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Strengthening capacities for the implementation of dual education in BH higher education
(DUALSCI)

Description and Concept of Specific Dual Higher Education Model of the study program Health Care at the Faculty of Medicine of the University of East Sarajevo

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Abstract	This document presents a specific model of dual education in the Health Care study program. Throughout the text, a description of the study program is presented with the basic elements of the objectives, learning outcomes, curriculum, qualification standard and matrix of competencies. Professional practice is presented as an integrated part of the study program through all the associated elements in accordance with the four documents that represent professional practice throughout all 4 years of study. In this study program, variant V of the generic model was selected as the most suitable for the development of a specific model.
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1. Introduction

The study program Health Care is the only one at the University of East Sarajevo that educates staff in this field. The need for the market for graduate nurses and technicians served as the basis for the introduction of this study program. While developing this study program, there was a need to open new study directions. The purpose of these new study directions is to educate the necessary professional staff, bearing in mind new approaches in the policy of health care of the sick and injured that require changes in education of anesthetists and appropriate competencies, as well as market needs for graduate medical laboratory technologist and graduate dental nurse.

The implementation of the dual education system refers to the existence of professional practice in all years of study. Each year of study has 240 hours of practical work with health facilities. The knowledge, abilities and skills that students acquire in health care institutions during their schooling are presented in the appendices to this document, which are catalogs of clinical skills throughout all years of study. The specific model is based on variant V of the generic model of dual higher education.

The professional activity of experts in these fields implies the provision of professional assistance during the life cycle to each individual in health and disease. Therefore, the student should master the basic theoretical and practical knowledge in order to be unhindered for future careers.

The study program Health Care has a clearly defined purpose in the system of higher education of nurses (World Health Organization, European Federation of Nurses Associations, International Council of Nurses, International Association of Nurses (ICN1987: 1992), European Nursing Committee on Nursing : 1994, European Directives 89/48 CEE and 92/51 / Eec), Association of Anesthetists and UINARIS according to the requirements of the International Federation of Nurse Anesthetics - IFNA).

2. Justification and market needs

The justification of the basic academic study of health care refers to the need of the society for educated staff in this field. Based on the acquired knowledge and skills, the graduated students are able to perform jobs in the field of nursing in health, educational and scientific research institutions. The new program also seeks to educate professionals adapted to new concepts in health care. Also, at this level, the student to some extent influences the creation of the Study Program through the selection of elective courses. The list of subjects is also subject to changes in terms of the introduction of new content, in order to further adapt to new changes in the field of health care as well as the needs of the labor market. The specificity of the study program of Health Care from 2021/2022 is the realization of the program of student practice through dual studies with health institutions in the east of the Republic of Srpska.

The study program health care is complete, integrated, interdisciplinary, scientifically based and harmonized with the Bologna Declaration. Today, great interest has been expressed for the existence of health care studies, both for high school graduates from the territory of Republika Srpska and Bosnia and Herzegovina, and for those from the surrounding countries.

Possible subjects of employment are:

- clinical - hospital centers,
- primary health care services,
- private health care institutions,
- secondary schools for the training of medical staff,
- higher education institutions for the training of medical staff,
- institutes and centers.

Health care studies last 4 years and due to the specifics of the training process, this staff requires significant financial resources. Performing the practical part of teaching in all years of study involves the use of specific equipment, teaching aids and materials. Practical classes also require the engagement of mentors in health care institutions and work with their equipment and materials, as well as work with patients. Classes in the Study Program of Health Care are performed by teachers and associates who are simultaneously engaged in the Study Program of Medicine, but also by teachers and associates who work at the Clinical Center of Foča. For most of the professional subjects in the Health Care Study Program, there is coverage by its own full-time teaching staff at the University of East Sarajevo. The introduction of elective blocks, in addition to contributing to the modernization of the curriculum, also allows supplementing the norm for the teaching staff of the Faculty.

3. Objectives of the study program

The goals of the study program of health care are aimed at acquiring additional academic knowledge related to the fields of medicine, care, pedagogy, sociology, in accordance with international standards.

The development of health care, through research and education, should enable nurses to build their knowledge, which will enable them to deal with healthy and sick people through the health care process, as well as to continue to improve standards in nursing. The ultimate goal is to create new ways for the development of young and quality professionals in the field of nursing.

Nursing encompasses the independent and joint care of individuals of all ages, families, groups and communities, the sick and the healthy - regardless of context. Nursing includes health promotion, disease prevention, as well as care for the sick, disabled, and dying. Promoting and advocating for a healthy environment, research, participating in health policy making and managing health systems and patients, as well as education are key elements of nursing. The Munich Declaration calls on all competent authorities "to strengthen the professions of nurses by improving initial education and access to higher education" and calls for "the establishment of the necessary legislative and regulatory framework". One way to achieve this is to comply with European Union (EU) requirements regarding the education of nurses.

The competencies acquired by health care students are an important issue in the health care system and are linked to professional standards, patient safety and the quality of nursing care.

In the context of the European Qualifications Framework, competencies are described in terms of responsibility and independence. The European Qualifications Framework classifies the level of learning into three categories: knowledge, skills and competences. The term 'competencies' encompasses 'a combination of skills, knowledge and attitudes, values and technical abilities that support safe and effective nursing practice and interventions'

According to the European Parliament and the Council, 'competences' means the demonstrated ability to use knowledge, skills and personal, social and / or other methodological skills, in work or learning situations, and in professional and personal development.

4. Learning outcomes

The learning outcomes of the study program Health Care for students attending the dual education system are:

- acquired competencies in the field of health care and the ability to work with people in order to meet their needs, both general and specific, which are the result of the new situation in the process of impairing their health;
- raising the quality of work in the health sector through professional activities of the graduate nurse, which includes: solving user problems, achieving quality interaction, constructive communication, creativity in work, critical thinking, ethical decision making, respect for ethical principles in interpersonal relationships;
- training for independent work according to defined nursing diagnoses and work in a team for collaborative problem solving, which relate to: identification of somatic problems, psychological state (stability and instability) and social interaction;
- association of work in the health sector, social care institutions, educational institutions, preschool institutions and in the community - family;
- enabling students to use professional literature and to transfer knowledge to others through health education work, professional content or to engage in the work of teachers in secondary and higher schools of the health profession.

5. Newly defined competencies of the dual education system

Upon completion of the first cycle of studies, together with attending a total of 960 hours of practical work in health care institutions, graduate students of health care will acquire the following competencies:

1. Professional, legal and ethical values. Knowledge of the nature and ethics of the profession, and general principles of health and health care. Ability to analyze the quality of care in order to improve one's own professional practice (Directive 2013). Promotion and respect for human rights, ensuring the right to privacy and confidentiality of data. Accepting responsibility for independent decisions, and respecting codes of ethics. Discuss legal changes to affect the health care delivery system.

2. Communication and interpersonal skills. Ability to comprehensive professional communication and cooperation with members of other professions in the health sector (Directive 2013). Comprehensive communication that includes: interaction and more efficient work with colleagues, interpersonal communication and therapeutic communication with individuals, families and groups. Independent download and application of information, exchange of information between patients and health professionals in the health system. Independent coordination of care for certain groups of patients and interdisciplinary work towards the common goal of ensuring the quality of care and patient safety. Efficient use of technology, to facilitate communication. Creating an atmosphere of mutual trust and providing comfort and emotional support. Applying principles to behavior change. Maintaining a system in which the patient controls decision making. Consideration of a health care and protection plan that is mutually acceptable. Respect for the inherited values of the patient and his human dignity. Using self-observation for further therapeutic relationship.

3. Assessing and improving the quality of care. Providing high quality health care. The core competence in this area includes demonstrating knowledge about the patient's health and illness; making the right decisions in patient health care and ensuring patient safety and privacy. Determining priorities in patient health care, effective application of treatment methods and assessments in accordance with nursing guidelines and catalogs of compulsory textbooks. Cooperation with the medical team, as well as the patient's family in order to create a health care plan. Recognition of health care goals and assessment of progress that leads to the realization of set goals, which is the core of competence in this area.

4. Knowledge and cognitive abilities. Comprehensive knowledge of the sciences on which general health care is based, including an understanding of the structure, physiological functions and behavior of healthy and sick persons, as well as the relationship between a person's health condition and his physical and social environment.

5. Professional development. Taking responsibility for lifelong learning and continuous professional development.

6. Nursing skills and interventions. Ability to collect patient health data, compile medical histories and promote a healthy environment. Performing a physical examination that is appropriate for the sex and age of the patient, applying various diagnostic and therapeutic strategies, while respecting gender and age. Ability of clinical way of thinking and diagnostic reasoning, when making clinical decisions. Knowledge and skills in

keeping medical records, using the necessary information and communication systems, adhering to the legal framework related to patient privacy.

7. Teaching and supervision. Informing and training other nurses and students. Training through educational programs for patients, families and junior nurses / technicians; development and implementation of health education plans and learning materials. Documenting all procedures performed on the patient. Recognition and differentiation of problems in health care, formulation of goals and development of care plans adapted to patient groups and the health care system. Responsible and successful performance of nursing duties and efficient oral and written reporting.

8. Leadership, management and teamwork. Knowledge of the current system of financing health care, because it affects the provision of health care. Analyzing the organizational structure, functions and resources that affect the provision of health care. Applying business strategy. Assessing the impact of health care delivery systems on care itself. Participation in all aspects of community health programs. Managing resources and equipment while recognizing the tasks to be performed, developing financially efficient programs and enabling the proper and efficient use of resources and equipment. Ability to independently ensure the quality of health care and its assessment. Ability to change and improve health care in line with outcomes based on external assessment and accreditation. Taking responsibility for practice. Teamwork and cooperation with colleagues, as well as the exchange of care plans with members of the health care team. Advocating for a more advanced role of nurses / technicians in practice.

9. Research and its application. Knowledge of research methodology, collection and analysis of research data, exchange of results, preparation of projects and submission of applications for donations, as well as the application of results in everyday work.

All these competencies are defined in the catalog of knowledge and skills and are acquired through various subjects described in syllabi, as well as through practical classes in health care institutions.

6. Description of the study program

Basic academic studies of the health care cycle at the Faculty of Medicine in Foča last 8 semesters and include 3000 hours of active teaching (1200 hours of theoretical classes, 1800 hours of exercises), 960 hours of professional practice in health care institutions and 3240 hours of independent student work valued with a total of 240 ECTS.

The study program contains the obligation to prepare a final thesis which is evaluated with 6 ECTS and is included in the total number of points required for completion of studies. The preparation of the diploma thesis can be approached after passing the exams in compulsory and selected subjects, according to the procedure provided by the Rulebook on the preparation and defense of the final thesis in the first cycle of studies. The final work is the result of independent scientific work of the student which systematizes the existing professional and scientific knowledge and contributes to new scientific knowledge and proves that the student has mastered the methodology of scientific research.

Type of study: integrated academic studies

Duration of studies: 4 years (8 semesters)

Total points: 240ECTS

Scientific field: Medical and health sciences

Scientific field: Nursing

Narrow scientific field: Nursing

Study program: Health care



Educational degree: Bachelor of Nursing

Semester duration: 15 weeks

ECTS credits per year: 60

Course scope: Courses are one-semester or two-semester.

7. Curriculum of the study program Health Care

		UNIVERSITY OF EAST SARAJEVO										
		Study program	Health care									
I YEAR OF STUDY												
Courses			Classes per week				Total teaching hours	Profess. practice	Individual learning	Total hours per course	ECTS	Prerequisite for taking the exam
			I sem		II sem.							
No	Code	Course	L	E	L	E						
1	3H-04-1-001-1	Anatomy, histology and embryology	3	2	0	0	75	-	105	180	6	-
2	3H-04-1-002-1	Physiology with biophysics	3	2	0	0	75	0	105	180	6	-
3	3H-04-1-003-1	Biochemistry	1	1	0	0	30	40	20	90	3	-
4	3H-04-1-004-1	Human genetics	2	1	0	0	45	-	45	90	3	-
5	3H-04-1-005-1	Sociology	2	0	0	0	30	-	30	60	2	-
6	3H-04-1-006-1	Informatics in healthcare	1	2	0	0	45	-	15	60	2	-
7	3H-04-1-007-1	Introduction to medicine and health care	3	3	0	0	90	20	100	210	7	-
8	3H-04-1-008-2	Clinical practice I	0	0	0	5	75	80	85	240	8	-
9	3H-04-1-009-2	Microbiology and immunology	0	0	2	2	60	40	50	150	5	-
10	3H-04-1-010-2	Social medicine	0	0	1	1	30	-	60	90	3	-
11	3H-04-1-011-2	Medical ethics	0	0	2	0	30	-	60	90	3	-
12	3H-04-1-012-2	Hygiene	0	0	2	1	45	-	15	60	2	-
13	3H-04-1-013-2	Multidisciplinary health care	0	0	1	3	60	60	30	150	5	-
14	3H-04-1-014-1 3H-04-1-014-2	English language I	1	1	1	1	60	-	90	150	5	-
Total active teaching			28		22		750	240	810	1800	60	
Professional practice Admission department: 2 weeks Clinic or surgery department: 2 weeks							<ul style="list-style-type: none"> - Microbiological laboratory: 1 week - Biochemical laboratory: 1 week 					

II YEAR OF STUDY												
Courses			Classes per week				Total teaching hours	Profess. practice	Individual learning	Total hours per course	ECTS	Prerequisite for taking the exam
			III sem		IV sem							
No	Code	Course	L	E	L	E						
1	3Б-04-1-015-3	Pathology and pathophysiology	2	2	0	0	60	-	120	180	6	-
2	3Б-04-1-016-3	Pharmacology and toxicology	2	1	0	0	45	-	135	180	6	-
3	3Б-04-1-017-3	Geriatrics and care for the elderly	2	3	0	0	75	80	25	180	6	-
4	3Б-04-1-018-3	Medical psychology	1	2	0	0	45	-	75	120	4	-
5	3Б-04-1-019-3	Epidemiology	1	1	0	0	30	-	60	90	3	-
6	3Б-04-1-020-4	Occupational safety and patient safety	0	0	2	1	45	-	75	120	4	-
7	3Б-04-1-021-4	Health statistics	0	0	1	1	30	-	30	60	2	-
8	3Б-04-1-022-4	Clinical practice 2	0	0	0	7	105	40	35	180	6	-
9	3Б-04-1-023-4	Propaedeutics and health care in clinical-hospital practice	0	0	3	5	120	40	50	210	7	-
10	3Б-04-1-024-4	Infectious diseases and the care of an infectious patient	0	0	2	2	60	-	120	180	6	-
11	3Б- 04-1-025-4	Pediatrics and the care of a healthy and sick child	0	0	2	3	75	80	25	180	6	3Б-04-1-015-3-
12	3Б-04-1-026-3 3Б-04-1-026-4	English language II	1	1	1	1	60	-	60	120	4	-
Total active teaching			19		31		750	240	810	1800	60	
			Professional practice:									
			<ul style="list-style-type: none"> - Pediatric Clinic: 2 weeks - Pediatrics in the health center: 1 week 				<ul style="list-style-type: none"> - Center for the elderly: 2 weeks - Family medicine: 1 week 					

III YEAR OF STUDY												
Courses			Classes per week				Total teaching hours	Profess. practice	Individual learning	Total hours per course	ECTS	Prerequisite for taking the exam
			V sem		VI sem							
No	Code	Course	L	E	L	E						
1	3Б-04-1-027-5	Internal medicine and care of internal medicine patients	2	3	0	0	75	40	65	180	6	-
2	3Б-04-1-028-5	Surgery and care of surgical patients	2	4	0	0	90	40	80	210	7	-
3	3Б-04-1-029-5	Gynecology and obstetrics and women's health care	1	2	0	0	45	40	35	120	4	-
4	3Б-04-1-030-5	Psychiatry and care of psychiatric patients	1	2	0	0	45	40	35	120	4	-
5	3Б-04-1-031-5	Medical rehabilitation	1	1	0	0	30	-	60	90	3	-
6	3Б-04-1-032-5	Care in primary health care and family	3	4	0	0	105	40	65	210	7	-
7	3Б-04-1-033-6	Health education	0	0	2	2	60	-	90	150	5	3Б-04-1-032-5
8	3Б-04-1-034-6	Organization and management in healthcare	0	0	3	2	75	-	105	180	6	-
9	3Б-04-1-035-6	Clinical practice 3	0	0	0	5	75	-	105	180	6	-
10	3Б-04-1-036-6	Palliative health care	0	0	2	2	60	40	20	120	4	-
11	3Б-04-1-037-6	Care of oncology patients	0	0	1	1	30	-	60	90	3	-
		Optional course	0	0	2	2	60	-	90	150	5	-
Total active teaching			26		24		750	240	810	1800	60	
Elective courses (Student listens to and takes 1 elective courses that are part of the total student workload)												
12	3Б-04-2-038-6	Intrahospital infections and their application	0	0	2	2	60	-	90	150	5	-
13	3Б-04-2-039-6	Emergency health care	0	0	2	2	60	-	90	150	5	-
14	3Б-04-2-040-6	Medical records / evidence-based medicine	0	0	2	2	60	-	90	150	5	-
Professional practice: Clinic for internal medicine: 1 week Clinic of Ophthalmology and ENT: 1 week Clinic for gynecology: 1							- Clinic for psychiatry: 1 week - Family medicine service: 1 week - Department of Palliative Care: 1 week					

IV YEAR OF STUDY												
Courses			Classes per week				Total teaching hours	Profess. practice	Individual learning	Total hours per course	ECTS	Prerequisite for taking the exam
			VII sem		VIII sem							
No	Code	Course	L	E	L	E						
1	ЗН-04-1-041-7	Ecology and public health	2	4	0	0	90	40	50	180	6	-
2	ЗН-04-1-042-7	Clinical practice 4	0	7	0	0	105	80	25	210	7	-
3	ЗН-04-1-043-7	Radiology and image in healthcare	2	1	0	0	45	-	105	150	5	-
4	ЗН-04-1-044-7	Introduction to pedagogy	3	3	0	0	90	80	70	240	8	-
5	ЗН-04-1-045-7	Methodology of scientific research work	2	2	0	0	60	-	120	180	6	-
6	ЗН-04-1-046-7	Social and health legislation	2	2	0	0	60	-	60	120	4	-
7	ЗН-04-1-047-7	Models of medical practice	1	1	0	0	30	40	20	90	3	-
		Optional course I	0	0	3	0	45	-	135	180	6	-
		Optional course II	0	0	0	12	180	-	90	270	9	-
Optional course I (Student listens to and takes 1 elective courses that are part of the total student workload)												
8	ЗН-04-2-048-8	Health promotion	0	0	3	0	45	-	135	180	6	-
9	ЗН-04-2-049-8	Organization of health care of oncology patients	0	0	3	0	45	-	135	180	6	-
10	ЗН-04-2-050-8	Methodology of teaching health care	0	0	3	0	45	-	135	180	6	-
Optional course II (Student listens to and takes 1 elective courses that are part of the total student workload)												
11	ЗН-04-2-051-8	Health care in internal medicine branches	0	0	0	12	180		90	270	9	-
12	ЗН-04-2-052-8	Health care in surgical branches	0	0	0	12	180		90	270	9	-
13	ЗН-04-1-053-8	Graduate work	0	0	0	3	45	-	135	180	6	-
Total active classes			35		15		750	240	810	1800	60	
			Professional practice:									
			- Institute for Health Protection: 1 week				- Kindergarten: 1 week					
			- Transfusion: 1 week				- Institution for children with developmental disabilities: 1 week					
			- Oncology: 1 week				- CMZ / CBR (Health Center): 1 week					

1.	LECTURES L	1200
2.	EXERCISES E	1800
3.	TOTAL CLASSES	3000
4.	PROFESSIONAL PRACTICE	960
5.	INDEPENDENT STUDENT WORK	3240
6.	TOTAL NUMBER OF HOURS	7200
7.	TOTAL ECTS POINTS	240

8. Qualification standards for the study program Health Care

8.1. Basic characteristics

- Study cycle: integrated study
- Degree: academic
- Study modules: health care
- Name of the qualification (generic part + specific part)
 - o Bachelor of Nursing
- Language in which you study: Serbian
- Duration of studies: 4 years
- Minimum volume - ECTS number (Minimal volume): 240
- Level: 7
- Entry routes
 - o completed four-year high school with an average grade of min. 3.0
 - o passed the entrance exam

8.2. Competences/ learning outcomes

KNOWLEDGE

- a medical graduate knows how to apply practical skills and knowledge in the field of nursing, nurses have a basic knowledge of the physiological functions and behaviors of those who are healthy and sick and the relationships of patients and their environment;
- a medical graduate knows how to educate patients and their families in order to promote health / she knows how to apply procedures for maintaining health and knows how to use safety measures during work;
- the medical graduate is aware of the codes of ethical practice and the declaration of human rights and patients' rights;
- a medical graduate knows life-threatening situations and implements emergency medical therapeutic measures.

SKILLS

- a medical graduate knows how to take a proper nursing history, perform a physical examination and make a nursing diagnosis and treatment plan;
- the medical graduate is capable of keeping nursing documentation and all other necessary documents;
- medical graduate uses modern information and communication means;
- a medical graduate has the basics of research skills and is able to participate in research projects;
- A medical graduate is capable of working on disease prevention and keeping records of all procedures.

COMPETENCIES

- the medical graduate demonstrates the ability to collect and process (interpret) relevant data (usually within the field of study) and draws conclusions that include reviews of important social, scientific and ethical issues;

- graduate medic is trained for basic communication and team skills;
- a medical graduate is able to work independently;
- medical graduate is trained for lifelong learning and continuous professional development in accordance with the needs of the economy and stakeholders;
- the medical graduate is aware of the codes of ethical practice and the declaration of human rights and patients' rights;
- A medical graduate is able to help patients meet basic life activities, taking into account their dignity and cultural differences and also preserving patient data.

In addition, one should possess knowledge, skills and competencies in the following areas:

1. Knowledge of a foreign language

2. Ethics

- Involvement in ethical reasoning and action to promote cooperation, social justice and nursing leadership as health professionals

3. Professional nursing

- demonstrate nursing practice including continuous engagement in lifelong learning processes;

4. Evidence-based practice

- improving patient health through access, analysis and interpretation of information at the individual and family level;

5. Critical thinking

- use of a systematic approach to the analysis of real and potential problems in order to develop, test and evaluate innovative solutions in different health environments.
Communication: use of communication techniques and demonstration of communication / collaborative techniques with colleagues.

6. Nursing Manager

- plans / provides patient-oriented empathy and coordinates care that contributes to the development of safe and high quality results.

8.3. Qualification and subject structure

Group of courses	<i>ECTS (minimum)</i>
1. Group of generic basic subjects Human Genetics, English 1, English language 2 Sociology	14
Outcome description - To understand the basic laws of inheritance and apply it in understanding human inheritance, - To understand and explain the mechanisms of genetic diversity and to connect changes in genetic material with changes in phenotype. - To be trained for active general communication in English. - Develop language skills	

Group of courses	ECTS (<i>minimum</i>)
<p>Competences</p> <ul style="list-style-type: none"> - knowledge of a foreign language - to understand the basics of malignant cell genetics and immune response genetics, and to apply the acquired knowledge of human genetics in practice. 	
<p>2. Group of generic basic subjects for the study program</p> <p>Anatomy, histology and embryology, Biochemistry, Physiology with biophysics, Pathology and pathophysiology, Social medicine , Medical ethics, Hygiene, Epidemiology Microbiology and Immunology, Pharmacology and toxicology, Health informatics, Health statistics, Introduction to medicine and health care, Methodology of scientific research, Introduction to pedagogy.</p>	<p>68</p>
<p>Outcome description</p> <p>Integrate the sciences on which medicine and health care are based, and describe, differentiate and apply scientific methods including the principles of measuring biological functions, evaluating scientifically established facts and analyzing data.</p> <p>Competences</p> <ul style="list-style-type: none"> - Students must demonstrate the ability to use critical thinking and problem solving using them for comprehensive patient care and scientific research - The introduction of biomedical sciences in education should provide a comprehensive understanding of basic biological principles, provide basic information about fundamental structures, functions and the relationship between organ systems in the human body. - Providing detailed information on various disorders should provide a high level of understanding of the biological basis, epidemiology, pathogenesis, prevention, therapy and prognosis for various diseases - Students must demonstrate the ability to apply the basic principles of behavioral sciences to promote and improve and maintain health. 	
<p>3. A group of basic subjects specific to the study program</p> <p>Clinical practice I, II, III, IV, Multidisciplinary health care, Occupational safety and patient safety, Geriatrics and nursing care,</p>	<p>132</p>

Group of courses	<i>ECTS (minimum)</i>
Pediatrics and care of healthy and sick children, Propaedeutics and health care in clinical-hospital practice Medical psychology, Infectious diseases and care of an infectious patient, Internal medicine and care of internal medicine patients, Surgery and care of surgical patients, Gynecology and obstetrics and women's health care, Psychiatry and care of psychiatric patients, Primary care and family care, Medical rehabilitation, Health education, Organization and management in health care, Palliative health care, Care of oncology patients, Ecology and public health, Radiology and image in healthcare, Social and health legislation, Models of medical practice.	
<p>Outcome description</p> <ul style="list-style-type: none"> - Describe, explain and connect the structure, function and behavior of healthy and sick people as well as the impact of physical and social environment on human health. - Distinguish and connect clinical areas of medicine with health care and correctly and critically select procedures that allow to obtain a complete picture of social and physical diseases, the principles of health care in terms of prevention, diagnosis and treatment. <p>Competences</p> <ul style="list-style-type: none"> - Students must demonstrate the ability of self-assessment, including the development of professional competencies and the expression of professional values and opportunities related to lifelong learning. - Students must demonstrate the ability to use critical thinking and problem solving using them for comprehensive patient care and scientific research - Students must demonstrate the ability to work with different patient populations, as well as communication skills in order to work in a multicultural work environment. - Students must demonstrate the ability to work with different patient populations, as well as communication skills in order to work in a multicultural work environment. - Students should demonstrate competencies in each of the preclinical subjects. - Students must demonstrate skills in communication and cooperation with other members of the health care team in order to provide adequate health care. - Students must demonstrate the ability to apply ethical principles in decision making and professional responsibility. - Students must demonstrate competency in approach and critical thinking in order to conduct evidence-based treatment and health care. - Students must demonstrate abilities in providing general and special health care to patients of all ages from all fields of medicine. 	

Group of courses	ECTS (<i>minimum</i>)
<ul style="list-style-type: none"> - Students must demonstrate abilities in the implementation of health care for patients with special needs. - Students must demonstrate abilities in the implementation of health care for oncology patients, as well as patients on palliative care. - Students must demonstrate the ability to evaluate and apply modern scientific and technological achievements. 	
<p>4. Group of generic elective courses specific to the study program: Intrahospital infections and their application, Emergency health care, Medical documentation / evidence-based medicine, Health promotion, Organization of health care of oncology patients, Methodology of teaching health care, Health care in internal medicine branches, Health care in surgical branches.</p>	20
<p>Outcome description Ensuring high quality and reliable health care and nursing care in accordance with existing guidelines and with the aim of patient well-being.</p> <p>Competences</p> <ul style="list-style-type: none"> - Students must demonstrate the ability to use critical thinking and problem solving using them for comprehensive care as well. - The student must demonstrate the ability of self-assessment, including the development of professional competencies and the expression of professional values and opportunities related to lifelong learning. - The introduction of biomedical sciences in education should provide a comprehensive understanding of basic biological principles, provide basic information about fundamental structures, functions and the relationship between organ systems in the human body. - Students must demonstrate skills in communication and cooperation with other members of the health care team in order to provide adequate health care. - Students must demonstrate the ability to apply ethical principles in decision making and professional responsibility. - Students must demonstrate competency in approach and critical thinking in order to conduct evidence-based health care and treatment. 	
<p>5. Professional practice Clinical practical classes within professional subjects</p>	960 hours

Group of courses	ECTS (<i>minimum</i>)
<p>Outcome description</p> <ul style="list-style-type: none"> - Critically evaluate, select and apply preventive measures, diagnostic, therapeutic and setrin procedures in order to prevent the occurrence of diseases and disorders, improve oral health or complete cure. <p>Competences</p> <ul style="list-style-type: none"> - Students must demonstrate the ability to use critical thinking and problem solving using them for comprehensive patient care and scientific research - The student must demonstrate the ability of self-assessment, including the development of professional competencies and the expression of professional values and opportunities related to lifelong learning. - Providing detailed information on various disorders should provide a high level of understanding of the biological basis, epidemiology, differential diagnosis, pathogenesis, prevention, therapy and prognosis for oral and orofacial diseases. - Students must demonstrate the ability to apply knowledge of biomedical sciences in the treatment of patients. - Students must use knowledge in the field of pharmacology in order to prevent, diagnose and treat diseases. - Students must demonstrate the ability to apply the basic principles of behavioral sciences to promote and improve and maintain health. - Students must demonstrate the ability to work with different patient populations, as well as communication skills in order to work in a multicultural work environment. - Students must demonstrate the ability to apply official and accepted concepts regarding the provision of health care. - Students must demonstrate the ability to apply the basic principles of managing a health care unit and its team. - Students must demonstrate skills in communication and cooperation with other members of the health care team in order to provide adequate health care. - Students must demonstrate the ability to apply ethical principles in decision making and professional responsibility. - Students must demonstrate competency in approach and critical thinking in order to conduct evidence-based health care. - Students must demonstrate abilities in providing general and special health care to all patients of all ages. - Students must demonstrate abilities in the implementation of health care for patients with special needs. - Students must demonstrate the ability to evaluate and apply modern scientific and technological achievements. 	

Group of courses	<i>ECTS (minimum)</i>
6. Final work / project	6
<p>Outcome description The student will be trained for scientific research</p> <p>Competences</p> <ul style="list-style-type: none"> - students must demonstrate the ability to use critical thinking and problem solving using them for comprehensive patient care and scientific research - are acquainted with the process of scientific research procedures, - have an impartial attitude towards new scientific processes in medicine, - are willing to teach colleagues and develop their own teaching skills. 	



Strengthening capacities for the implementation of dual education in BH higher education (DUALSCI)

9. Competence matrix

Learning outcomes at the level of the study program - Competences	A group of generic basic courses	A group of generic core courses for the study program	Group of basic courses specific for the study program	A group of generic and elective courses	Professional practice	Final work/project
1. Knowledge of a foreign language	x					
2. Critical judgment						
- Students must demonstrate the ability to use critical thinking and problem solving using them for comprehensive patient care and scientific research		x	x	x	x	x
3. Self-assessment and lifelong learning						
- The student must demonstrate the ability of self-assessment, including the development of professional competencies and the expression of professional values and opportunities related to lifelong learning.			x	x	x	
4. Basics in biomedical sciences						
a) The introduction of biomedical sciences in education should provide a comprehensive understanding of basic biological principles, provide basic information about the fundamental structures, functions and interrelationships of organ systems in the human body.		x	x	x		

b) The biomedical basis is extremely important for understanding the functioning of the entire human organism.		X	X	X		
c) Providing detailed information on various disorders should provide a high level of understanding of the biological basis, epidemiology, pathogenesis, prevention, therapy and prognosis for various diseases of the human body.		X	X	X	X	
d) Students must demonstrate the ability to apply knowledge of biomedical sciences in the care and treatment of patients.			X	X	X	
e) Students must use knowledge in the field of pharmacology in order to apply different forms of drugs, prevention and treatment of various diseases and maintain health.			X	X	X	
5. Basics of behavioral sciences						
a) Students must demonstrate the ability to apply the basic principles of behavioral sciences to promote, promote and maintain health.		X	X	X	X	
b) Students must demonstrate the ability to work with different patient populations, as well as communication skills in order to work in a multicultural work environment.			X	X	X	
6. Basics in health care						
a) Students should demonstrate competencies in each of the preclinical subjects in the field of health care			X			

7. Implementation of practice in health care						
a) Students must demonstrate the ability to apply official and accepted concepts regarding the provision of health care			X	X	X	
b) Students must demonstrate the ability to apply the basic principles of leadership in a healthcare team.				X	X	
8. Ability to work in a team						
- Students must demonstrate skills in communication and cooperation with other members of the health care team in order to provide adequate health care.			X	X	X	
9. Ethics of the profession						
- Students must demonstrate the ability to apply ethical principles in decision making and professional responsibility.			X	X	X	
10. Evidence-based health care						
- Students must demonstrate skills in approach and critical thinking in order to conduct evidence-based health care.			X	X	X	
11. Comprehensive health care						
- Students must demonstrate skills in providing health care to all patients of all ages.			X	X	X	
12. Patients with special needs						
- Students must demonstrate abilities in the implementation of health care for patients with special needs.			X	X	X	
13. Application of modern technology in medicine and health care						

- Students must demonstrate the ability to assess and apply modern scientific and technological advances in medicine and health care			x	x	x	
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10. Variant V of the generic model in the implementation of dual education

Variant V which is applied to the study program health care assumes the classes according to the normal regime with the hours of work in the health institutions planned during the holidays (last two weeks of July and August) for 6 weeks.

This variant envisages 25 hours of teaching at a higher education institution during 15 weeks of teaching. Teaching hours include all previous forms of teaching, lectures and exercises, as well as other established forms of teaching.

Hours of work in the health institutions under this model are performed during the holidays in the last two weeks of July and in August. Jedino u ovom periodu moguće je da student bez značajnih prekida uradi praksu u skladu sa kompetencijama definisanim u knjižicama stručne prakse.

Table 1. Hours of work in companies / institutions during the holidays during each study year

	July III week	July IV week	August I week	August II week	August III week	August IV week
Monday	8	8	8	8	8	8
Tuesday	8	8	8	8	8	8
Wednesday	8	8	8	8	8	8
Thursday	8	8	8	8	8	8
Friday	8	8	8	8	8	8
Total hours (h)						240

This variant is assumed to fit perfectly into the dual education system in which institutions in which practical classes or work process would be conducted are located in cities outside the seat of the higher education institution that the student attends. This is exactly the case with the study program of health care whose students come from all over the east of Republika Srpska. It is the students who will be able to attend professional internships in the health institutions of the cities they come from.

Originally, the health care curriculum would provide for professional practice to be done during 1800 hours of one academic year, however this is impossible due to the large interruptions that students would have, as well as due to mandatory hours of theoretical instruction. For that reason, variant V of the generic model with professional practice during July and August is the most applicable in the specific model of dual higher education.