)</li> <li>14. Manages personal and professional development (FZSSIM-IU-14)</li> <li>15. Takes samples for laboratory analysis, understands methods of laboratory measurements, applies laboratory methods that are appropriate for identification of health risks (FZSSIM-IU-15)</li> <li>16. Defines sustainable development in terms of environmental health, applies methodology from the field of waste management, control of emissions of harmful compounds in the environment and air (FZSSIM-IU-16)</li> <li>17. Plans, organizes and conducts microbiological, physical and chemical testing of food, all types of water, air and soil, and analyzes and interprets the data obtained in accordance with legal provisions when preparing expert opinions (FZSSIM-IU-17)</li> <li>18. Prevents and supervises the food safety system and supervises activities in its implementation (FZSSIM-IU-18)</li> <li>19. Analyzes and performs supervision of sanitary and technical correctness during the construction of facilities, as well as the principles of operation of water supply and sewerage systems and their management (FZSSIM-IU-19)</li> <li>20. Manages risks and emergencies in the field of environmental pollution of industrial toxins and poisons from nature resulting from the use of drugs and immunobiological preparations (FZSSIM-IU-20)</li> </ol>
<p><b>Opportunity after graduation</b></p>	<p>After successful completion of their studies, students are offered the opportunity to work in: healthcare 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 deratization, disinfection, and disinsectization measures; institutions for quality control of food, water and air, and assessment of the impact of various activities on the environment; food and pharmaceutical industry; teaching/scientific research institutions; private practice and/or continuing education at the 3<sup>rd</sup> cycle of higher education.</p>
<p><b>Accreditation</b></p>	<p>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&amp;H, after which the University was registered in the State Register of Accredited Higher Education Institutions.</p>

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### 3. CHARACTERISTICS OF THE STUDY PROGRAM

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#### 3.1. Correlation 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 second level (graduate study), education is focused on training students for teamwork, planning processes, projects, decision-making and leadership, alongside the evaluation process, as well as additional specialist skills and knowledge in the chosen fields. A special strategic goal is training for teaching work and new educational methods, and it includes a two-year education with a load of 120 ECTS-points, after which the title of master's degree is obtained.

#### 3.2. Correlation with scientific/artistic achievements of certain scientific fields and labor market and correlation with occupational/qualification standards

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 labour market and related to the standards profession. 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 graduate 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, Available from: <http://www.ond.vlaanderen.be/hogeronderwijs/>.*
- 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. Available at: <http://ec.europa.eu/education/policies/educ/bologna/bologna.pdf>.*
- *Joint declaration on harmonisation of the architecture of the European higher education system Paris, Sorbonne, 1998. Available at: [http://www.bologna.org.gu.se/digitalAssets759/759802\\_Sorbonnedeklarationen1998.pdf](http://www.bologna.org.gu.se/digitalAssets759/759802_Sorbonnedeklarationen1998.pdf). Accessed .*
- 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 Amendments to the Rulebook on internship and professional examination of healthcare workers
- Rulebook on internships and professional exams for health professionals (Official Gazette of the FB&H, 51/17),

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 university graduate study programme of 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.

### 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 thesis worth 13 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 two-year study programme for a total of four 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. Part-time students are students who enroll the study program alongside work or other activity. The syllabus of each course defines the amount and type of classes that part-time students are required to attend and alternatively, the workload for the part of classes that they are not required to attend. Part-time students should attend at least 50% of lectures and seminars (by own choice) and perform practicals to the extent specified for part-time students.

### 3.8. Structure of the study program

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 3600 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.

In relation to the total number of ECTS credits, a sum of ECTS credits acquired in elective courses is 10 ECTS, and the student can choose a total of 5 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 graduate university study programme of Sanitary engineering

Form of teaching	1 <sup>st</sup> year	2 <sup>nd</sup> year	Total	%
Lectures	210	145	355	10%
Seminars	305	120	425	12%
Practicals	215	205	420	12%
Independent work	1070	1330	2400	66%
<b>Total</b>	<b>1800</b>	<b>1800</b>	<b>3600</b>	<b>100%</b>

In the two years of the graduate university study of Sanitary engineering there are active classes and independent student work of 3600 hours. Student independent work of 2400 hours includes the time a student needs for independent study of

the subject, preparation of seminars, mid-terms, final tests, preparation and writing of graduate theses, not counting contact hours with the teacher (lectures, seminars and practicals).

The graduate university study programme of Sanitary engineering consists of six modules with 17 compulsory and 5 elective courses and the graduate thesis of 390 hours.

Five elective courses 4,2 % 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.

Learning outcomes that are acquired by fulfilling individual study obligations, as well as the number of hours expected for each study obligation that ensures the acquisition of the expected learning outcomes, are listed in the description of each individual subject from the study programme.

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

1 <sup>st</sup> year									
1 <sup>st</sup> 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*					
FZSZAM101	Medical informatics and advanced statistics	25	50	40	115	0	155	270	9
FZSZAM102	Quality management in healthcare	25	20	50	95	0	145	240	8
FZSZAM103	Introduction to scientific research work	25	40	30	95	0	145	240	8
FZSZAM104	Communication skills	15	10	10	35	0	55	90	3
Total		90	120	130	340	0	500	840	28
ECTS compulsory courses									28
ECTS elective courses									2
ECTS TOTAL									30

1 <sup>st</sup> year									
2 <sup>nd</sup> 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*					
FZSZAM207	Didactics	25	50	40	115	0	155	270	9
FZSZAM208	Management in healthcare	25	30	50	105	0	135	240	8
FZSZAM209	Economics and legislation in health care	25	0	50	75	0	165	240	8
FZSZAM210	The art of medical education	15	15	15	45	0	45	90	3
Total		90	95	155	340	0	500	840	28
ECTS compulsory courses									28
ECTS elective courses									2
ECTS TOTAL									30

2 <sup>nd</sup> year									
3 <sup>rd</sup> 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*					
FZSSIM301	Special toxicology	15	20	5	40	0	140	180	6
FZSSIM302	Food safety systems	15	45	10	70	0	110	180	6
FZSSIM303	Soil hygiene and pesticides	15	20	10	45	0	135	180	6
FZSSIM304	Environmental protection	10	20	10	40	0	140	180	6
Total		55	105	35	195	0	525	720	24
ECTS compulsory courses									24
ECTS elective courses									6
ECTS TOTAL									30

2 <sup>nd</sup> year									
4 <sup>th</sup> 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*					
FZSSIM411	Headwaters and water supply; water management	10	10	10	30	0	60	90	3
FZSSIM412	Urbanism and spatial planning	10	10	10	30	0	60	90	3
FZSSIM413	Vectors and public health pests	15	30	10	55	0	95	150	5
FZSSIM414	Modern methods of food analysis	15	30	15	60	0	60	120	4
FZSAM430	Master's thesis draft	5	10	10	25	0	35	60	2
FZSAM429	Thesis	0	0	0	0	0	390	390	13
Total		55	90	55	200	0	700	900	30
ECTS compulsory courses									30
ECTS elective courses									0
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.

### **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.

### 3.11. Learning outcomes matrix

<b>IU-study program</b>	FZSSI M-IU-1	FZSSI M-IU-2	FZSSI M-IU-3	FZSSI M-IU-4	FZSSI M-IU-5	FZSSI M-IU-6	FZSSI M-IU-7	FZSSI M-IU-8	FZSSI M-IU-9	FZSSI M-IU-10	FZSSI M-IU-11	FZSSI M-IU-12	FZSSI M-IU-13	FZSSI M-IU-14	FZSSI M-IU-15	FZSSI M-IU-16	FZSSI M-IU-17	FZSSI M-IU-18	FZSSI M-IU-19	FZSSI M-IU-20
<b>IU-course</b>																				
IU-FZSZAM101						x							x	x						
IU-FZSZAM102	x	x										x		x						
IU-FZSZAM103		x				x							x							
IU-FZSZAM104								x		x			x							
IU-FZSZAM207							x	x		x				x						
IU-FZSZAM208	x	x	x					x	x					x						
IU-FZSZAM209	x		x				x					x		x						
IU-FZSZAM210					x		x													
IU-FZSSIM301																				x
IU-FZSSIM302		x													x		x	x		
IU-FZSSIM303									x								x			
IU-FZSSIM304				x												x				
IU-FZSSIM411				x	x								x		x	x	x			
IU-FZSSIM412				x									x			x			x	x
IU-FZSSIM413				x	x				x		x									
IU-FZSSIM414				x											x		x			
IU-FZSZAM430						x				x				x						

#### 4. STUDY PLAN

1 <sup>st</sup> year							
1 <sup>st</sup> Winter semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L*	P*	S*		
FZSZAM101	Medical informatics and advanced statistics	Compulsory	25	40	40	0	9
FZSZAM102	Quality management in healthcare	Compulsory	25	20	50	0	8
FZSZAM103	Introduction to scientific research work	Compulsory	25	40	30	0	8
FZSZAM104	Communication skills	Compulsory	15	10	10	0	3
ECTS for core courses							28
ECTS for elective courses							2
ECTS IN TOTAL							30

1 <sup>st</sup> year							
2 <sup>nd</sup> Summer semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L*	P*	S*		
FZSZAM207	Didactics	Compulsory	25	50	40	0	9
FZSZAM208	Management in healthcare	Compulsory	25	30	50	0	8
FZSZAM209	Economics and legislation in health care	Compulsory	25	0	50	0	8
FZSZAM210	The art of medical education	Compulsory	15	15	15	0	3
ECTS for core courses							28
ECTS for elective courses							2
ECTS IN TOTAL							30



2 <sup>nd</sup> year							
3 <sup>rd</sup> Winter semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L*	P*	S*		
FZSSIM301	Special toxicology	Compulsory	15	20	5	0	6
FZSSIM302	Food safety systems	Compulsory	15	45	10	0	6
FZSSIM303	Soil hygiene and pesticides	Compulsory	15	20	10	0	6
FZSSIM304	Environmental protection	Compulsory	10	20	10	0	6
ECTS for core courses							24
ECTS for elective courses							6
ECTS IN TOTAL							30

2 <sup>nd</sup> year							
4 <sup>th</sup> Summer semester							
Course code	Course title	Course status	Teaching hours			Hours of practice	ECTS
			L*	P*	S*		
FZSSIM411	Headwaters and water supply; water management	Compulsory	10	10	10	0	3
FZSSIM412	Urbanism and spatial planning	Compulsory	10	10	10	0	3
FZSSIM413	Vectors and public health pests	Compulsory	15	30	10	0	5
FZSSIM414	Modern methods of food analysis	Compulsory	15	30	15	0	4
FZSZAM430	Master's thesis draft	Compulsory	5	10	10	0	2
FZSZAM429	Thesis	Compulsory	0	0	0	0	13
ECTS for core courses							30
ECTS for elective courses							0
ECTS IN TOTAL							30

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

