CURRICULUM FOR STUDIES IN GENERAL MEDICINE

I year

I semester			II semester		
Subjects	**Classes**	**Credits**	**Subjects**	**Classes**	**Credits**
Biophysics	30	2	Medical chemistry	90	7
Cell morphology and physiology	60	5	Anatomy 2	90	7
Anatomy 1	90	9	Histology and embryology 2	75	6
Introduction to medicine	30	2	Health promotion	15	1
Medical psychology and sociology	75	5	Medical ethics	30	2
Histology and embryology 1	60	5	Introduction to human genetics	60	5
English language	30	2	First aid	15	1
Sports and health	30		Elective subject	15	1
	405	**30**		**390**	**30**

*Condition for enrolling the second year of studies is obtained signature from the subject Sports and health

II year

III semester			IV semester		
Subjects	**Classes**	**Credits**	**Subject**	**Classes**	**Credits**
Biochemistry 1	105	7	Physiology 2	90	6
Physiology 1	150	11	Biochemistry 2	75	5,5
Introduction to immunology	45	3	Microbiology and parasitology 1	60	4
Medical statistics and informatics	45	3	Pathophysiology 1	105	7
Anatomy 3	90	6	Hygiene	75	5
			Basics in scientific work	30	1,5
			Elective subject	15	1
	435	**30**		**450**	**30**

III year

V Semester			VI semester		
Subjects	**Classes**	**Credits**	**Subject**	**Classes**	**Credits**
Microbiology and parasitolology 2	75	6	Pathology 2	120	8
Pathophysiology 2	60	4.5	Clinical examination	92	7
Pathology 1	135	9	Pharmacology	105	7
Clinical examination	93	6	Epidemiology	75	5
Radiology	60	3	Transfusiology	30	2
Nuclear medicine	30	1.5	Elective subject	15	1
	435	**30**		**437**	**30**

IV year

VII Semester			VIII Semester		
Subjects	**Classes**	**Credits**	**Subjects**	**Classes**	**Credits**
Internal medicine	205	11	Internal medicine	150	9,5

Infectiology	105	7	Surgery	160	9,5
Dermatovenerology	80	5	Gynecology	100	6
Neurology	97	6	Clinical pharmacology	30	1,5
Elective subject	15	1	Clinical biochemistry	30	1,5
			Oncology	45	2
	502	**30**		**515**	**30**

V year

IX Semester			X Semester		
Subjects	**Classes**	**Credits**	**Subjects**	**Classes**	**Credits**
Surgery	175	10.5	Pediatrics	90	5
Gynecology and obstetrics	105	6	Psychiatry	95	5.5
Pediatrics	90	6	Otorhinolaryngology	97	6
Orthopedics	55	3	Ophthalmology	67	4
Anaesthesiology and reanimation and pain management	40	2	Family medicine	30	1.5
Emergency medicine	30	1.5	Forensic medicine	75	4
Physical medicine and rehabilitation	15	1	Occupational medicine	45	2
			Social medicine and health economics	30	2
	510	**30**		**529**	**30**

VI year

XI Semester		XII Semester	
Subjects	**Duration/organization**	**Classes**	**Credits**
Internal medicine clinical practice	8 weeks	320	15
Surgery clinical practice	8 weeks	320	15
Gynecology and obstetrics clinical practice	4 weeks	160	7
Pediatrics clinical practice	3 weeks	120	6
Public health clinical practice	2 weeks	80	4
Family medicine clinical practice	1 week	40	2
Gerontology	1 week	40	2
Palliative medicine	1 week	40	2
Seminars* (3 subjects)	1 week Differential diagnosis (solving cases internal+surgery+pediatrics)	60	3
Clinical microbiology	2 days	15	1

Rational drug prescription and natural ways of healing	1 week	40	2
Elective subject		15	1
		1250	**60**

*Seminars are conducted on the mentoring principle with professor and assistants. They are organized as active participation of students in the working process, participation in seminars and/or workshops, public presentations of case reports.

Conditional criteria
I for II Semester

Signature: Anatomy 1	→	Anatomy 2
Signature: Histology and embryology 1	→	Histology and embryology 2
Signature: Cell morphology and physiology	→	Introduction to human genetics
Signature: Introduction to medicine	→	Health promotion

II for III semester

Passed exams: Anatomy 1 Anatomy 2 Histology and embryology 1	→	Anatomy 3 Physiology 1
Passed exams : Medical chemistry	→	Biochemistry 1
Passed exams : Cell morphology and physiology	→	Physiology 1 Introduction to immunology
Signature: Introduction to human genetics	→	Introduction to immunology

III for IV semester

Signature: Biochemistry 1	→	Biochemistry 2
Signature: Physiology 1	→	Physiology 2 Pathophysiology 1
Passed exams: Cell morphology and physiology **Signature:** Introduction to immunology	→	Microbiology & parasitology 1

IV for V semester

Passed exam: Physiology 1 **Signature:** * Pathophysiology 1	→	Pathophysiology 2
Passed exam: Physiology 1 **Signature** **:** Physiology 2 Pathophysiology 1 ** Microbiology & parasitology 1	→	Microbiology & parasitology 2
Passed exams: Physiology 1 Anatomy 3 Histology and embryology 2 **Signature** **:** Physiology 2 * Pathophysiology 1	→	Pathology 1
Passed exams: Physiology 1 and Anatomy 3 **Signature :** Microbiology & parasitology 1 * Pathophysiology 1	→	Clinical examination 1
Passed exam: Biophysics	→	Radiology Nuclear medicine

*The student does not have a right to take Pathophysiology 2, Pathology 1 and Clinical examination exams before passing Pathophysiology 1 exam.

V for VI semester

Passed exams: Biochemistry 1 Physiology 2 **Signature:** Pathology 1 Pathophysiology 2 Clinical examination 1	→	Clinical examination 2
Passed exams: Biochemistry 1 Physiology 2 **Signature**: Pathology 1 Pathophysiology 2	→	Pathology 2
Passed exams: Biochemistry 1 Physiology 2 **Signature:** Pathology 1 Pathophysiology 2	→	Pharmacology
Passed exams: Biochemistry 1 Physiology 2 **Signature:** Pathology 1 Pathophysiology 2	→	Transfusiology
Passed exam: Medical statistics and informatics	→	Epidemiology

**The student does not have the right to take Microbiology and parasitology 2 exam before passing Microbiology and parasitology 1 exam.

VI for VII semester

Passed exams: Introduction to medicine Medical psychology and sociology Health promotion Medical ethics First aid Basics in scientific work Introduction to human genetics Biochemistry 2 Microbiology and parasitology 2 Pathophysiology 2 Pathology 1 Pathology 2 Clinical examination Introduction to immunology Hygiene Radiology Nuclear medicine **Signature:** *Pharmacology Epidemiology Transfusiology	→	For any subject

*The student does not have the right to take Clinical pharmacology exam before passing Pharmacology exam.

Subjects study programs

1.	Subject	**ANATOMY 1**			
2.	Code	MED 111			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semester	First (I) / First (I)	7.Number of credits	9	
8.	**Responsible teacher**	Prof. Julija Zhivadinovikj Bogdanovska, PhD, MD			
9.	Preconditions	None			
10.	Teaching goals: • Introduction to anatomy as a natural, morphological science and its place among the medical disciplines; • Introduction to osteology and syndesmology of the extremities, torso and head; • Introduction to the myology, angiology and neurology of extremities.				
11.	Brief content: **Theoretical course:** • Introduction to anatomy, types of anatomy and its significance. • Bone as an organ, types of bones, its morphological characteristics. • Osteology and syndesmology of upper and lower extremities. • Osteology and syndesmology of the torso. • Osteology and syndesmology of the head. • Myology, angiology and neurology of upper and lower extremities. **Practical lessons:** • Practical exercises on specific bones in the extremities, the torso and the head. • Skeleton of the thorax, spine, pelvis and head. • Syndesmology of upper and lower extremities, the spine, torso and head. • Topographical anatomy of upper and lower extremities. • Regions of the arm and leg and their contents.				
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, visual studying of skeletons with human bones, practical exercises on cadavers and specimens, computer-assisted learning.				
13.	Total available time:	270 classes			
14.	Organization of the course	90 classes - theoretical course, practical course, seminars 180 classes - home individual learning			
15.	Forms of teaching activities	15.1.	Theoretical course	45 classes	
		15.2.	Practical course, Seminars	45 classes	
16.	Other forms of activities	16.1.	Practice		
		16.2.	Individual tasks		
		16.3.	Individual (home) learning	180 classes	
17.	Method of assessment				

	17.1	Tests	min – max **Continual assessment - 3(oral)** 1. Osteology, syndesmology and regions of the upper extremity. Osteology and syndesmology of thorax and spine. 6-10 points 2. Osteology and syndesmology of the lower extremity. 6-10 points 3. Osteology and syndesmology of the head 6-10 points

			Final exam: final test + practical examination +oral examination 1. Final test: myology, angiology and neurology of the upper and lower extremities. 12-20 points 2. Practical examination: anatomical elements of upper and lower extremities. 6-10 points 3. Oral examination: integrative knowledge of the whole material learnt in Anatomy 1. 18-30 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.
	17.2	Seminar paper/project (oral/written presentation)	min – max 1 - 2
	17.3	Active participation	min – max Theoretical course 1-2 Practical course 4 - 6 Completed textbook mandatory

18.	Grading criteria (points / grade)	up to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the three continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons.

22.	Textbooks					
	22.1.	Mandatory				
		1.	Systematic human anatomy - part 1.	Tosovska Lazarova D, Janevska Nakeva N, Papazova M, Matveeva N, Zhivadinovikj J.	Skopje: Medical Faculty	2016

	22.2.	Additional				
		1.	Clinically oriented anatomy.	Moore KL.	Skopje: Tabernakul	2011
		2.	Atlas of human anatomy			
		3.	Human sectional anatomy.	Ellis H, Logan BM, Dixon AK.	Skopje: Ars Lamina DOO	2011
		4.	Peripheral nerve systemclinical anatomy.	Papazova M, Zhivadinovikj J.	Skopje: MARIV-S	2009

1.	Subject	**ANATOMY 2**		
2.	Code	MED 121		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	First (I) / Second (II)	7.Number of credits	7
8.	**Responsible teacher**	Prof. Julija Zhivadinovikj Bogdanovska, PhD, MD		
9.	Preconditions	Signature from Anatomy 1		
10.	Teaching goals: • Introduction to the descriptive and topographical anatomy of the thoracic, abdominal and pelvic walls; • Introduction to the topography of the thoracic, abdominal and pelvic cavity; • Introduction to the morphology, the structure and the syntopic, skeletotopic and holotopic relations of the thoracic, abdominal and pelvic cavity contents.			
11.	Brief content: • **Theoretical course:** • Thoracic walls and the topographical division of the thoracic cavity. • Contents of the pleuropulmonary regions, and the anterior and posterior mediastinum. • Abdominal walls with weak points and topographical division of the abdominal cavity. • Contents of the superior and inferior floors of the peritoneal cavity and the retroperitoneal space. • Pelvic walls and division of the pelvic cavity to floors. • Contents of the superior, subperitoneal and subcutaneous pelvic floor. **Practical course:** • Practical exercises on cadavers, or more specific: Regions of the thorax with the organs in the thoracic cavity. Regions of the abdomen with the organs in the abdominal cavity. Regions of the pelvis with the organs in the pelvic cavity. Learning the morphology, structure, syntopic, skeletotopic and holotopic relationships of the organs in the thoracic, abdominal and pelvic cavity by practical exercises on cadavers and fixed specimens.			
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent studying by using textbook, practical exercises on the regions of cadavers, practical exercises on individual organs, computer -assisted studying.			
13.	Total available time:	270 classes		
14.	Organization of the course	90 classes - theoretical course, practical course, seminars 180 classes - home individual learning		

15.	Forms of teaching activities		15.1.	Theoretical course	45 classes
			15.2.	Practical course, Seminars	45 classes
16.	Other forms of activities		16.1.	Practice	
			16.2.	Individual tasks	
			16.3.	Individual (home) learning	180 classes
17.	Method of assessment				
	17.1	Tests			min – max **Continual assessment of knowledge - 2 (oral)**

			1. Thorax 9 -15 points 2. Abdomen 9 -15 points **Final exam: final test + practical examination +oral examination** 1. Final test: pelvis 9-15 points 2. Practical examination: region of the thorax, abdomen and pelvis 6-10 points 3. Oral examination: Integrative knowledge of the whole material learnt in Anatomy 2. 18-30 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	
	17.2	Seminar paper/project (oral/written presentation)	min – max 1 - 2	
	17.3	Active participation	min – max Theoretical course 1-2 Practical course 4 - 6 Completed textbook mandatory	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the two continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.	
20.	Language of instruction		English	
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.	
22.	Textbooks			
	22.1.	Mandatory		

		1.	Systematic human anatomy - part 2.	Tosovska Lazarova D, Janevska Nakeva N, Papazova M, Matveeva N, Zhivadinovikj J.	Skopje: Medical Faculty	2016
	22.2.	Additional				
		1.	Clinically oriented anatomy.	Moore KL.	Skopje: Tabernakul	2011
		2.	Atlas of human anatomy			
		3.	Human sectional anatomy.	Ellis H, Logan BM, Dixon AK.	Skopje: Ars Lamina DOO	2011
		4.	Peripheral nerve systemclinical anatomy.	Papazova M, Zhivadinovikj J.	Skopje: MARIV-S	2009

1.	Subject	**ANATOMY 3**		
2.	Code	MED 211		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Second (II) / Third (III)	7.Number of credits	6
8.	**Responsible teacher**	Prof. Julija Zhivadinovikj Bogdanovska, PhD, MD		
9.	Preconditions	Passed exam of Anatomy 2		
10.	Teaching goals: • To become acquainted with the morphology and the structural elements of the head and neck; • To become acquainted with the topography of the head and neck; • To become acquainted with the muscles, fasciae, blood and lymph vessels, nerves and the organs of the head and neck; • To become acquainted with the morphology and structure of the sense of hearing, sense of sight and sense of balance; • To become acquainted with the morphology, structure and the significance of the central nervous system components (CNS).			
11.	Brief content: **Theoretical course:** • Myology, neurology and angiology of the head and neck. • Organs of the head and neck. • Components of CNS • CNS paths • Vascularization of CNS • CNS envelopments • Cerebrospinal fluid • Sences of sight, hearing and balance **Practical course:** Topographical regions of the head and neck			
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, visual studying, practical exercises on cadavers and specimens, computer-assisted learning.			
13.	Total available time:	270 classes		
14.	Organization of the course	90 classes - theoretical course, practical course, seminars 180 classes - home individual learning		

15.	Forms of teaching activities	15.1.	Theoretical course	45 classes
		15.2.	Practical course, Seminars	45 classes
16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	180 classes
17.	Method of assessment			
	17.1 Tests		min – max **Continual assessment of knowledge - 2 (written)** 3. Neurology of the head and neck 12-20 points 4. Sences of sight, hearing and balance 6 - 10 points **Final exam: final test + practical examination +oral examination**	
			1. Final test: myology, angiology and organs of thehead and neck, senses and the central nervous system 12-20 points 2. Practical examination: region of the head and neck 6-10 points 3. Oral examination: Integrative knowledge of the whole material learnt in Anatomy 3. 18-30 points The grade in the comprehensive exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	
	17.2 Seminar paper/project (oral/written presentation)		min – max 1 - 2	
	17.3 Active participation		min – max Theoretical course 1-2 Practical course 4 - 6 Completed textbook mandatory	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the two continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.	
20.	Language of instruction		English	
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.	
22.	Textbooks			
	22.1.	Mandatory		

		1.	Systematic human anatomy - part 3.	Tosovska Lazarova D, Janevska Nakeva N, Papazova M, Matveeva N, Zhivadinovikj J.	Skopje: Medical Faculty	2016
	22.2.	Additional				
		1.	Clinically oriented anatomy.	Moore KL.	Skopje: Tabernakul	2011
		2.	Atlas of human anatomy			
		3.	Human sectional anatomy.	Ellis H, Logan BM, Dixon AK.	Skopje: Ars Lamina DOO	2011
		4.	Peripheral nerve systemclinical anatomy.	Papazova M, Lazarova D, Zhivadinovikj J.	Skopje: MARIV-S	2009
		5.	Clinical anatomy of the organ of hearing and balance.	Papazova M, Zhivadinovikj J, Netkovski J.	Skopje: UKIM, Medical Faculty	2014
		6.	Clinical anatomy of the nose.	Papazova M, Zhivadinovikj J, Netkovski J.	Skopje: UKIM, Medical Faculty	2016
		7.	Vascularization of the brain.	Papazova M, Lazarova D, Zhivadinovikj J.	Skopje: UKIM, Medical Faculty	2010

1.	**Subject**	**HISTOLOGY AND EMBRYOLOGY (1)**			
2.	**Code**	MED 113			
3.	**Study program**	Undergraduate general medicine program			
4.	**Institution (Unit, Institute, Chair, Department)**	Institute of Medical Histology and Embryology UKIM – Faculty of medicine			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Academic year / semester**	First / first	7.	Број на ЕКТС кредити	4
8.	**Professor-Lecturer in charge**	**Prof. Liljana Milenkova M.D. PhD**			
9.	**Preconditions:**	/			
10.	**Teaching goals and study program (competencies):** • To get acquainted with the concept of human prenatal development. • To be able to define and classify the tissues. • To be able to stress out the functional abilities of each component of the tissue. • To get skills to identify the tissues on microscopic slides, to elaborate their structural components and to campare their structure.				

11.	**Content of the study program** **Theoretical and laboratory practice classes**: - The structure of male and female gamete; fertilization, implantation of the conceptus. - Preembryonic period, (embryogenesis), embryonic period (organogenesis), fetal period. - Structure and function of placenta and of embryonic sac. - Disturbances of the prenatal development and origin of the congenital anomalies. - Microscopic slides, microscope, tissues. - Structural characteristics and types of epithelial, connective, cartilaginous, bone, muscle and nerve tissues. - Histological characteristics of the: bones and junctions, heart, blood and lymphatic vessels, lympho-epithelial and lympho-reticular organs. - Embryonic development and origin of the congenital anomalies of cardiovascular and skeletal system.	
12.	**Learning methods** - Through visual presentation during accentuated concept lectures, studygoal oriented learning, and interactive teaching. - Through power point, video presentations and other aids during laboratory practice classes. - Through video-presentation and individual examination of microscopic slides. - Through student presentations and open discussions during seminars. - Through learning from recommended literature and selected files available on the web site of the Institute of histology and embryology.	
13.	**Total number of hours**	150
14.	**Distribution of the available time**	

15.	**Forms of educational activities**	15.1	Lectures - theoretical course	30
		15.2	Laboratory practice classes:	30
16.	**Other forms**	16.1	Projects assignments	
		16.2	Individual tasks	6
		16.3	Home learning	84
	Assesment of knowlwdge points			
	17.1 **Continuous Assessment:**		**1. Written:** Prenatal development, placenta, causes and consequences of the developmental disturbances 12-20 **2. Written:** Tissue structure 12-20 **Laboratory practice:** Microscopic slides from different tissues 9 -15	
	Final exam		On lymphoid organs, skeletal system and cardio-vascular system (histology and embryology) **1. Laboratory practice:** Microscopic slides of lymphoid organs, bone, heart, blood vessels and lymphatic vessels. 7 - 12 **2. Oral**: Lymphoid organs, skeletal system and cardiovascular system (histology and embryology) 14 - 23	

	17.2	**Seminars / projects (oral or written presentation)**	min - max points	
	17.3	**Active participation**	points Theoretical course 1-3 Practical course 4-7	
18.	**Knowledge assessment criteria** (points/grade)		Up to 59 points	5 (five) F
			from 60 to 68	6 (six) E
			from 69 to 76	7 (seven) D
			from 77 to 84	8 (eight) C
			from 85 to 92	9 (nine) B
			from 93 to100	10 (ten) A
19.	**Criteria for obtaining signature and taking the final exam**		**Conditional criteria for signature:** To take active participation in all the teaching activities including continuous assesments. **Conditional criteria for assesment of knowledge:** Students which have succesfully pass the continuous assesment, apply for final exam. In case the student has not achieved minimum points (60%) on each continual assessment, he/she applies to take the complete final exam. **Complete final exam**: The final exam is a combination of both written examinations (segments of the continuous assessments with less of 60%) and final examination. The grade for the entire exam is obtained according to the table of grades and based on the sum of the points gained in all the activities including the continual assessment.	

20.	**Language**		**English**			
21.	**Methods of evaluation of quality of education**		Anonimous student's evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	**Literature / textbooks**					
	22.1	**Mandatory literature**				
			Author	Title	Editor	Year
		1	The stuff of the Department of his-tology and embryo-logy	Study quide for Histology & embryology (1)	On the web site of the Medical faculty of Skopje	2017
		2	Milenkova L, Kostovska N.	Opsta embriologija na covekot (**General human embryology**);	Mariv	2009
		3	Kostovska N, Milenkova L.	Histologija-Gradba na tkivata (**Histology- tissue structure**);	Mariv	2009

		4	Kostovska N, Milenkova L.	Histoloska gradba i embrionalen razvitok na organskite sistemi (**Histology and embryonicdevelopment of organ systems)**	Medicinski fakultet, Skopje	2013
		5	Mitevska E.	Priracnik za prakticna nastava po histologija i embriologija-1 **(Manual for labora-tory practice for histology and embryology-1**)	Medicinski fakultet, Skopje	2012
		6	The stuff of the Department of his-tology and embryo-logy	Selected files (Power Point presentations) available on the web site of the Med. Fak.	Contiuously revised	
	22.2	**Aditional literature**				
			Author	Title	Editor	Year
		1	Michael H. Ross, Wojciech Pawlina	**Histology, A text and atlas**: (original version and translation in macedonian)	original version 5th ed.	2010 translation in macedonian
		2	J.K.Junqueira, H. Carneiro	**Basic histology. Text and atlas**;	original version 11th ed.	2009 translation in macedonian
		3	Keith L. Moore, T.V.N. Persaud	**The developing human.**	original version 8th ed.	2010 translation in
				Clinically oriented embryology: (original version and translation in mace-donian)		macedonian
				www.biolucida.com\ Medical education edition		

1.	**Subject**	**HISTOLOGY AND EMBRYOLOGY (2)**
2.	**Code**	MED 122
3.	**Study program**	Undergraduate general medicine program
4.	**Institution (Unit, Institute, Chair, Department)**	Institute of Medical Histology and Embryology UKIM – Faculty of medicine
5.	**Educational degree (first or second cycle)**	Интегриран циклус

6.	**Academic year / semester**	First / second	7.	Number of ECTS credits	6
8.	**Professor-Lecturer in charge**	**Prof. Liljana Milenkova M.D. PhD**			
9.	**Prerequisites**	None			
10.	**Teaching goals and study program (competencies):** 1. Acquiring skills of viewing histology microscopic slides and precise identification of structural components of tissues and organs 2. Acquiring ability of comprehension of: - specific combination of tissues in each organ; - crucial components of organs; - specific structural properties determining basic organ function; - role of additional (supporting) structural and functional components. 3. Acquiring ability to present comprehension of origin and organ development; 4. Acquiring basic ability to make causal-consequential connection between potential disruption of organ development and type of resulting congenital anomaly.				
11.	**Brief content of study program** **Theoretical and laboratory practice classes**: Microscopic structure, embryonic development, concept of origin of congenital malformations of organ systems - gastro-intestinal, - urinary, - genital, - respiratory, - endocrine, - central nervous system, - skin - sensory organs.				
12.	**Learning methods** - Through visual presentation during accentuated concept lectures, studygoal oriented learning, and interactive teaching. - Through power point, video presentations and other aids during laboratory practice classes. - Through individual examination of microscopic slides. - Through student presentations and open discussions during seminars.				

	- Through learning from recommended literature and selected files available on the web site of the Institute of histology and embryology.			
13.	**Total number of hours**	180		
14.	**Distribution of the available time**			
15.	**Forms of educational activities**	15.1	Theory lectures:	30
		15.2	Laboratory practice classes:	45
16.	**Other forms**	16.1	Project assignments	
		16.2	Individual tasks	18
		16.3	Home studing	78
	Assesment of knowlwdge points			

	17.1	Continuous Assessment:	1. Gastrointestinal system, Written: 8,4-14 Microscopic slides 2,4 - 4 2. Urinary and male & female genital systems**,** Written: 13,2-22 Microscopic slides 2,4 - 4
		Final exam	Skin, respiratory system, endocrine system, 46 C.N.S., eye, ear ; **1.Practical-**Microscopic slides 4,8 - 8 **2.Oral**: 38 22,8-
	17.2	**Seminars / projects (oral or written presentation)**	points min - max
	17.3	**Active participation**	points Theoretical course 1-3 Practical course 4-7

18.	**Knowledge assessment criteria** **(points/grade)**	Up to 59 points	5 (five) F
		from 60 to 68	6 (six) E
		from 69 to 76	7 (seven) D
		from 77 to 84	8 (eight) C
		from 85 to 92	9 (nine) B
		from 93 to100	10 (ten) A

19.	**Criteria for obtaining a signature and taking the final exam**	**Conditional criteria for assesment of knowledge:** **Criteria for signature:** To take active participation in all the teaching activities including continuous assesments. **Criteria for assesment on final exam:** Students which have succesfully pass the continuous assesment, apply for final exam. In case the student has not achieved minimum points (60%) on each continual assessment, he/she applies to take the complete final exam. **Complete final exam**: The final exam is a combination of both written examinations (segments of the continuous assessments with less of 60%) and final examination. The grade for the entire exam is obtained according to the table of grades and based on the sum of the points gained in all the activities including the continual assessment.
20.	**Language**	English

21.	**Method for evaluation of the quality of education**		Anonimous student's evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	**Mandatory literature**					
	22.1	**Basic**				
			Author	Title	Editor	Year
		1	The stuff of the Department of his-tology and embryo-logy	Study quide for Histology & embryology (2)	On the web site of the Medical faculty of Skopje	2017
		2	Kostovska N, Milenkova L.	Histoloska gradba i embrionalen razvitok na organskite sistemi (**Histology and embryonicdevelopment of organ systems)**	Medicinski fakultet, Skopje	2013
		3	The stuff of the Department of his-tology and embryo-logy	Selected files (Power Point presentations) available on the web site of the Med. Fak.	Contiuously revised	
	22.2	**Aditional literature**				
			Author	Title	Editor	Year
		1	Michael H. Ross, Wojciech Pawlina	**Histology, A text and atlas**: (original version and translation in macedonian)	original version 5th ed.	2010 translation in macedonian
		2	J.K.Junqueira, H. Carneiro	**Basic histology. Text and atlas**;	original version 11th ed.	2009 translation in macedonian
		3	Keith L. Moore, T.V.N. Persaud	**The developing human. Clinically oriented embryology** (original version and translation in mace-donian)	original version 8th ed.	2010 translation in macedonian
		4		www.biolucida.com\ Medical education edition		

1.	**Subject**	**BASIC IMMUNOLOGY**
2.	**Code**	MED 214
3.	**Study Program**	General medicine
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of Immunology
5.	**Educational degree (first or second cycle)**	Integrated cycle

6.	**Study year /semester**	Second/Third	7.	Number of credits	3
8.	**Responsible teacher**	Prof Dr. Kocho Dimitrovski			
9.	**Preconditions:**	Passed exam Morphology and Phisiology of cell			
10.	**Teaching goals of the study program (competencies):** • Instroducing students in basics of Immunology • Instroducing students in immunological disorders • Training the students for performimg and interpretating results from immunodiagnostic procedures • Connecting basic immunology knowleage with clinical practice				
11.	**Contents of the study program:** **Theoretical course:** • T and B cell immune response • Immune effector mechanism • Immunological disorders **Practical course**: • Immunological diagnostics • Analyses of immunological cases of patients history				
12.	**Methods of studying:**				
13.	**Total no. of hours:**	45 hours			
14.	**Distribution of the available time**				
15.	**Type of educational activity**	15.1	Lectures-theoretical course	24 hours	
		15.2	Practicals (laboratory, clinical), seminars, team work	21 hours	
16.	**Other types of activities**	16.1	Project assignments	. . . hours	
		16.2	Individual tasks	. . . hours	
		16.3	Home studying	. . . hours	
17.	**Assessment of knowledge:** points				
	17.1	Tests	3 Continuous tests • 12-20. • 6-10 • Complete: 18-30	18 min.- 30 max. total points	
		Final exam	Subject:		
			Practical exam Oral exam	25 min.- 42max. 17 points 25. points	
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	1 min.- 2max. 2 points	
	17.3	Active participation	Theoretical course Practical course	min.-max. points 1-3 points 4-7	
18.	Knowledge assessment	up to 59 points		5 (five) F	

	criteria: (points/grade)	60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:**
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

22.1 Mandatory textbooks

	Author	Title	Publisher	Year
1	Prof K. Dimitrovski	Lectures		current
2	Doc D. Trajkov	Lectures		Current
3	Kuby	Immunology 6th ed	New York : W.H. Freeman	2007
4	Immunology practicum	Spiroski at al.		2005
5	Analyses of immunological cases	Spiroski at al.		2007
6				
7				

22.2 Additional literature

	Author	Title	Publisher	Year

1.	Subject	**RATIONAL DRUG PRESCRIBING AND NATURAL WAYS OF HEALING**		
2.	Code	MED-615		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Pharmacology		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Sixth (XI)/ (XII)	7.Number of credits	2
8.	Responsible teacher	Prof. Dimche Zafirov, PhD, MD		
9.	Preconditions	Fullfilled condition for enrollment in the VII semester		
10.	Teaching goals: • Gaining knowledge about the basic concept of rational pharmacotherapy; • Making assessment and use of the concept for making a choise for a „personal" medication; • Gaining basic knowledge about the natural ways of healing, especially about the herbal medicines.			
11.	Brief content:			

<table>
<tr><td></td><td colspan="5">Theoretical course:
• Basic principles of rational drug prescribing.
• Rational drug prescribing for selected indications.
• Natural ways of healing.
• Herbal medicines, efficacy and safety associated with the use of the herbal medicines.

Practical lessons:
• Evaluation and solving of case-reports by using the concept for making a choise for a „personal” medication for selected diseases (practical excercises and seminars).</td></tr>
<tr><td>12.</td><td colspan="5">Methods of studying:
Interactive teaching during lectures, independent study by using textbooks, practical exercises, seminars.</td></tr>
<tr><td>13.</td><td colspan="3">Total available time:</td><td colspan="2">60 classes</td></tr>
<tr><td>14.</td><td colspan="3">Organization of the course</td><td colspan="2">40 classes - theoretical course, practical excersises, seminars
20 classes - home individual learning</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1.</td><td>Theoretical course</td><td>30 classes</td></tr>
<tr><td>15.2.</td><td>Practical course, Seminars</td><td>10 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td></td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td></td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td>20 classes</td></tr>
<tr><td rowspan="4">17.</td><td colspan="5">Method of assessment</td></tr>
<tr><td>17.1</td><td>Tests

Final exam:</td><td colspan="3">min – max
Continual assessment* points 12- 20

*1 written test with case-reported included for individual dosage adjustement (team work)
min – max Oral examination points 25- 41</td></tr>
<tr><td>17.2</td><td>Seminar paper/project (oral/written presentation)</td><td colspan="3">min – max
Seminars 12 - 20</td></tr>
<tr><td>17.3</td><td>Active participation</td><td colspan="3">min – max
Theoretical course* 1-3
Practical course** 10-16
*Presence at the theoretical courses:
30-50% 1 point
51-70% 2 points
71-100% 3 points

**Practical course:
Presence: 4 points

Interactive evaluation of knowledge: min. 6 points- max. 10 points

Colloquium of a practical excersise: 2 points</td></tr>
<tr><td>18.</td><td colspan="2">Grading criteria (points / grade)</td><td>up to 59 points</td><td>5 (five) F</td></tr>
<tr><td></td><td colspan="2"></td><td>from 60 to 68 points</td><td>6 (six) E</td></tr>
</table>

		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper. In order to take the final exam, the student should obtain the minimum points of the continual assessment. If the student has not obtained the minimum points of the continual assessment, he/she will be obligated to pass it before the final exam.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Anonymous evaluation by the students of the subject, as well of the teachers that participate.

22. Textbooks

22.1.	Mandatory				
	1.	Rang HP, Dale MM et al.	Rang and Dale's Pharmacology	Elsevier	2013
	2.	Schulz V, Hansel R, Tyler VE	Rational phytotherapy	Spinger-Verlag, Berlin Heidelberg	2001
22.2.	Additional				
	1.	Capaso F, Gaginela T, Grandolini G, Izzo A.	Phytotherapy, a quick reference to herbal medicine	Springer	2003
	2.	Francetic I, Vitezic D.	Basics of clinical pharmacology	Medicinska naklada, Zagreb	2007
	3.	Zafirovska K et al.	Guidelines for implementing of evidence based medicine	Ministry of Health of R. Macedonia	2012

1.	Subject	**MEDICAL CHEMISTRY**		
2.	Code	MED 123		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	First (I) / Second (II)	Number of credits	7
8.	**Responsible teacher**	Prof. D-r Marija Krstevska, PhD		
9.	Preconditions	None		
10.	Teaching goals: • The Science of Matter and Chemical Bonds in Moleculs • Solutions and Electrolytes • Energy and Kintetics of chemical reaction • Acids and Bases, Redox reaction, pH and Buffers • Structure and Properties of Organic compounds			

<table>
<tr><td></td><td colspan="4">• Biologicaly important Organic compounds (Carbohydrates, Proteins, Lipids, Nucleic acids)</td></tr>
<tr><td>11.</td><td colspan="4">Brief content:

Theoretical course:

• Structure of atoms and molecules, Ionic, Covalent bonds, Intermolecular forces
• Basic thermochemic lows, Energy of chemical reactions, Chemical kinetics, Rates of chemical reactions, Chemical equlibrium
• Solutions, Quantitative Composition of Compounds, Colligative properties, Weak and Strong electrolytes (dissociation)
• Oxido-reduction (Redox reactions), Theory of acids and bases, pH, Buffers, Equilibrium in water solutions
• Hemistry of pollution, pollution of natural water and air
• Chemistry of carbon atom, Alkanes, Alkenes, Alkynes, Aromatic compounds and their derivates, Halides, Alcohols, Ethers, Ketones, Aldehydes, Carboxylic acids, Nitrogen and Sulfur containing compounds
• Structures and functions of carbohydrates, proteins, lipids, nucleic acids.
• Chemistry of pollution, pollution of air, natural waters, sea water, purification of contaminated water before returning to the natural environment, getting clean water.

Practical lessons:
• Preparation and examination of colligative properties of solutions, Volumetric analysis in chemistry, Calculation of solution concentration.
• Calculation from chemical equations and formula
• Nomenclature of more important organic compounds in medicine, reactions of carbohydrates, protein and lipids.</td></tr>
<tr><td>12.</td><td colspan="4">Methods of learning:
Interactive teaching (theoretic), working in small groups, laboratory exercises (practices), seminar work and another forms of anticipated criteria of CTS</td></tr>
<tr><td>13.</td><td colspan="2">Total available time:</td><td colspan="2">90classes</td></tr>
<tr><td>14.</td><td colspan="2">Organization of the course</td><td colspan="2">39 classes - theoretical course,
41 practical course, seminars
180 classes - home individual learning</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1.</td><td>Theoretical course</td><td>39 classes</td></tr>
<tr><td>15.2.</td><td>Practical course,
Seminars</td><td>41 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td></td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td></td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td>120 classes</td></tr>
<tr><td>17.</td><td colspan="4">Method of assessment</td></tr>
</table>

	17.1	Tests	**Two partial tests (written)** min – max **1. Partial test 1 - written** **12 – 20 points** • Basic structure of atom, Periodic Table • Types of chemical bonds, Water, Solutions, Colligative properties of solution • Nonelectrolyte and Electrolyte Solutions • Acids and Bases, Solubility od salts • pH, Buffers, Henderson-Hasselbach equation **2. Partial test 2 - written** **9 –15points** • Structure, isomerism, reactivity and clasification of organic compounds • Thermodynamic, First and Second Low of

			thermodynamic • Free Gibbs energy • Chemical Kinetic and factors of influence • Chemical equilibrium and factors of influence • Energy of activation, active complex • Catalyse, catalysts, biological catalyst • Oxidation-reduction, Srandard potential, flow of electrons **3. Practical exam – written** **9 – 15 points** **4. Final exam oral examination** **18– 30 points** **a) Organic chemistry, chemistry of carbon** • Hydrocarbons (Alkanes, Alkenes, Alkynes) and polyens • Cycloalkanes • Aromatic Hydrocarbons • Heterocyclic Hydrocarbons • Alcohols, Phenols, Ethers • Ketones, Aldehydes, Carboxylic acids, • Nitrogen and Sulfur containing compounds (amines, amides, tiols) • Structures and functions of, proteins, lipids, nucleic acids.
	17.2	Seminar paper/project (oral/written presentation)	min – max 3 - 5
	17.3	Active participation	min – max Theoretical course 1-3 Practical course 10 - 12
18.	Grading criteria (points / grade)		up to 59 points: 5 (five) F from 60 to 68 points: 6 (six) E from 69 to 76 points: 7 (seven) D from 77 to 84 points: 8 (eight) C

		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** To get signature in index, the student is duty to obtain minimum 10 points of practical lecture (6.0 points of attendance), 3 points of seminar work and 1 point of theoretical attendance, total 14 points. Practical exam start in a session. To approach to the final exam, oral, the student must obtain minimum 60% knowledge of two partial tests and practical exam. The final exam goes in for examination in a examine sessia	
20.	Language of instruction	English	
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons.	

22.	Textbooks					
	22.1.	Mandatory				
		1.	General and Organic Chemistry for medical students	Krstevska Marija, Alabakovska Sonja, Efremova Aaron Snezana, Labudovic Danica, Cekovska Svetlana	Skopje: Medical Faculty	2011
		2.	Biochemistry	Dzhekova-Stojkova Sloboda, Korneti Petraki, Todorova Bojana, Trajkovska Snezana. 2nd Ed	Skopje: Medical Faculty	2011
		3.	Script of Medical Chemistry for medical students	Krstevska Marija, Alabakovska Sonja, Efremova Aaron Snezana, Labudovic Danica, Cekovska Svetlana, DzhekovaStojkova Sloboda, Bosilkova Gordana	Skopje: Medical Faculty	2011
	22.2.	Additional				
		1.	General, Organic and Biochemistry	Katherine J Denniston, Joseph J Topping, and Robert L Caret	6th Ed.	2011
		2.	Selected parts of chemistry for the students of Medical School	Zorana Vujovic	Medical Faculty, Belgrade, Serbia	2006
		3.	Organic chemistry	John McMurry	Skopje	2009
		4.				

1.	**Subject:**	**INFECTOLOGY**
2.	**Code**	**MED-412**
3.	**Study Program:**	General Medicine
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Infectology

5.	Degree of education (first and second cycles)	Integrated 6-year study		
6.	Study year/semester	Fourth (IV)/ SeventhVII	7. Number of ECTS credits	7
8.	**Responsible teacher**	Chair of the department –prof. d-r Irena Kondova Topuzovska * the classes are carried out by all the professors at the Department of Infectology		
9.	Preconditions	Criteria meet for enrollment of the seventh semester		
10.	**Goals of the study program (competences)** • The students will be able to learn and use the learned knowledge for rational diagnosis, contemporary treatment and prevention of infectious diseases. • The students will learn to make a rational clinical judgment for recognizing infectious diseases in different, mostly expected situations and prescribe a proper treatment.			
11.	**Brief content of the study program:**			

	Theoretical course: • General Infectology: definition of the term infection and anti-infective immunity, introduction to the pathogenesis of infectious diseases, principles of diagnosis and treatment, anti-infective therapy (antibiotic therapy, antiviral therapy, anti-parasitic therapy, antifungal medications, principles of immune prophylaxis) • Special Infectology: introduction of basic syndromes with infectious etiology, introduction of the specific bacterial, viral, parasitic, and fungal infections and prion infections, basic knowledge of infections in special hosts, introduction to the importance of recognizing, treatment and prevention of nosocomial infections **Practical course** • Mastering the clinical skills and usage of the acquired theoretical knowledge			
12.	**Methods of studying:** Interactive lectures, seminars, practical trainings			
13.	Total available teaching hours	210 hours		
14.	Organization of the course	105 hours- lectures and practical activities 105 hours- home individual learning		
15.	Forms of teaching activities	15.1	Theoretical course	45 hours
		15.2	Practical course, Seminars	60 hours
16.	Other forms of activities	16.1	Practice	
		16.2	Individual tasks	
		16.3	Individual (home) learning	105 hours
17.	Method of assessment			Scoring system
	17.1	Tests		min-max Continual assessment* points 12 – 20 ***Continual assessment of knowledge (colloquia) -** 1 written test General Infectology (for mark 10=19-20 points; for mark 9=17-18 points; for mark 8=15-16 points; for mark 7=13-14 points; for mark 6=12 points

		Final exam:	**Final exam: final test + practical examination +oral examination** min-max 1. Final test * points 9 - 15 2. Practical examination** points 9 - 15 3. Oral examination*** points 24 – 40 ***Final test** – to assess students' knowledge in infectology- special Infectology (for mark 10=14,515 points; for mark 9=13-14 points; for mark 8=11,5-12,5 points; for mark 7=10-11 points; for mark 6=99,5 points) **** Practical examination** (according to a catalogue of skills): examination of the patients, diagnosis, differential diagnosis, therapy (for mark 10=14,5-15 points; for mark 9=13-14 points; for mark 8=11,5-12,5 points; for mark 7=10-11 points; for mark 6=99,5 points) ***** Oral examination** (**integrated)**- 4 questions in which the integrated knowledge of the student is

			checked on matters of understanding the subject of infectious diseases as a whole as well as the practical medical routine in infectious diseases (for mark 10=38-40 points); for mark 9=35-37 points); for mark 8=32-34 points); for mark 7=28-31 points); for mark 6=24-27 points)) Students are obliged to score the predicted minimum of the projected points for each section of the exam so that the points can be transferred for the final exam; otherwise they will fail the test.
17.2	Seminar paper/project (oral/written presentation)	Min-max Seminar work points	
17.3	Active participation	Min-max Theoretic lectures* points 1-2,5 Practical lectures** points 5-7,5 * presence in the theoretical course 51%-60% 1 point 61%-70% 1,5 points 71%-85% 2 points 86%- 100% 2,5 points **practical course presence 0.2 points colloquia 0.3 points	
18.	**Assessment of knowledge (points/scores)**	Up to 59 points 60 to 68 points 69 to 76 points 77 to 84 points 85 to 92 points 93 to100 points	5 (five) F 6 (six) E 7 (seven) D 8 (eight) C 9 (nine) B 10 (ten) A

19.	Requirement for signature and taking the final exam	**Obligatory criteria**: In order to get a professor's signature the students has to attend theoretic and practical studies, as well as seminars and to gain minimum points. In order to take the final exam the student has to pass the projected continuous assessments (colloquium in general infectology). During the exams the students has to pass the previously failed Continuous assessments (colloquium in general infectology) and then continue to the final exam. The grade/score for the entire exam is obtained according the table of grades and based on the sum of the points gained in all the activities, Continuous assessments and final exam.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Anonymous student evaluation about the subject of study as well as evaluation of the professors and assistant-professors enrolled in the subject studies.
22.	Literature	

	Obligatory literature					
	22.1	No.	Author	Title	Publisher	Year
		1.	Jonathan Cohen, William J. Powderly Steven	Infectology Volume 1 and Volume 2	Tabernacul	2012
		2.	Dimitriev Dimitar, Ivanovski Ljubomir, Milenkovic Zvonko, Grunevska Violeta, Topuzovska Irena, Stojkovska Snezana.	Infectious Diseases	University "St Cyril and Methodius" Faculty Of Medicine, Skopje	2012

1.	Subject	**INTERNAL MEDICINE**		
2.	Code	MED 411		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Internal Medicine		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Firth (IV) / Seventh and eight (VII+ VIII)	7.Number of credits	21
8.	**Responsible teacher**	Prof Dr Sonja Genadieva Stavrik MD PhD		
9.	Preconditions	Fulfilled criteria for VII semester		
10.	• The student will learn and conquer the skills within the rational diagnosis and modern treatment grounded on etiopathogenesis of diseases and postulates of clinical pharmacology • The student will be able to assess and treat rationally the diseases of heart and blood vessels, lungs, endocrine glands, nephrological, hematological, gastroenterohepatological, rheumatological and toxicological diseases and disorders • Contemporary clinical assessment will be based on rational diagnosis, especially on clinical examination, and later on target trials (laboratory) • Contemporary rational treatment will be based on recent therapeutic knowledge and on evidence – based medicine.			

11.	Brief content: **Theoretical course:** • diseases and disorders of cardiovascular system • diseases and disorders of lungs • diseases and disorders of gastroenterohepatologic system • diseases and disorders of urinary system • diseases and disorders of joints and connective tissues • diseases and disorders of endocrine glands and metabolism • diseases and disorders of hematologic system • diseases and disorders of hematologic system **Practical lessons:** • clinical skills and practical application of the acquired theoretical knowledge.	
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, seminars and practical teaching	
13.	Total available time:	355 classes
14.	Organization of the course	355 classes - theoretical course, practical course, seminars

			195 classes - home individual learning	
15.	Forms of teaching activities	15.1.	Theoretical course	160 classes
		15.2.	Practical course, Seminars	195 classes
16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	160 classes
17.	Method of assessment			
	17.1 Tests		Continuous checking of knowledge (colloquium): 4 written tests. They cover the all fields of Internal medicine (8) in different combinations, depending on the group which the student attend and current schedule. The students from one colloquium can get 4.5 – 8 points, and total 18 – 32 points (from 4 colloquiums). Final exam (practical + theoretical) • **Practical exam** (according to the catalogue of skills) – examination of a patient, differential diagnosis, therapy 13 – 20 points (for 10 = 20 points, for 9 = 18 – 19 points, for 8 = 16 – 17 points, for 7 = 14 – 15 points, for 6 = 13 points) • **Theoretical exam** (integrative) – 4 questions that are not questioned in detail, but integrative knowledge which is essential for understanding the whole subject and medical practice 18 -28 points (for 10 = 26 – 28 points, for 9 = 24-25 points, for 8 = 22 – 23 points, for 7 = 20 – 21 points, for 6 = 18 – 19 points). The student is obligated to win a minimum of 49% of the predicted score for each part of the exam, to be able to be registered the points for final exam. Otherwise, the test is considered not passed. • **Complete final exam:** The exam is a combination of colloquia which are not passed and the final exam. First, the student is obligated to pass the colloquia, and than to approache the final exam. If the student doesn't pass the colloquia , he has no right to take the final exam.	

	17.2	Seminar paper/project (oral/written presentation)		min – max
	17.3	Active participation	Theoretical course Practical course	min – max 1-5 10-15
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. In order to take the final exam, the student should obtain the minimum points in the continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.	
20.	Language of instruction		Macedonian	

21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.			
22.	Textbooks					
	22.1.	Mandatory				
		1.	**Harrison's Principles of Internal Medicine 19/E**	Anthony S. Fauci; Dan Longo; Dennis L. Kasper; J. Larry Jameson; Joseph Loscalzo; Stephen Hauser	2015 by McGraw-Hill Education	2015
		2.	**Goldman-Cecil Medicine, 25th Edition**	Lee Goldman MD (Author), Andrew I. Schafer MD		2015
	22.2.	Additional				

1.	Subject	**INTERNAL MEDICINE-CLINICAL PRACTICE**			
2.	Code	MED 611			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Internal Medicine			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semester	Six (VI) / Eleven and twelve (XI+ XII)	7.Number of credits	14	
8.	**Responsible teacher**	Prof Dr Sonja Genadieva Stavrik MD PhD			
9.	Preconditions	Passed exam of Internal Medicine			

10.	Student will acquire the skill of modern clinical assessment and treatment. Student will be able independently to make admission of a patient, to make urine analysis blood counts pretransfusion test with legal documentation insertion of urinary catheter rectal DRI (digital rectal investigation), rectoscopy ECG (technique and analysis), cardiopulmonary resuscitation interpretation of lungs rtg injections (subcutaneous , intramuscular, intravenous) will watch and assist in interventions such as: sternal puncture and smear, pleural puncture, abdominal puncture, insertion of gastric tube and gastric lavage, insertion of a central venous catheter, measerement of central venous pressure, gastroscopy , gastrolavage , tracheal intubation , artificial ventilation, peritoneal dialysis.
11.	Brief content: Introduction to diagnostic and therapeutic procedures in the field of Internal Medicine Practice: 320 hours Clinical practice will be organized during 8 working weeks with full time of 8 hours The four turnuses will be organized during the XI and XII semester. Three days will be organized in the ambulances for family medicine. The practice will be organized in groups of 2-5 students on mentoring principle with professors and assistants. During the turnuses , the departments and mentors will be changed. Student's daily activities will be noticed in special " diary of activities " , which will be verified with the signature of the mentor. **Practical lessons:** • clinical skills and practical application of the acquired theoretical knowledge.
12.	**Methods of studying:**

	participation in professional meetings in the clinic participation in morning rounds participation in daily work in the departments participation in interventions in the field of Internal medicine Interactive teaching during lectures and practical trainings, independent study by using textbooks, seminars and practical teaching				
13.	Total available time:			320 hours	
14.	Organization of the course			Practice 320 hours	
15.	Forms of teaching activities	15.1.	Theoretical course		
		15.2.	Practical course, Seminars		
16.	Other forms of activities	16.1.	Practice		320
		16.2.	Individual tasks		
		16.3.	Individual (home) learning		
17.	Method of assessment				
	17.1	Practice	Practice: 320 hours Clinical practice will be organized during 8 working weeks with full time of 8 hours The four turnuses will be organized during the XI and XII semester. Three days will be organized in the ambulances for family medicine. The practice will be organized in groups of 2-5 students on mentoring principle with professors and assistants. During the turnuses , the departments and mentors will be changed. Student's daily activities will be noticed in special " diary of activities " , which will be verified with the signature of the mentor.		

	17.2	Seminar paper/project (oral/written presentation)	min – max
	17.3	Active participation	min – max Theoretical course Practical course
18.	Grading criteria (points / grade)		The student assessment is descriptive (passed)
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. In order to take the final exam, the student should obtain the minimum points in the continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.
20.	Language of instruction		English
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.
22.	Textbooks		

	22.1.	Mandatory				
		1.	**Harrison's Principles of Internal Medicine 19/E**	Anthony S. Fauci; Dan Longo; Dennis L. Kasper; J. Larry Jameson; Joseph Loscalzo; Stephen Hauser	2015 by McGraw-Hill Education	2015
		2.	**Goldman-Cecil Medicine, 25th Edition**	Lee Goldman MD (Author), Andrew I. Schafer MD		2015
	22.2.	Additional				

1.	Subject	**GERIATRIC MEDICINE**			
2.	Code	MED 626			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Internal Medicine			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semester	Six (VI) / Eleventh (XI)	7.Number of credits	2	
8.	**Responsible teacher**	Prof Dr Sonja Genadieva Stavrik MD PhD			
9.	Preconditions	Completed course in Internal Medicine			

10.	• Course objectives (competencies): • Introduction to palliative medicine as an internist interdisciplinary science and its place in medical science • Introduction to the individual specifics of palliative medicine • Introduction to the particularities of the therapeutic approach in patients palliative care and terminal patients • Introduction to the ethical and legal aspects of palliative medicine • Dealing with pain with pharmacological and non-pharmacological means (ways) • Adopt communication skills and communication skills in special situations
11.	**Brief content** **Theoretical course:** • **Pulmonary disorders in the geriatric population** (Features in history, clinical examination and diagnostic procedures in elderly patients ,diseases of the respiratory system; Respiratory failure, pneumonia,chronic obstructive pulmonary disease, chronic pulmonary heart, pulmonary , tuberculosis, lung cancer) • **Diseases of the cardiovascular system in old age** (Diagnostic procedures in cardiology, electrocardiography, radiological, diagnosis of heart and lung, computerized tomography, magnetic resonance, dynamic electrocardiogram, echocardiography, phono-cardiography, Methods of nuclear cardiology; Heart failure, chronic heart failure, acute cardiogenic pulmonary edema; Inflammatory diseases of the valves – reumatic fever, mitral valve disease, aortic valve disease; endocarditis; Degenerative diseases of the heart valves; Coronary disease; prevention and treatment of atherosclerosis; Disorders of heart rhythm; pulmonary thromboembolism; Heart disease in metabolic disorders; diseases aortic and peripheral blood vessels; Arterial hypertension) • **Hematological diseases in older person**- anemias, myelodysplastic syndrome, leukemias (acute leukemia, chronic myeloid leukemia, chronic lymphatic leukemia), multiple myeloma, platelet disorder, coagulation disorders (DIC hemophilia, thrombosis, thromboembolism) • **Oncological geriatric diseases** (breast cancer, colon tumors) • **Infectious diseases in the geriatric population** (Acute inflammation of the respiratory system, viral hepatitis, herpes zoster, the Fever from unknown etiology; Purulent meningitis; Streptococcal infections; acute intestinal **i**nfections

	• **Kidney disease in elderly** - (primary and secondary glomerulopathy, tubulointerstitial disease , acute and chronic failure in kidneys , urinary tract infections) • **Endocrine disorders in old age** (Diabetes, Thyroid Disease gland; Bone disease, osteoporosis, osteomalacya; Hormone laboratory diagnostics) • **Rheumatic diseases** - (degenerative diseases of the joints,osteoporosis, rheumatoid arthritis, systemic lupus, systemic sclerosis, arthritis, polymyalgia rheumatica, fibromyalgia, Rehabilitation, Physical activity and exercise in geriatric population) • **Diseases of gastroenterology system**, (Diseases of the oral cavity, acute GI conditions, diseases of the esophagus,, gastric and duodenal diseases , diseases of the small bowel and colon, diseases in anorectal area, Hepato-biliary diseases , pancreatic diseases, tumors of the gastrointestinal tract) • **Neurological disorders** (cerebrovascular stroke, epilepsy, syncope, pain syndrome, balance disorder, ataxia, extrapyramidal system diseases, dementia, and intracranial expansive processes, neuromuscular disorders in the geriatric population.) • **Psychiatric disorders in the geriatric population** (neuroses, psychoses, Neurotic senile syndrome, senile depressive psychosis, senile dementia, treatment of mental disorders, ethics psycho-geriatric) • **Psychology of Aging** (Psychological theory aging, aging and skills, social relationships in old age, streenje and health) • **Changes in skin with age** (most common skin disease in old age - pruritus, erythroderma, action on drugs, reaction to light, hypostatic dermatitis, psoriasis; Skin infections in geriatric; The most common tumors)

12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, seminars and practical teaching			
13.	Total available time:		60 classes	
14.	Organization of the course		40 classes - theoretical course, practical course, seminars 20 classes - home individual learning	
15.	Forms of teaching activities	15.1.	Theoretical course	30 classes
		15.2.	Practical course, Seminars	10 classes
16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	20 classes

17.	Method of assessment			
	17.1	Tests	In order to get a signature for the course, students are requested to actively participate in the activities, including the continual assessment (the tests).	

Activity type	**Points**
	Min
Theoretical course (lectures) *	2
Practical course**	28
Seminar papers	/
Continual assessment - 2	/
Final exam	30
Total	**60**

Points for the activities of the student:

*** theoretical course attendance (lectures)**
51% - 60% - 2 point;
61% - 70% - 4 points;
71% - 85% - 6 points; 86%
- 100% - 8 points;

** **practical course**: practice is carried out for 5 days x 6 working hours provided for activities (total 30 hours) . Journal of clinical activities assignments for which the student receives points. Mentoring principle.
Presence: 4 points Activity (skills): 6 points

	17.2	Seminar paper/project (oral/written presentation)		min – max
	17.3	Active participation	Theoretical course Practical course	min – max 2 28
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. In order to take the final exam, the student should obtain the minimum points in the continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.				
20.	Language of instruction	Macedonian				
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons.				
22.	Textbooks					
	22.1.	Mandatory				
		1.	**Harrison's Principles of Internal Medicine 19/E**	Anthony S. Fauci; Dan Longo; Dennis L. Kasper; J. Larry Jameson; Joseph Loscalzo; Stephen Hauser	2015 by McGraw-Hill Education	2015
		2.	**Goldman-Cecil Medicine, 25th Edition**	Lee Goldman MD (Author), Andrew I. Schafer MD		2015
	22.2.	Additional				

1.	Subject	**PALIATIVE MEDICINE**			
2.	Code	MED 627			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Internal Medicine			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semester	Six (VI) / Eleventh (XI)	7.Number of credits	2	
8.	**Responsible teacher**	Prof Dr Sonja Genadieva Stavrik MD PhD			
9.	Preconditions	Completed course in Internal Medicine			
10.	• Course objectives (competencies): • Introduction to palliative medicine as an internist interdisciplinary science and its place in medical science • Introduction to the individual specifics of palliative medicine • Introduction to the particularities of the therapeutic approach in patients palliative care and terminally ill patients • Introduction to the ethical and legal aspects of palliative medicine • Dealing with pain with pharmacological and non-pharmacological means • Adopt communication skills and communication skills in special situations				

<table>
<tr><td>11.</td><td colspan="5">Theoretical course:
• Basics palliative medicine (manner of organizational structure, International development)
• Types and ways of organizing palliative care - outpatient, hospital, consulting
• Symptoms of chronic pain and handling with it- interdisciplinary approach
• Handling with Gastrointestinal symptoms (constipation, diarrhea, nausea, vomiting)
• Handling with Pulmonary symptoms- dyspnea, cough
• Handling with Neuropsychiatric symptoms, anorexia, cachexia
• Care for terminally ill
• Psychological and physiological aspects of palliative care
• Ethical and Legal Aspects of palliative medicine
• Teams for implementation of palliative care
Practical course
• The student will acquire knowledge about the most common conditions in palliative care, ways for its implementation and organization. Recognition of terminal sick patient, most common indications for palliative care, recognition specifics. Models of communication and special situations of communication</td></tr>
<tr><td>12.</td><td colspan="5">Methods of studying:
Interactive teaching during lectures and practical trainings, independent study by using textbooks, seminars and practical teaching</td></tr>
<tr><td>13.</td><td colspan="3">Total available time:</td><td colspan="2">60 classes</td></tr>
<tr><td>14.</td><td colspan="3">Organization of the course</td><td colspan="2">40 classes - theoretical course, practical course, seminars
20 classes - home individual learning</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1.</td><td>Theoretical course</td><td>30 classes</td></tr>
<tr><td>15.2.</td><td>Practical course, Seminars</td><td>10 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td></td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td></td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td>20 classes</td></tr>
<tr><td>17.</td><td colspan="5">Method of assessment</td></tr>
<tr><td></td><td>17.1</td><td>Tests</td><td colspan="3">In order to get a signature for the course, students are requested to actively participate in the activities, including the continual assessment (the tests).

<table><tr><th>Activity type</th><th>Points Min</th></tr><tr><td>Theoretical course (lectures) *</td><td>2</td></tr><tr><td>Practical course**</td><td>28</td></tr><tr><td>Seminar papers</td><td>0</td></tr><tr><td>Continual assessment - 2</td><td>0</td></tr><tr><td>Final exam</td><td>30</td></tr><tr><td>Total</td><td>60</td></tr></table>
Points for the activities of the student:

* theoretical course attendance (lectures)
51% - 60% - 2 point;
61% - 70% - 4 points;
71% - 85% - 6 points; 86% - 100% - 8 points;

** practical course: practice is carried out for 5 days 6 working</td></tr>
</table>

			hours provided for activities journal of clinical practice for which the student receives points. mentoring principle. Presence: 4 points Activity (skills): 6 points	
	17.2	Seminar paper/project (oral/written presentation)	min – max	
	17.3	Active participation	min – max Theoretical course 2 Practical course 28	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. In order to take the final exam, the student should obtain the minimum points in the continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.	
20.	Language of instruction		Macedonian	
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.	
22.	Textbooks			
	22.1.	Mandatory		
		1.	**Palliative medicine A casebased manual**	Neil MacDonald, Doreen Oneschuk, Neil Hagen- (2012 – Oxford University Press, third edition) 2012
		2.	**Goldman-Cecil Medicine, 25th Edition**	Lee Goldman MD (Author), Andrew I. Schafer MD 2015
		3.	**Harrison's Principles of Internal Medicine 19/E**	Anthony S. Fauci; Dan Longo; Dennis L. Kasper; J. Larry Jameson; Joseph Loscalzo; Stephen Hauser 2015 by McGraw-Hill Education 2015
	22.2.	Additional		

1.	Subject	**DERMATOVENEROLOGY**
2.	Code	MED-414
3.	Study Program	General Medicine
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, University Clinic of Dermatology
5.	Degree of education (first or second cycle)	Integrated 6-year study

<table>
<tr><td>6.</td><td>Study year/semester</td><td colspan="2">Forth (IV) / Seventh (VII)</td><td>7. Number of credits</td><td>5</td></tr>
<tr><td>8.</td><td>Responsible teacher</td><td colspan="4">Assoc. Prof. Suzana Nikolovska, PhD, MD</td></tr>
<tr><td>9.</td><td>Preconditions</td><td colspan="4">Fullfieled conditions of enrollement in VIIth semester</td></tr>
<tr><td>10.</td><td colspan="5">Teaching goals (competences) :
• The student will acquire knowledge about the basic concepts of structure, the function and morphological changes of the skin as well as diagnostic and therapeutic modalities in dermatovenereology
• The student will acquire knowledge about the most common and urgent dermatology diseases, as well as sexually transmitted infections
• The student will have the skills to recognize the most common and urgent conditions in dermatovenerology and create diagnostic and rational therapeutic protocol.
• The student will be aware of the importance of taking proper dermatovenerological history, communication and collaboration with the patient and his family
• The student will be aware of the importance of prevention and promotion in dermatovenereology</td></tr>
<tr><td>11.</td><td colspan="5">Brief content:

Theoretical course:
• Structure and function of the skin, morphology of skin lesions
• Treatment principals in dermatovenerology
• Infections and infestations, STI
• Emergency conditions in dermatology
• Inflammatory skin disorders
• Diseases of nail, hair and pigmentation
• Reactive skin diseases
• Skin signs of systemic diseases
• Drug reactions
• Neoplasms

Practical lessons:
Practicing the clinical skills and practical application of the acquired theoretical knowledge on real patients.</td></tr>
<tr><td>12.</td><td colspan="5">Methods of studying:
Interactive teaching during lectures, seminars and practical trainings, independent study by using textbooks, computer-assisted learning.</td></tr>
<tr><td>13.</td><td colspan="3">Total available time:</td><td colspan="2">150 classes</td></tr>
<tr><td>14.</td><td colspan="3">Organization of the course</td><td colspan="2">75 classes - theoretical course, practical course, seminars
75 classes - home individual learning</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1.</td><td>Theoretical course</td><td colspan="2">23 classes</td></tr>
<tr><td>15.2.</td><td>Practical course,
Seminars</td><td colspan="2">40 classes
12 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td colspan="2"></td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td colspan="2"></td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td colspan="2">75 classes</td></tr>
<tr><td>17.</td><td colspan="5">Method of assessment</td></tr>
</table>

	17.1	Tests	min – max Continual assessment points: 18 - 30 Two (2) **written tests** (MSQ) that cover all areas of dermatovenereology for which the curriculum is foreseen for formative assesment of knowledge. Each test should be scored in the range 9-15 to be considered passed. min – max

		Final exam	Oral exam* points: 21 - 35 Practical exam** points**:** 12 - 20 **Oral exam* (integrative) –** consists of 2 questions aimed to examine integrative knowledge that matters for understanding the whole of the subject and medical practice in dermatovenerology (for grade 10=33-35 points; for grade 9=30-32 points; for grade 8=27-29 points; for grade 7=24-26 points; for grade 6=21-23 points) **Practical exam** –** consists of 2 long cases (for grade 10=10 points; for grade 9=9 points; for grade 8=8 points; for grade 7=7 points; for grade 6=6 points) The student is obliged to score a minimum of predicted points for each part of the exam separately. Otherwise, the exam is considered unsuccessful. The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.
	17.2	Seminar paper/project (oral/written presentation)	min – max 1 - 5
	17.3	Active participation	min – max Theoretical course 1-2 Practical course 6 - 8

18.	Grading criteria (points / grade)	up to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	**Conditional criteria** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and seminars. In order to take the final exam, the student should obtain the minimum points in the two continual assessments (tests). If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Students' anonymous evaluation of the course as well as teachers and assistants.
22.	Textbooks	
	22.1.	Mandatory

		1.	Klaus Wolf, Richard Allen Johnson	Fitzpatrick's Color Atlas and Synopsis of Clinical Dermatology	Mc Graw Hill	2009
		2.	Ancevski A, Gocev G, Pavlova Lj, Petrova N	Dermatovenerology	Kultura Skopje	2005
	22.2.	Additional				
		1.	Sue Burg, Dinny Wallis	Oxford Handbook of Medical Dermatology	Oxford University Press	2011
		2.	Christopher Griffiths Jonathan Barker, Tania Bleiker, Robert Chalmers, Daniel Creamer	Rook's Text Book of Dermatology	John Wiley and Sons Ltd	2016
		3.				
		4.				

1.	**Subject**	**MEDICAL PSYCHOLOGY AND SOCIOLOGY**			
2.	**Code**	MED 114			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine University Clinic of Psychiatry, Skopje, Belgradska b.b. Department of Psychiatry and Medical Psychology,			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	first/first	7.	Number of credits	5
8.	**Responsible teacher**	Prof. dr. Marija Raleva			
9.	**Preconditions:**	none			
10.	**Teaching goals of the study program (competencies):** • To introduce students with the basics of Medical Psychology and Medical Sociology: (basic concepts, psychological processes , psychological factors in health and illness) • To enable the students to develop communication skills, establishing contact with the patient and the practical application of these skills • To provide skills and knowledge for applying biopsychosocial approach to diagnosis and treatment of patients • To provide skills and knowledge for exploring social determinants of health and the meaning of health and illness in the social context				

11.	**Contents of the study program**: Theoretical course: Psychological processes across the life span • Consciousness and sleep – levels of awareness • Senses and perception – the interpretation of sensory stimuli • Attention – selection of information, planning • Cognitive development – the changes in the capacities of the individual as a function of age and experience frombirth to adulthood • Cognitive aspects of ageing – the changes as a function of age and experience during later life • Socio-emotional relationship across the life span • Attachemnt • Learning – interaction with the environment, stable change in behaviour or understanding • Memory – the cognitive processes of encoding, storing and retrieving information as a function of age • Language and speech • Development and personality structure, theories of personality development • Psychological defense mechanisms and their function Psychological factors in health and illness • Biological basis of behavior (genes and behavior) • Mental health and mental illness • Psychological factors in health promotion and illness prevention • Psychological interventions – interventions to change behaviour, modify risk, and improve outcomes

	• Psychological processes in disease – pathways and mechanisms from psychological states to disease end points • Psychological aspects of pain Psychological responses to illness • Emotional, cognitive and behavioural responses to illness • Coping with illness – adjusting behaviour or thoughts to reduce effects of an acute or chronic illness • Psychological stress and trauma • Death, dying and bereavement • Burn out syndrome Psychological counseling Social determinants of health and illness: • Social norms, social biography, healthy lifestyles, self-care • Social structure, social inequalities, social stress and coping • Violence and health : ecological model, risk and protective factors • Social change and the meaning of gender, sexuality, suicide, mental illness, disability, death **Practical course**: Human communication and communication skills training • Meaning of communication • Interaction doctor-patient: compliance, health education and difficulties in communication • Leadership and teamwork • Social processes shaping professional behavior Psychological response to illness • Response of the patient to the illness • Response of an ill child • Patient with acute illness • Patient with chronic illness • Psychological profile of the personality of the patient .			
12.	**Methods of studying:** Interactive lectures, tutorials / workshops, seminars			
13.	**Total no. of hours:**		. . . hours 75	
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	38 hours
		15.2	Practicals (laboratory, clinical), seminars, team work	Practicals 28 hours Seminars: 10 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	. . . hours
17.	**Assessment of knowledge:** points			
	17.1	Tests	3 Continuous tests • Test 1 • Test 2	min.-max. total... points 22 – 40 points 22 – 40 points

		Final exam	min.-max.

			Oral exam	44-80 points
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	min.-max. 5-10 points
	17.3	Active participation	Theoretical course Practical course	min.-max. points 1-3 points 4-7

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To obtain a signature the student should regularly attend the theoretical as well as practical course and seminars. The continuous knowledge assessment is not obligatory, the student may directly attend the final exam. Passed first test is a precondition to attend the second exam . Students who have passed both tests are not attending the final exam. Student who haven't passed the first test or haven't attended the first test are obliged to attend the final exam. Assessment of the overall performance is obtained based on the sum of points from overall activities, including the tests or the final exam
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

Mandatory textbooks (22.1)

	Author	Title	Publisher	Year
1	Chadlovski G, Filipovska A, Belevska D.	Medical Psychology	Prosvetno Delo, Skopje	2004
2		Authorised lectures		
3		Practicum of exercises in Medical Psychology and Sociology	In preparation	
4	Branislav Sarkanjac & Stefan Kostovski	Sociology of Health and Illness	Faculty of Philosophy, Skopje	2010
5				
6				
7				

Additional literature (22.2)

	Author	Title	Publisher	Year

1.	Subject	**OCCUPATIONAL MEDICINE**

2.	Code	MED-526
3.	Study Program	General medicine

4.	Organizing Institution (Unit, Institute, Chair, Department)	UKIM-Faculty of Medicine Cathedra of Occupational Medicine
5.	Educational degree (first or second cycle)	Integrated cycle
6.	Study year/semester	Fifth (V) year / Tenth (X) semester
7.	Број на ЕКТС кредити	2
8.	Responsible teacher	Prof. Dr Jovanka Karadzinska Bislimovska, Head of Chair * the education process is performed by all members of the Cathedra
9.	Preconditions for starting the subject	Passed first part of the professional exam Completed criteria for VII semester
10.	Teaching goals of the study program (competencies): Adoption of the knowledge, skills, and basic principles in occupational medicine, principles, and practice of health and working environment	
11.	Contents of the study program: **Theoretical course**: • Physiology and psychology of work; • Ergonomics, Ecology of work and working environment's surveillance • Physical hazards in working environment and health's effects; • Chemical hazards in working environment and health's effects; • Psychosocial factors at work and health's effects; • Biological hazards in working environment and health's effects • Occupational diseases, work-related diseases and impairments of selected organs and systems • Preventive measures, Preventive strategy **Practical course:** • Microclimate in working environment; workplace analysis; • Noise in working environment and hearing assessment; • Ionizing radiation, personal dosimeters, safety measures; • Lighting in working environment and sight assessment; • Air pollution in working environment; • Functional capacity assessment: cardio-respiratory system, anthropometry; • Preventive medical examinations**;** • Occupational diseases (case reports) • Work-related-diseases (case reports) • Pneumoconiosis and RTG classification-interpretation; • Methods and procedures in work ability assessment-practical work; • Specific occupational risks in exposed workers in different sectors and industries • Workers' Preparedness and Response to disasters • Analysis of research data and scientific publications in the field of occupational medicine	

12.	Methods of learning: Lectures with interactive approach; Practical work, Seminars, Poster preparation and presentation	
13.	Total available amount of learning hours	60 hours
14.	Distribution of the available learning time	45 hours lectures, practical work, seminars, project tasks
		15 hours home learning

15.	Types of educational activities	15.1.	Lectures-theoretical course	24 hours
		15.2.	Practical work (laboratory, clinical), seminars	Practical work: 16 hours Seminars: 2 hours
16.	Other types of activities	16.1.	Project tasks	3 hours
		16.2.	Individual tasks	
		16.3.	Home learning	15 hours

17.	Types of knowledge assessment		
	17.1	Tests	min.-max. Continuous tests Continuous testing of knowledge (colloquium) 1 written test points 15-25 Physiology and psychology of work, Ergonomics, Workplace risk assessment and ecological monitoring, Occupational diseases, work-related diseases and injuries at work, Physical factors of working environment **Final exam** min. - max. **Written exam*** points 12-20 **Oral exam**** points 18-30 * Written exam - Chemical factors of working environment and health's effects, occupational toxicology, metals, gases, pesticides, organic compounds ** Oral exam (integrative) including physical, chemical, biological, and psychosocial workplace hazards, occupational diseases, and impairments of selected organs and systems, preventive measures The student is obliged to have a minimum of predicted points for each part of the exam in particular, in order to enable them to be inscribed as points for the final exam. Otherwise, the exam is considered unsuccessful.

	17.2	Seminar work/project (presentation: written/oral)	min. - max. Project activity (part of practical work) points 2-5
	17.3	Active participation	min. - max. Theoretical course * 2-5 Practical course ** 12-20

			* Attendance at theoretical lectures 51%-60% 2 points 61%-70% 3 points 71%-85% 4 points 86%- 100% 5 points ** Practical course (4 exercises with duration of 4 hours each - each exercise with 2 points) Attendance at practical course - exercises: 6-8 points Active participation in exercices: 4-7 points The student can be absent just once (one exercise).

18.	Knowledge assessment criteria: (points/grade)	up to59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	Conditional criteria: In order to obtain a signature, the student is required to attend theoretical, practical courses and seminars and to score minimum points. The student can take the final exam if he/she has passed the continuous tests with minimum points; Additionally, he/she has to pass the continuous assessments, and then can take the complete final exam. The grade for the subject is formed according to the rating table, based on the sum of the points from all the activities, the continuous testing and the final exam.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	
	22.1.	Mandatory textbooks

		1.	Bislimovska Karadzinska J, Minov J, Risteska-Kuc S, Mijakoski D, Stoleski S.	Occupational Medicine	University "Sts. Cyril and Methodius", Skopje	2011
		2.	Stikova E.	Occupational Medicine	Faculty of Medicine, Skopje	2012
		3.	William N Rom; Steven	Environmental and occupational medicine	Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia, USA	2007

			Markowitz; Book		UCLA University, Columbia University	
	22.2.	Additional literature				
		1.	Robert B. Wallace ed, MaxeyRosenauLast	Public Health and Preventive Medicine	OEM Press Publication, Denver-New Orleans, USA	2008
		2.	Robert J. Gatchel, Izabela Z. Schultz	Handbook of Occupational Health and Wellness	Imprint: Springer, Harvard University, Boston,USA	2012

1.	**Subject**	**MEDICAL ETHICS AND DEONTOLOGY**			
2.	**Code**	MED-126			
3.	**StudyProgram**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Institute of forensic medicine, criminalistics and medical deontology Cathedra (Chair) of Medical deontology			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Studyyear/semester**	First/ II	7.	Number of credits	2
8.	**Responsible teacher**	Head teacher Prof. d-r. Zdravko Chakar *the teaching is performed by all professors of the Chair of medical deontology			
9.	**Preconditions:**	/			

10.	**Teaching goals of the study program (competencies):** • adoption of the historical basis for the development of medical ethics and deontology • adoption of the most important elements of medical ethics • adoption of the rights, in particular the duties of health workers in terms of patients and their relatives and other representatives • introduction to proper treatment in their daily practice trough examples • interactive learning, debate and seminar papers as tools for easier adoption of matter and free thinking on certain ethical issues
11.	**Contents of the study program:** **Theoretical course:** • Introduction to the general principles of ethics as a philosophical science • Introduction to ethical principles in different historical eras • Introduction to bioethics • Known philosophical teachings and philosophers that interface with medical ethics • General principles of medical ethics • Respect and equal treatment • Communication and consent (informed consent) • Presumed consent • Decisions on behalf of patients who are unable to individually give consent, the notion of representation, participation of such patients to the moment of their end capabilities of understanding

	• Medical secret • Beginning of life, ethical problems in biological assisted fertilization (BAF) • End of life, ethical problems of euthanasia • Ethical tenets of behavior among health workers • Ethical tenets of behavior among health workers and patients • Ethical tenets of behavior among health workers and relatives of patients • Transplant and ethical dilemmas, especially in situations of possible cadaveric transplants • Medical error and ethical problems • Codes of medical ethics and deontology • Most important conventions and declarations, particularly after 1948 that basically have the Universal Declaration of Human Rights by the UN **Seminar papers:** Students themselves choose matter in the field of medical ethics and deontology.			
12.	**Methods of studying:** Interactive teaching, debate and seminar papers			
13.	**Totalno. ofhours:**		60 hours	
14.	**Distribution of the available time**		30 hours lectures-theoretical course 30 hours home studying	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	30 hours
		15.2	Practicals (laboratory, clinical), seminars, team work	/
16.	**Other types of activities**	16.1	Project assignments	/
		16.2	Individual tasks	/
		16.3	Home studying	30 hours
17.	**Assessment of knowledge:** points			
	17.1	Tests	Periodic evaluation min. 24 – max. 40 .	

		Final exam	Written exam min. 24 – max. 40
	17.2	Seminar work/project (presentation: written and oral)	Seminar works min. 6 – max. 10
	17.3	Active participation	*Theoretical course points min. 6 – max. 10 *Presence on theoretical course 51-60% - 6 points 61-70% - 7 points 71-80% - 8 points 81-90% - 9 points 91-100% - 10 points

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To get a signature, the student should attend theoretical classes and seminars and gain a minimum score. In order to access the final exam student should pass the predicted continuous check or to win at least 30% of the total number of points on the preliminary exam. In the exam session, the student should first pass the preliminary exam and then approach the final exam. The final grade is formed according to the table of grades based on the sum of points from all activities, continuous checks, preliminary exam and final exam.
20.	Language of the course	English
21.	Method for evaluation of the quality ofeducation	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

Mandatory text books

		Author	Title	Publisher	Year
22.1	1	Wendy A Rogers Annette Braunack - Mayer	Practical Ethics for General Practice	Oxford University Press	2009

		2	Prof. d-r. Karposh Boshkoski	Medical ethics and deontology	OZ Dizajn, Skopje	2007
		3		Manual of ethics for medical doctors SLA, translation	Macedonian Medical Association, Skopje	2005
	22.2	Additional literature				
			Author	Title	Publisher	Year
		1	Prof. d-r. Zdravko Chakar	Collection of Declarations, Conventions, Codes and laws		

1.	Subject	**NEUROLOGY**		
2.	Code	MED 111		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Clinic of Neurology		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Forth (IV)/VII	7.Number of credits	9
8.	**Responsible teacher**	Prof. Dijana Nikodijevic, PhD, MD		
9.	Preconditions	Fullfilled condition for VII semester		
10.	• Teaching goals:			

	• Introduction to neurological symptoms and signs • Introduction to neurological diseases • Introduction to diagnostic methods and procedures used for the diagnosis of neurological diseases • Introduction to management of neurological diseases • Introduction in pharmacological and non-pharmacological treatment of neurological diseases • The student to learn and master skills in the frame of rational diagnosis and contemporary treatment based on etiology and pathogenesis of the diseases and postulates of clinical pharmacology • The student to be able to rationally clinically judge and treat disease of the nervous system • Contemporary clinical judgement will be based according to the rational diagnosis, especially neurologic examination, and later on the special investigations (laboratory, neurophysiologic, morphologic) • Contemporary rational treatment will be based on the latest therapeutic knowledge and evidence based medicine

11.	Brief content: **Theoretical course:** • Diagnostic methods for determining disturbances and diseases of the central and peripheral nervous system • Etiology and pathogenesis and clinical manifestations of the disturbances and diseases of the central and peripheral nervous system • Therapy for the disturbances and diseases of the central and peripheral nervous system **Practical lessons:** • Recognition of neurological symtoms and neurological signs • Topographic localization of the neurological symptoms and signs • Learning clinical skills • practical application of the acquired theoretical knowledge				
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, visual studying of neurological signs and neurological diseases, practical exercises on patients with neurological diseases with neurological symptoms and signs, computerassisted learning.				
13.	Total available time:			270 classes	
14.	Organization of the course			90 classes - theoretical course, practical course, seminars 180 classes - home individual learning	
15.	Forms of teaching activities		15.1.	Theoretical course	30 classes
			15.2.	Practical course, Seminars	60 classes
16.	Other forms of activities		16.1.	Practice	
			16.2.	Individual tasks	
			16.3.	Individual (home) learning	180 classes
17.	Method of assessment				
	17.1	Tests			min – max
				Continual assessment – test	15-25
				Final exam: final test + practical examination +oral examination 4. Final test: 15-25 points 5. Practical examination 20-30 points 6. Oral examination: integrative knowledge of the whole material learnt in Neurology 20-45 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	
	17.2	Seminar paper/project (oral/written presentation)			min – max 1 - 2
	17.3	Active participation			min – max
				Theoretical course	1-2
				Practical course	4 - 6
				Completed textbook	mandatory
18.	Grading criteria (points / grade)			up to 59 points	5 (five) F
				from 60 to 68 points	6 (six) E
				from 69 to 76 points	7 (seven) D
				from 77 to 84 points	8 (eight) C
				from 85 to 92 points	9 (nine) B
				from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the test during continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.			
20.	Language of instruction		English			
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.			
22.	Textbooks					
	22.1.	Mandatory				
		1.	Principles of neurology	Adams and Victor's	Allan H. Ropper, Martin A. Samuels, Joshua Klein	2014
	22.2.	Additional				
		1.	Clinical Neurology	Roger S, Aminof M, Gringerb D	Mc Graw-Hill Companies Inc.	2009
		2.	Neurology in clinical practice	Walter Bradley, Robert Daroff Gerald Fenichel C. David Marsden	Butterworth-Heinemann	1996

1.	**Subject**	**MICROBIOLOGY AND PARASITOLOGY 1**
2.	**Code**	MED-224
3.	**Study Program**	General Medicine
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of Microbiology and Parasitology
5.	**Educational degree (first or second cycle)**	Integrated cycle

6.	**Study year/semester**	II year / IV semester	4	Number of EKTS credits	4
8.	**Responsible teacher**	Head of department/cathedra Prof. Dr. Zaklina Cekovska Teaching is conducted by following members of the Cathedra of Microbiology and Parasitology			
9.	**Preconditions:**	Completed course in Medical Microbiology 1			

10.	**Teaching goals of the study program (competencies):** **Course objectives (competencies):** **This course program aims to enable students:** • To gain knowledge about different types of micro-organisms; to study their morphology and physiology; • Get to know the prevalence of microorganisms in different ecosystems and their mutual associations, including the normal microflora of the host; • To study the genetics of bacteria; • To gain insights into the factors of virulence of microorganisms and to widen the understanding of the pathogenesis of infections they cause; • To be able to successfully and accurately setting microbiological diagnosis of various infectious conditions; • To explore susceptibility testing methotds of the causative pathogens, which also represents a prerequisite for successful therapy (extremely important in their further medical practice).			
11.	**Content of the study program:** **Theoretical course:** • Introduction to Microbiology; • Morphology and structure of microorganism; • Physiology of the microorganisms; • Genetics of microorganisms; • Effect of physical and chemical agents on microorganisms; • Distribution of microorganisms and their interactions; • Pathogenicity of microorganisms and pathogenesis of infections; • Selected host of pathogens; • Basic principles of microbiological diagnosis **Practical classes:** • Purpose and method of operation of microbiological laboratories; • Microscopic examination of micro-organisms; • Isolation and cultivation of microorganisms; • Examination of the biochemical activity of micro-organisms; • Sterilization and disinfection; • Application of serological reactions in laboratory diagnostics; • Techniques to investigate the antimicrobial effect; • Proper sampling, transporting and processing of samples for microbiological examination;			
12.	**Methods of studying:** **Interactive teaching, practical course, seminars**			
13.	**Total number of hours:**		120 hours	
14.	**Distribution of available time:**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	30 hours teaching
		15.2	Practical (laboratory, clinical), seminars, team work	30 hours practical course/seminars
		16.1	Home study	60 hours

17.	**Assessment of knowledge:**	**points**

	17.1	Tests	min. - max 1. Continuous tests ✦ Selected parts from theoretical microbiology points 12 - 20 2. Continuous test from first practical part (first half) plus theoretical second part points 18 - 30
		Final exam	min.- max. Oral part points 21 - 34
	17.2	Seminar work/project (presentation: written and oral)	min. – max. Seminar work points 0 - 3
	17.3	Active participation	min.- max. Theoretical course points 1 - 3 Practical course points 8– 10 Attendance at theoretical course 51% - 60% = 1 point 61% - 91% = 2 points 91% - 100% = 3 points Practical course (24 practical course of 3 hours)

18.	**Knowledge assessment criteria:** (points/grade)	to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	**Criteria for obtaining a signature and taking the final exam**	**Conditional criteria for assessment of knowledge**: **Knowledge assessment criteria:** 1. Students need 70% from a total points (from presence of theoretical and practice work) should receive approval for their attendance (sign document). 2. In order to take the final exam, the student has to win a minimum of 60% of the two continual assessment tests. 3. The minimum passing score for the final examination is 60% out of the total points.
20.	**Language of the course**	English
21.	**Method for evaluation of the quality of education**	Anonymous evaluation by students on the subject, teaching staff, and associates participating in the teaching.

22. Literature:

Mandatory literature

	No.	Author	Title	Publisher	Year
22.1	1	Jawetz E, Melnik Il, Adelberg EA. _____ Grinvud D.	Medical Microbiology _____ Medical Microbiology		21 th ed., 2004 _____ 17-тh edition, 2006
	2	Nikola Panovski and ass.	General Microbiology	University “Ss. Cyril and Methodius” Medical faculty	2011

		3	Milena Petrovska and ass.	Practical Microbiology	University "Ss. Cyril and Methodius" Medical faculty	5 th ed., 2010

1.	**Subject**	**MICROBIOLOGY AND PARASITOLOGY 2**			
2.	**Code**	MED-312			
3.	**Study Program**	General Medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of Microbiology and Parasitology			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year/semester**	III year / V semester	5.	Number of EKTS credits	4
8.	**Responsible teacher**	Head of department/cathedra Prof. Dr. Zaklina Cekovska Teaching is conducted by following members of the Cathedra of Microbiology and Parasitology			
9.	**Preconditions:**	Completed course in Medical Microbiology 2			

10. **Course objectives (competencies):**
The objectives of the course enables students to acquire:

• More specific knowledge of medical important bacteria;
• Solid knowledge of important medical viruses;
• The necessary knowledge about medical important fungi;
• More specific knowledge specific knowledge of medical important parasites.

11. **Course content:**

Theory:

Medical bacteriology

- Classification of medical important bacteria
- Gram positive cocci• Gram negative cocci
- Gram-positive bacilli • Gram negative bacilli
- Intracellular bacteria
- Spiral bacteria

Medical virology

- Classification and nomenclature of viruses
- RNA viruses
- DNA viruses

Medical mycology

- Triggers superficial mycoses
- Triggers systemic mycoses

Medical Parasitology

- Medical significant protozoa
- Medical significant helminths

Intra-hospital infections

Diagnosis of microbial infections in different systems

Practical classes:

- Microbiological diagnosis of infections caused by pyogenic cocci;
- Microbiological diagnosis of infections involving the respiratory tract;
- Microbiological diagnosis of infections involving the urogenital tract;
- Microbiological diagnosis of infections involving the gastrointestinal tract;
- Microbiological diagnosis of infections involving the central nervous system;
- Microbiological diagnosis of intra-hospital infections;
- Microbiological diagnosis of anaerobic infections;
- Laboratory diagnosis of infections caused by fungi, protozoa and helminthes.

12.	**Methods of studying:** **Interactive teaching, practical course, seminars**			
13.	**Total number of hours:**		150 hours	
14.	**Distribution of available time:**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	45 hours teaching
		15.2	Practical (laboratory, clinical), seminars, team work	45 hours practical course/seminars
		16.1	Home study	60 hours

17.	**Assessment of knowledge:**			**points**
	17.1	Tests	1. Continuous tests ✦ Selected parts from theoretical microbiology	min. - max points 12 - 20
			2. Continuous test from first practical part (first half) plus theoretical second part	points 21 -35
		Final exam	Oral part	min.- max. points 18 - 29
	17.2	Seminar work/project (presentation: written and oral)	Seminar work	min. – max. points 0 - 3
	17.3	Active participation	Theoretical course Practical course Attendance at theoretical course 51% - 60% = 1 point 61% - 91% = 2 points 91% - 100% = 3 points Practical course (24 practical course of 3 hours)	min.- max. points 1 - 3 points 8– 10

18.	**Knowledge assessment criteria:** (points/grade)	to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	**Criteria for obtaining a signature and taking the final exam**	**Conditional criteria for assessment of knowledge**: **Knowledge assessment criteria:** 4. Students need 70% from a total points (from presence of theoretical and practice work) should receive approval for their attendance (sign document). 5. In order to take the final exam, the student has to win a minimum of 60% of the two continual assessment tests. 6. The minimum passing score for the final examination is 60% out of the total points.
20.	**Language of the course**	English
21.	**Method for evaluation of the quality of education**	Anonymous evaluation by students on the subject, teaching staff, and associates participating in the teaching.
22.	Literature:	

22.1 Mandatory literature

No.	Author	Title	Publisher	Year
1	Jawetz E, Melnik Il, Adelberg EA. _____ Grinvud D.	Medical Micioborlogy _____ Medical Microbiology		21 th ed., 2004 _____ 17-rh edition, 2006
2	Nikola Panovski and ass.	Special Microbiology	University "Ss. Cyril and Methodius" Medical faculty	2011
3	Milena Petrovska and ass.	Practical Microbiology	University "Ss. Cyril and Methodius" Medical faculty	5 th ed., 2010

1.	**Subject**	**BIOSTATISTICS WITH MEDICAL INFORMATICS**			
2.	**Code**	MED-215			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of epidemiology and biostatistics with medical informatics.			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year/semester**	II year / III semester	7.	Number of EKTS credits	3
8.	**Responsible teacher**	Head of department/cathedra Prof. Dr. Vesna Velic Stefanovska Teaching is conducted by following members of cathedra of epidemiology and biostatistics with medical informatics: Prof. Dr. Dragan Danilovski Prof. Dr. Kristin Vasilevska Prof. Dr. Biljana Tausanova Prof. Dr. Vesna Velic Stefanovska Prof. Dr. Rozalinda Isjanovska			

		Prof. Dr. Beti Zafirova Ivanovska Senior Research assistant prof. Dr. Irina Pavlovska
9.	**Preconditions for taking the subject**	None

10.	**Teaching goals of the Aims of study program (competencies):** 1. Acquiring knowledge of the basics of medical statistics, terminology, measuring units. 2. Acquiring theoretical and practical knowledge of analyses of statistical series through implementation of appropriate statistical methods. 3. Acquiring theoretical and practical knowledge of demographic and vital statistics and implementation of acquired knowledge in practice. 4. Acquiring theoretical and practical knowledge of the basis, concepts and application of medical informatics.			
11.	**Content of the study program:** **Theoretical course:** • Descriptive analysis (plan of statistical research, methods of collection, grouping and presentation of data; use of relative numbers; analyses of structure of statistical mass according to numerical characteristics; method of sampling) • Distribution of frequency and probability (estimation of parameters of samples; standard error of mean and proportion • Hypothesis (t – test) • Analysis of variance • Pearson X^2 - test • Regression analysis and linear correlation • Measures of correlation based on ranked data • Non parameter tests – dependant samples • Research of dynamics of occurrences • Analyses of survival time • Demographic statistics • Vital statistics • Medical informatics **Practical course:** • Relations, proportions, rates, indexes, • Index of dynamics • Modus and median • Assessment of parameters of a sample • Student t-test • X^2 - test • Correlation • Assessment of proportions of the total statistical mass based on a sample • Linear trend of time series • Season index • Practical application of terms of demographic and vital statistics • Medical informatics			
12.	**Methods of studying:** **Interactive teaching, practical course, seminars**			
13.	**Total number of hours:**			90 hours Credits 3 x 30 hours for 1 credit = 90 90 – 45 hour teaching, practical course and seminars = 45 hours home study
14.	**Distribution of available time:**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	18 hours of teaching

		15.2	Practical (laboratory, clinical), seminars, team work	27 hours practical/seminars
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	45 hours

17.	**Assessment of knowledge:**				**points**
	17.1	Tests			min. - max.
			Continuous tests	points	18 - 30
			Continuous tests of knowledge (mid-term) consists of 2 written tests Continuous tests relate to: ✦ Problems from selected parts (index of dynamics; arithmetic mean, standard deviation and variation coefficient; modus and median; assessment of parameters of sample) ✦ Problems from selected parts (student t-test; X^2- test; correlation; linear trend of time series; season index) One mid-term test carries 9 – 15 points		
		Final exam			min.-max.
			Oral exam	points	36 - 52
	17.2	Seminar work/project (presentation: written and oral)			min. – max.
			Seminar work	points	0 - 3
	17.3	Active participation			min.- max.
			Theoretical course	points	1 - 5
			Practical course	points	5 – 10
			Attendance at theoretical course 51% - 60% = 1 point 61% - 91% = 2 points 91% - 100% = 3 points Practical course (24 practical course of 3 hours)		

18.	**Knowledge assessment criteria:** (points/grade)	to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	**Criteria for obtaining a signature and taking the final exam**	Conditional criteria for assessment of knowledge: To obtain a signature, the student needs to acquire minimum points from attendance at seminars, theoretical and practical courses. To take the final exam, the student must pass the continuous tests or acquire a minimum of 30% of total number of points in the continuous tests, whereas during the exams session the student shall take the previously failed continuous tests, and then shall take the final exam. The assessment of the subject is established according to the

		table of marks, based on the sum of points from all activities,

			continuous tests and final exam.			
20.	**Language of the course**		Macedonian			
21.	**Method for evaluation of the quality of education**		Anonymous evaluation by students on the subject, teaching staff, and associates participating in the teaching.			
22.	**Literature**					
	22.1	Mandatory textbooks				
		No.	Author	Title	Publisher	Year
		1	James F. Jeckel, David L. Kac, Joan J. Elmor, Dorothea M. J. Wild	Epidemiology, biostatistics and preventive medicine	Tabernakul	2010
		2	Danilovski D., Orovcanec N., Vasilevska K., Taushanova B., Velic Stefanovska V., Isjanovska R., Zafirova Ivanovska B., Zdravkovska M., Pavlovska I.;	Practical teaching in Biostatistics	University "Ss. Cyril and Methodius" Medical faculty	2012
		3	Danilovski D., Orovcanec N., Vasilevska K., Taushanova B., Velic Stefanovska V., Isjanovska R., Zafirova Ivanovska B., Zdravkovska M., Pavlovska I.;	Biostatistics	University "Ss. Cyril and Methodius" Medical faculty	2012

1.	**Subject**	**EPIDEMIOLOGY**			
2.	**Code**	MED-322			
3.	**Study Program**	General Medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of epidemiology and biostatistics with medical informatics			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year/semester**	III year / VI semester	7.	Number of EKTS credits	5

8.	**Responsible teacher**	Head of department/cathedra Prof. Dr. Vesna Velic Stefanovska Teaching is conducted by following members of the Cathedra of epidemiology and biostatistics with medical informatics: Prof. Dr. Dragan Danilovski Prof. Dr. Kristin Vasilevska Prof. Dr. Biljana Tausanova Prof. Dr. Vesna Velic Stefanovska Prof. Dr. Rozalinda Isjanovska Prof. Dr. Beti Zafirova Ivanovska Senior Research assistant prof. Dr. Irina Pavlovska
9.	**Preconditions:**	First part of professional exam passed

		Exam of Biostatistics with medical informatics passed (III semester)
10.	**Teaching goals of the study program (competencies):** • Acquiring of theoretical and practical knowledge from the area of epidemiology which would enable recognition and resolution of epidemiological problems and challenges as well as their prevention. • Acquiring of skills which will use mortality and morbidity indicators to analyze conditions with specific diseases or groups of diseases, including the ethyology factors for their occurrence. • Recognition of the role and meaning of the levels of prevention and their application in practice. • Acquiring knowledge of the epidemiological methods and their implementation in the scientific research. • Acquiring of knowledge of epidemiology of infectious and noninfectious diseases and conditions.	

11.	**Content of the study program:** **Theoretical course:** • Basis of epidemiology – introduction, goals, history, contemporary epidemiology; • Epidemiology methods • Indicators of diseases, deterioration of health, and death rate; • Epidemiological process and epidemiological models • Occurrence of infection, and infectious diseases • Measures of prevention and eradication of diseases • Epidemiological oversight • Immunization, seroprophylaxis, and immunoprophylaxis • Elimination and eradication of infectious diseases • Desinfection, desinsection and deratisation • Health education • Intrahospital infections • Epidemiological doctrine of military conflict and state of emergency • Epidemiological characteristics of intestinal, respiratory, contact, and transmissive infectious diseases • Epidemiological characteristics of zoonosis and helmintosis • Epidemiological characteristics of chronic noninfectious diseases and health deterioration. **Practical Course:** • Application of epidemiological methods in practice • Processing of samples from various types of epidemics – resolving of an invented case of epidemics • Acquainting with books of rules, and laws from the area of epidemiology • Mastering the acquired theoretical knowledge				
12.	**Methods of studying:** **Interactive teaching, practical course, seminars**				
13.	**Total number of hours:**			150 hours Credits 5 x 30 hours for 1 credit = 150 150 – 75 hours teaching, practical course and seminars = 75 home study	
14.	**Distribution of available time:**				
15.	**Type of educational activity**	15.1	Lectures-theoretical course	40 hours teaching	
		15.2	Practical (laboratory, clinical), seminars, team work	35 hours practical course/seminars	
		16.1	Home study	75 hours	
17.	**Assessment of knowledge:**				**points**
	17.1	Tests		Continuous tests points	min. - max 18 - 30
				Continuous tests of knowledge (mid-term) consists of 2 written tests Continuous tests relate to: ✦ Selected parts from general epidemiology ✦ Selected parts from special epidemiology One mid-term test carries 9 – 15 points	
		Final exam		мин.-макс. Oral part points	36 - 52

	17.2	Seminar work/project (presentation: written and oral)	Seminar work	points	min. – max. 0 - 5
	17.3	Active participation	Theoretical course Practical course Attendance at theoretical course 51% - 60% = 1 point 61% - 91% = 2 points 91% - 100% = 3 points Practical course (24 practical course of 3 hours)	points points	min.- max. 1 - 3 5 – 10

18.	**Knowledge assessment criteria:** (points/grade)	to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	**Criteria for obtaining a signature and taking the final exam**	**Conditional criteria for assessment of knowledge**: To obtain a signature, the student needs to acquire minimum points from attendance at seminars, theoretical and practical courses. To take the final exam, the student must pass the continuous tests or acquire a minimum of 30% of total number of points in the continuous tests, whereas during the exams session the student shall take the previously failed continuous tests, and then shall take the final exam. The assessment of the subject is established according to the table of marks, based on the sum of points from all activities, continuous tests and final exam.
20.	**Language of the course**	Macedonian
21.	**Method for evaluation of the quality of education**	Anonymous evaluation by students on the subject, teaching staff, and associates participating in the teaching.

22. Literature:

22.1 Mandatory literature

No.	Author	Title	Publisher	Year
1	James F. Jeckel, David L. Kac, Joan J. Elmor, Dorothea M. J. Wild	Epidemiology, biostatistics and preventive medicine	Tabernakul	2010
2	Danilovski D., Orovcanec N., Vasilevska K., Taushanova B., Velic Stefanovska V., Isjanovska R., Zafirova Ivanovska B., Zdravkovska M., Pavlovska I.;	General Epidemiology	University “Ss. Cyril and Methodius” Medical faculty	2007

		3	Danilovski D., Orovcanec N., Vasilevska K., Taushanova B., Velic Stefanovska V., Isjanovska R., Zafirova Ivanovska B., Zdravkovska M., Pavlovska I.;	Special Epidemiology	University "Ss. Cyril and Methodius" Medical faculty	2009

Subject:	**ANAESTHESIOLOGY WITH REANIMATION**
Study Program:	General Medicine
Code:	MED 513
Academic Year:	Fifth (V)
Semester:	Ninth (IX)
Total no. of hours:	60
Credits:	2
Type of the Subject:	Mandatory
Preconditions:	Fulfilled condition for the VII semester
Conducted by:	Department of Anaesthesiology with reanimation
Responsible teacher:	Prof. Mirjana Shosholcheva, PhD, MD
Address:	KARIL, Vodnjanska 17, Skopje e-mail: sosolceva@hotmail.com
Key words:	General medicine studies, mandatory subject, Anaesthesiology with reanimation
Aims of the study:	The student has to acquire: • Basic knowledge of anaestesiology (types of anaesthesy and the impact the anaesthetics have on the human body, anaesthesiology check-up, anaesthesy preparation, peroral monitoring and peroral administration of patient with anaesthesy, general and local anaesthetics, opiates, muscle reluctant, post anaesthesiology healing, types of anaesthesiology complications and their salvation) • Resuscitation as science and its practical appliance in the doctors practice, (elements of basic and progressive keeping in life and ways of manipulation at resuscitation, resuscitation at accidental conditions (electric shock, anaphilaxa, drowning, trauma etc.)) • Basis of intensive care (urgent procedures at unconsciousness patients, acute respiratory weakness, electrolyte misbalance, and clinical manifestation of the different types of shocks and their therapy) • Basic knowledge of healing acute chronic pain To be capable of: • Reanimation, basic and progressive • Oxigenotherapy • Resuscitation of the circulation volume • Artificial alimentation • Transport of critical patient
	Theoretical course: 20 hours Anesthesiology: • Introduction to the subject • Pre-Anesthesiology checkup of patient for Anesthesia/operation • Types of anesthesia, medications in anesthesia • Surveillance and monitoring of patient (basic and progressive) • Patients care in post-operation period

Brief content:

Reanimation:

- SBMO, cardiopulmonary reanimation (SBO)-ABC, basic keeping in life, DEF, medicaments treatment of KA, (EKG manifestations at KAdefibrilation)
- Reanimation of accidental conditions: drowning, deathly electric strike. Cerebral death, Artificial ventilation
- Definition and types of shock-clinics and therapy
- Pre-hospital treatment with infusion, plasma, blood and blood derivates transfusion, (bleeding and water-salted disbalance at adults and children)
- First reanimation, at consciousness patient with unknown nature, reanimation of acute respiratory weakness, acute neuromuscular weakness, status epilepticus, status asthmaticus; **Practical course: 18 hours**
- Anaesthesiology check-up (classification according to ASA);
- Anaesthesiology apparatus practice-surgery
- Regional anesthesia-practice
- Phantom practice-artificial respiration, heart massage
- Medicaments application, practice (im, iv and infusion therapy)
- Practice in intensive care unit-critical patient, reanimation of patient with shock, patient intubing-practice on a model
- Practical use of defibrillator
- Blood transfusion

Organization:

Theoretical course: 20 hours
Seminars: 2 hours
Practical course:18 hours
Home learning 20 hours

Methods of studying:

Interactive teaching, seminars, practical trainings

Anticipated results:

Knowledge and understanding: The student will acquire knowledge on types of anesthesia, medications in anesthesia, per-oral monitoring, postanesthesia period care, types of shock and therapy, reanimation
Key skills: The student will be able to apply modern therapy in treatment of acute and chronic pain, basic pre-operation treatment and preparation of patient before anesthesia, infiltrative anesthesia, resuscitation protocols for OOZ and NOZ application, reanimation and urgent procedures for hosting critical patients, polytraumatic and other patients in urgent condition.

Specific recommendations for the course:

The student is obliged to participate actively in all anticipated activities including continuous assessment in order to gain a signature.

Points for the activities of the student:

Type of activity	Points	
	Min.	**Max.**
Theoretical course*	1	5
Seminars	2	4
Practical course**	12	16
Continual assessment (one)	21	35
Final exam-oral	24	40
Total:	**60**	**100**

*theoretical course presence:
51%-60% - 1 points;
61%-70% - 2 points;
71%-80% - 3 points;
81%-90% - 4 points; 91%-100%
- 5 points.
**practical course (4 groups of practical training lasting for 4 hours)
Presence: 2 points
The grade for the whole exam is obtained by counting the points obtained from all the anticipated activities (lectures, practice, seminars, colloquies, final exams)

	Continual assessment of knowledge colloquies – 1 written test
Assessment of knowledge	**1.** Anaesthesiology, reanimation patient's shock and therapy 21-35 points **Final exam: practical + oral examination** **1. Practical examination:** (according to skills catalogue) + integrative oral part – the integrative knowledge necessary to understand the core of the subject is examined 24-40 points (for 10=38-40 points, for 9=35-37 points, for 8=31-34 points, for 7=28-30 points for 6=24-27 points) The student has to gain minimum 49% of the anticipated points for each part of the exam in order to obtain the points for the final exam. On the contrary, the exam is considered not passed. **Complete final exam:** is a combination of the failed colloquies and final exam. The student is obliged to pass the failed colloquies first, and then to pass the final exam. In case student does not pass the failed exam, he does not have right to take the final exam.
Textbooks:	• Edvard Morgan, Madzid Mikail, Majkl Marej Clinical Anesthesiology, Magor, Proect of the Government of R.M. (translated books) 2011 • Marija Soljakova and coauthors Anesthesiology and reanimation, Biographica 2007 • Mirjana Shosholcheva, Neuromuscular block, Medical faculty, UKIM, 2012 • Mirjana Shosholcheva, Physic for anesthesiologists, Medical Faculty, UKIM, 2014 • Zorka – Nikolova Todorova, Biljana Kuzmanovska, Albert leshi Mechanical ventilation, Prosvetno delo, 2011 • Biljana Shirgovska, Hypotensive anesthesia, Medical faculty, 201 • Andonov V., - Heart and pulmonary reanimation

bio

1.	Title of the subject	**PEDIATRICS-CLINICAL PRACTICE**			
2.	Code	MED- 613			
3.	Study program	General Medicine			
4.	Organizer of the study program (unit, institute, division, department)	Ss. Cyril and Methodius University of Skopje-Medical faculty Division of General Pediatrics			
5.	Level of education (first or second cycle)	Integrated cycle			
6.	Academic year/semester	sixth(XI or XII semester)	7.	Number of EKTS credit points	6
8.	Teacher	Chairman of the Pediatrics Division Prof. Dr. Kata Martinova *The classes are conducted by all the members of the Pediatrics division			

9.	Enrollment requirements	Credit points gained(passed exam) in Pediatrics

10.	**Objectives of the program :** **Familiarization with the diagnostic and therapeutic procedures in the field of clinical pediatrics**

11.	**Contents of the program :** 1. Admission of a sick child in the hospital 2. Particularities in the taking of the patient's medical history according to the department 3. Particularities of the physical exam according to the department : • Hematology • Oncology • Cardiology • Endocrinology • Pulmology • Immunology • Gastroenterology • Neurology • Metabolism • Neonatology • Nephrology • Intensive care 4. Creating of algorithms for diagnostic procedures, work diagnosis and therapy plan in various clinical cases 5. Participation in the clinical work at the department • urine analyses • complete blood count and blood smear • pre-transfuzion testing with a legal documentation • insertion of a urine catheter • ECG (technique and analyses) • cardio-pulmonay resuscitation • interpretation of a chest x-ray • injections (subcutaneus, intramuscular, intravenous) 6. To attend and to participate in the following procedures : • Blood and bone marrow smear • pleural puncture • abdominal puncture • insertion of a gastric tube and gastric lavage • insertion of central venous catheter • measurement of central venous pressure • continuous measurement of blood glucose • continuous measurement of blood pressure (Holter) • Measurement of blood glucose with glucometer • gastroscopy, endotracheal intubation • artificial ventilation • peritoneal dialysis

	The clinical practice will be held over three working weeks, with full time working hours (eight hours a day). Four cycles will be held during the XI and XII semester. Cycle rotations between the wards are organized and the mentors will shift. The student's everyday activities will be noted in a designated "activity diary" , which will be verified by the mentors signature.				
12.	**Learning methods:** • Participation in the grand rounds of the Clinic • Participation in the everyday work of the Pediatric departments • Participation in the procedures form the field of pediatrics				
13.	Total available amount of hours		180 hours		
14.	Distribution of the available hours		120 hours of exercises 60 hours of home learning		
15.	Types of educational activities	15.1	Exercises(laboratory, clinical), seminars, team work	120 hours	
16.	Other forms of activities	16.1	Home learning	60 hours	
17.	Method of evaluation			бодови	
	17.1	The student is obliged to attend and actively participate in the clinical practice during three weeks , 15 working days for hours min. max. Clinical practice score-attendance 33 points, participation (skills) 34 points			
18.	Criteria for evaluation (points/score)		The student must achieve a minimum score of 60 points The scoring is descriptive （passed）.		
19.	Criteria for completing the seminar and obtaining the right to a final exam		**Conditional criteria**: To obtain the right to a final exam and score the minimum amount of points necessary for passing of the pediatrics exam , the student is obliged to attend the clinical practice and must master all the skills and activities which are planned in the subject program		
20.	Language on which the education is conducted		Macedonian		
21.	Methods for evaluating the quality of the education		Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education		
22.	Literature				

Mandatory literature

No	Author	Title	Publisher	Year
1	R. Kliegman, B. Stanton, J. St. Geme, N. Schor, R. Behrman	Nelson Textbook of Pediatrics, 19th edition	Elsevier Health Sciences	2011
2	Dushko Mardeshich	Pediatrics	School book, Zagreb	2003
	T.Lissauer, G. Clayden	Illustrated Texbook of Pediatrics	Mosby Elsevier	2011

22.1

		3	Kuzmanovska D. Grujovska S.	Physical Diagnosis in Pediatrics	Medical Faculty, USCM	2011

	22.2	Additional literature				
		No	Author	Title	Publisher	Year
		1	Mary Rudolph,Tim Lee, Malcolm Leven	Pediatrics and Children's health (translation)	Ars Lamina-Skopje (A project of the GOM)	2012

1.	Title of the subject	**PEDIATRICS**			
2.	Code	MED- 511			
3.	Study program	General Medicine			
4.	Organizer of the study program (unit, institute, division, department)	Ss. Cyril and Methodius University of Skopje-Medical faculty Division of General Pediatrics			
5.	Level of education (first or second cycle)	Integrated cycle			
6.	Academic year/semester	fifth/IX fifth/X	7.	Number of EKTS credit points	11
8.	Teacher	Chairman of the Pediatrics Division Prof. Dr. Kata Martinova *The classes are conducted by all the members of the Pediatrics division			
9.	Enrollment requirements	The first part of the professional exam should be passed The criteria for enrollment in the VII semester should be met			
10.	**Objectives of the program (competencies):** 1. The students should gain basic knowledge, which will be applied in a clinical setting in order to handle normal and abnormal growth and development (physical, physiological, psycho-social) of the children from birth to adolescence. 2. The student should be able to provide basic pediatric care to children from different age groups (neonates, infants, toddlers, children and adolescents). 3. The students should gain the appropriate skills and knowledge necessary for the proper handling of the most common and important diseases and urgencies in Pediatrics 4. The students should gain knowledge for professional conduct and communicational abilities necessary for problem-solving (problem solving skills). 5. The students should be equipped for life-long learning , necessary for their further professional development				

11.	**Contents of the program:** **Theoretical training:** **1. Social and preventive pediatrics** Social-economical factors that influence children's health. Vital statistics for the children's health in R. of Macedonia. Organization of the health-care system, National preventive programs, mandatory immunizations 2. **Growth and development**

Normal growth and growth charts, abnormalities of the growth and development. Evaluation of various developmental milestones and discovering of developmental abnormalities.

3. Care for the sick child

Primary and hospital care for the children. Ethics. Basics of evidence based medicine.

4. Pediatric emergencies/ accidents/ poisonings

Principles of emergency pediatrics: respiratory, cardiovascular, neurologic and metabolic emergencies, poisonings and serious trauma

5. Genetics and dysmorphology

Chromosome disorders, monogenic disorders, multifactorial inheritance and dysmorphism

6. Perinatology/ Neonatology

A normal newborn, neonatal resuscitation, growth of the newborn, neonatal seizures, respiratory disturbances, jaundice, metabolic disorders, hematologic disorders, infections, birth trauma and urgent surgical conditions.

7. Growth and puberty

Disorders of the pubertal development

8. Nutrition

Nutritional needs, breastfeeding , formula feeding , nutritional disorders

9. Nephrology

Nephrotic syndrome, glomerulonephritis, urinary tract infection, renal failure, enuresis, hypertension

10. Cardiology

Rheumatic fever, Congenital heart diseases, heart failure, infective endocarditis, arithmias

11. Respiratory system

Upper and lower respiratory tract diseases, bronchial asthma, chronic pulmonary diseases, cystic fibrosis

12. Infections/ Allergies/Immunity

Conditions accompanied by fever, Specific infections, anaphylactic reactions, urticaria (hives), allergies, immunizations, immunodeficiency disorders

13. Endocrinology

Diabetes mellitus, hypoglycemia, hypothyreoidism, hyperthyreoidism, disorders of the parathyreoid glands, adrenal cortical insufficiency,Cushing's syndrome

14. Metabolism

Inborn errors of the metabolism, neonatal screening, gastroenteritis, dehydration and re-hydration, acid-base balance (interpretation and disorders)

15. Neurology

Mental retardation, CNS infections, cerebral palsy, hydrocephalus, microcephaly, neuromuscular disorders

16. Gastroenterology/ Hepatology

Abdominal pain, abdominal mass, malabsorbtion, inflammatory bowel diseases, liver diseases, cirrhosis and portal hypertension, hepato-splenomegaly.

17. Hematology/Oncology

Anaemias , hemorrhagic syndrome, the most common malignancies in children **18. Behavioral pediatrics**

Behavioral and social problems in childhood, ethic and professional behaviors relevant for the pediatricians

19. Rheumatology

<table>
<tr><td></td><td colspan="5">Evaluation of the musculo-skeletal system, variations of the normal posture, diseases of the hip, knee and foot, diseases of the spine, back and neck, arthritis
20. Skin
Rash in the neonatal/infant period, infections and infestations, rash during systemic diseases
21. Adolescent medicine
Communication with adolescents , common health problems Practical teaching :
Mastering of clinical skills and the practical implementation of the acquired theoretical knowledge</td></tr>
<tr><td>12.</td><td colspan="5">Methods of studying:
interactive lectures, clinical exercises and exercises in primary health-care, problemoriented clinical scenarios, practicing of skills on mannequins, a project exercise, problem oriented seminars (case based)</td></tr>
<tr><td>13.</td><td colspan="3">Total available amount of hours</td><td colspan="2">330 hours</td></tr>
<tr><td>14.</td><td colspan="3">Distribution of the available hours</td><td colspan="2">180 hours of lectures, exercises and seminars
150 hours of home learning</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Types of educational activities</td><td>15.1</td><td>Lectures- theoretical education</td><td>64 hours</td></tr>
<tr><td>15.2</td><td>Exercises(laboratory, clinical), seminars, team work</td><td>90 hours

Seminars 26 hours</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1</td><td>Project exercises</td><td>hours</td></tr>
<tr><td>16.2</td><td>Stand-alone assignments</td><td>hours</td></tr>
<tr><td>16.3</td><td>Home learning</td><td>150 hours</td></tr>
<tr><td rowspan="2">17.</td><td colspan="4">Method of evaluation score points</td></tr>
<tr><td>17.1</td><td>Test</td><td colspan="2">min.-max.
Continuous evaluation * 3: score points 30-51

*Continuous control of the gained knowledge (colloquiums): 3 written tests (multiple choice) All the fields in Pediatrics are covered:
Colloquium 1: neonatolgy, nutrition, genetics, immunology, pulmology , 10-17 score points
Colloquium 2: endocrinology, emergency pediatrics, metabolic diseases/disorders, nephrology, gastroenterology, 10-17 score points
Colloquium 3:hemato-oncology, neurology, cardiology, 10-17 score points</td></tr>
</table>

		Final exam	min.-max. Score points 20-33 **The final integrative exam consists of** : Taking of the patient's medical history, differential diagnosis, physical exam, skill according to the catalog of skills + an integrated oral exam where the integrated knowledge

			necessary for the understanding of the plenum of the subject and the medical practice is evaluated . **The exam is conducted on one real patient and one virtual case (practical and oral part) min.-max.20-33 score points** **10=30-33 score points, 9=27-29 score points, 8=24-26 score points, 7=21-23 score points, 6= 18-20 score points**
	17.2	Seminar assignment/project (presentation : written or oral)	min**. - max.** **Seminars*points30 - 40**
	17.3	Active participation	min.-max Theoretical teaching score points2 - 6 Practical teaching score points 8 - 10

18.	Criteria for evaluation (points/score)	from59 score points	5 (five) F
		from 60 to 68 score points	6 (six) E
		from 69 to 76 score points	7 (seven) D
		from 77 to 84 score points	8 (eight) C
		from 85 to 92 score points	9 (nine) B
		from 93 to100 score points	10 (ten) A

19.	Criteria for completing the seminar and obtaining the right to a final exam	**Conditional criteria**: To complete the seminar the student is obliged to attend and take active participation in the seminars, also to achieve the necessary score minimum To obtain the right to a final exam the student is obliged to pass the planed continuous evaluations or to score a 30% minimum of the total amount of points , wherein during the exam session first he must pass the continuous evaluations he hasn't passed and then go to a final exam The score for the subject is formed according a table of scores, which on the other hand is formed according to the sum of the score points from all the activities, continuous evaluations and the final exam
20.	Language on which the education is conducted	Macedonian

21.	Methods for evaluating the quality of the education		Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education			
22.	Literature					
	22.1	Mandatory literature				
		No	Author	Title	Publisher	Year
		1	R. Kliegman, B. Stanton, J. St. Geme, N. Schor, R. Behrman	Nelson Textbook of Pediatrics, 19th edition	Elsevier Health Sciences	2011
		2	Dushko Mardeshich	Pediatrics	School book, Zagreb	2003
			T.Lissauer, G. Clayden	Illustrated Texbook of Pediatrics	Mosby Elsevier	2011
		3	Kuzmanovska D. Grujovska S.	Physical Diagnosis in Pediatrics	Medical Faculty, USCM	2011
	22.2	Additional literature				
		No	Author	Title	Publisher	Year
		1	Mary Rudolph,Tim Lee, Malcolm Leven	Pediatrics and Children's health (translation)	Ars Lamina-Skopje (A project of the GOM)	2012

1.	**Subject**	**FIRST AID**		
2.	**Code**	MED-127		
3.	**Study Program**	General Medicine		
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of general surgery		
5.	**Educational degree (first or second cycle)**	Integrated cycle		
6.	**Study year /semester**	First (I) Year, second (II) semester	Number of credits	1
8.	**Responsible teacher**	Chief of department of surgery - |**Doc.dr. Boro Dzonov** Chief of department of anaesthesiology – **Prof. d-r Mirjana Sosolceva** **Prof. d-r Sasko Jovev**		
9.	**Preconditions:**	None		
10.	**Teaching goals of the study program (competencies):** • Introducing the basics of first aid and life support skills • Students are introduced with the principles and skills of first aid in unconscious situations, bleeding, broken bones, burns and other accidents, as well as the system of modern triage in mass disasters •			

11.	**Contents of the study program: Theoretical** **courses :** First cycle • What is first aid: introduction, meaning and methods • Reasons that lead to the need of providing first aid and assessment of the situation: awareness, breathing, circulation, injuries • Basics of cardiac pulmonary resuscitation • Reanimation • Life support

	• Asphyxia and other conditions of impaired breathing • Poisoning • Other types of emergency situations • Aches Second cycle • Wounds and bleeding • Fractures • Injuries on the muscle and joint surfaces • Burns • Bandaging and bandages • Effects of low and high temperatures • Procedures for major incidents – organization • Blackouts.
12.	**Methods of studying:** Classes will be held in the form of a two-day intensive course. The first day will be taught theoretical classes and practical exercises in groups on reanimation phantom (3 class's theory and 4 classes' practical exercises). The second day will be taught theoretical and practical exercises in surgery (taking care of wounds, wounds, fractures and set.) (3 class's theory and 4 classes practical exercises). Discussion and consultation whit teachers.

13.	**Total no. of hours:**			30
14.	**Distribution of the available time**			15 classes theory, practical exercises 15 hours home studying
15.	**Type of educational activity**	15.1	Lectures-theoretical course and practical teaching	7 classes
		15.2	Practice, seminars	Practice,8 classes
16.	**Other types of activities**	16.1	Project assignments	hours
		16.2	Individual tasks	hours
		16.3	Home studying	15 hours

17.	**Assessment of knowledge:** points		
	17.1	Tests	min.-max. Continuous tests points 60 - 100 **periodic evaluation of knowledge:** 2 - written test min – max 1. Reanimation 30 – 50 2. Surgery 30 - 50

		Final exam	If the student did not win a minimum score on one or both continuous controls, the student needs to approach the final exam which represents one or two continuous checks that are not passed	
	17.2	Seminar work/project (presentation: written and oral)	min. - max. Seminar works	
	17.3	Active participation		
18.	Knowledge assessment		up to 59 points	5 (five) F
	criteria: (points/grade)		60 to 68 points	6 (six) E
			69 to 76 points	7 (seven) D
			77 to 84 points	8 (eight) C
			85 to 92 points	9 (nine) B
			93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam		**Conditional criteria for assessment of knowledge:** To get a signature the student is required to attend the theoretical, practical training and seminars and to gain minimum scores The assessment of the subject is formed according to the table of estimates, based on the sum of points from all activities, continuous inspections.	
20.	Language of the course		English	
21.	Method for evaluation of the quality of education		Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	
22.	Literature			

	Mandatory textbooks				
	Р.бр	Автор	Наслов	Издавач	Година
22.1	1	Jeffrey Schaider Stephen R. Hayden Richard Wolfe Roger M. Barkin Peter Rosen	rosen and barkin's 5 minute emergency medicine consult	Tabernakul - Skopje	2011
	2	Members of the departments involved in teaching	Authorized lectures		

1.	**Subject**	**HEALTH PROMOTION**			
2.	**Code**	MED-125			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of Social Medicine			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	First/II	7.	Number of credits	1

8.	**Teacher**	Head of Department: Prof. Dr. Fimka Tozija Responsible teacher: Prof. Dr. Elena Kjosevska *Teaching is conducted by all teachers of the Department of Social Medicine
9.	**Prerequisites for enrolling the course:**	A signature for the subject Introduction to Medicine
10.	**Teaching goals of the study program (competencies):** • Introduction to the basic values of health • Preparing for the independent performance with educational purposes • Promote health to target group at all the levels of health care	

11.	**Contents of the study program: Theoretical course::** • Behavior and health education - Definition of health education and health culture • Objectives and to whom the health education is intended • Health promotion and health education • Motivation for learning health promotion • Forms, methodology and tools in work in the field of health promotion • Health promotion principles • Health promotion methods • Health promotion tools • Areas of work in health promotion • Planning and organization of health promotion • Methodology of preparation and implementation of the health promotion program in the community • Practicing health promotion in the Republic Macedonia			
12.	**Methods of studying**: Interactive lectures, exercises, seminar work			
13.	**Total available time:**		30 hours	
14.	**Distribution of the available time**		15 hours lectures, exercises 15 hours home studying	
15.	**The forms of educational activity**	15.1	Lectures-theoretical course	10 hours
		15.2	Exercises seminars, team work	5 hours
16.	**Other types of activities**	16.1	Project assignments	Hours
		16.2	Individual tasks	Hours
		16.3	Home studying	15 hours
17.	**Assessment of knowledge:**points			
	17.1	Tests	min.-max. Continuous checks points 18-30 Continuous assessment of knowledge (Colloquium): 1 written test It covers the first half of all areas of the content of the theoretical and practical training program for the subject Health promotion, which is divided into two equal parts.	

		Final exam	min-max. Oral part * points 30-50 * Oral part (integrative) - 3 questions for the integrative knowledge, which is important for understanding the whole subject. (for grade: 10 = 47-50 points; 9 = 43-46 points, 8 = 39-42 points; 7 = 35-38 points; 6 = 30-34 points)
	17.2	Seminar work/project (presentation: written and oral)	min.-max. Seminar work points 6-10
	17.3	Active participation	min.-max. Theoretical course* points 3-5 Practical course** points 3-5 *Attendance of theoretical course: 61-74%=3 points 75-90%=4 points

1.	Title of the subject	**PEDIATRICS-SEMINAR**
2.	Code	MED- 614

			91-100%=5 points **Practical course (2 blocks of exercises 5 hours in total) 1 block=3 points 2 blocks=5 points

18.	Knowledge assessment criteria: (points/grade)	up to 59points	5 (five) F
		60 to 68points	6 (six) E
		69 to 76points	7 (seven) D
		77 to 84points	8 (eight) C
		85 to 92points	9 (nine) B
		93 to 100points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To get a signature, the student is required to attend the theoretical, practical training and seminars and to achieve minmum points. To access to the final exam the student should pass the predicted continuous assessment and to achieve at least 60% of the total number of points for this assessment, whereby in the exam session first takes the unpassed continuous checks, and then comes to the final exam. The grade from the assessment of the subject is formed in accordance with the table of grades, based on the sum of points from all activities, continuous checks and final examination.
20.	Language of the course	English
21.	Method for evaluation of the quality ofeducation	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

22.1 Mandatory textbooks

	Author	Title	Publisher	Year
1	Seturaman KR.	Communication skills in clinical practice	Tabernakul	2010
2	D.Donev, M.Spasovski, F.Tozija, E. Kjosevska	Social medicine	Faculty of Medicine In print	2013
3	D.Donev, L.Mirchevska, V.Stojanovska, E. Kjosevska, Z.Velkovski. I.Gligorov, E.Rizova	Health promotion and health education	Faculty of Medicine In print	2013

22.2 Additional literature

	Author	Title	Publisher	Year
1	Donev D., Pavlekovic G., Zaletel Kragelj L	Health promotion and disease prevention	Hans Jacobs Publishing Company	2007

3.	Study programe			General Medicine	
4.	Organizer of the study program (unit, institute, division, department)			Ss. Cyril and Methodius University of Skopje-Medical faculty Division of General Pediatrics	
5.	Level of eduction (first or second cycle)			Integrated cycle	
6.	Academic year/semester			sixth (XI or XII semester) 7. Number of EKTS credit points	1
8.	Teacher			Chairman of the Pediatrics Division Prof. Dr. Kata Martinova *The classes are conducted by all the members of the Pediatrics division	
9.	Enrollment requirements			Credit points gained from the exam in Pediatrics and from the clinical practice in Pediatrics	
10.	**Objectives of the program :** During the seminars, which are problem-based, in the midst of a case presentation , the actual pathology is discussed . The student receives the opportunity to become familiarized with the broader spectrum of Pediatric casuistry				
11.	**Contents of the program:** • Theoretical processing of cases from various pediatric topics • Problem-solving of cases from various pediatric topics • Case presentation during seminars which are problem-based The classes will be held over five days , for four hours each . Four cycles will be held during the XI and XII semester				
12.	**Methods of learning:** • The classes are conducted by the professors as mentors • The student actively participates in the discussion and in the public case presentations • The student will work every day in groups of 20 students on a rotational principle, will have meetings with experts, will participate in "for or against " types of discussions • A tutorial system of education with problem solving will be conducted				
13.	Total available amount of hours			30 hours	
14.	Distribution of the available hours			20 hours of seminars 10 hours of home learning	
15.	Types of educational activities		15.1	lectures-theoretical education	
			15.2	Exercises(laboratory, clinical), seminars, team work	Seminars 20 hours
16.	Other forms of activities		16.1	Project assignments	hours
			16.2	Stand-alone assignments	hours
			16.3	Home learning	10 hours
17.	Method of evaluation				points
	17.1	Final exam	**Solving of a case (seminar assignment)** **min. – max.** **Written part points 15 - 30** **Oral presentation points 15 - 30**		

	17.2	Seminar assignment/project(presentation : written or oral)	**Seminar assignment written + oral presentation**
	17.3	Active participation	min**. - max.** **Seminars* points 30 - 40** ***The seminars are held over five days , for four hours each . Attendance : 4 points; participation: 4 points**
18.	Criteria for evaluation (points/score)		The student must achieve minimum 60 points The scoring is descriptive （passed）**.**
19.	Criteria for completing the seminar and obtaining the right to a final exam		**Conditional criteria**: To complete the seminar the student is obliged to attend and take active participation in the seminars, also to achieve the necessary score minimum To obtain the right to a final exam the student is obliged to prepare a seminar assignment and a power point presentation
20.	Language on which the education is conducted		Macedonian
21.	Methods for evaluating the quality of the education		Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education

22. Literature

Mandatory literature

	No	Author	Title	Publisher	Year
22.1	1	R. Kliegman, B. Stanton, J. St. Geme, N. Schor, R. Behrman	Nelson Textbook of Pediatrics, 19th edition	Elsevier Health Sciences	2011
	2	Dushko Mardeshich	Pediatrics	School book, Zagreb	2003
		T.Lissauer, G. Clayden	Illustrated Texbook of Pediatrics	Mosby Elsevier	2011
	3	Kuzmanovska D. Grujovska S.	Physical Diagnosis in Pediatrics	Medical Faculty, USCM	2011

Additional literature

	No	Author	Title	Publisher	Year
22.2	1	Meri Rudolph,Tim Lee, Malcolm Leven	Pediatrics and Children's health (translation)	Ars Lamina-Skopje (A project of the GOM)	2012

1.	Subject	**TRANSFUSIOLOGY**
2.	Code	**MED 324**
3.	Study program	**Undergraduate students**
4.	Organizing Institution (Unit, Institute, Chair, Department)	**Cathedra of Transfusiology** **Institute of transfusion medicine, Skopje**
5.	Educational degree (first or second cycle)	**Integrated cycle**
6.	Academic year/semester	

8.	Teacher			**Prof. D-r Milenka Blagoevska** **Ass. Prof. D-r Tatjana Makarovska Bojadzieva**	
9.	Conditions				
10.	Aims of study program: **Fundamentals of laboratory and clinical transfusiology**				
11.	Contents of study program: Theoretical course: **Blood donation, Immunohematology, Blood components, Clinical Transfusiology Laboratory diagnosis and treatment of thrombotic and hemorrhagic disorders.** Practical: **Blood donation, Immunohematology, Blood components, Laboratory testing of thrombohemorrhagic disorders**				
12.	Methods of study: **Lectures, Practical work, Seminar project**				
13.	Total number of hours			**30 часови**	
14.	Distribution of activities				
15.	Forms of activities	15.1.	**Lectures**	16 часа	
		15.2.	**Practical work** **Seminar project**	14 часа 4 часа	
16.	Other forms of activities	16.1.			
		16.2.	**Individual work**	**Seminar project**	
		16.3.			

17.	Assesement			
	17.1	Tests	**First exam** **Final exam**	мин.-макс. 18-30 20-36
	17.2	Seminarian project (oral presentation)		мин.-макс 4-8
	17.3	Active participation	**Lectures** **Praxis**	мин.-макс. 6-10 12-16

18.	Knowledge assessment criteria:	Lectures	6-10
		Practical work	12-16
		Seminar project	4-8
		First exam	18-30
		Final exam	20-36
		Total	60-100

19.	Criteria for signature and exam	**Presence of the students in theoretical and practical teaching. Oral presentation of the seminar project.**
20.	Language	**English**
21.	Assessment of quality of teaching	**Interactive participation of students in theoretical and practical teaching (case reports, problem solving-exams)**
22.	Literature	

22.1.	Obligatory literature				
		1.Guide to the preparation, use and quality Assurance of Blood Components, Council of Europe, 2016			
		2. Essential gide to Blood Groups, I.Bromilow, G.Daniels			
		3. An introduction to immunohematology Book by Neville J. Bryant			

	22.2.					
			4. Technical Mannual, AABB			

1.	**Subject**	**INTRODUCTION TO MEDICINE**			
2.	**Code**	MED 115			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of Social Medicine			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	First/I	7.	Number of credits	2
8.	**Teacher**	Head of Department: Prof. Dr. Fimka Tozija Responsible teacher: Prof. Dr. Mome Spasovski *Teaching is conducted by all the teachers of the Department of Social Medicine			
9.	**Prerequisites for enrolling the course:**	None			
10.	**Teaching goals of the study program (competencies):** • Introduction to the basic principles and tasks of medicine. • Introduction to the history of medicine and public health. • Character and importance of the medical professions, principles and levels of organization of health care. • Health and disease and levels of prevention. • Basic characteristics and prevention of certain diseases and groups of diseases.				
11.	**Contents of the study program:** **Theoretical course::** • Definition, tasks, and division of medicine; Conditions for a good student of medicine and doctor • Medical Education, Edinburgh declaration; Retrospective of the development of medicine and public health through the centuries • Development of modern medicine; Natural scientific basis of medicine • Theoretical conceptualization and definition of health; Determinants of health; What is disease, natural course of the disease, and levels of prevention • Principles of organization and levels of the health care system • Medical professions - legislative and ethical aspects; Medical and other professions; Internship and professional exam; Specializations and sub-specializations • Health status of the world's population. Ethical dilemmas and values in public health. Characteristics and prevention of certain diseases and group of diseases. • International and national organizations in the field of health **Practical course:** • Control and prevention of communicable and non-communicable diseases • Introduction to the work and organization of health institutions in Macedonia • Practical field work in the community .				
12.	**Methods of studying:** Interactive lectures, exercises, seminars and field practical work				

13.	**Total no. of hours:**		60 hours	
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	15 hours
		15.2	Exercises, seminars, team work	15 hours
16.	**Other types of activities**	16.1	Project assignments	hours
		16.2	Individual tasks	hours
		16.3	Home studying	30 hours

17.	**Assessment of knowledge:** points		
	17.1	Tests	min-max. Continuous assessment points 18-30 Continuous assessment of knowledge (Colloquium): 1 written test. It covers the first half of all areas of the content of course of theoretical and practical teaching for the subject Introduction to medicine, which is divided into two equal parts.
		Final exam	min-max. Oral part * points 30-50 *Oral part (integrative) - 3 questions for integrative knowledge, which is important for understanding of the whole subject (for grade10 = 47-50 points; 9 = 43-46 points; 8 = 39-42 points; 7 = 35-38 points; 6 = 30-34 points)
	17.2	Seminar work/project (presentation: written and oral)	min.-max. Seminar works points 6-10
	17.3	Active participation	min.-max. Theoretical course* points 3-5 Practical course** points 3-5 * Presence at the theoretical classes 61-74% = 3 points 75 – 90% = 4 points 91-100% = 5 points ** Practical classes (3 blocks of exercises of 3 hours) 2 blocks = 3 points 3 blocks = 5 points

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To get a signature the student is required to attend the theoretical, practical training and seminars and to achieve minimum points to access the final exam . To access to the final exam the student should pass the predicted continuous assessment and to achieve at least 60% of the total number of points for continuous assessment, whereby in the exam session first takes the unpassed continuous checks, then comes to the final exam. The grade of the subject is formed in accordance with the table of grades, based on the sum of points from all activities, continuous assessment and final exam..
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

Mandatory textbooks

		Author	Title	Publisher	Year
22.1	1	Seturaman KP.	Communication skills in clinical practice	Tabernakul	2010
	2	Donev D.	Introduction to Medicine	Faculty of Medicine	2013

Additional literature

		Author	Title	Publisher	Year
22.2	1				
	5				

1.	**Subject**	**OTORHINOLARYNGOLOGY**			
2.	**Code**	MED 522			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of otorhinolaryngology			
5.	**Educational degree (first or second cycle)**	Integrated cycle - first			
6.	**Study year /semester**	Fifth (V)	Tenth(X)	Number of credits	6
8.	**Responsible teacher**	Prof. Marina Davcheva Chakar, PhD MD			
9.	**Preconditions:**	Completed course of VII semester			
10.	**Teaching goals of the study program (competencies):** • Student should learn the main symptoms and sings of certain pathological conditions in otorhinolaryngology • To perform the basic investigations in this area.				

11.	**Contents of the study program: Theoretical course::** • Clinical anatomy and physiology of the ear, congenital malformations of the external, middle and inner ear, noninflammatory,inflammatory diseases of external ear, acute and chronic middle ear diseases, otogenic complication of otitis, injuries of the middle ear, bone diseases of the middle ear, general aspects of cochlear and retrocochlear hearing loss, treatment of pediatric hearing disorders,vestibular disorders,tumors of the ear, tumors of the cerebellopontine angle, sudden snsorineural hearing loss, temporal bone fractures, diagnosis and managment of facial paralysis, auditory rehabilitation • Clinical anatomy immunology and physiopogy of the nose and paranasal sinuses. morphology of rhe nasal mucosa, nasal deformities, inflamaton of external nose, nasal cavity and facial soft tissues, sinus inflamation,nasal polyposis, rhinosinugenic complicatios, tumors of the nasal cavity and

	paranasal sinuses, allergic rhinitis, vasomotor rhinitis, epistaxis, fractures of the nasal pyramid, tumors of the nose nad paranasal sinuses. • Anatomy,physiology and immunology of the pharynx, diseases of the nasopharynx, oropharynx, peripheral obstructive sleep apnea syndome, tumors, diseases of the hypopharynx and esophagus. • Anatomy of the external neck, malformation,inflammation and tumors of the neck,clinical anatomy of the larynx and trachea, malformation of the larynx and trachea, infectious diseases of the larynx and trachea in adults and childfren,chronic nonspecific laryngitis, foreign-body aspiration and injures of the larynx and trachea, tumors of the larynx and trachea,airway management, neurogenic disorders of the larynx, clinical aspects of the voice disorders, speech and language disorders. **Practical course:** • Examination of the ear (inspection and otoscopy), clinical hearing tests, basic princips of audiometry, nystagmus clasification and tests, • History and clinical examination of the nose, nasal endoscopy, special rhinologic tests,imiging of the nose and paranasal sinuses. • Methods of examining the farynx, • Symptomatology and examination of larynx (inspection, palpation indirect and direct laryngoscopy) and trachea, imaging of the larynx and trachea, .

12.	**Methods of studying:** Interactive lectures, group work, exercises, seminar paper			
13.	**Total no. of hours:**		90 hours	
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	30 hours 15 hours seminars
		15.2	Practicals (laboratory, clinical), seminars, team work	45 .hours
16.	**Other types of activities**	16.1	Project assignments	hours
		16.2	Individual tasks	hours
		16.3	Home studying	hours
17.	**Assessment of knowledge:** points			

	17.1	Tests	min.-max. 2 Continuous tests • Otology and audiology 12-20 • Nose, paranasal sinuses, Farynx,larynx 12-20 Total 40 points
		Final exam	Subject: otorhinolaryngology min.-max. Practical exam 9-10 points Oral exam 21-35 points
	17.2	Seminar work/project (presentation: written and oral)	min.-max. Seminar works 1-3 points
	17.3	Active participation	min.-max. Theoretical course points 1-5 Practical course points 4-7
18.	Knowledge assessment	up to 59 points	5 (five) F
	criteria: (points/grade)	60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam	**C onditional criteria for assessment of knowledge:** In order to get a signature for the course, students are requested to actively participate in the activities, including the continual assessment (the tests).	
20.	Language of the course	English	
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	

22.	Literature				
	22.1	Mandatory textbooks			
		Author	Title	Publisher	Year
		1 Rudolf Probst ,Gerhard Grevers, Heinrich Iro	Basic otorhinolaryngology	Georg Thieme Verlag Stuttgard- New York,	2006
		7			
	22.2	Additional literature			
		Author	Title	Publisher	Year
		1 K. J. Lee, M.D.	K.J.LEEs Essential otolaryngology head and neck surgery,	Tenth edition Copyright material by Mc-Grow Hill Companies,	2012

1.	**Subject**	**OPHTHALMOLOGY**
2.	**Code**	**MED 523**
3.	**Study Program**	General medicine
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra .of Ophthalmology . . . .
5.	**Educational degree (first or second cycle)**	Integrated cycle

6.	**Study year /semester**	Fifth/ V	Tenth (X)	Number of credits	4
8.	**Responsible teacher**	Prof.Vesna Dimovska Jordanova MD,PhD			
9.	**Preconditions:**	. . . .Fulfilled criteria for assessing Xth semester .			
10.	**Teaching goals of the study program (competencies):** • Student's ability for learning basic pathological signs to recognize and differentiate most common ophthalmological diseases • Embracing knowledge for performing fundamental skills and general investigations for setting proper diagnosisi of certain ophthalmological diseases				
11.	**Contents of the study program: Theoretical course::** • Pathology of orbit and refractions • Diseases of eyelids, conjunctiva and lacrimal system • Diseases of anterior segment – cornea, iris and lens • Classification, clinical course, diagnosis and treatment of primary and secondary glaucoma • Diseases of posterior segment – vitreus body, optic nerve, choroid and retina • Strabismus, nystagmys, amblyopic conditions				

	Practical course: • History and local status • Basic methods of investigation of anterior segment and slit-lamp examination • Visual acuity determination • Special methods of investigation: direct and indirect ophthalmoscopy, tonometry, gonioscopy, perimetry, ultrasound and biometry, FFA, exophthalmometry, Optical coherence tomography of anterior and posterior segment, aplication of laser treatment techniques in ophthalmology • Introduction with basic principles of most common surgical procedures .			
12.	**Methods of studying:** Interactive lectures, seminar presentations, exercises, workshop			
13.	**Total no. of hours:**	. 60. hours		
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	20 hours
		15.2	Practicals (laboratory, clinical), seminars, team work	Practical - 30.hours Seminars – 10 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	60. . . hours
17.	**Assessment of knowledge:** points			

17.1	Tests	min.-max. 2 Continuous tests total... points • General . .ophthalmology . . 11,5-19 • Special ophthalmology. . . . 11,5-19 • . . . Total number - 38 points

		Final exam	Subject: . . Ophthalmology. . . . min.-max. Practical exam 6-11 points . . Oral exam 25-41 points
	17.2	Seminar work/project (presentation: written and oral)	min.-max. Seminar works 3-5 … points
	17.3	Active participation	min.-max. Theoretical course points 1-3 Practical course points 4-7

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** In order to get a signature for the course, students are obliged to visit practcal and theoretical lectures with active participation, in terms of getting minimal points for assessing the continuous tests and final exam.	
20.	Language of the course	English	

21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Literature					
	22.1	Mandatory textbooks				
			Author	Title	Publisher	Year
		1	Blagojevic M.	"Ophthalmology"		2004
		2	Cynthia A.Bredford	"Basic Ophthalmology"	Tabernakul,Skopje	2011
		3	Group of authors from the Cathedra of ophthalmology	"Practical skills for the students of ophthalmology and dentistry"	Faculty of Medicine,Skopje	Skopje, 2011
		4	Nancy B.Carlson,Daniel Kurtz	"Clinical procedures in ophthalmologic examination"	Tabernakul,Skopje	2011
		5				
		6				
		7				
	22.2	Additional literature				
			Author	Title	Publisher	Year
		1	Group of Authors	Ophthalmology (12 books)	American Academy of Ophthalmology (AAO)	2012
		2	Jack. J. Kanski	Clinical Ophthalmology	Vth Edition,Datastatus	2003

		3	Dzajkovska E,Dimovska V.	Glaucoma - Monography	Jofisken,Skopje	2005
		4	BogoevM, Dimovska V.	Diabetic retinopathy, Monography		2000
		5				

1.	Course title	**FAMILY MEDICINE- CLINICAL PRACTICE**			
2.	Code	MED 616			
3.	Study program	General Medicine			
4.	The organizes of the study ptogram (unit, institute, department)	UKIM Medical Faculty Department for Family medicine			
5.	Degree of education (first, i.e second cycle)	Integrated cycle			
6.	Academic year/semester	Sixth/XI-XII	7.	Number od ECTS credits	2
8.	Teacher	Head of the Department: Prof dr Goran Petrovski *The teaching is performed by all members of the Family Medicine Department			
9.	Prerequisites for registering subject	Credits(passing exam) from family medicine			

10.	**Objectives of the course program:** Introduction to the organization of the work in the ambulance and integrating the acquired knowledge and skills using the basic principles of family medicine in solving the problems that patients come to ambulance.
11.	**Course content:** The student at the end of the course will: • Describe the position of primary health care system • Describe which conditions are addressed in primary health care • Assign appropriate diagnostic procedures and treatments according to the incidence and prevalence of diseases • Explain the specifics of the patient – doctor's relationship that are unique in family medicine • Conduct a consultation • get acquainted with running a chronically ill patient • conducted a consultation and proposed initial therapy for acute illness • solve cases where there is clinical insecurity • discuss with the educator on the ethical aspects of family medicine • demonstrates empathy and respect for the patient • promote health promotion and disease prevention in patients Clinical practice will be organized in the course of 1(one) working week full time of 8 hours in ambulance under the supervision of an educator. 4 clinical rotations will be organised during the XI and XII semester. Everyday activities of the student will be recorded in a separate "activity log" that will be verified with the educator's signature.

1.	**Subject**	**ONCOLOGY**
2.	**Code**	MED 423
3.	**Study Program**	General medicine

4.	**Organizing Institution (Unit, Institute, Chair, Department)**	Ss. Cyril snd Methodius University, Faculty of Medicine Department of Oncology and Radiotherapy			
5.	**Educational degree (first or second cycle)**	Integrated 6-year study			
6.	**Study year /semester**	Forth (IV)/Eight (VIII)	7.	Number of credits	2
8.	**Responsible teacher**	Prof. Snezhana Smichkoska, Prof. Valentina Krstevska			
9.	**Preconditions:**	Enrolled eight semester			
10.	**Teaching goals of the study program (competencies):** Students to become acquainted with: − terminology in oncology − epidemiology of cancer, cancer prevention and early detection − diagnostic procedures and staging − principles of cancer surgery, chemotherapy, radiotherapy, hormonotherapy, target therapy, immunotherapy, principals of multidisciplinary treatment, side effects of specific oncological treatments − special problems in oncology and oncological emergencies − clinical characteristics, diagnosis and treatment of the most common solid malignant diseases (breast cancer, lung cancer, genitourinary malignancy, gynaecological malignancy, gastrointestinal cancers, head and neck cancers, CNS cancers, skin cancers, malignant melanoma, bone and soft tissues cancers)				

11.	**Content of the programme –theory (T) and practise (P):** Module1 3T (theory)+2P (practise) classes − Introduction to oncology, oncological terminology and cancer related terms − Epidemiology of cancer − Cancer prevention, screening, early diagnosis − Pathology and molecular biology of cancer − Approach to cancer patient − Tissue diagnosis in cancer − Evaluation of patient, imaging modalities, staging Module2 3T (theory)+5P (practise) classes 1. Therapeutic modalities in oncology − Surgical oncology − Radiotherapy − Chemotherapy − Hormonotherapy − Target therapy − Immunotherapy 2. Multidisciplinary approach 3. Acute and chronical side effects of cancer therapy Module3 3T (theory)+5P (practise) classes 1. Malignant tumours of thorax − Lung cancer − Breast cancer − Mediastinal tumours Module4 5T (theory)+5P (practise) classes − Genitourinary malignancy − Gynaecological malignancy − Gastrointestinal cancers − Head and neck cancers − CNS cancers − Skin cancers and malignant melanoma − Bone and soft tissues cancers Module5 3T (theory)+3P (practise) classes 1. Special problems in oncology and oncological emergencies − Raised intracranial pressure − Spinal cord compression − Bone marrow suppression − Malignant effusions − Superior vena cava obstruction − Hypercalcemia − Paraneoplastic neurological syndromes − Cancer vein thrombosis 2. Cancer pain 3. Terminally ill patient			
12.	**Methods of studying:** Theoretical and interactive lectures organised in 5 thematic modules concurently with practical group work and exercises			
13.	**Total available time:**		60 classes	
14.	**Organization of the course**		45 classes-theoretical course, practical course, seminars 15 classes-home individual learning	
15.	**Forms of teaching**	15.1	Theoretical course	20 hours

	activities	15.2	Practicals course, team work, seminars	25 hours
16.		16.1	Practice	

	Other forms of activities	16.2	Individual tasks	
		16.3	Individual (home) learning	15 hours

17.	**Assessment of knowledge:**			points
	17.1	Tests	**Continual assessment 1(test)** Included Module 1,2 and 3	min.-max. 20-32
		Final exam	Subject: Included Module 4 and 5 Written exam (test)+Practical exam+ Oral exam total 29-49 points min.-max. Written exam 21-37 points Practical and Oral exam 8-12 points	
	17.2	Seminar paper/project (presentation: written and oral)	Seminar works	
	17.3	Active participation	Theoretical course points 1-3 Practical course points 10-16	min.-max.

18.	Grading criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Requirements for signature and taking the final exam	**Conditional criteria for assessment of knowledge:** 7. In order to take the signature, the student should obtain minimum points in both theoretical and practical courses. 8. In order to take the final exam, the student should obtain the minimum points in the continual assessment. 9. If the student has not obtained the minimum points in the continual assessment, he/she will be obligated to pass it before the final exam.
20.	Language of instruction	Macedonian
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons.

22.	Literature					
	22.1	Mandatory textbooks				
			Author	Title	Publisher	Year
		1	Vincent deVita	*Cancer: Principles and Practice of Oncology*	10th edition AVAILABLE ONLINE AT LWWHealthLibrary.com/oncology.	2014

		2	David J. Kerr, Daniel G. Haller, Cornelis J. H. van de Velde, and Michael Baumann	*Oxford Textbook of Oncology* Third Edition	Oxford Textbook	2016
		3	Снежана Смичкоска Валентина Крстевска	Авторизирани предавања	Поместени на страницата на Медицински факултет	2017
		4	Валентина Крстевска Снежана Смичкоска	Радиотерапија на канцери на главата и вратот	Медицински факултет	2015
	22.2	Additional literature				
			Author	Title	Publisher	Year

1.	Subject	**PUBLIC HEALTH - CLINICAL PRACTICE**
2.	Code	MED-617
3.	Study Program	General medicine
4.	Organizing Institution (Unit, Institute, Chair, Department)	UKIM-Faculty of Medicine Chair of Epidemiology and Biostatistics, Chair of Occupational Medicine, Chair of Social Medicine, Chair of Hygiene
5.	Educational degree (first or second cycle)	Integrated cycle
6.	Study year/semester	Sixth (VI) year / Eleventh - twelfth (XI-XII) semester
7.	Number of EKTS credits	4
8.	Responsible teachers	Prof. d-rvesna Veljic Stefanovska , Prof d-r Jovanka Karadzinska Bislimovska, Prof d-r Fimka Tozija, Prof d-r Mihail Kochubovski* the education process is performed by all members of the Cathedra
9.	Preconditions for starting the subject	Acquired credits (passed exams) from the following subjects: Social Medicine, Hygiene, Epidemiology and Biostatistics and Occupational medicine
10.	Teaching goals of the study program (competencies): Adoption of the basic principles, knowledge and practice of public health in the field of hygiene, social medicine, occupational medicine, epidemiology and biostatistics	

11.	**Contents of the study program:** **Hygiene** • Application of the basic methodological approach for eco-toxicological risks assessment • Exposure and health risk assessment from physical, chemical, biological and radiological agents in the environment • Regulations, standards and food safety monitoring • Nutrition and physical activity, public health importance through practical examples • Strategies and policies to determine priorities and risk management in the field of environmental health, nutrition and food safety **Social Medicine** • Evaluation of health, individual and community health • Health care system - organization and evaluation • Priority public health problems, risks, strategies, policies • Health promotion and disease prevention • Health Policy, Health Economics and Management: analysis

<table>
<tr><td></td><td colspan="5">of policies and good practice

Occupational Medicine

• Work place, work environment, professional risk - assessment of the effects of occupational exposure on the health of exposed workers
• Occupational diseases, work-related diseases and injuries at work: clinical (diagnostic, therapeutic procedures) - preventive and public health aspects in practice
• Work ability assessment, absence, disability, rehabilitation
• Preventive Strategy - levels and measures; workplace health promotion (multidisciplinary and intersectoral approach); legislative aspects (examples and solutions in practice)
• Interventional public health prevention programs (examples, analysis, recommendations) in occupational medicine

Epidemiology and Biostatistics

Epidemiology
• Epidemiological principles, models, epidemic process, prevention measures
• Epidemiological methods (descriptive, analytical, experimental)
• Epidemiological features of certain communicable and non-communicable diseases

Biostatistics
• Descriptive statistical methods
• Analytical methods
• Vital statistics

The study program will be arranged within 2 working weeks (full time 8 hours).
Four courses will be organized during the XI and XII semester.
Students are organized in groups consisting of 2-5 members (students) on mentor principle by the professors and assistants. During the course different departments and mentors are taking place. Student’s daily activities will be registered in a separate „Diary of activities“which will be verified by a mentor’s signature.</td></tr>
<tr><td>12.</td><td colspan="5">Methods of learning:
• Interactive work, work on mentor’s principle, individual work, work in small groups, problem solving
• Processing, reporting and case resolving of different segments of public health practice
• Data analysis, computer simulation
• Evaluation of the scientific literature, consulting, essays, seminar papers
• Problem resolving designed seminars, discussion, public presentation</td></tr>
<tr><td>13.</td><td colspan="3">Total available amount of learning hours</td><td colspan="2">120 hours</td></tr>
<tr><td>14.</td><td colspan="3">Distribution of the available learning time</td><td colspan="2">80 hours practical work
40 hours home learning</td></tr>
<tr><td>15.</td><td>Types of educational activities</td><td>15.1.</td><td>Practical work (laboratory, clinical), seminars</td><td colspan="2">80 hours</td></tr>
<tr><td>16.</td><td>Other types of activities</td><td>16.1.</td><td>Home learning</td><td colspan="2">40 hours</td></tr>
<tr><td rowspan="3">17.</td><td colspan="5">Types of knowledge assessment points</td></tr>
<tr><td>17.1</td><td colspan="2">Final exam</td><td colspan="2">min. - max.
Seminar work points 36 - 60</td></tr>
<tr><td>17.2</td><td colspan="2">Seminar work/project (presentation: written/oral)</td><td colspan="2">Seminar work: written form + public presentation</td></tr>
</table>

	17.3	Active participation	min. - max. Practical course * points 24 - 40 * The course is organized within 10 days by 8 hours (full time). Presence: 2 points; activity: 2 points The student should get a minimum 6 points of each subject of the practice (epidemiology and biostatistics, occupational medicine, social medicine, hygiene)
18.	Knowledge assessment criteria: (points/grade)	The student should obtain minimum 60 points. Student assessment is a descriptive (passed).	
19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria:** In order to obtain a signature and get access to the final exam, the student should attend the practical work and obtain minimum points. In order to get access to the final exam, the student must finis the seminar work.	
20.	Language of the course	English	
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	

22. Literature

22.1. Mandatory textbooks

No.	Authors	Title	Publisher	Year
1.	Robert B. Wallace ed, Maxey-Rosenau-Last	Public Health and Preventive Medicine	OEM Press Publication, Denver-New Orleans, USA Tabernakul, Skopje	2008 2011
2.	Gjorgjev D, Kochubovski M, Kendrovski V, Ristovska G.	Hygiene and environmental health	Faculty of Medicine, Skopje	2008
3.	Gjorgjev D, Kochubovski M, Kendrovski V, Ristovska G.	Food Hygiene and Nutrition	Faculty of Medicine, Skopje	2008
4.	Donev D, Spasovski M, Tozija F, Kosevska E, Gudeva-Nikovska D, Kasapinov B, Kisman-Hristovska M, Lazarevik V, Simonovska V.	Social Medicine	Faculty of Medicine, Skopje	2012
5.	Bislimovska-Karadzinska J, Minov J, Risteska-Kuc S, Mijakoski D, Stoleski S.	Occupational Medicine	University "Sts. Cyril and Methodius", Skopje	2011
6.	Stikova E.	Occupational Medicine	Faculty of Medicine, Skopje	2012

		7.	Danilovski D, Orovchanec N, Vasilevska K, Taushanova B, Velikj-	Biostatistics	Faculty of Medicine, Skopje	2005

			Stefanovska V, Isjanovska R, Ivanovska-Zafirova B, Zdravkovska M, Pavlovska I			
		8,	Danilovski D, Orovchanec N, Vasilevska K, Taushanova B, VelikjStefanovska V, Isjanovska R, Ivanovska-Zafirova B, Zdravkovska M, Pavlovska I	General Epidemiology	Faculty of Medicine, Skopje	2007
		9.	Danilovski D, Orovchanec N, Vasilevska K, Taushanova B, VelikjStefanovska V, Isjanovska R, Ivanovska-Zafirova B, Zdravkovska M, Pavlovska I	Special Epidemiology	Faculty of Medicine, Skopje	2007
		10.	Tulchinski T, Varavikova E.	The New Public Health Introduction to 21st Century	„Studentski zbor“, Skopje	2003
	22.2.	Additional literature				
		No.	Authors	Title	Publisher	Year
		1.	Robert H. Fries, Thomas A. Sellers	Epidemiology for public Health	Academic Press, Skopje	2011
		2.	Lloyd F. Novik, Cynthia B. Morrow, Glen P. Mays	Administration of Public Health: principles for management based on population	Academic Press, Skopje	2011

1.	**Subject**	**ORTHOPEDICS**			
2.	**Code**	MED 512			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of Orthopedics			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Fifth/IX	7.	Number of credits	3
8.	**Responsible teacher**	Prof. Dr. Anastasika Poposka, MD, PhD			
9.	**Preconditions:**	Necessary condition for enrolling in IX semester			

10.	**Teaching goals of the study program (competencies):** • The student should learn and master the skills concerning rational diagnosis and contemporary treatment embodied into the ethiopathogenesis of the diseases. • The student should be capable of clinical assessment and treatment of muscle-skeletal system diseases

	• Contemporary clinical assessment should be founded on a rational diagnosis, especially on clinical examination, which can result in other examinations (laboratory, ultrasound, radiographic, computer etc). • Contemporary treatment will be done according to the newest achievements in medicine based on evidence.
11.	**Contents of the study program:** **Theoretical course::** • Basics in orthopedic surgery • Congenital disorders of the bone and joint system • Inflammatory diseases of the bone and joint system • Degenerative diseases of the bones and joints • Normal and disturbed healing of the bone • Tumors of the muscle-skeletal system • Congenital and acquired diseases of the locomotor system (neck, spine, pelvis, thorax, shoulder, elbow, wrist, hand, knee, foot) • Canalicular syndromes of the upper and lower extremities • Orthopedic devices **Practical course:** • Practical applications and clinical skills in orthopedics • Measuring of the size and length of the upper and lower extremities • Clinical signs and tests for diagnosis knee injuries • Clinical signs and tests for diagnosis osteoarthritis of the joints • Practical course on phantoms • Measurements and tests for diagnosis of spine deformities • Podometric measurements, diagnosis and treatment of congenital foot deformities in children • Clinical signs and tests for early diagnosis of congenital hip dysplasia in children • Clinical approach for diagnosis of soft tissue and bone tumors • Introduction into orthopedic surgical techniques
12.	**Methods of studying:** Interactive lecturing, practical education/seminars
13.	**Total no. of hours:** 120 hours
14.	**Distribution of the available time** 60 hours lecturing, practical education/seminars 60 hours home studying

15.	**Type of educational activity**	15.1	Lectures-theoretical course	30 hours
		15.2	Practicals (laboratory, clinical), seminars, team work	25 hours 5 hours
16.	**Other types of activities**	16.1	Project assignments	0 hours
		16.2	Individual tasks	0 hours
		16.3	Home studying	60 hours
17.	**Assessment of knowledge:** 100 points			

	17.1	Tests	min.-max. Continuous tests total... points 26- 45
		Final exam	Subject: Orthopedics min.-max. Practical exam 26-45 points Oral exam 17-29 points

	17.2	Seminar work/project (presentation: written and oral)	min.-max. Seminar works … points
	17.3	Active participation	min.-max. Theoretical course points 5-10 Practical course points 12-16 * **presence during theoretic education:** 51% - 60% - 5 points; 61% - 70% - 6 points; 71% - 80% - 7 points; 81% - 90% - 8 points; 91% -100% -10 points. ** **practical education** (6 exercises in duration of 4 hours): Presence: 2 points Activity during exercises: 2 points. *** **continued examination – 1 written test** Theoretic elements in orthopedics – (26 – 45 points) **** **final examination:** practical + oral – (17 – 29 points) Practical part (examination of a patient, differential diagnosis and therapy, according to the catalogue of skills) + oral part of the examination where the integrative knowledge is verified. (For the marks: 6 = 17-19 points, 7 = 20-21 points, 8 = 2224 points, 9 = 25-26 points, 10 = 27-29 points).

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both the theoretical and the practical courses and seminars and to win minimum of total points. In order to take the final exam, the student should pass the continuous tests or win minimum 60% of total points of the continuous tests; than the student may aproach to the final exam. The grade in the comprehensive exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities, continous tests and final exam.	
20.	Language of the course	English	

21.	Method for evaluation of the quality of education		Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1	Mandatory textbooks				
			Author	Title	Publisher	Year
		1	A. Greenspan	Orthopedic Imaging -A Practical Approach	Government of RM	2012
		2	B.J.Zitelli, H.V. Davis	Atlas of Pediatric Physical Diagnosis (Chapter – Orthopedics 781-867)	Government of RM	2011
		3	R.E.Rakel	Textbook of Family Medicine: Orthopedics. 857915 p.	Government of RM	2011
	22.2	Additional literature				
			Author	Title	Publisher	Year
		1	Group of authors	Authorized lectures of the Department		2009
		2	I. Rushkovski	Orthopedics	Medicinska naklada Zagreb	1976
		3	P.B.Pynsent, J.C.T.Fairbank, E.J.Carr	Outcome Measures in Orthopedics and Orthopedic Trauma		
		4	Zafirovski Gj, Grkova V, Kamnar J, Nojkov J, Poposka A, Bozinovski Z, Samardziski M et al	Children's Orthopedics	Kultura Skopje	2003
		5	Z. Temelkovski	Shoulder Joint		
		6	A. Poposka	Ultrasound Diagnostics of the Child's Hip Congenital Dysplasia	Kosta Abrashevic Ohrid	1995

1.	Title of the teaching subject	**BASIC PRINCIPLES OF THE SCIENTIFIC AND INVESTIGATION WORK**			
2.	Code	MED-226			
3.	Study program	General medicine			
4.	Organizer of the study program (Unit/ Institute, Cathedra, Department)	УКИМ – Medical Faculty Cathedra of Internal Medicinea			
5.	Degree of education (first i.e. second cycle)	Integrated cycle			
6.	Academic year/semester	Second /IV	7.	Number of EKTS credits	1.5

8.	Professors	*Responsible teacher*: Prof. Dr Ljubica Georgievska-Ismail *Theoretical teachers*: Prof. Dr. Ljubica Georgieva-Ismail Prof. Dr. Olivera Stojcheva-Taneva Prof. Dr. Biljana Janeska Prof. Katerina Tosheska-Trajkovska Prof. Dr. Marija Valvukis *Practice teaching*: Prof. Dr. Marija Valvukis
		Sen. Res. Fellow Biljana Gerasimovska-Kitanovska Doc. Dr. Katerina Tosheska-Trajkovska Res. Fell. Dr, Irina Pavlovska Doc. Dr. Lidija Poposka Ass. Doc. Dr/ Zhanina Perevska Dr. Tanja Smilevska, ph.sci
9.	Preconditions for starting the subject	Enrolled semester
10.	Goals of the subject program are getting acquainted with: • The essence and the meaning of scientific investigation and the principles of the scientific method; • The components of the scientific process and its understanding; • Medicine based on evidence and its application; • Discovering of the sources for scientific-investigation project and acquisition of basic knowledges for a critical attitude toward them: • Basic principles for scientific ethics, team work and the meaning of the authorship; • Basic principles and rules for preparation, announcement and/or presentation of the results from the scientific investigation.	
11.	Contents of subject program: **Theoretical course (10 hours))** • Introduction of the subject, obligations, expectations, Science and scientific method-what is it, history, meaning and principles. • Terminology in science, types of evidences, strength of recommendations • Design of the scientific-investigation project. • Medicine based on evidences and its application • Usage of bio-medical bases of data. • Ethics in the scientific-investigation work and responsible attitude in science. • Elaboration of scientific paper and preparation for publication, style, language and presentation. • Critical estimation of parts of the scientific paper. **Practice (18 hours)** - Practice 1. How to choose a theme for scientific-investigation work, searching of the resources on internet by means of key words, formation of hypotheses. - Practice 2. Planning and organization of the scientific investigation – practice of the assigned themes with a special retrospection toward material and methods. - Practice 3. Ethics in science – panel discussion on assigned examples (plagiarism, conflict of interest, prevention of copyright). - Practice 4. Parts of the paper: Critical review of the parts of the paper (title, design, material and methods, results, discussion, conclusion). - Practice 5. Quotation of literature, presentation of the paper on assigned material,	
12.	Methods of learning: Interactive lectures, practice, panel discussion	
13.	Total available amount of learning hours	30 hours (+ project tasks by choice)
14.	Distribution of the available learning time	

15.	Forms of teaching activities	15.1.	Lectures – theoretical teaching	10 hours + 2 hours test
		15.2.	Practice, Seminars	18 hours
16.	Other forms of activities	16.1.	Practice	
		16.2.	Independent tasks	By choice

		16.3.	Home learning	
17.	Way of estimation			Points
	17.1	Continuous tests	Mini-quiz after practical lecture – total 5 (for arch exact answer is given 1.5 point)	Min. – max. 23 - 38
	17.2	Final exam	**Written:** (30 questions: 1.5 point is given for each exact answer.. Minimum 60% exact answers)	min. – max;. 27 - 45
	17.3	Seminar work/project (presentation: oral)	There are bonus points for elaboration of project task/publicly presented for those who have reported at the beginning of the lecture (5 points))	

	17.4	Active participation	Min.-max. Theoretical lecture*: 4 - 6 Practical lecture: presence*: 4 – 6 * Presence of min.. 70% hours= 4 Presence of min. 80% hours= 5 Presence of min. > 90% hours= 6

18.	Criteria for assessment (points/mark)	Up to 59 points	5 (five) F
		Up to 60 to 68 points	6 (six) E
		Up to 69 to 76 points	7 (seven) D
		Up to 77 to 84 points	8 (eight) C
		Up to 85 to 92 points	9 (nine) B
		Up to 93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam	To get the signature, the student should win minimum points from his/her attendance at theoretical and practical lectures. The grade for the subject is formed according to the rating table, based on the sum of the points from all the activities, the continuous testing and the final exam.	
20.	Language on which the lecture is performed	Macedonian, if necessary on English	
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	
22.	Literature		
	22.1.	Mandatory literature	
		1. Authorized lectures by Prof. Dr. Katica Zafirovska and Prof. Dr. Ljubica Georgievska-Ismail	
	22.2.	Additional literature	
		1. Panzova V. Science as a trade. Faculty of Philosophy, UKIM, 2003.	
		2. Marushik M. et al. Introduction in scientific work in medicine. Skopje, Kultura, 2003	
		3. Spiroski Z.M. Scientific paper – to write and public. Skopje, Institute for Immuno-biology and Human Genetics, 2002	

1.	Subject	**PATHOPHYSIOLOGY 1**		
2.	Code	MED 223		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Pathophysiology		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Second (II) / Fourth (IV)	7.Number of credits	7
8.	**Responsible teacher**	Prof. Daniela Pop Gjorcheva,PhD, MD		
9.	Preconditions	Signature of Physiology 1		

10.	Teaching goals: • Object and methods of pathophysiology (exploration of the ethiology and the pathogenesis of diseases on experimental models and by clinical methods) • General mechanisms of compensation and decompensation in disturbancies caused by the pathological influence of external factors • Factors of the general reactivity and the immunity, their disturbances and their relationship with external medium • Mechanisms of initiation and manifestation of pathological situations with general functional disturbances • Mechanisms of metabolic disorders • Pathophysiological mechanisms of the hematopoetic system's diseases

11.	Brief content: **Theoretical course:** • health, desease, death; ethiology and pathogenesis, compensation, decompensation, sufficiency, insufficiency • pathogenic influence of the enviromental (external) factors (physical, chemical, biological and psychical factors) • general reactivity and immunity, inheritance and environment • disturbances of innate immunity (complement, phagocytosis, interferon) • disturbances of adaptive immunity, hypersensitivity, immunodeficiency, autoimmunity, transplant reaction • disturbances in pathological situations with general functional disorders (hypoxia, fever, fatigue, peripheral circulatory disorders), pathophysiology of the oldness • disturbances of the energetic metabolism and of the protein, carbohydrate,lipid, water, electrolyte and vitamin metabolism • disturbances of hematopoetic system **Practical lessons:** • experimental practices on experimental animals, demonstrations on students, presentation of in vitro and in vivo methods			
12.	**Methods of studying:** Classic - Ex cathedra teaching and interactive teaching during lectures and practical trainings, independent study by using textbooks, computer assisted learning			
13.	Total available time:			210 classes
14.	Organization of the course			105 classes - theoretical course, practical course, seminars 105 classes - home individual learning
15.	Forms of teaching activities	15.1.	Theoretical course	45 classes
		15.2.	Practical course, Seminars	60 classes
16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	105 classes
17.	Method of assessment			

	17.1	Tests	min – max **Continual assessment – 2 tests (written form)** 1. Health, desease, death; ethiology, pathogenesis, compensation, decompensation, sufficiency, insufficiency. Pathogenic influence of the enviromental (external) factors; General reactivity and immunity; Disturbances in the course of pathological conditions with general functional disorders 18 - 30 points 2. Disturbances of metabolism and peripheral circulation 18 - 30 points **Final exam: final test + oral examination** 1. Final test: analysis of experimental models or tests for disorders detection 6 - 10 points
			2. Oral exam: theoretical discution for the application of experimental models or tests 6 - 10 points **Complete exam -** combination of the failled exam (written form) plus final test and final oral exam **Full exam -** combination of the two failled exams plus final test and final oral exaam
	17.2	Seminar paper/project (oral/written presentation)	min – max / - /
	17.3	Active participation	Students are obliged to follow actively all recommended activities, including participation in the continuous testing of knowlidge in order to get signature Pointing of student's activities: <u>Theoretical course (% of presence)</u> • min.30% 1 point • 31-70% 2 points • 71-100% 3- points <u>Practical</u> 11 - 15 points The grade in the final exam is given accrding to the grading table, and on basis of the sum of points obtained in all of the activities
18.	Grading criteria (points / grade)		up to 59 points: 5 (five) F from 60 to 68 points: 6 (six) E from 69 to 76 points: 7 (seven) D from 77 to 84 points: 8 (eight) C from 85 to 92 points: 9 (nine) B from 93 to 100 points: 10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. In order to take the final exam, the student should obtain the minimum points in the two continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.				
20.	Language of instruction	English				
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons.				
22.	Textbooks					
	22.1.	Mandatory				
		1.	Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S, Majstorov V:	General pathological physiology	RC Copy, Medical faculty, Skopje	2013
			Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S:	Practical course for general and special pathological physiology	Boro Grafika, Skopje	2013
	22.2.	Additional				
		1.	Gamulin S et all:	Pathophysiology	Jumena Zagreb	2014
		2.	Tadzer I et all:.	General pathological physiology	Medicinska knjiga, Beograd	1984
		3.	McPhee SJ, Ganong WF:	Pathophysiology of disease. An introduction to clinical medicine	Langee medical Books/McGraw-Hill, New York	2003

1.	Subject	**PATHOPHYSIOLOGY 2**		
2.	Code	MED 311		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Pathophysiology		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Third (III) / Fifth (V)	7.Number of credits	4.5
8.	**Responsible teacher**	Prof. Daniela Pop Gjorcheva, PhD, MD		
9.	Preconditions	Exam of Physiology 1, Signature of Physiology 2, Signature of Pathophysiology 1		
10.	Teaching goals: To get introduced with mechanisms of initiation, course and outcome of heart and vascular, lung, kidney, digestive, liver and bile and endocrine disturbances			

11.	Brief content: **Theoretical course** • disturbances of cardiovascular system • disturbances of respiratory system • disturbances of renal system • disturbances of digestive system • disturbances of hepatobiliar system • disturbances of endocrine system **Practical lessons:** • experimental practices on experimental animals, demonstrations on students, presentation of in vitro and in vivo methods				
12.	**Methods of studying:** Classic - Ex cathedra teaching and interactive teaching during lectures and practical trainings, independent study by using textbooks, computer assisted learning				
13.	Total available time:			135 classes	
14.	Organization of the course			60 classes - theoretical course, practical course 75 classes - home individual learning	
15.	Forms of teaching activities		15.1.	Theoretical course	30 classes
			15.2.	Practical course, Seminars	30 classes
16.	Other forms of activities		16.1.	Practice	/
			16.2.	Individual tasks	/
			16.3.	Individual (home) learning	75 classes
17.	Method of assessment				
	17.1	Tests	min – max **Continual assessment – 2 tests (written form)** 1. disturbances of cardiovascular, respiratory and renal systems		

			18 - 30 points 2. disturbances of digestive, hepatobiliar , haematopoetic and endocrine systems 18 - 30 points 18 - 30 points **Final exam: final test + oral examination** 3. Final test: analysis of experimental models or tests for disorders detection 6 - 10 points 4. Oral exam: theoretical discution for the application of experimental models or tests 6 - 10 points **Complete exam -** combination of the failled exam (written form) plus final test and final oral exam **Full exam -** combination of the two failled exams plus final test and final oral exaam
	17.2	Seminar paper/project (oral/written presentation)	min – max / - /

	17.3	Active participation	Students are obliged to follow actively all recommended activities, including participation in the continuous testing of knowlidge in order to get signature Pointing of student's activities: <u>Theoretical course (% of presence)</u> • min.30% 1 point • 31-70% 2 points • 71-100% 3-5 points <u>Practical</u> 10 - 15 points The grade in the final exam is given accrding to the grading tble, and on basis of the sum of points obtained in all of the activities

18.	Grading criteria (points / grade)	up to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. In order to take the final exam, the student should obtain the minimum points in the two continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons.
22.	Textbooks	

	22.1.	Mandatory				
		1.	Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S, Majstorov V:	Special pathological physiology	RC Copy, Medical faculty, Skopje	2012
			Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S:	Practical course for general and special pathological physiology	Boro Grafika, Skopje	2013
	22.2.	Additional				
		1.	Gamulin S et all:	Pathophysiology	Jumena Zagreb	2014
		2.	Tadzer I et all:.	General pathological physiology	Medicinska knjiga, Beograd	1984
		3.	McPhee SJ, Ganong WF:	Pathophysiology of disease. An introduction to clinical medicine	Langee medical Books/McGraw-Hill, New York	2003

1.	Name of the subject	**PATHOLOGY 1**

2.	Code	MED-421			
3.	Study program	General medicine			
4.	Organizer of the study program (Unit, Institute, Cathedra, Section)	UKIM – Medical Faculty Department of Pathology			
5.	Degree of education (first or second cycle)	Integrated cycle			
6.	Academic year / Semester	Third / V	7.	No. of ECTS credits	9
8.	Lecturer	Head of department: Liljana Spasevska *The lectures are conducted by all teachers at the department of Pathology			
9.	Conditions for enrolling the subject	Passed first part of the professional exam Fulfilled conditions for enrolment in the Vth semester			
10.	**Aims of the subject program (skills):** • The student will get to know the causes and general mechanisms of development of the diseases, as well as understand the structural and functional changes in the cells, tissues and organs by using the routine morphological and contemporary molecular techniques. • While studing general pathology, the student will learn about the basic cellular and tissue responses to various pathological stimuli. • In the special section, the sudent will learn the characteristic responses and changes during various pathological conditions of RES, cardiovascular and respiratory system. • The student will learn the macroscopical and histological methods of analysis of the morphological changes in the organs, tissues and cells, based on which the diagnosis is established and therapy is planned.				
11.	**Content of the subject program:** **Theory:** General pathology and part of the special pathology: • Cellular injury, adaptations and death • Hemodynamic disorders, thrombosis and schock				

	• Acute and chronic inflammation • Tissue regeneration and reparation • Specific inflammation • Genetic diseases • Immunopathology • Environmental and nutritional diseases • Pathology of the neoplasia • Pathology of the reticuloendothelial system • Pathology of the cardiovascular system • Pathology of the respiratory system **Practical training:** Learning the skills of microscopic analysis and diagnostics on histopathological slides, dissection and macroscopic analyses of surgical specimens, autopsy technique, interpretation of the changes with determination of the basic disease and immediate cause of death; altogether, practical application of the acquired theoretical knowledge.
12.	**Methods of learning:** Interactive lecutres, practical excercises / seminars

<table>
<tr><td>13.</td><td colspan="3">Total time available</td><td colspan="2">270 classes
Credits 9x30 classes per 1 credit= 270
270-135 theoretical classes, excercises and seminars= 135 classes home learning)</td></tr>
<tr><td>14.</td><td colspan="3">Distribution of the available time</td><td colspan="2"></td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1</td><td>Lessons – theoretical lessons</td><td>75 classes</td></tr>
<tr><td>15.2</td><td>Exercises (laboratory), seminars, team work</td><td>Exercises: 60 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1</td><td>Project tasks</td><td>Facultative</td></tr>
<tr><td>16.2</td><td>Independent tasks</td><td>Facultative</td></tr>
<tr><td>16.3</td><td>Home learning</td><td>135 classes</td></tr>
<tr><td rowspan="2">17.</td><td colspan="4">Evaluation points</td></tr>
<tr><td>17.1</td><td>Tests</td><td colspan="2">min-max
Continuous checks of knowledge* points 12 – 20

Continuous checks of knowledge (colloquium):
2 written tests
Covering the following areas of Pathology 1:
The first colloquium:
1. Cellular injury, adaptations and death
2. Hemodynamic disorders, thrombosis and shock
3. Acute and chronic inflammation The second colloquium:
1. Tissue regeneration and reparation
2. Specific inflammation
3. Genetic diseases
4. Immunopathology
5. Environmental and nutritional pathology

Students can obtain 12- 20 points from one colloquium</td></tr>
<tr><td></td><td></td><td>Final exam</td><td colspan="2">min-max
Oral part* points 13 - 23
Practical part** points 13 - 23</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td colspan="2">*Oral part (integrative) - 2 questions from the fields of pathology of neoplasia, RES, cardiovascular system and respiratory system, as well as integrative knowledge of pathology important for understanding of the entire subject and medical practice.
(for grade 10=21-23 points; for 9=19-20 points; for 8=17-18 points; for 7=15-16 points; for 6=13-14 points)

**Practical part (according to the catalogue of skills): microscopic analysis and diagnosis of histopathological slides, dissection and macroscopic analyses of surgical specimens.
(for grade 10=21-23 points; for 9=19-20 points; for 8=17-18 points; for 7=15-16 points; for 6=13-14 points)

The student must get at least the minimum points for each part of the exam in order to get the points from the final exam. Otherwise, the exam is considered to be failed.</td></tr>
<tr><td></td><td>17.2</td><td>Seminar / project (presentation: written and oral)</td><td colspan="2">min - max
Seminar work 1 – 2 points</td></tr>
<tr><td></td><td>17.3</td><td>Active participation</td><td colspan="2">min - max
Theoretical lessons* points 1 - 2
Practical lessons** points 10 – 12

*Attendance at theoretical lessons
Up to 35% 0 points
35%-70% 1 points
71%-100% 2 points

** Practical excercises (24 groups of exercises lasting 4 classes):
Attendance: 0.25 points
Colloquium on missed exercise 0.25 points</td></tr>
<tr><td>18.</td><td colspan="2">Criteria for grading (points / grade)</td><td>Up to 59 points</td><td>5 (five) F</td></tr>
<tr><td></td><td></td><td></td><td>from 60 to 68 points</td><td>6 (six) E</td></tr>
<tr><td></td><td></td><td></td><td>from 69 to 76 points</td><td>7 (seven) D</td></tr>
<tr><td></td><td></td><td></td><td>from 77 to 84 points</td><td>8 (eight) C</td></tr>
<tr><td></td><td></td><td></td><td>from 85 to 92 points</td><td>9 (nine) B</td></tr>
<tr><td></td><td></td><td></td><td>from 93 to 100 points</td><td>10 (ten) A</td></tr>
</table>

19.	Conditions for signature and for taking the final exam	**Conditional criteria**: **Conditions for a signature** In order to get a signature, the student has to attend the theoretical lessons, practical excercises and the seminars, and to achieve at least minimum points (1+10 points). **Conditions to take the final exam** In order to take the final exam, the student has to achieve at least a minimum points for each of the periodical evaluations separately (12+12 points), or get at least 30% of the total number of points provided for continous check of knowledge (6+6 points); during the exam session the student must take an examination for the failed periodical evaluation(s) first, and afterwards the student may proceed to the final exam. The final grade is formed according to the grading table, based on the sum of the points earned from all activities, continuous checks of knowledge and the final exam.
20.	Teaching language	Macedonian
21.	Method for monitoring the quality of lectures	Student`s anonymous evaluation of the subject, teachers and associates involved in the educational process.

22. Literature

22.1 Mandatory literature

No.	Author	Title	Publisher	Year
1	Kumar V, Cotran RS, Robbins SL. Robbins	Basic Pathology. 7th ed.	W.B. Sounders Company,Pilade lphia	2003
2	Винај Кумар, Абул Абас, Нелсон Фаусто, Ричард Мичел	Основи на патологијата според Робинс	Табернакул	2010
3	Катедра по патологија – група автори	Избрани поглавја од Патологија 1	Медицински факултет, Скопје, УКИМ	2010
4	Катедра по патологија – група автори	Практикум за хистопатолошки вежби	Медицински факултет, Скопје, УКИМ	2008
5				

22.2 Additional literature

No.	Author	Title	Publisher	Year
1	Kumar V, Kotran RS, Robins SL.	Osnovi patologije. 5 izdanje	Školska knjiga, Zagreb,	1994
2	Kumar, Abbas, Fausto, Aster	Pathologic Basis of Disease, eight edition	Saunders	2010

		3	Робинс и Котран	Патолошки атлас	Saunders Elsevier Академски печат	2006 2010
		4	Робинс и Котран	Патолошка основа на болестите - 8 изд.	Арс Ламина-публикации	2015
		5				

1.	Title of the Subject	**PATHOLOGY 2**
2.	Code	MED-421
3.	Study program	General Medicine

4.	Organizer of the study program (Unit, Institute, Cathedra, Section)	UKIM-Medical Faculty Department of Pathology			
5.	Degree of education (first, second cycle)	Integrated cycle			
6.	Academic year / Semester	III/VI	7.	No. of ECTS credits	8
8.	Lecturer	Head of department: Liljana Spasevska *The lectures are conducted by all teachers at the department of Pathology			
9.	Conditions for enrolling the subject	Passed first part of the professional exam Fulfilled conditions for enrolment in the VIth semester			
10.	**Aims of the subject's program (skills):** • To enable learning of the ethiopathogenetic mechanisms of the diseases. • To enable to learning of the morphologic basis, macroscopic and histopathologic changes in tissues and organs in diseases of all systems. • To train the students for morphologic diagnostics of the diseases, as well as to introduce the contemporary diagnostic techniques. • To introduce the basic clinical manifestations of the diseases.				
	Content of the subject program: **Theory:** Pathology by systems • Pathology of the digestive system • Pathology of the liver, gallbladder and pancreas • Pathology of the urinary system • Pathology of breast • Pathology of the endocrine system • Pathology of the central nervous system • Pathology of the genital system • Pathology of skin • Pathology of the locomotion system **Practical training:** Learning the skills of microscopic analysis and diagnostics on histopathologic slides, dissection and macroscopic analyses of surgical specimens. Learning the manual skills of autopsy including determination of the main disease, complications of the main disease, prior diseases and determining the cause of death.				
	Learning methods: Interactive lectures, practical exercises/seminars				

13.	**Total time available**		240 hours Credits 8 x 30 hours for 1 credit = 240 hours 120 hours lectures, exercises and seminars + 120 hours homework	
14.	Distribution of the total time			
15.	Forms of teaching activities	15.1	Lectures-theoretical teaching	60 hours
		15.2	Exercises (laboratory), seminars, team work	60 hours
16.	Other activities	16.1	Projects	Facultative
		16.2	Independent tasks	Facultative
		16.3	Homework	120 hours
17.	Grading points			
	17.1	Tests	min.-max. Continous checks of knowledge* points 12 – 20 **Continous check of knowledge (colloquium):** 2 written tests Covering the following areas of Pathology 2: **The first colloquium:** 1. Pathology of the digestive system, 2. Pathology of the biliary system and pancreas. 3. Pathology of the urinary system. **The second colloquium:** 3. Pathology of breast 4. Pathology of the endocrine system 5. Pathology of the central nervous system Students can obtain 12- 20 points from one colloquium	

		Final exam	min.-max. Oral part* points 13 - 23 Practical part** points 13- 23 ***Oral part** (**integrative)-** 2 questions from pathology of the genital system, skin and locomotory system, as well as integrative knowledge of Pathology 2 important for understanding of the entire subject and medical practice (for grade 10=21-23 points; for 9=19-20 points; for 8=17-18 points; for 7=15-16 points; for 6=13-14 points) ****Practical part (according to the catalogue of skills):):** microscopic analysis and diagnosis of histopathological slides and autopsy or macroscopic analysis of surgical specimens including theoretical discussion about the topic concerned. (for grade 10=21-23 points; for 9=19-20 points; for 8=17-18 points; for 7=15-16 points; for 6=13-14 points) Thje student must get at least the minimum points for each part of the exam in order to get the points from the final exam. Otherwise, the exam is considered to be failed.
	17.2	Seminar/project (presentation: written and oral)	min.-max. Seminar 1 - 2 points Presentation
	17.3	Active participation	min.-max. Theoretical lessons* points 1 - 2 Practical lessons** points 10 – 12 *Attendance at theoretical lessons Up to 35% 0 points 35%-70% 1 point 71%-100% 2 points

			** Practical exercises (24 groups of exercises with a duration of 4 hours): Attendance: 0.25 points Colloquium on missed exercise 0.25 points	
18.	Grading criteria (points /grade)		Up to 59 points	5 (five) F
			60 to 68 points	6 (six) E
			69 to 76 points	7 (seven) D
			77 to 84 points	8 (eight) C
			85 to 92 points	9 (nine) B
			93 to 100 points	10 (ten) A

19.	Conditions for signature and for taking the final exam	**Conditional criteria**: **Condition for a signature** In order to get a signature, the student has to visit the theoretical lessons, practical exercises and seminars, and has to achieve at least a minimum points (1+10 points) **Condition to take the final exam** In order to take the final exam, the student has to achieve at least a minimum points for each of the periodical evaluations separately (12+12 points), or get at least 30% of the total number of points provided for continous check of knowledge (6+6 points); during the exam session the student must take an examination for the failed periodical evaluation(s) first, and afterwards the student may proceed to the final exam. The final grade is formed according to the grading table, based on the sum of the points earned from all activities, continuous checks of knowledge and the final exam.
20.	Teaching language	Macedonian
21.	Method for monitoring the quality of lectures	Student`s anonymous evaluation of the subject, teachers and associates involved in the educational process.

22. Literature

Mandatory literature (22.1)

#	Author	Title	Publisher	Year
1	Винај Кумар, Абул Абас, Нелсон Фаусто, Ричард Мичел	Основи на патологијата според Робинс	Табернакул	2010
2	Катедра по патологија – група автори	Избрани поглавја од Патологија 1	Медицински факултет, Скопје, УКИМ	2010
3	Катедра по патологија – група автори	Практикум за хистопатолошки вежби	Медицински факултет, Скопје, УКИМ	2008

Additional literature (22.2)

#	Author	Title	Publisher	Year
1	Kumar, Abbas, Fausto, Aster	Pathologic Basis of Disease, eight edition	Saunders	2010
2	Робинс и Котран	Патолошки атлас	Saunders Elsevier Академски печат	2006 2010
3	Робинс и Котран	Патолошка основа на болестите - 8 изд.	Арс Ламина-публикации	2015
4				
5				

1.	Subject	**BASIC NUCLEAR MEDICINE**
2.	Code	MED 315

3.	Study Program		General Medicine		
4.	Institution (Unit, Institute, Chair, Department)		Ss Cyril and Methodius University, Medical Faculty, Department of Pathophysiology and Nuclear Medicine		
5.	Degree of education (first or second cycle)		Integrated 6-year study		
6.	Study year/semester		Third (III) / Fifth(V)	7.Number of credits	1.5
8.	**Responsible teacher**		Prof. Olivija Vaskova, PhD, MD		
9.	Preconditions		Obtained credits and passed final exam of Biophysics		
10.	Teaching goals: • To become acquainted with the basics of nuclear medicine, production of radioisotopes and radiopharmaceuticals. • To get acquainted with radionuclide application in diagnosis and therapy of diseases.				
11.	Brief content: **Theoretical course:** • Physical bases of radioactivity, types of decay, radioactivity detectors. • Radiopharmaceuticals preparation and application. • Principles of radiotracers methods, application of radionuclides in diagnostic procedures and therapy of diseases. **Practical lessons:** • Routine procedures in detection and measurement of radioactivity. • The application of radionuclides for In vivo and In vitro procedures. • Presentation of the most common performed nuclear medicine scintigraphic diagnostic procedures.				
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, visual studying, practical exercises, computer-assisted learning.				
13.	Total available time:		45classes		
14.	Organization of the course		30 classes - theoretical course, practical course, seminars 15 classes - home individual learning		
15.	Forms of teaching activities	15.1.	Theoretical course		20 classes
		15.2.	Practical course, Seminars		10 classes
16.	Other forms of activities	16.1.	Practice		
		16.2.	Individual tasks		
		16.3.	Individual (home) learning		15 classes
	Method of assessment				
	17.1	Tests	min – max **Continuous assessment** **Final exam: final test +oral examination** 1. Final test: all unites of the theoretical and practical course with the exception of the theoretical part devoted to nuclear medicine in the field of oncology 36-60 points 2. Oral examination: integrative knowledge		

			of the application of nuclear medicine methods in the oncology field 15-25 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.

	17.2	Seminar paper/project (oral/written presentation)	min – max	
	17.3	Active participation	min – max Theoretical course (% of presence) • min.30% 1 point 1-5 • 31-70% 2 points • 71-100% 5 points Practical course 6 - 10	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses	
20.	Language of instruction		English	
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.	
22.	Textbooks			
	22.1.	Mandatory		
		1.	Basic nuclear medicine,	Vaskova O, Miceva Ristevska S, Pop Gjorcheva D, Miladinova D, Loparska S, Janevik-Ivanovska E:	Boro Grafika, Skopje,	2008
	22.2.	Additional				
		1.	*Essentials of Nuclear Medicine Imaging: Expert Consult*	Mettler F. A., Jr. and Guiberteau M.J :	Saunders, ISBN: 1455701041	2012

1.	**Subject**	**BIOCHEMISTRY 1**
2.	**Code**	MED-212
3.	**Study Program**	General Medicine
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of Biochemistry and Clinical Biochemistry

5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Second year /III	7.	Number of credits	7

8.	**Responsible teacher**	Prof. Jasna Bogdanska The lectures are given by all members of the Department of Biochemistry and Clinical Chemistry
9.	**Preconditions:**	Passed exam in Medical chemistry
10.	**Teaching goals of the study program (competencies): The students have:** ✦ To learn and to define the different roles of the three different classes of macromolecules in the human body: proteins, carbohydrates and lipids as well as, the complex compounds build of these macromolecules: ✦ To learn the structure and the transport trough the biological membranes; ✦ To define the vitamins as the enzyme cofactors and as hormones (vitamin A and D)and antioxidants (vitamin E) and as anti-hemorrhagic compound (vitamin K); ✦ To be informed about the 6 classes of the enzymes, ✦ To understand the types of enzyme catalysis and the types of the catalyses, enzyme kinetics and inhibition of the enzyme reactions; ✦ To understand the biosynthesis of the biological molecules (carbohydrates, proteins and lipids)and the catabolism to the final products; and to understand the regulation of the most important biochemical pathways; ✦ To understand the role of ATP in the body and in the biological oxidation: ✦ To understand the metabolism of haemoglobin; ✦ To understand the respiratory chain, oxidative phosphorilation and ATP synthesis.	
11.	**Contents of the study program:** ✦ **Theoretical course**: ✦ Biochemistry of the cell ✦ Chemical structure and function of the proteins , haemoglobin, myoglobin, amino-acid derivates ✦ Carbohydrates as a compounds of the cell membrane, glycosaminoglycanes (hetero- polysaccharides of the extra cellular matrix), proteoglycanes, glycoproteins, glycolipids; ✦ Lipids as a energy storage, as a membrane components, signals, cofactors and pigments; ✦ Biological membranes and transport; ✦ Vitamins as the enzyme cofactors and as hormones (vitamin A and D)and antioxidants (vitamin E) and as anti-hemorrhagic compound (vitamin K); Michaelis-Menten- equation, Hill's equation; enzyme inhibition; alosteric and covalent modification of the enzyme activity; ✦ General metabolism ✦ Metabolism of carbohydrates: glicolisis glukoneogenesis, pentose-phosphate cycle, glycogenesis; glicogenolisis. ✦ Tricarboxylic acid cycle, oxidative decarboxylation of piruvate. ✦ Metabolisam of lipids, beta oxidation of the fatty acids, metabolism of ketone bodies, fatty acids synthesis, cholesterol synthesis, phospholipids, glicolipids, cholesterol catabolism. ✦ Protein metabolism, the fate of nitrogen, urea synthesis, the fate of carbon chain of the amino acids, synthesis of the non-essential amino acids, amino acid derivates, regulation of the metabolic pathways. ✦ Hemoglobin Metabolism ✦ Respiratory chain, oxidative phosphorilation and ATP synthesis.	

	Practical course: ✦ Plasma proteins separation techniques, lipoprotein separation tecniques (electrophoresis), carbohydrates separation techniques (chromatography). ✦ Michaelis-Menten- equation, pH optimum and temperature optimum; ✦ Quantification of several biochemical parameters like vitamins, proteins, carbohydrates and lipids in human serum. .			
12.	**Methods of studying:** interactive lectures, group work, exercises, seminar paper.			
13.	**Total no. of hours:**		210 hours	
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	45 hours
		15.2	Practicals (laboratory, clinical), seminars, team work	48 hours
16.	**Other types of activities**	16.1	Project assignments	12 hours
		16.2	Individual tasks	
		16.3	Home studying	105 hours

17.	**Assessment of knowledge:** points			
	17.1	Tests	2 Continuous tests • Test 1 • Test 2	min.-max. total... points 6 -10 6 - 10
		Final exam	Subject: Biochemistry 1 Practical exam Oral exam	points min.-max. 12 - 20 21 - 35
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	min.-max. 1-3 points
	17.3	Active participation	Theoretical course Practical course	min.-max. points: 1-5 points: 13-17

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** I n order to get a signature that the course has been successfully finished the students are requested to actively participate in th theoretical course (min 1 point) practical course (the student has to be present on all the lectures) and seminars (minimum 1 point).
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

<table>
<tr><td rowspan="6">22.</td><td colspan="6">Literature</td></tr>
<tr><td rowspan="3">22.1</td><td colspan="5">Mandatory textbooks</td></tr>
<tr><td></td><td>Author</td><td>Title</td><td>Publisher</td><td>Year</td></tr>
<tr><td>1</td><td>Robert K. Merey and all.</td><td>Harper’s Illustrated Biochemistry</td><td>ISBN-13: 9780071625913</td><td>2006</td></tr>
<tr><td>2</td><td>David. L. Nelson</td><td>Lehninger Principles of Biochemistry</td><td>ISBN-13: 9781464126116</td><td></td></tr>
<tr><td rowspan="2">22.2</td><td colspan="5">Additional literature</td></tr>
<tr><td></td><td>Author</td><td>Title</td><td>Publisher</td><td>Year</td></tr>
<tr><td></td><td>1</td><td>Michael Lieberman</td><td>Mark’s Basic Medical Biochemistry</td><td>Lippicott Williams & Wilkins</td><td>2013</td></tr>
<tr><td>1.</td><td colspan="2">Subject</td><td colspan="4">BIOCHEMISTRY 2</td></tr>
<tr><td>2.</td><td colspan="2">Code</td><td colspan="4">MED-221</td></tr>
<tr><td>3.</td><td colspan="2">Study Program</td><td colspan="4">General medicine</td></tr>
<tr><td>4.</td><td colspan="2">Organizing Institution (Unit, Institute, Chair, Department)</td><td colspan="4">UKIM-Faculty of Medicine
Department of biochemistry and Clinical Chemistry</td></tr>
<tr><td>5.</td><td colspan="2">Educational degree (first or second cycle)</td><td colspan="4">Integrated cycle</td></tr>
<tr><td>6.</td><td colspan="2">Study year /semester</td><td>Second/ IV</td><td>7.</td><td>Number of credits</td><td>6</td></tr>
<tr><td>8.</td><td colspan="2">Responsible teacher</td><td colspan="4">Prof. Jasna Bogdanska
The lectures are given by the professors, members of the Department of Biochemistry and Clinical Chemistry.</td></tr>
<tr><td>9.</td><td colspan="2">Preconditions:</td><td colspan="4">Signaturefrom Biochemistry 1</td></tr>
<tr><td>10.</td><td colspan="6">Teaching goals of the study program (competencies): The student has:

✦ To know to recognize the basic chemical structures of the nucleic acid bases, of nucleotides and of nucleosides (both ribo-and deoxyribo-forms);
✦ To describe the flow of genetic information (DNA→ proteins); naming the three types of RNAand their roles
✦ To learn about the digestion and absorbtion of nutrients;
✦ To learn about plasma proteins, immunoglobulins , biochemistry of the blood count elements,
✦ To learn and explain the metabolism of water and electrolytes.
✦ To describe signal transduction
✦ To define hormones and hormone cascade system; introducingpeptide, amino acidderived hormones and steroid hormones and their role in signal transducing.
✦ To be informed about the translocation of proteins in different cell compartments
✦ To know to describe and explain the metabolic processes in the: kidney, liver, muscle, bone, blood, nervous system.</td></tr>
<tr><td>11.</td><td colspan="6">Contents of the study program:
Theoretical course::
✦ Nucleic acid bases, of nucleotides and of nucleosides (both ribo-and deoxyribo-forms);
✦ Structure and function of the nucleic acids, protein synthesis, protein degradation, gene expression regulation;
✦ Signal transduction, second messengers, tyrosine kinase, G-couopled protein receptors, JAK-Stat kinase, protein kinase G.</td></tr>
</table>

	✦ Hormones, definition, chemical structure, biosynthesis, transport, degradation, mechanism of action, physiological effects. ✦ Nutrition ✦ Water metabolism, elektrolytes and acid-bas balance. ✦ Translocation of the proteins, importunes and exportines; ✦ Plasma proteins, immunoglobuline(s) and biochemical processes in the erythrocytes, leucocytes, thrombocytes, hemostasis. ✦ Biochemistry of different tissues: Liver, Kidneys, Nervous system; Extracellular matrix, collagen, elastin, laminin, bone, cartilage; Biochemistry of the muscle tissue and cytoskeleton. ✦ Free radicals and metabolism of xenobiotics. ✦ **Practical course:** ✦ Qualitative determination of DNA in the tissue sample of the experimental animal(s); ✦ Quantification of the urea, acidum uricum, creatinine in human plasma and urine samples; ✦ Quantification of bilirubin in human serum; ✦ Quantification of electrolytes in human serum; ✦ Qualitative and quantitative analyzes of urine samples; ✦ 4 – 20 % SDS-PAGE as a technique of the separation of proteins in urine. .				
12.	**Methods of studying: :** class room oriented lectures, interactive lectures, group work, practical training, seminar paper.				
13.	**Total no. of hours:**			180 hours	
14.	**Distribution of the available time**				
15.	**Type of educational activity**	15.1	Lectures-theoretical course	35 hours	
		15.2	Practicals (laboratory, clinical), seminars, team work	39 hours + 6 hours of Seminars	
16.	**Other types of activities**	16.1	Project assignments		
		16.2	Individual tasks		
		16.3	Home studying	75 hours	
17.	**Assessment of knowledge:** points				
	17.1	Tests	2 Continuous tests • Test 1: • Test 2	min.-max. points 9-15 9-15	
		Final exam	Subject: Biochemistry 2 Practical exam (Test) Oral exam	min.-max. 9-15points 21-35 points	
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	min.-max. 1-3 points	

	17.3	Active participation	Theoretical course Practical course	min.-max. points 1-5 points 10-12
18.	Knowledge assessment		up to 59 points	5 (five) F
	criteria: (points/grade)		60 to 68 points	6 (six) E
			69 to 76 points	7 (seven) D
			77 to 84 points	8 (eight) C
			85 to 92 points	9 (nine) B
			93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam		**Conditional criteria for assessment of knowledge: :** I n order to get a signature that the course has been successfully finished the students are requested to actively participate in the theoretical course (min 1 point) practical course (the student has to have 100% presence) and seminars (minimum 1 point). In order to take the final exam the student has to fulfil the tasks for the signature as well as to pas the written exams with 60% each. The test for the practical examination is independent and is passed if the student has gained 60% of the total number of the points. The final score is formed according to the table from the score of total planed activities taken into account.	
20.	Language of the course		English	
21.	Method for evaluation of the quality of education		Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	

22. Literature

Mandatory textbooks

	Author	Title	Publisher	Year
22.1 1	Robert K. Merey and all.	Harper's Illustrated Biochemistry	ISBN-13: 9780071625913	2006
22.1 2	David. L. Nelson	Lehninger Principles of Biochemistry	ISBN-13: 9781464126116	

Additional literature

	Author	Title	Publisher	Year
22.2 1	Michael Lieberman	Mark's Basic Medical Biochemistry	Lippicott Williams & Wilkins	2013

1.	Subject	**PHYSIOLOGY 1**		
2.	Code	MED 213		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	First (I) / First (I)	7.Number of credits	11
8.	**Responsible teacher**	Prof. Sanja Mancevska, PhD, MD		
9.	Preconditions	Gained credits (passed exam) from Morphology and physiology of cell, Histology and Embryology 1, Anatomy 1 and 2		

10.	Teaching goals: • To gain insight in functional organization of the human body and to be able to:

	• Define homeostasis and to explain the mechanisms of maintenance of the constancy of the internal environment. • Define the functions of every system in the body, to explain the mechanisms through which they are achieved and to connect them with morphological structure • Understand and interpret the relations between different body systems • Predict and explain integrated responses of the systems during physiological effort • Perform certain practical procedures			
11.	Brief content: **Theoretical course:** •Functional organization of the human body, mechanisms for maintaining consistency of the internal environment; feedback and regulation of functions of the body. •Physiology of skeletal and smooth muscles •Physiology of heart, cardiac cycle, heart tones, heart rate; physiology of circulation, arterial and venous system; microcirculation and lymphatic system, control mechanisms of regulation of circulation, regulation of blood pressure. •Physiology of body fluids and their regulation. •Physiology of the urinary system •Physiology of blood, blood elements, blood hemostasis and coagulation. • Physiology of the respiratory system • Physiology of the gastrointestinal system • Physiology of metabolism, metabolic processes of carbohydrates, fats and proteins, physiological regulation of energy balance, basal metabolism, diet. •Physiological functions of the liver. •Skin physiology, thermoregulation, body temperature. •Activity of the organism under specific conditions, sports physiology, sports impact on bodies and systems, functioning of the organism in extreme environmental conditions: high altitude and great depths. **Practical lessons:** •Examination of the activity of the muscles, testing the activity of the heart muscle in experimental animals and the influence of various factors on the heart; bioelectrical currents in humans and electrocardiography. •Examination of blood and blood components (red blood cells, white cells and platelets), determination of blood groups and test methods for hemostasis. •Examination of respiratory function (functional testing). •Examination of the function of the gastrointestinal system (determination of acidity of gastric juice and the action of digestive enzymes).			
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, practical exercises on experimetal animal models and virtual models with computer-assisted learning.			
13.	Total available time:			330 classes
14.	Organization of the course			150 classes - theoretical course, practical course, seminars 180 classes - home individual learning
15.	Forms of teaching activities	15.1.	Theoretical course	75 classes
		15.2.	Practical course, Seminars	75 classes
16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	180 classes
17.	Method of assessment			

	17.1	Tests	min – max **Continual assessment - 3 (written)** • Physiology of blood and respiratory system 9-15 points • Physiology of muscle, heart and circulatory system 9-15 points • Physiology of the urinary system, body fluids and gastrointestinal system. 9-15 points **Final exam: final test (written) + practical examination +oral examination** **1.** Final test (written): liver metabolism, thermoregulation, physiology of sport and physiology in special conditions 9 - 15 points **2.** Practical and oral examination: certain practical procedures and integrative knowledge of the whole material learnt in Physiology 1. 14-23 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.
	17.2	Seminar paper/project (oral/written presentation)	min – max 1 - 3
	17.3	Active participation	min – max Theoretical course 1-3 Practical course 8 - 11 Completed textbook mandatory

18.	Grading criteria (points / grade)	up to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the three continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.
20.	Language of instruction	Macedonian
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons and anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Textbooks	
	22.1.	Mandatory

		1.	Guyton AC, Hall JE.	Textbook of Medical Physiology 12 th edition.	Elsevier, London,	2011
		2.	Dejanova B, Petrovska S, Todorovska L.	Physiology of certain organ systems.	Medical Faculty, Skopje	2012
		3.	Costanzo LS.	Physiology	Elsevier, London,	2006
		4.	Efremovska Lj and all.	Practicum in Physiology 1.	Medical Faculty, Skopje	2012
	22.2.	Additional				
		1	Widmaier E, Raff H, Strang K.	Vander's Human Physiology: The Mechanisms of Body Function.	McGraw - Hill Education	2013

1.	Subject	**PHYSIOLOGY 2**		
2.	Code	MED 222		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	First (I) / First (I)	7.Number of credits	6
8.	**Responsible teacher**	Prof. Sanja Mancevska, PhD, MD		
9.	Preconditions	Signature from Physiology 1		
10.	Teaching goals: • To gain insight in the regulatory systems of the human body and to be able to: • Define the functions of the nerve system, sensory senses and endocrine system, to explain the mechanisms through which they are achieved and to connect them with morphological structure. • Understand and interpret the interrelations between the nerve and endocrine system and their relations with other organ systems. • To explain integrated responses of the regulatory systems during the maintenance of the normal function of the human body • Perform certain practical procedures			

11.	Brief content: **Theoretical course:** • Physiology of the nervous system, neuron, nerve impulse, synapses, neurotransmitters and nevromodulatori. • Physiology of sensory system, receptors, neural pathways, sensory cortex, somatic sensations, sense of touch and position; sense of vision; sense of hearing; sense of balance; sense of taste; sense of smell; sense of pain. • Physiology of the motor cortex, basal ganglia, cerebellum, brainstem, spinal cord, vegetative spinal reflexes, physiological functions of the autonomic nervous system. • Physiology of the reticular formation and physiology of the limbic system and hypothalamus. • Endocrine physiology and physiological mechanisms of action of hormones of the endocrine glands: pituitary, tireoidea, parathyroid glands, endocrine pancreas, adrenal glands. **Practical lessons:** • Measurement of body temperature and basal metabolism. • Examination of the peripheral nervous system in experimental animals, its excitability and conduction; examination of clinically important human reflexes; examination of the sense of vision, sense of sound and balance, sense of taste and smell; methods of brain activity. • Examination of the autonomic nervous system.

	• Examination of the functions of the endocrine glands in experimental animals.			
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, practical exercises on experimetal animal models and virtual models with computer-assisted learning.			
13.	Total available time:		180 classes	
14.	Organization of the course		90 classes - theoretical course, practical course, seminars 90 classes - home individual learning	
15.	Forms of teaching activities	15.1.	Theoretical course	45 classes
		15.2.	Practical course, Seminars	45 classes
16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	90 classes
17.	Method of assessment			

	17.1	Tests	min – max **Continual assessment - 2 (written)** • Physiology of peripheral and central nervous system. 12-20 points • Physiology of senses, neuronal control of mood, emotion and state of awareness; and intellectual functions. 12-20 points **Final exam: final test (written) + practical examination +oral examination** **1.** Final test (written): physiology of endocrine 12 - 20 points **2.** Practical and oral examination: certain practical procedures and integrative knowledge of the whole material learnt in Physiology 2. 14-23 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	
	17.2	Seminar paper/project (oral/written presentation)	min – max 1 - 3	
	17.3	Active participation	min – max Theoretical course 1-3 Practical course 8 - 11 Completed textbook mandatory	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the three continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.	
20.	Language of instruction		Macedonian	
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons and anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	
22.	Textbooks			
	22.1.	Mandatory		

		1.	Guyton AC, Hall JE.	Textbook of Medical Physiology 12 th edition.	Elsevier, London,	2011
		2.	Maleska V, and all.	Practicum in Physiology 2.	Medical Faculty, Skopje	2012
		3.	Costanzo LS.	Physiology	Elsevier, London,	2006
		4.	Despopoulos A, Silbernagl S.	Color atlas of Physiology.	New York	2003
	22.2.	Additional				
		1	Widmaier E, Raff H, Strang K.	Vander's Human Physiology: The Mechanisms of Body Function.	McGraw - Hill Education	2013

1.	**Subject**	**BASICS IN HUMAN GENETICS**			
2.	**Code**	MED 124			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of himan genetics			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	first/second	7.	Number of credits	5
8.	**Responsible teacher**	Chief of the cathedrae - Prof d-r Elena Shukarova-Angelovska * the course is conducted by all members of the Cathedra of human genetics			
9.	**Preconditions:**	Obtained the signature of the morphology and physiology of the cell			
10.	**Teaching goals of the study program (competencies):** • Training the students about the basic genetic principles that influence medical practice • Training the students regarding basic principles of cytogenetics, molecular genetics, biochemical genetics, population genetics, reproductive genetics and genetics in forensic medicine • Educating the students on basic principles in communication with families with genetic disorders and malformations • Training the students about basic ethical principles in genetics				

<table>
<tr><td>11.</td><td colspan="4">Contents of the study program:
Theoretical course:
• Basics of human genetics - organization of prokaryotic and eukaryotic DNA, nuclear and non-nuclear DNA, basic processes of replication, transcription and translation, regulation of gene expression and signaling, gene mapping in prokaryotes and eukaryotes, recombinant DNA cloning, basics of cytogenetics, chromosome organization, frequent chromosomal aberrations, cell cycle and mitotic and meiotic division, and errors in their behavior, cellular and molecular basis of heredity, Mendelian genetics, nonmendelian inheritance - complex and multifactorial inheritance genetic factors in common diseases. Mapping and identification of genes for monogenetic diseases. Developmental genetics and processes that disrupt embryonic development. Mutations- types, ways of occurrence and systems for repair of the DNA. Molecular and biochemical basis of genetic diseases. Basics of onkogenetics and immunogenetics. New technologies and future possibilities for gene therapy. Prenatal and postnatal genetic testing of inherited and genetic conditions, ethical aspects of genetic examinations. Practical course:
• Methods of genetic analysis - DNA extraction, methodts for detecting of known and unknown mutations and polymorphisms. Methods of writing and interpretation of the results. Basics in cytogenetics - performing karyotype, staining methods, FISH, detection of chromosomal aberrations. Interpretation of the mendelian and nonmendelian inheritance, interpretation of the types of the mutations, oncogene changes. Screening methods in the population-methods and organisation.
• Basics in dysmorphology and clinical recognition of the syndrome and multimalformations, methods for prenatal and postnatal detection of malformations, genetic counseling.</td></tr>
<tr><td>12.</td><td colspan="4">Methods of studying: Integrated lecturers, practical tutorials/seminars</td></tr>
<tr><td>13.</td><td colspan="2">Total no. of hours:</td><td colspan="2">150 hours: 30 theoretical lecturers, 30 practical tutorials, 90 hours home learning and seminar work</td></tr>
<tr><td>14.</td><td colspan="2">Distribution of the available time</td><td colspan="2"></td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Type of educational activity</td><td>15.1</td><td>Lectures-theoretical course</td><td>30 hours</td></tr>
<tr><td>15.2</td><td>Practicals (laboratory, clinical), seminars, team work</td><td>30hours</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other types of activities</td><td>16.1</td><td>Project assignments</td><td>depending on the interest of student /hours</td></tr>
<tr><td>16.2</td><td>Individual tasks</td><td>depending on the interest of student /hours</td></tr>
<tr><td>16.3</td><td>Home studying</td><td>90 hours</td></tr>
<tr><td>17.</td><td colspan="4">Assessment of knowledge:
points</td></tr>
<tr><td></td><td>17.1</td><td>Tests</td><td colspan="2">3 Continuous tests total... points
<table><tr><td></td><td>min</td><td>max</td></tr><tr><td>Colloquium 1</td><td>5</td><td>15</td></tr><tr><td>Colloquium 2</td><td>5</td><td>15</td></tr><tr><td>Colloquium 3</td><td>7</td><td>20</td></tr></table></td></tr>
<tr><td></td><td></td><td>Final exam</td><td colspan="2"><table><tr><td></td><td>min</td><td>maks</td></tr><tr><td>Theoretical test</td><td>30</td><td>50</td></tr></table></td></tr>
</table>

			Oral exam	21 36
			If the student passes all 3 continuous tests with minimal points (min 60% of the sum of all 3 tests), he can pass directly on the oral exam	
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	min.-max. … points
	17.3	Active participation	Theoretical course Practical course	min.-max. points 1-3 points 4-7
18.	Knowledge assessment	up to 59 points 5 (five) F	criteria: 60 to 68 points 6 (six) E	(points/grade) 69 to 76 points 7 (seven) D
		77 to 84 points 8 (eight) C		
		85 to 92 points 9 (nine) B		
		93 to 100 points 10 (ten) A		
19.	Criteria for obtaining a signature and taking the exam	**Conditional criteria for assessment of knowledge:** For gaining the signiture student s are oblidged to attend final practical teaching with minimal points. To access to the oral exam the student should pass predicted continuous check-ups or gain minimum 60% of points from the written exam. The evaluation of the subject is formed according to the above mentioned scoring, based on the sum of the points of all activities.		
20.	Language of the course	Macedonian, English		
21.	Method for evaluation of quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	Literature			

Mandatory textbooks

	Author	Title	Publisher	Year
1	Prof d-r M. Kocova and	Medical genetics	University 'Curil and Methodius' associates	2013
2	Doz d-r A. Petlickovski	Authorized lecturers	2014	
3	Prof d-r M. Spiroski	Practicum of human genetics 1 and	University 'Curil and Methodius' Madical faculty, Skopje	2009 22.1
4	Проф Др М. Кочова и соработници	Practicum of human genetics 2	University 'Curil and Methodius' Madical faculty, Skopje	2009
5				

Additional literature

		Author	Title	Publisher	Year
22.2	1	Mueller, R.F. and Young, I.D.	Emery's Elements of Medical Genetics. 10th ed.	Elsiever	1998
	2	Strachan T, Read	Human Molecular th ed.	Oxford journals	2007

			A Genetics 4			
		3	Gardner GR	RM, Chromosome abnormalities and 2nd ed	Oxford University Press	1996 Sutherland genetic counseling,
		4	Nussbaum, McInnes, Willard	Thomson&Thomson Genetics in medicine	Elsiever	2007
		5	Peter Russel	I Genetics 3rd ed.	Benjamin Cummings	2011

1.	**Subject**	**BIOPHYSICS**			
2.	**Code**	MED-116			
3.	**Study Program**	General Medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Chair in Medical Physics			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	First/First	7.	Number of credits	2
8.	**Responsible teacher**	Assistant Professor Dr Tomislav Stankovski			
9.	**Preconditions:**	/			
10.	**Teaching goals of the study program (competencies):** • To learn the basic laws of Physics applied in Medicine; • To understand the processes of the living organisms that can be described by the Biophysics models; • To learn the basic laws of mechanics, acoustics, fluids and thermodynamics; • To learn about the electrical and magnetic forces, as well as their occurrence and application in living organisms; • To learn the basic characteristics of Non-ionizing and Ionizing radiation and their use in Medicine.				

11.	**Contents of the study program:** • Biophysics basics and system theory • Biomechanics • Biophysics of fluids • Bioacoustics • Optics • X-ray and nuclear radiation • Thermodynamics • Electrical forces • Electromagnetism **Theoretical course:** • Biophysics basics. Divisions in Biophysics. System theory. System control. Important theories. • Basics of biomechanics. Levers of the locomotor system. Work and power of the man. Mechanical work of the heart. Elasticity. Bone fractures. • Fluids and their characteristics. Liquid viscosity. Hydrodynamics. Physical model of the blood vessels. Surface tension of liquids. Atmospheric pressure. Mechanics of breathing. • Bioacoustics. Oscillations and waves. Sounds waves. Ultrasound. Application of sound in Medicine. • Basic geometric laws in optics. Optical instruments. Eye as an optical instrument. Infrared light. NIRS method. Thermography. Ultraviolet light. Quantum optics. Lasers.

	• X-ray radiation. X-ray spectra. Application of X-ray in Medicine. Computer Tomography. Nuclear physics and nuclear reactions. Nuclear Medicine basics. SPECT and PET methods. Hybrid SPECT-CT methods. • Thermodynamic processes. Biological open systems. Physiological effect of heat on human body. • Electrical forces. Electrostimulation. Heart Bypass. Biopotentials and electrophysiology. • Basics of electromagnetism. Electromagnetic induction. Magnetic resonance. **Practical course:** • Basics of measuring physical quantities: measuring length. • Electrical forces and Ohm law of electrical circuit. • Concentration measurement with Abbe refractometer. • Concentration measurement with Polarimeter of light.

12.	**Methods of studying:** Theoretical lectures and lab experiments			
13.	**Total no. of hours**		60 hours	
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	21 hours
		15.2	Practicals (laboratory, clinical), seminars, team work	9 hours
16.	**Other types of activities**	16.1	Project assignments	/ hours
		16.2	Individual tasks	/ hours
		16.3	Home studying	30 hours
17.	**Assessment of knowledge:** points			

	17.1	Tests	Continuous tests	min.-max. 2 36 - 60
		Final exam	Oral (written) exam	min.-max. 18 - 30
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	min.-max. /
	17.3	Active participation	Theoretical course Practical course	min.-max. 0 - 1 6 - 9

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** Only one absence is permitted for obtaining a signature. The two continuous tests are taken only during the lectures, after that one needs to go to the full exam. The written and the oral test are taken either during the lectures or on the full final exam. In either case, to pass the subject one needs to get at least the minimum required points. Based on the acquired points, the grade is formed according to the table of grades (given above).

20.	Language of the course		English			
21.	Method for evaluation of the quality of education		Anonymous evaluation taken by the students, of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1	Mandatory textbooks				
			Author	Title	Publisher	Year
		1	T. Stankovski	Biophysics – internal materials	Faculty of Medicine	2015
		2	N. Andonovska	Biophysics	UKIM	2005
		3	D. Gersanovski	Biophysics – internal materials	Institute of Physics	2006
	22.2	Additional literature				
			Author	Title	Publisher	Year
		1	W. Bialek	Biophysics: Searching for Principles	Princeton University Press	2012
		2	T. Stankovski	Tackling the inverse problem for nonautonomous systems: Application to life sciences	Springer	2013

1.	Subject	**CELL MORPHOLOGY AND PHYSIOLOGY**
2.	Code	MED 112

3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	First (I) / First (I)	7.Number of credits	5
8.	**Responsible teacher**	Prof. Sanja Mancevska, PhD, MD		
9.	Preconditions	None		
10.	Teaching goals: • Gaining knowledge on the building concept of a cell's structural components and structure and function interconnection • Gaining knowledge on evident morphological changes manifested during the process of mitosis, meiosis and cell apoptosis. • To recognize the cell as a functional unit, to study the functions of individual cellular structures and systems, as well as the interaction of the cell with the environment. • To learn about the cellular production processes, cellular information processes and control mechanisms that enable their physiological function.			
11.	Brief content: **Theoretical course:** • Basic structure and function of prokaryotic cells • Eukaryotic cells: • Morphological characteristics of the cell in mitosis, meiosis and apoptosis. • Morpholocical specificities of different cell types			

	• Function of the cell, the cell's environment and its behavior (motility and communication with the environment and with other cells). • Function of cellular physiological systems. • Functions of the nucleus and cell organelles. • Cell information processes and their regulation. • Cell replication and development. • Specialized cell systems. **Practical lessons:** • Basic structure and function of prokaryotic cells • Eukaryotic cells: Plasmaleme, glycocalix, organellae and nucleus morphology; • Morphological characteristics of the cell in mitosis, meiosis and apoptosis. • Morpholocical specificities of different cell types • Transport through cell membrane • Functions of the nucleus and cell organelles. • Intercellular communication • Specialized tissues (muscle and nerve cell)	
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, independent study by using textbooks, practical exercises on experimetal animal models and virtual models with computer-assisted learning.	
13.	Total available time:	150 classes

14.	Organization of the course		60 classes - theoretical course, practical course, seminars 90 classes - home individual learning	
15.	Forms of teaching activities	15.1.	Theoretical course	34 classes
		15.2.	Practical course, Seminars	26 classes
16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	90 classes
17.	Method of assessment			
	17.1 Tests		min – max **Continual assessment - 1 (written)** • Structure of eukaryotic cells; structural characteristics during mitosis, meiosis and apoptosis; structural specificities of different cell types 23-38 points . **Final exam: final test (written) Physiology** Transport through cell membrane, physiology of cell organelles, physiology of nucleus, cell information systems,	

			specialized cell systems 25 - 43 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	
	17.2	Seminar paper/project (oral/written presentation)	min – max	
	17.3	Active participation	min – max Theoretical course 1-3 Practical course 4-7 Completed textbook mandatory	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the three continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.				
20.	Language of instruction	Macedonian				
21.	Method of monitoring the quality of teaching process	Attendance of students to classes and interactive participation in theoretical and practical lessons and anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Textbooks					
	22.1.	Mandatory				
		1.	Guyton AC, Hall JE.	Textbook of Medical Physiology 12 th edition.	Elsevier, London,	2011
		2.	Milenkova L, Kostovska N.	Structural characteristics of eukaryotic cells.	Skopje	2011
		3.	Cooper GM, Hausman RE.	The Cell: A Molecular Approach.	Sinauer Associates, Boston, USA	2016
	22.2.	Additional				
		1	Widmaier E, Raff H, Strang K.	Vander's Human Physiology: The Mechanisms of Body Function.	McGraw - Hill Education	2013

1.	**Subject**	**CLINICAL BIOCHEMISTRY**			
2.	**Code**	MED-424			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of Biochemistry and Clinical Biochemistry			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Fourth/VIII	7.	Number of credits	1.5
8.	**Responsible teacher**	Prof. Jasna Bogdanska The lectures are given by the professors, members of the Department.			
9.	**Preconditions:**	Completed Biochemistry 2 course			

10.	**Teaching goals of the study program (competencies):** • To understand and to aplly the laboratory findings in the diagnosis of various diseases; • To prepare seminar papers (case reports) related to laboratory parameters important for clinical practice and differential diagnosis				
11.	**Contents of the study program:** **Theoretical course:** ✦ Clinical enzymology; ✦ Plasma proteins and their roles in diagnosis of various disease; ✦ Hyperlipoproteinemia , atherosclerosis, CAD, hypoliporoteinemia; • Liver function tests; jaundice, cirrhosis; • Clinical biochemistry of renal disease; biochemical parameters in diagnosis of kidney disease, ABI, HBI; • Tumor markers in diagnosis and prognosis of malignity disease; • Diabetes mellitus; • Neonatal screening; • Fluid and electrolyte balance ; • Biological factors that influence biochemical parameters. **Practical course:** ✦ Preparation and oral presentation of seminar paper; ✦ Visit to a clinical laboratory.				
12.	**Methods of studying:** class room oriented lectures, interactive lectures, group work, practical training, seminar paper.				
13.	**Total no. of hours:**			45 hours	
14.	**Distribution of the available time**				
15.	**Type of educational activity**	15.1	Lectures-theoretical course	30 hours	
		15.2	Practicals (laboratory, clinical), seminars, team work	4 hours 11 hours Seminars	
16.		16.1	Project assignments		
	Other types of activities	16.2	Individual tasks		
		16.3	Home studying	15 hours	
17.	**Assessment of knowledge:** points				
	17.1				
		Final exam	Subject: Clinical Chemistry Oral exam points	min.-max. 37-65	
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	min.-max. 1-7.5 points	
	17.3	Active participation	Theoretical course Practical course	min.-max. points 21-22.5 points 1-5	
18.	Knowledge assessment criteria: (points/grade)		up to 59 points	5 (five) F	
			60 to 68 points	6 (six) E	
			69 to 76 points	7 (seven) D	
			77 to 84 points	8 (eight) C	

		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** In order to receive the professor's signature for the course, and to enroll the oral exam the students are requested to actively participate in the planned activities.	
20.	Language of the course	English	
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	

22.	Literature				
22.1	Mandatory textbooks				
		Author	Title	Publisher	Year
	1	Gaw A, et al.;	Clinical Biochemistry	Churchill Livingstone: Elsevier	2008
22.2	Additional literature				
		Author	Title	Publisher	Year

1.	Subject	**PHARMACOLOGY**		
2.	Code	MED 323		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated studies		
6.	Study year/semester	Third/ (VI)	7. Number of credits	7
8.	**Responsible teacher**	Prof. Dimce Zafirov, PhD, MD		
9.	Preconditions	Obtained loans for VI semester		
10.	Teaching goals: • Introduction to pharmacology as a subject and its aims; • Introduction to pharmacodynamic characteristics od drugs, how a drug affects an organism,			

	modes of action of drugs upon the body. • Achieving basic knowledge of pharmacokinetic, the branch of pharmacology concerned with the movement of drugs within the body and the importance of knowing the pharmacokinetic properties of drugs. • Acquiring basic knowledge about toxicology and toxicological research as well as their importance in the development of drugs • Treatment of addiction and drug abuse • Understanding the basic principles of pharmacogenetics • Acquiring knowledge of special pharmacology, in meaning of pharmacodynamic groups and their therapeutic areas. • Students will learn how to prescribe medicines and will gain understanding of all pharmaceutical dosage forms.

<table>
<tr><td>11.</td><td colspan="5">Brief content:
Theoretical classes:
• Introduction to pharmacology.
• Pharmacodynamia.
• Pharmacokinetics
• Drug addiction
• Pharmacogenetics
• Pharmacology of central nervous system, psychopharmacology,vegetative nervous system, respiratory system,cardiovascular system, hematology, digestive system, urinary system, hormones, vitamins, antimicrobial drugs.
• Toxicology (separation of toxins, general principles of poisoning, treatment and specific treatment of poisoning).

Practical classes:
• Pharmacography
• Pharmaceutical dosage forms
• Demonstrating experimental models: in vitro and in vivo.</td></tr>
<tr><td>12.</td><td colspan="5">Methods of studying:
Interactive teaching during lectures, practical trainings and seminars.</td></tr>
<tr><td>13.</td><td colspan="3">Total available time:</td><td colspan="2">210 classes</td></tr>
<tr><td>14.</td><td colspan="3">Organization of the course</td><td colspan="2">105 classes - theoretical course, practical course
105 classes - home individual learning</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1.</td><td>Theoretical course</td><td>55 classes</td></tr>
<tr><td>15.2.</td><td>Practical course (laboratory, clinical), seminars, group work</td><td>50 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td>classes</td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td>classes</td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td>105 classes</td></tr>
<tr><td>17.</td><td colspan="5">Method of assessment</td></tr>
<tr><td></td><td>17.1</td><td>Tests</td><td colspan="3">min – max
Continual assessment - points 18 - 30

Continual assessment of knowledge:
Two written tests
First test – basic pharmacology (min 6, max 10 points)
Second test- special pharmacology (min 12, max 20 points)

min – max
Oral examination* points 24-41
Practical examination** points 8-12

*Oral examination (integrative) – 3 questions on the basis of which the integrative knowledge in the field of pharmacology is assessed, which is important for understanding the subject.</td></tr>
<tr><td></td><td></td><td>Final test</td><td colspan="3">**Practical examination (catalog skills) – pharmacography and pharmaceutical dosage form.

The student is obliged to score a minimum of the foreseen points for each part of the exam, in order to take the final exam.
Otherwise, the exam is deemed to have failed.</td></tr>
</table>

	17.2	Seminar paper/project (oral/written presentation)	min – max	
	17.3	Active participation	min – max Theoretical classes* 1-3 Practical classes ** 9 - 14 *Attendance on theoretical classes 30%-50% 1 point 51%-70% 2 points 71%-100% 3 points **Practical classes Attendance : 3 points Activity:min 6 points, max 11 points Practical exam due to not attendance on class: 1 point	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		**Conditional criteria for assessment of knowledge:** In order to get a signature, the student is required to attend the theoretical classes, actively participate in practical classes and seminars and take the subsequent exams. In order to take the final exam in the exam session, the student should have passed each of the anticipated continuous exams with a minimum of 60% points. If during the semester the student did not pass the continuous examinations, the student takes a complete exam (in the exam session, first has to pass the one's he did not passed, then he takes the final exam). The grade in the final exam is given according to the grading table, on the basis of the sum of points obtained in all of the activities and the final exam.	
20.	Language of instruction		English	
21.	Method of monitoring the quality of teaching process		Professors and other members of the Department who are included in the theoretical and practical classes will be evaluated by the students (anonymous).	
22.	Textbooks			
	22.1.	Mandatory		
		1. Rang and Dale: H.P.Rang, M.M.Dale, J.M. Ritter, R. Flower	Pharmacology	Akademski pecat 2013
		Department of pharmacology and toxicology	Authorized lectures	
		I.Golan, David E	Principles in pharmacology	In press
		Department of pharmacology and toxicology	Text book for practical exercise	In press
	22.2.	Additional		

		1.	Goodman & Gilman's Laurence L.Brunton, John S.Lazo, Keith L.Parker	The Pharmacological Basis of Therapeutics	Tabernak ıl	2011
		2.	Varagic V, Milosevic P	Pharmacology	Elit Medi ca 23 izdanie	2012
		3.				
		4.				

1.	Subject	**CLINICAL PHARMACOLOGY**		
2.	Code	MED-425		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Pharmacology		
5.	Degree of education (first or second cycle)	Integrated cycle		
6.	Study year/semester	Fourth /VIII	7. Number of credits	1.5
8.	**Responsible teacher**	Assoc.Prof. Dimce Zafirov, PhD, MD		
9.	Preconditions	Fulfiled condition to inroll in the VII semestar		
10.	Teaching goals: • Introduction to the subject and tasks of the clinical pharmacology and its practical meaning in the todays therapy; • Understanding the basics of clinical pharmacology and training the students to use its principles in practise, in particular to specific patients groups; • Introduction to basic knowlege in managing clinical studies; • Trainig the students to identify, follow and report adverse effects of drugs; • Optimisation, therapy individualisation and dosing regiments of specific drugs; • Knowlege of clinical importance of drug interactions.			
11.	Brief content: **Theoretical course:** • Introduction to clinical pharmacology; • Design and conduct of clinical drug studies; bioequivalence studies and good clinical practice standards during study performance; • Drug interactions and its clinical significance; • Use of drugs in elderly patients, children, during pregnancy and lactation and in patients with renal and hepatic impairment; • Adverse drug reactions and Pharmacovigilance. **Practical lessons:** • Preparation of key documents for conduct of clinical trials (study protocol, case report file, informed consent); • Individual dosing models for drugs, determination of dosing regiments acording to drug blood concentrations and acording to therapeutic effect of specific drug groups; • Practical aspects of adverse efeects reporting using electronic reporting system.			
12.	**Methods of studying:** Interactive teaching during lectures, practical trainings/seminars			
13.	Total available time:	45 classes		

<table>
<tr><td>14.</td><td colspan="3">Organization of the course</td><td colspan="2">30 classes - theoretical course, practical course, seminars
15 classes - home individual learning</td></tr>
<tr><td rowspan="2">15.</td><td colspan="2" rowspan="2">Forms of teaching activities</td><td>15.1.</td><td>Theoretical course</td><td>20 classes</td></tr>
<tr><td>15.2.</td><td>Practical course, Seminars</td><td>10 classes</td></tr>
<tr><td rowspan="3">16.</td><td colspan="2" rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td>classes</td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td>classes</td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td>15 classes</td></tr>
<tr><td rowspan="4">17.</td><td colspan="5">Method of assessment</td></tr>
<tr><td>17.1</td><td>Tests</td><td colspan="3">min – max
Continual assessment* - points 18-30

Continual knowledge assessment:
Written test
(min.12-max 20 points)
1 study case of individual dosage regiment (tim work)
(min. 6-max. 10 points)

• Oral examination (intergrative knowledge) – 3 questions in order to determine the integrative knowledge of the material learnt in Clinical Pharmacology relevant for understanding the course purpose.

• Practical examination (grading accordingly to skills catalogue):
Text materials prepared for the practical course

The student has to fulfill the minimum recuired points for every part of the examination in order to be able to get the scores for the final examination. In conterary the exam can not be passed.</td></tr>
<tr><td>17.2</td><td>Seminar paper/project (oral/written presentation)</td><td colspan="3">min – max</td></tr>
<tr><td>17.3</td><td>Active participation</td><td colspan="3">min – max
Theoretical course 1-4
Practical course 9 – 14
Theoretical course attendance
51%-60% 1 point
61%-70%-2 points
71%-85%- 3 points
86%-100%- 4 points

Practical course attendance
4 points

Interactive knowledge check : min 6 points-max. 10 points
Practical course colloquium: 2 point</td></tr>
<tr><td rowspan="6">18.</td><td colspan="2" rowspan="6">Grading criteria (points / grade)</td><td colspan="2">up to 59 points</td><td>5 (five) F</td></tr>
<tr><td colspan="2">from 60 to 68 points</td><td>6 (six) E</td></tr>
<tr><td colspan="2">from 69 to 76 points</td><td>7 (seven) D</td></tr>
<tr><td colspan="2">from 77 to 84 points</td><td>8 (eight) C</td></tr>
<tr><td colspan="2">from 85 to 92 points</td><td>9 (nine) B</td></tr>
<tr><td colspan="2">from 93 to 100 points</td><td>10 (ten) A</td></tr>
</table>

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities.

		Conditional criteria for assessment of knowledge: In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the three continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam. The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Students anonymous evaluation for the course, teachers and associates that participate in the lessons.

22. Textbooks

22.1.	Mandatory				
	1.	Department of pharmacology and toxicology	Authorized lectures		
	2.	Rang and Dale: H.P.Rang, M.M.Dale, J.M. Ritter, R. Flower	Pharmacology	Akademski pecat	2013
	3.	James M Ritter, Lionel D Lewis, Timothy GK Mant, Albert Ferro	A Textbook of Clinical Pharmacology ant Therapeutics	Hodder Arnold, an imprint of Hodden Education	2008
22.2.	Additional				
	1.	Arthur J. Atkinson	Principles of Clinical Pharmacology, Second Edition	Elsevier	2007

1.	Subject	**PHYSICAL MEDICINE AND REHABILITATION**			
2.	Code	MED 515			
3.	Study program	Study for Doctors of Medicine			
4.	Institution (Unit, Institute, Chair, Department)	"Ss Cyril and Methodius" University, Faculty of Medicine, Institute for Physical Medicine and Rehabilitation, Cathedra of Physical Medicine and Rehabilitation			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semestar	Fifth/IX	7.	Number of ECTS credits	1
8.	Responsible teacher	Prof. Erieta Nikolikj Dimitrova, MD, MSc, PhD, PRM specialist			

9.	Preconditions		Requirement for the ninth semester fulfilled	
10.	**Teaching goals:** - To acquire knowledge for fundamentals of physical therapy - To acquire knowledge for physiological and therapeutic effects of some physical modalities - To understand positive effects of kinesitherapy (exercise therapy) and occupational therapy - To acquire knowledge for orthopaedic devices and their use in rehabilitation - To acquire rehabilitation procedures for rehabilitation of patients with rheumatologic, neurologic, orthopaedic disorders, child diseases, posttraumatic conditions, rehabilitation of cardiovascular and pulmonary diseases - To know indications and contraindications for physical therapy and rehabilitation - To acquire knowledge for multidisciplinary approach in rehabilitation - To become qualified for education of patients about their need for physical therapy and rehabilitation treatment			
11.	**Brief content** **Theoretical course:** - Introduction to physical medicine and rehabilitation - Patient's examination - Heat therapy - Light therapy - Hydrotherapy - Balneotherapy - Fundamentals of electrotherapy - Manual therapy- massage, and spinal traction - Fundamentals of exercise therapy - Occupational therapy - Orthopaedic devices - Rehabilitation of patients with rheumatologic diseases - Rehabilitation of patients with neurologic diseases - Rehabilitation of patients with orthopaedic diseases and posttraumatic conditions - Rehabilitation of diseases in childhood - Rehabilitation of patients with cardiology and pulmonary diseases - **Practical lessons:** Introduction to different therapeutic rehabilitation programs Training for application of some methods of physical therapy in a variety of injuries and illnesses (infra –red rays, ultraviolet rays, ice therapy)			
12.	**Methods of studying:** Interactive teaching during lectures and practical trainings, classes of practical instruction, independent study by using textbooks.			
13.	Total available time:		30 classes	
14.	Organization of the course		15 classes - theoretical course, practical course 15 classes - home individual learning	
15.	Forms of teaching activities	15.1	Lectures-theoretical lessons	7 classes
		15.2	Practical instructions, clinical lessons, team work	8 classes

16.	Other forms of activities		16.1	Practice	
			16.2	Individual tasks	
			16.3	Individual home learning	15 classes
17.	Method of assessment				
	17.1	Tests			min – max Continual assessment - 1 (written) 54-90 points
		Final exam			Final exam: final test Final test is written 54-90 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.
	17.2	Seminar paper/project (oral/written presentation)			
	17.3	Active participation			min – max Theoretical course 1-3 points Practical course 5- 7 points
18.	Grading criteria (points / grade)			up to 59 points	5 (five) F
				from 60 to 68 points	6 (six) E
				from 69 to 76 points	7 (seven) D
				from 77 to 84 points	8 (eight) C
				from 85 to 92 points	9 (nine) B
				from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam				The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.
20.	Language of instruction				English
21.	Method of monitoring the quality of teaching process				Student's anonymous evaluation of the subject and teaching stuff who are involved in the education.
22.	Литература				
	22.1	Задолжителна литература			
		Р.бр	Автор	Наслов	Издавач / Година
		1	Erieta Nikolikj-Dimitrova, Laserjet, Skopje, 2011	Textbook: Fizikalna medicina i rehabilitacija (Physical medicine and rehabilitation),	Laserjet Skopje / 2011
	22.2	Дополнителна литература			
		Р.бр	Автор	Наслов	Издавач / Година

		1	Eds.J. De Lisa	In Physical Medicine and Rehabilitation. Principles and Practice Some Chapters:		2011
				-Therapeutic physical modalities - Massage -Rehabilitation of patients with amputation of lower extremity - Scoliosis and other deformities of the spine - Orthosis -Rehabilitation in the water etc.		
		2	Eds. Randall Braddom	In Physical Medicine and Rehabilitation. Some Chapters: - Modalities of physical agencies - Therapeutic exercises		2011

1.	Subject	**GYNECOLOGY AND OBSTETRICS**			
2.	Code	MED-422			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	UKIM-Medical Faculty Department of Gynecology and Obstetrics			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semester	Fourth/VIII Fift/IX	7.	Number of ECTS credits	12
8.	Responsible teacher	Head of department Prof. Goran Dimitrov * teaching is performed by all members of the department			
9.	Preconditions	Filled for enrollment in VII semester			

10.	**Objectives of the course program (competences):** • The student learns and mastered the skills within the framework of rationaldiagnostics and the modern treatment of gynecological diseases. • To familiarize the student with the basic principles of diagnosing operationalpreparation and treatment within Gynecology and Obstetrics. • The student can rationally be able to evaluate and refer to the treatment of acutegynecological and obstetric diseases, which if not diagnosed and treated in a timely manner can end up fatal. • Student be able to evaluate and treat gynecological and obstetric diseases, monitorand assess normal pregnancy

11.	**Course content:** **Theoretical instruction:** **A. Gynecology Contents:** - Introduction to gynecology and ethical principles - Examination and objective finding in gynecology - Gynecological neuroendocrinology - Pelvic anatomy - Embryology with histology - Basics in surgical endocrinology - Growth, development and sexual maturation - Disorders of puberty and adolescence - Menstrual cycle and its disorders - Sexually transmitted diseases - Inflammation of the genital organs - Emergency and critical conditions in gynecology - Reproductive endocrinology and male infertility - Tubal factor infertility and endometriosis - Assisted reproduction - Pelvic prolapse - Urinary incontinence - Genital fistulae - Diagnostic methods in gynecology - Perimenopausal HRT - Contraception and paling of the family - Benign tumors of the vulva, vagina and cervix - Benign tumors on the body of the uterus - Benign tumors of adnexa - Malignant tumors on the vulva, vagina and cervix - Malignant tumors on the body of the uterus - Malignant tumors of adnexa

- Early diagnosis and prevention of cervical cancer and colposcopy -

  Benign and malignant tumors of the breast

B. Content by Obstetrics:

- Conception. Morphological development of the placenta.
- Fetus and placental membranes.
- The construction and function of the placenta.
- Placental hormones.
- Placenta previa
- Abrubtio placente
- The use of drugs in pregnancy - Urgent conditions in pregnancy
- Graviditas E.U.
- Bleeding in the first and second half of pregnancy
- Breech delivery
- Abnormalities on the placenta.
- Embryopathy and fetopathy.
- Prenatal diagnostics.
- Genetic counseling.
- Normal and abnormal pelvis
- Multiple pregnancy
- Infections in pregnancy
- PPO,ALSy
- IUGR
- Rh incompatibility and Rh sensibilization
- Diagnostic and therapeutic interventions in pregnancy
- Gestosis
- Fetus as an object
- Normal labor. Normal deliveries.
- Fetal distress

- Preterm delivery.
- Prolonged pregnancy - Diabetes in pregnancy
- Dystocia.
- Induction of labor
- Mall rotations and mall presentations
- Completion of delivery with a vaginal intervention
- Completion of delivery with S.C.
- Anesthesia and analgesia in obstetrics
- Ultra sound in pregnancy
- Diseases of the trophoblast
- Puerperium
- Pre-term and postpartum bleeding
- Internist and surgical diseases in pregnancy
- Ethical and legal aspects in perinatology

Practical classes:

A. Gynecology

- gynecological history
- gynecological examination
- cytological investigations
- taking swabs
- Rtg diagnostics in gynecology
- laparoscopic diagnostics in gynecology
- biochemical investigations in gynecology
- RCUI and CEF
- Ultrasound diagnostics
- Acute conditions of gynecological origin: acute pain and acute bleeding
- Painful syndrome in gynecology
- Forensic research in gynecology
- Benign diseases in gynecology: vulva, uterine cervix, uterine body, adnexa
- Malignant diseases in gynecology: vulva, uterine cervix, uterine body, adnexa
- Treatment of an urogenital patient
- Operative cuts, suture, suture material and instruments in gynecological surgery

B OBSTETRICS :

- obstetric history
- obstetric examination
- clinical treatment of the pregnant woman
- laboratory and radiographic diagnostics in gravidity

<table>
<tr><td></td><td colspan="5">- keeping a normal birth
- leading to birth in the pelvic presentation of the fetus
- Abortion techniques in obstetric practice RCUI
- childbearing of maternity pathways, epizoototomy and suture
- obstetric surgery: external bone, Perforatio capitis, forceps - surgery to complete the birth in the pelvic fetus</td></tr>
<tr><td>12.</td><td colspan="5">Learning methods: Interactive lectures, exercises / seminars</td></tr>
<tr><td>13.</td><td colspan="3">Total available time:</td><td colspan="2">360 classes</td></tr>
<tr><td>14.</td><td colspan="3">Organization of the course</td><td colspan="2">/</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1</td><td>Theoretical course</td><td>Gynecology – 64 classes
Obstetrics – 86 classes</td></tr>
<tr><td>15.2</td><td>Practical course, seminars , team work</td><td>Gynecology - 56 classes
Obstetrics – 60 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1</td><td>Practice</td><td>classes</td></tr>
<tr><td>16.2</td><td>Individual tasks</td><td>classes</td></tr>
<tr><td>16.3</td><td>Individual (home) learning</td><td>102 classes</td></tr>
<tr><td rowspan="4">17.</td><td colspan="5">Method of assessment бодови</td></tr>
<tr><td>17.1</td><td>Oral examination</td><td colspan="3">min-max.
Continual assessment - points 18 -30
* Continual assessment of knowledge (colloquium): 4 written
1 and 2 colloquium - questions in the field of gynecology
3 and 4 colloquium - issues in the field of obstetric</td></tr>
<tr><td></td><td>Final exam</td><td colspan="3">min-max.
Oral examination points 27 - 45
Practical examination points 6 – 10</td></tr>
<tr><td>17.2</td><td>Seminar paper/project (oral/written presentation)</td><td colspan="3">/</td></tr>
<tr><td>17.3</td><td>Active participation</td><td colspan="3">min-max.
Theoretical course points 1 - 3
Practical course points 11 – 14</td></tr>
<tr><td rowspan="6">18.</td><td rowspan="6">Grading criteria (points / grade)</td><td colspan="2">up to 59 points</td><td>5 (five) F</td></tr>
<tr><td colspan="2">from 60 to 68 points</td><td>6 (six) E</td></tr>
<tr><td colspan="2">from 69 to 76 points</td><td>7 (seven) D</td></tr>
<tr><td colspan="2">from 77 to 84 points</td><td>8 (eight) C</td></tr>
<tr><td colspan="2">from 85 to 92 points</td><td>9 (nine) B</td></tr>
<tr><td colspan="2">from 93 to 100 points</td><td>10 (ten) A</td></tr>
</table>

19.	Requirement for signature and taking the final exam	**Conditional criteria for assessment of knowledge**: Conditional criteria: In order to obtain a signature, a student is required to attend the theoretical and practical classes and to score minimum points. In order to enter the final exam, the student should pass the anticipated continual assessments or to earn a minimum of 30% of the total number of points envisaged for continual assessments, and in the exam session he first takes the undue continual assessments, and then approaches the final exam. The grade for the course is formed according to the rating table, based on the sum of the points from all the

		activities, the continual assessments and the final exam			
20.	Language of instruction	Macedonian			
21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the subject and the teachers and collaborators participating in the teaching			
22.	Textbooks				
	22.1 Mandatory				
		Author	Title	Publisher	Year
	1	Stephen G. Gab, Jennifer R. Nibil, Joe Lee Simpson	Obstetrics: Normal and problematic pregnancies	Tabernacul, Skopje (translation with a project of the Government of the Republic of Macedonia)	2011
	2	Jonathan S. Berek	Gynecology Berek And Novac	Tabernacul, Skopje (translation with a project of the Government of the Republic of Macedonia)	2011
	3	Willibald Pschyrembel	Practical Gynecology	Medical Naclada Belgrade - Zagreb	1977
	22.2 Additional				
		Author	Title	Publisher	Year
	1	Barbara Hoffman, John Schorge, Lisa Halvorson, Karen Bradshaw, F.Cunningham	Article I. Williams Gynecology Second Edition	McGraw Hill Profesional	2012
	2	F.Cunningham, Kenneth Leveno, Steven Bloom, John Hauth, Dwight Rouse, Catherine Spong	Article II. Williams Obstetric 23rd Edition	McGraw Hill Professionsl	2009

1.	Subject	**GYNECOLOGY AND OBSTETRICS-CLINICAL PRACTICE**
2.	Code	MED 623

3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Gynecology and Obstetrics		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Sixth / XI - XII	7.Number of ECTS credits	9
8.	**Responsible teacher**	Head of department		

		Doc. d-r Goran Dimitrov *teaching is performed by all members of the department
9.	Preconditions	Credits achieved (passed exam) from Gynecology and obstetrics
10.	Objectives of the course program (competences): Introduction to the diagnostic and therapeutic procedures in the area of urgent gynecology and obstetrics.	

11.	Course content: **Perinatalogy** • Filling in obstetric history and birth protocol • Obstetric examination: a condition of the cervix, dilatation, fetal heals, presentation, advancement of birth. • Obstetric examination: pelvimetry, amnioscopy. • Monitoring of the mother: cardiotocography, ph-metric intra partum, ph - blood metric from a new-born • Participation in spontaneous labor: head and pelvic treatment, repair of soft-tissue cleavage and episiotomy • Assistation in delivery with caesarean section and vaginal delivery obstetric operations: vacuum, forceps, baby extraction • Neonatal treatment • An ultrasound examination of a pregnant woman in the first half of pregnancy • An ultrasound examination of a pregnant woman in the second half of pregnancy • Participation in everyday work in the clinic for risky pregnancy • Participation in the work of the Intensive Peripartum Care Unit **Gynecology:** • Gynecological examination, taking a swab for microbiology and Papanicolau, colposcopy examination • Participation in the daily work of the gynecological departments, taking a history, filling in gynecological history • Assistance in small gynecological interventions: curettage, biopsy, • spiral insertion, cyst posture, cystoscopy • Ultrasound gynecological examination • Assistance to major gynecological surgeries: abdominal and vaginal hysterectomy • Assistance in minor and minimally invasive gynecological operations: hysteroscopy, laparoscopy, TVT and TOT prosthesis, IVS prosthesis • Working in a gynecological clinic: urogynecological, oncological, ultrasound, colposcopic, ambulance for human reproduction, cytogenetic laboratory, in-vitro fertilization • Family Planning and Contraception, Artificial abortion Assistance in first and second trimester The practice is carried out within 4 working weeks with a full time of 8 hours, organized in 4 rounds during the XI and XII semesters: • stay in the maternity room • stay in one operational unit • stay in the clinic for risky pregnancies • stay in the colposcopy clinic and the gynecological ultrasound clinic It takes place in groups of 2-5 students on a mentoring principle with professors and assistants. During the tour, the departments and mentors change. Everyday activities of the student will be recorded in a special “diary of activities " that will be verified with the mentor's signature.
12.	**Learning methods:** • Participation in the expert meetings of the clinic • Participation in morning visits • Participation in the daily work of the departments at the Clinic for Gynecology and Obstetrics

	• Participation in surgical interventions in the field of gynecology and Obstetrics Knowledge and Understanding: The student will acquire theoretical knowledge in the field of perinatology and gynecology referring to admission of a patient in hospital conditions, will learn about the characteristics of taking a history of each department, as well as the peculiarities of clinical examination of different departments. The student will get to know the setup procedures for working diagnosis and treatment plan and surgical treatment of individual clinical cases. Key skills: The student will be able to apply the acquired knowledge of interventional ultrasound, and to develop surgical culture and introduction to surgical principles. After practice, he will know how to do a gynecological examination and take a swab, fill out obstetrics history and birth protocol, to make an ultrasound examination of a pregnant woman, to assist during delivery, small and large surgical interventions.

13.	Total available time:		210 classes	
14.	Organization of the course		160 classes practice 50 classes - home individual learning	
15.	Forms of teaching activities	15.1.	Practical course	160 classes
16.	Other forms of activityes	16.1.	Individual (home) learning	50 classes

17.	Method of assessment
	The student is obliged to attend and actively participate in the practice during 4 weeks (20 working days, 8 hours daily) min. - max. Practice * points 60 - 100 * attendance: 2.5 points, activity (skills): 2.5 points

18.	Grading criteria (points / grade)	The student should earn a minimum of 60 points. The student's assessment is descriptive (passed).
19.	Requirement for signature and taking the final exam	**Conditional criteria:** To get a signature and win a minimum score for passing the student is required to attend the practice and to overcome all the activities and skills provided by subject program
20.	Language of instruction	Macedonian
21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the course and teachers and associates participating in teaching.

22. Textbooks

22.1. Mandatory

	Author	Title	Publisher	Year
1.	Stephen G. Gab, Jennifer R. Nibil, Joe Lee Simpson	Obstetrics: Normal and problematic pregnancies	Tabernacul, Skopje (translation with a project of the Government of the Republic of Macedonia)	2011
2	Jonathan S. Berek	Gynecology Berek and Novak	Tabernacul, Skopje (translation with a project of the Government of the Republic of Macedonia)	2011

1.	Subject	**RADIOLOGY**
2.	Code	MED-316
3.	Study Program	General Medicine
4.	Institution (Unit, Institute, Chair, Department)	Ss. Cyril and Methodius University, Medical Faculty, Department of Radiology
5.	Degree of education	Integrated 6-year studies

	(first or second cycle)					
6.	Study year/semester	III year/ V semester	7.	Number of ECTS credits	3	
8.	Responsible teacher	Prof. Dr. Violeta Vasilevska-Nikodinovska Assist. Prof. Dr. Elizabeta Stojovska-Jovanovska Assist. Prof. Dr. Maja Jakimovska- Dimitrovska Assist. Prof. Dr. Biljana Prgova				
9.	Preconditions	Passed first part of the professional exam				
10.	**Teaching goals:** Learning fundamental concepts in radiology by systems in the human body Practical work by showing examples of radiological methods, normal anatomy and pathology by systems					
11.	**Brief content of the study program:** **Theoretical course:** How to perform radiology examination: Introduction X-ray physics. X-ray apparatus. Monitor and film. Medical preconditions for x-ray imaging on the screen and film (natural body contrasts). Radiology methods for examination of thoracic organs (lungs, mediastinum, pleura and diaphragm). X-ray of normal chest. Atelectasis, stasis and edema on x-ray image. Non-specific inflammatory diseases of thoracic organs. Lung tuberculosis and sarcoidosis. Professional, parasitic and fungal diseases of the lungs. Methods of examination of the heart and large blood vessels. Normal x-ray image. Congenital and inherited diseases of the heart, aorta and large blood vessels. Esophagus: radiology methods and examination. Stomach and duodenum: methods of examination. Intestine and colon. Hepatobiliary tract and pancreas: methods of examination. Urgent radiodiagnostics of thoracic and abdominal organs. Urinary tract: methods of examination. Urinary tract: calculi. Radiologic diagnostics of the breast: methods of examination. Gynecologic radiodiagnostics: methods of examination. Basic concepts of radiological protection of patients and staff during radiodiagnostic procedures. Radiologic features when examining a child. Radiologic diagnostics of the skeleton. Trauma changes in bones and joints. Inflammation changes in bones and joints: tuberculosis osteomyelitis. Tumors of the skeleton: benign and semi-malignant. Endocrine hypo- and hyperfunction and avitaminous diseases of the skeleton. Vasography, fistulography: indications and pathology. Angiodiagnosis. Interventional radiology. Vascular radiology. Non-vascular radiology. Imaging diagnostics: US, CT, MR and virtual diagnostic methods.					
12.	**Methods of studying:** Interactive teaching during lectures, practical courses and colloqua.					
13.	Total available time			90		
14.	Organization of the course			60 classes - theoretical and practical courses 30 classes – home individual learning		
15.	Forms of teaching activities	15.1.	Lectures - Theoretical course		30 classes	

		15.2.	Practical course, Seminars	30 classes

1.	Subject	**FAMILY MEDICINE**
2.	Code	MED524

16.	Other forms of activities	16.1.	Practice	
		16.2.	Individual tasks	
		16.3.	Individual (home) learning	30 classes

17.	Methods of assessment			Points
	17.1	Continual assessment	First colloquium Second colloquium	12 min.- 20 max. 12 min.- 20 max.
	17.2	Final exam	Practical and oral examination	32 min.- 54 max.
	17.3	Seminar paper/project (presentation: oral)		min.-max.
	17.4	Active participation	Theoretical course Practical course *Attendance to theoretical and practical course 30% - 50% - 1 point 51% - 80% - 2 point 81% - 100% - 3 point	1 min.- 3 max. 1 min.- 3 max.

18.	Criteria for assessment of knowledge (point/grade)	up to 59 бода	5 (five) F
		from 60 to 68 бода	6 (six) E
		from 69 to 76 бода	7 (seven) D
		from 77 to 84 бода	8 (eight) C
		from 85 to 92 бода	9 (nine) B
		from 93 to 100 бода	10 (ten) A

19.	Requirement for signature and taking the final exam	**Conditional criteria:** In order to get a signature, the student should attend minimum 30% of theoretical and practical courses and to obtain minimum points. In order to take the final exam, the student should pass all anticipated continual assessments or to obtain minimum 30% of the total number of points in the continual assessments; in the examination session the student has to pass previously failed parts of continual assessments and then he/she can approach to take the final exam. The grade for the subject is given according to the grading table, and on the basis of the sum of points gained in all of the activities, continual assessment of knowledge and final exam.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Students' anonymous evaluation of the subject and medical staff included in the teaching process.

22.	Textbooks		
	22.1.	Mandatory	
		1.	Saton D.J.W.R. Young, A short textbook of clinical imaging, London Springer Verlag, 1990
		2.	Gary Johnson, Atlas of Emergency Radiology, WB Saunders Company, 2001
		3.	Kok HK et al. Interventional Radiology for Medical Students, Springer, 2017
	22.2.	Additional	
		1.	Richard Ha et al. Breast MR Teaching Atlas, Springer, 2017

3.	Study Program	General medicine			
4.	Institution (Unit, Institute, Chair, Department)	UKIM Skopje-Medical Faculty Department of family medicine			
5.	Degree of education (first or second cycle)	Integrated studies			
6.	Study year/semester	Five/X	7.	No of EKTS credits	1
8.	**Responsible teacher**	Prof. Dr Goran Petrovski Ass.Prof. Katarina Stavrikj			
9.	Preconditions	Исполнет улов за упис во IX семестар			
10.	**Objectives (competences):** • To achieve knowledge, skills and attitude for effective patient orientated care and treatment: prevention, recognize and treatment of most common acute and chronic diseases and mental health. • To achieve communication and consultation skills in family doctor practice. • To achieve skills for effective response to different complains and problems of patients, to support them to manage and to make prioritization of problems • To understand the possibilities and limitations in the community for medical care • To achieve knowledge and skills to use bio-psycho-social model for patient treatment and care • To be aware for ethical and moral responsibility of family doctor about creating health policy in the community				

11.	**Content:** **Theoretical part:** Interactive participation of students with analyses and discussion of cases and theoretical lecture of the responsible teacher. 1. Introduction to FM/GP as a specific medical discipline. Principles of Family Medicine: Continuity, comprehensiveness, coordination of care. 2. Communication skills. 3. Use of evidence based medicine and guidelines for most common presenting symptoms in family medicine. 4. Management of diseases at early, undifferentiated stage. Dealing with uncertainty. 5. Holistic approach. Bio-psycho-social model. 6. Management of multiple health problems, identifying priorities. 7. Prevention and health promotion, patient education. 8. Decision making based on prevalence and incidence of target. 9. Consulting skills — stages of a consultation. 10. Patient-centeredness – complex patient. 11. Chronic care, management of chronic diseases and health problems 12. Interface of primary and secondary care: Referrals, gate keeping, advocacy 13. The family as a source of disease and resource of care. 14. Community orientation. **Practical part:** The practical work will be organized in the Center for family medicine through workshops - patient with chest pain, rational prescribing of antibiotics for acute respiratory tract infection, patient with hypertension, patient with diabetes mellitus, patient with cough and patient with metabolic syndrome. During the workshops the student can:

	• Collects all important clinical information • Is able to integrate collected information • Gives a correct working diagnosis • Orders appropriate diagnostic tests • Can choose an appropriate treatment method The student can demonstrate following clinical skills: • Blood pressure measurement • Calculate and interpret BMI • Use of glucometar • Use of pick flow meter • Clinical examination of breast • Taking and interpreting rapid strep test **Seminar work:** Each student has the task under the supervision of a teacher to prepare a seminar essay on the topic of family medicine with a maximum of 3 pages. Seminar work is submitted in electronic form in the Family Medicine Center by the end of completion of family medicine. Assessed: understanding the problem, explains the findings and give possible solutions of the problem, and use of appropriate literature.
12.	**Methods of learning:**
13.	Total: 30
14.	Time table

15.	Forms of educational activities	15.1	Teaching	15 classes
		15.2	Practical work (workshops, clinical skills),	15 classes
16.	Other forms of educational activities.	16.1	Project work – seminar essay	8 classes
		16.2	Home learning	

17.	Assessment					points
	17.1	Final exam				min.-max.
			Written part	30	points	18-30
			Oral part	30	points	20-30
			Written part is consisting of 15 questions (15 questions x 2 points). Oral part is consisting of 3 questions (one question max 10 points).			
	17.2	Seminar essay (written document)				min.-max.
			Seminar essay	5	points	5-12
			Seminar essay is maximum 12 points (3 points for each of criteria: understanding the topic, explain and gives the solutions, adequate use of literature).			
	17.3	Active involvement				min.-max.
			Theoretical part	10	points	5-10
			Practical part	20	points	12-18
			Theoretical part is maximum 10 points (15 classes x 0,7 points). Practical part is maximum 20 points (6 workshops x 3 points)			

18.	Criteria for marks (points/mark)	to 59 points	5 (five) F
		From 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		From 77 to 84 points	8 (eight) C
		From 85 to 92 points	9 (nine) B
		From 93 to points	10 (ten) A
19.	Prerequisites for taking the final exam	**Criteria**: To obtain the signature, student is required to attend the theoretical, practical training and admit seminar and to gain a minimum scorefor all parts. After that the student has to pass the colloquium and oral exam. The final mark is formed according to the table of marks, based on the sum of points from all activities, continuous checks and final exam.	
20.	Language	Macedonian	
21.	Methods of following the quality of teaching	Anonymous student evaluation for subjects, teachers who are involved in teaching Internal anonymous evaluation of teaching theoretical and practical work	
22.	Literature		

22.1	Obligatory				
	No	Author	Title	Publisher	Year
	1	Ass.Prof Katarina Stavrikj, Prof.Dr Goran Petrovski, Prof.dr Suzana Nikolovska, Prof.dr Gordana Kiteva Trenceva, Ass.Prof. Biljana Gerasimovska Dr sci Zoran Stojanovski	Family medicine (on line available)	Department of family medicine	2013
22.2	Optional literature				
	No	Author	Title	Publisher	Year
	1	Robert Rachel	Textbook of family medicine	Tabernakil	2010

1.	Subject	**PHYSICAL EDUCTION, HEALTH AND SPORT**			
2.	Code	**MEDI3**			
3.	Study Program	general medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty Skopje			
5.	Degree of education (first or second cycle)	Integrated cycle			
6.	Study year/semester	5 years/10 semesters	7.Number of credits	1	
8.	**Responsible teacher**	Prof. Slavica Novachevska, PhD			
9.	Preconditions	None			

10.	Teaching goals: The aim of the physical education, sport and health subject is to adopt new and confirm previous motoric skills and knowledge, and functional capabilities in order to improve general health, satisfy the necessity to be physically active, enabling students to rationally and purposefully use their free time as well as improvement of the quality of living during young age, in maturity and old age. Improvement of the social communication. Expected results Enabling the student to independently engage in sports and physical activeness, knowing the laws of physical culture, and healthy nutrition. Adopting knowledge of the structure, rules and principles of the training process and the singularities of the chosen kinesiological activity.
11.	Brief content: • A. Program – basic regular program • - basketball, futsal, volleyball, handball, dances and fitness programs (aerobics, step-aerobics, pilates etc.) • B. Program – optional lessons • - Mountain hiking and camping, swimming, bike riding, roller glading, ice skating, skiing, ping-pong • C. Program for students with special needs • - physical activities depending on the student's condition/diagnosis • D. Optional programs for students from higher years of studies • E. Program – sport competitions
12.	**Methods of studying:** Method of interactive teaching, demonstration, practice (synthetic, analytical, complex), method of sport training.

13.	Total available time:		60 classes	
14.	Organization of the course		30- practice Total: 30	
15.	Forms of teaching activities	15.1.	Theoretical course	4 classes
		15.2.	Practical course (frontal, group, sequential, circular)	22 classes
16.	Other forms of activities	16.1.	Determining the motoric capabilities (through standardized motoric MAKFIT tests)	4 classes
		16.2.		
		16.3.		

17.	Method of assessment		
	17.1	Tests	80
	17.2	Seminar paper/project (oral/written presentation)	10
	17.3	Active participation	10

18.	Grading criteria (points / grade)		

19.	Requirement for signature and taking the final exam	Minimum 60% regular presence in class as well as active participation in the program
20.	Language of instruction	Macedonian
21.	Method of monitoring the quality of teaching process	Method of monitoring, method of assessment etc.

22.	Textbooks					
	22.1.	Mandatory				
		1.	Necessary literature is assigned by the professor depending on the choice of kinesiological activity			
	22.2.	Additional				

1.	Subject	**FORENSIC MEDICINE**		
2.	Code	MED-525		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Forensic Medicine		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Fifth(V)/ Teen(X)	7.Number of credits	4
8.	**Responsible teacher**	Prof. Verica Poposka, PhD, MD		
9.	Preconditions	Filled out condition for enrollment in the VII semester		

10.	Teaching goals: • adoption and mastering of skills for determination of death, signs of death, cause of death and issuing a certificate of death • gaining knowledge of indications for forensic autopsy, and differentiating violent from natural death • mastering skills of description of mechanical injuries, chemical injuries, injuries due to heat, injuries due to cold, electrocution, lightening, asphyctic injuries and nutritive injuries • mastering skills of filling out and issuing a medical certificate • gaining knowledge of criminal law provisions concerning the medical profession (negligent treatment, professional secrecy, euthanasia, failure to provide medical assistance)
11.	Brief content: **Theoretical course:** • Thanatology. Agony, dying, death, and types of death. Signs of death – uncertain signs, early post-mortem signs, and certain or later post-mortem signs. Estimation of time since death. Determination of death and cause of death. • Mechanical injuries, general characteristics. Blunt-force trauma, sharp-force trauma (stab wounds, incised wounds), and gunshot wounds. • Asphyctic injuries, mechanism, and general characteristics. Strangulation, suffocation, and compression. • Injuries due to heat, injuries due to cold, injuries due to electrocution, injuries due to lightening, injuries due to microwave, laser, and atomic radiation • Chemical injuries, poisons. Poisoning with corrosives, poisoning with metals, medicamentous poisoning, poisoning with pesticides, alcohol poisoning, and drugs • Nutritive injuries • Identification of living, and of deceased. DNA identification. • Violent death - murder, suicide, and accident • Forensic gynecology, and sexology • Medico-legal expertise, and medico-legal expert. Medico-legal expertise of injuries. • Medico-legal comment on the provisions of the criminal law for negligence, negligent treatment, failure to provide medical assistance, quackery, professional secrecy

	Practical lessons: • Medico-legal autopsy. Performing technique of medico-legal autopsy. Goals and indications for medico-legal autopsy. • Medical certificate • Examination of victims of sexual abuse • Identification of living and deceased • Determination of death and issuing of certificate of death • Medical criminalistics, expertise of blood stains, fiber and hair, sperm • Forensic DNA technology **Seminar papers:** Students themselves choose matter in the field of forensic medicine			
12.	**Methods of studying:** Interactive teaching, practical course and seminar papers			
13.	Total available time:		120 classes	
14.	Organization of the course		75 hours lectures-theoretical course, practical course, and seminars 45 hours home studying	
15.	Forms of teaching activities	15.1.	Theoretical course	49 classes
		15.2.	Practical course, Seminars	25 classes 1 class
16.	Other forms of activities	16.1.	Practice	/
		16.2.	Individual tasks	/

			16.3.	Individual (home) learning	45 classes
17.	Method of assessment				
	17.1	Tests Final exam	Periodic evaluation * min. 11 – max. 20 * Periodic evaluation (preliminary exam): one written exam Oral exam* min. 32 – max. 52 Practical exam* min. 11 – max. 20 * Oral exam (integrative) – 3 questions to evaluate the integrative knowledge important for understanding the entirety of the subject and the medical practice * Practical exam (according to the skills) – 2 questions from the practical course and skills of writing Latin diagnosis		
	17.2	Seminar paper/project (oral/written presentation)	min – max 1 - 2		
	17.3	Active participation	min – max Theoretical course 1-3 Practical course 3-5 Completed textbook mandatory		
18.	Grading criteria (points / grade)		up to 59 points		5 (five) F
			from 60 to 68 points		6 (six) E
			from 69 to 76 points		7 (seven) D
			from 77 to 84 points		8 (eight) C
			from 85 to 92 points		9 (nine) B
			from 93 to 100 points		10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** To get a signature, the student should attend theoretical classes, practical course and seminars and gain a minimum score.		
			In order to access the final exam student should pass the predicted continuous check or to win at least 30% of the total number of points on the preliminary exam. In the exam session, the student should first pass the preliminary exam and then approach the final exam. The final grade is formed according to the table of grades based on the sum of points from all activities, continuous checks, preliminary exam and final exam		
20.	Language of instruction		English		
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.		
22.	Textbooks				
	22.1.	Mandatory			
		1.	Praktikum po sudska medicina	Janeska and associates	MARIS, Skopje 2010
		2.	Forensic Pathology	Dominick DiMaio, Vincent J.M. DiMaio, M.D.	CRC Press LLC 2001

	22.2.	Additional				
		1.	Sudska medicina	Tasić and associates	Zmaj, Novi Sad	2006
		2.	Sudska medicina	*Zeć*ević and associates	Medicinska naklada, Zagreb	2004
		3.	Sudska medicina	Milovanovic	Medicinska knjiga	1990

1.	**Subject**	**URGENT MEDICINE**			
2.	**Code**	MED-514			
3.	**Study Program**	General Medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of general surgery			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Fifth (V) Year, Ninth (IX) semester		Number of credits	1
8.	**Responsible teacher**	Chief of department of surgery - |**Doc.dr. Boro Dzonov** **Prof. d-r Sasko Jovev** Article I. ***C**lasses are perform from all the teachers from department of Interal medicine, Surgery, Neurology, Dermatology, Gynecology, Pediatric, Ophthalmology and Otorhinolaryngology			
9.	**Preconditions:**	Filled condition for VII semester, passed first part of professional examination			
10.	**Teaching goals of the study program (competencies):** • The students to learn the basis of recognition of urgent conditions in medicine				

	• To learn the principles of careing in urgent situations and to overcome the skills in necessary therapis procedures, within their professional work. • to know how to apply algorithms for reanimation issued by AHA (American Heart Association） and ERC (European Resuscitation Council)**.**

11.	**Contents of the study program:** **Theoretical courses :** (13 **classes**) • Urgent conditions in Cardiology • Urgent conditions in Pulmonology • Urgent conditions in GIT • Urgent conditions in Toxicology • Urgent conditions in Nephrology • Urgent conditions in Pediatrics • Urgent surgery conditions • Urgent gynecology conditions • Urgent conditions in Ophthalmology, • Urgent conditions in ORL • Urgent conditions in neurology • Urgent conditions in dermatovenerology **Seminar** (4 **classes**) • Cardiology (2 hours) • Nephrology (1 hours) • Surgery (1 hours) **Practical course** (12 **hours**) **:** The practical course is mandatory and it is carried out in different departmants of intensive treatment uder leadership od mentor professor. The student is obliged to participate in all activities of caring and treatment on intensive treatment.			
12.	**Methods of studying: Interactive lectures, tutorials and seminars**			
13.	**Total no. of hours:**			
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	13 classes
		15.2	Practicals (laboratory, clinical), seminars, team work	Practical: 12 hours Seminars 4 classes
16.	**Other types of activities**	16.1	Project assignments	hours
		16.2	Individual tasks	hours
		16.3	Home studying	
17.	**Assessment of knowledge:** points			
	17.1	Tests	Continuous tests points min.-max. 25 - 45 **periodic evaluation of knowledge:** written test Theoretical basics of all areas of emergency medicine	
		Final exam	Practical exam * points min.-max. 20 - 30	

			**** practical exam (according to a catalog of skills**）: examination of a patient, definition, diagnosis, therapy The practical part of the exam will be performed in the emergency centers in the Surgical clinics and in the Internal Medicine clinics. The student is obligated to win a minimum of the envisaged points for each part of the exam, to be able to registered points for the final exam. Otherwise, the test is considered not passed
	17.2	Seminar work/project (presentation: written and oral)	min. - max. Seminar works
	17.3	Active participation	min. - max. Theoretical course 5 - 10 Practical course 10 - 15 * Attending on theoretical course 51%-60% 5 points 61%-70% 6 points 71%-80% 7 points 81%- 90% 8 points 91%-100% 10 points ** Practical course（(Every group is in session of 4 hours, 3 groups of practice) For Attendance： 2 points Engage in practices: 3 points

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A
19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To get a signature the student is required to attend the theoretical, practical training and seminars and to gain minimum scores The student is obliged to gain a minimum score of planned activities, including the continued examination in order to access the final exam. If the student did not win the required minimum score, they can access on the final exam in one of the three exam sessions The assessment of the subject is formed according to the table of estimates, based on the sum of points from all activities, continuous inspections and final examination.	
20.	Language of the course	English	
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	
22.	Literature		

	22.1	Mandatory textbooks				
		Р.бр	Автор	Наслов	Издавач	Година
		1	Jeffrey Schaider Stephen R. Hayden Richard Wolfe Roger M. Barkin Peter Rosen	rosen and barkin's 5 minute emergency medicine consult	Tabernakul - Skopje	2011
		2	Members of the departments involved in teaching	Authorized lectures		

1.	**Subject**	**SOCIAL MEDICINE AND HEALTH ECONOMICS**			
2.	**Code**	MED-527			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of Social Medicine			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Fifth/ X	7.	Number of credits	2
8.	**Responsible teacher**	Head of Cathedra: Prof. Dr. Fimka Tozija Responsible teacher: Prof. Dr. Mome Spasovski *Teaching is conducted by all the teachers of the Cathedra of Social Medicine			
9.	**Prerequisites for enrolling the course:**	Passed exams: Introduction to Medicine and Health Promotion			
10.	**Teaching goals of the study program (competencies):** • Introduction to the basic principles of Social Medicine • Organization and evaluation of the health systems • Health Management • Health Economics • Quality of Health Care • Prevention and health care of vulnerable groups of the population				

11.	**Contents of the study program:** **Theoretical course::** • Social Medicine as a science, definition, social medical method, concepts, goals, areas of activity, study subject of social medicine • Basic principles of organization of the health care and health service • Levels of health care • Health System - organization and evaluation • Health organizations and organization of health care system of the Republic of Macedonia • Family - importance for health, health needs and health care • Health and social protection of vulnerable groups (children, school children and youth, women, elderly, workers, people with disabilities) • Social diseases • Social medical aspects of chronic diseases (cardiovascular diseases, malignant neoplasms, injuries and violence, drug addictions, diabetes mellitus) • Social medical aspects of infectious diseases (tuberculosis, STDs, HIV /

	AIDS) • Health Economics • Financing of health care • System of health insurance and financing of health care in Macedonia • Health management • Planning of the development of health care • Accreditation of health facilities • Globalization and health • Evaluation of health and health status of the population • Informatics, statistics and health evidence **Practical course:** • Medical documentation and evidence. Basic medical documentation, daily and current health reports. Individual and aggregated reports. Legislation, specific reports-registers. ICD - meaning, structure and practical application • Social medical diagnostics. Health indicators for monitoring and studying the health of the population. • Methodology and preparation of health care in the community and for certain specific groups of the population. Health statistical research. Monitoring and assessment of health risks .			
12.	**Methods of studying:** Lectures, exercises, seminars, field practical course			
13.	**Total no. of hours:**		60 hours	
14.	**Distribution of the available time**		30 hours lectures, exercises 30 hours of home studying	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	20 hours
		15.2	Practical exercises, seminars, team work, field work	10 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours

		16.3	Home studying	30 hours
17.	**Assessment of knowledge:** points			
	17.1	Tests	min.-max. Total 18 - 30 points 3 Continuous tests * Continuous verification of knowledge (Colloquium): 1 written test It covers the first half of all areas of the content of the course of theoretical and practical training on the subject Social Medicine and Health Economics, which is divided into two equal parts.	
		Final exam	Oral exam* min.-max. Points 30 – 50 * Oral part (integrative) - 3 questions of integrative knowledge, which is important for understanding the whole subject and social-medical activity	

			(for grade 10 = 47-50 points; 9 = 43-46 points; 8 = 39-42 points; 7 = 35-38 points; 6 = 30-34 points)	
	17.2	Seminar work/project (presentation: written and oral)	min.-max. … Seminar works 6 – 10 points	
	17.3	Active participation	min.-max. Theoretical course points 3 - 5 Practical course points 3 - 5 * Presence at the theoretical course 61-74% = 3 points 75 – 90% = 4 points 91-100% = 5 points ** Practical classes (3 blocks exercises of 3 hours) 2 blocks = 3 points 3 blocks = 5 points	
18.	Knowledge assessment criteria: (points/grade)		up to 59 points	5 (five) F
			60 to 68 points	6 (six) E
			69 to 76 points	7 (seven) D
			77 to 84 points	8 (eight) C
			85 to 92 points	9 (nine) B
			93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To get signature the student is required to attend the theoretical, practical course and seminars and to achieve minimum points To access to the final exam the student should pass the predicted continuous check and to achieve at least 60% of the total number of points predicted for the continuous check, whereby in the exam session first takes the unpassed continuous checks, and then access to the final exam. The grade of the subject is formed in accordance with the table of grades, based on the sum of points from all activities, continuous checks and final exam.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	

22.1	Mandatory textbooks				
		Author	Title	Publisher	Year
	1	Maxi-RozenoLast, Robert W. Wallace and others.	Public Health and Preventive Medicine	Tabernakul	2011
	2	D.Donev M.Spasovski F.Tozija E.Kjosevska	Social Medicine	Faculty of Medicine in print	2013
22.2	Additional literature				
		Author	Title	Publisher	Year
	1	Detels R., Beaglehole R., Lansang MA., Gulliford M.	Oxford Textbook of public health (5th edition)	Oxford University Press	2009

1.	**Subject**	**PSYCHIATRY**			
2.	**Code**	MED-521			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine University Clinic of Psychiatry, Skopje, Belgradska b.b. Department of Psychiatry and Medical Psychology,			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	fifth/tenth	7.	Number of credits	
8.	**Responsible teacher**	Head of the Department prof. dr. Marija Raleva The teaching is performed by the professors at the Department of Psychiatry and Medical Psychology			
9.	**Preconditions:**	Fulfilled preconditions for VII semester .			

10.	**Teaching goals of the study program (competencies):** • Preparation of students to work with psychiatric patients • Diagnosis and treatment of psychiatric patients • Adoption of theoretical and practical knowledge in psychiatry (contact and communication with psychiatric patients, interviewing patients, differential diagnosis, treatment planning)
11.	**Contents of the study program:** **Theoretical course::** • General psychopathology (disorders of psychological functions of consciousness, sensations and perceptions, emotions and affects, attention, thought process, delusions/illusions/hallucination, memory function, will and drives, cognitive functioning) ; • Developmental stages and developmental disorders (speech and language disorders , learning disorders, pervasive disorders, mixed developmental disorders , attention deficit Hyperactivity Disorder) • Intellectual disability • Personality disorders • Anxiety disorders and stress disorders (Generalized anxiety disorder, Dissociative disorder, Somatoform disorder, Phobic disorder, Obsessive – compulsive disorder, Posttraumatic stress disorder) • Psychosis (Schizophrenia spectrum, clinical presentation, differential diagnosis and treatment) ; • Affective spectrum (Recurrent depressive disorder, Bipolar disorder – clinical presentation, differential diagnosis and treatment) • Persistent delusional disorders • Organic brain syndromes (acute brain disorders, chronic brain disorders) • Eating disorders • Substance abuse disorders and comorbidity (alcohol abuse, illegal drug abuse) • Treatment approach in psychiatry • - psychotherapy, psychotherapeutic approaches and techniques, • - psycho-pharmacotherapy **Practical course:** **Communication with psychiatric patients (taking medical history, ps**ychiatric status, Identification of the leading symptoms, Psychological evaluation , Differential diagnosing, Treatment approaches **in:** • **Disorders in childhood and adolescence** • Anxiety diorders • Psychotic diorders • Disorders in involutive period

	• Diagnostic methods in psychiatry (Psychological exploration, Neuro-immiging techniques, EEG) • Treatment approaches in psychiatry (psychotherapy and pharmacotherapy) .			
12.	**Methods of studying:** Interactive lectures, seminars, exercises			
13.	**Total no. of hours:**		. . . 90 hours	
14.	**Distribution of the available time**			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	. . 40 hours
		15.2	Practicals (laboratory, clinical), seminars, team work	. . . 50 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	. . . hours
17.	**Assessment of knowledge:** points			

	17.1	Tests	min.-max. 3 Continuous tests total... points • Test 1 16 – 30 points • • . . .
		Final exam	Subject: . . . . . . min.-max. Practical exam 12-20 points Oral exam 22-40 points
	17.2	Seminar work/project (presentation: written and oral)	min.-max. Seminar works … points
	17.3	Active participation	min.-max. Theoretical course points 1-3 Practical course points 4-7

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** For obtaining a signature the student is required to attend the theoretical and practical lectures and to acquire minimum points. For taking the final exam the student has to pass the test and to acquire minimum 51% of the total number of points from the tests. After passing the test the student takes the oral and practical exam. The grade is a sum of all points acquired from the activities and parts of the exam according to the table of grades.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	
	22.1 Mandatory textbooks	

			Author	Title	Publisher	Year
		1	Chadlovski G. and al.	Psychiatry, part I and part II	Prosvetno delo, Skopje	2004
		2	Chadlovski G, Filipovska A. and Belevska D.	Medical psychology	Prosvetno delo, Skopje	2004
	22.2	Additional literature				
			Author	Title	Publisher	Year
		1	Sadock B., Sadock V.	Comprehensive textbook of psychiatry, Kaplan and Sadock	Tabernakul, Skopje	2012

1.	**Subject**	**HYGIENE**
2.	**Code**	MED 225

3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra of Hygiene			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year/semester**	Second/Fourth	7.	Number of credits	5
8.	**Responsible teacher**	Dragan Gjorgjev, MD, PhD			
9.	**Preconditions:**	None			
10.	**Teaching goals of the study program (competencies):** • Environmental health, health risk assessment from air pollution, drinking water and surface water pollution, environmental health aspects of school environment • Food safety and principles of proper nutrition of the population				
11.	**Contents of the study program:** **Theoretical course**: -Hygiene (parts and objectives of the environmental health) - Ecological concept of health, dose-response reaction, changes in the organism - Some aspects of eco-toxicology, risk assessment and eco-oncology - Environmental health - Factors of the environment – impact to health: physical, climate, radiation, noise - Hygiene of air - Environmental health aspects of drinking water and water supply - Environmental health aspects of surface and waste waters - Environmental health aspects of the soil and waste, with particular emphases on medical waste - Hygiene of settlements and housing - Environmental health aspects of school environment - Characteristics of the school children morbidity - Environmental health aspects health care institutions - Hygiene of food safety and nutrition of population - The basics of detotherapy **Practical course:** Environmental health: air pollution, methods of monitoring of air pollution and health statistics methods of monitoring of negative health effects; drinking water and monitoring of drinking water safety; ionizing radiation and health risk assessment; noise in environment, monitoring methodology and health risk assessment. - Hygiene in state of emergency: rapid detection and elimination of the risks of				

	different environment media - School hygiene: implementation and interpretation of questionnaire for hygiene in school environment - Hygiene of food safety and nutrition: methods of assessment of food safety, nutritive value of meals, methods of assessments of nutritional status and dietotherapy			
12.	**Methods of studying**: Lecturing, exercises/seminars			
13.	**Total no. of hours:**		150 hours	
14.	**Distribution of the available time**		75 hours of lecturing, exercises and seminars 75 hours of home learning	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	30 hours

		15.2	Practicals (laboratory, clinical), seminars, team work	45 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	75 hours

17.	**Assessment of knowledge:** points			
	17.1	Tests	3 Continuous tests • Environmental health • Food Safety and Nutrition	min.-max. total... points 21 35 15 25
		Final exam	Subject: Oral integrative exam exam	min.-max. Oral 15 25 points
	17.2	Seminar work/project (presentation: written and oral)	Seminar works	min.-max. … points
	17.3	Active participation	Theoretical course Practical course	min.-max. points 1-5 points 9-15

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** The student must participate at the theoretical and practical courses in order to score minimum points to obtain signature. The minimum requirements for that are as follows: Theoretical course: 100% presence - 5 points 80% presence - 4 points 60% presence - 3 points 50% presence - 2 points 40% presence - 1 points Practical course : Presence at 11 exercise - 15 points Presence at 10 exercise - 13 points Presence at 9 exercise - 11 points Presence at 8 exercises or less – the student will be reevaluated for some of the exercises he/she missed. If positively reevaluated - the student will gain 9 points. For the student to approach to the final exam, he/she should score min. 60% from continuous knowledge assessment. The final mark is formed as a sum of scores of all activities (presence at theoretical and practical course, continuous assessments and final exam)
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

22.1 Mandatory textbooks

	Author	Title	Publisher	Year
1	Wallace RB.	Public Health and Preventive Medicine	New York: McGraw-Hill	2008
2	Gjorgjev D, Kochubovski M, Kendrovski V, Ristovska G.	Hygiene and environmental health	Skopje: Faculty of Medicine	2008
3	Gjorgjev D, Kendrovski V, Ristovska G, Dimitrovska Z.	Hygiene of food safety and nutrition	Skopje: Faculty of Medicine	2008
4	Jackel JF.	Jekel's Epidemiology, Biostatistics, Preventive Medicine, Public Health, 3rd edition	Skopje: Tabernakul	2010

22.2 Additional literature

	Author	Title	Publisher	Year

		1	Tulchinski T.	The new public health	Skopje: Studentski zbor;	2003
		2	Gjorgjev D, Kendrovski V, Tozija F.	Enviromental Health Risk Assessment Studies. In: Zaletel-Kragelj L, Bizikov J, editors. Methods and Tools in Public Health. A handbook for teachers, researchers, health professionals and decisions makers.	Lage:Hans Jacobs Publishing Company http:/www.snz.hr/phsee/publications.htm	2010

1.	Subject	**SURGERY**		
2.	Code	MED 421		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Fourth (IV) and Fifth (V) / Eight (VII) and ninth (IX)	7.Number of credits	20
8.	**Responsible teacher**	Cheaf of Department of Surgery Doc. d-r Boro Dzonov		
9.	Preconditions	Filled condition for VII semester		

10. Teaching goals:

- to learn and master skills within rational diagnostics and contemporary treatment of surgical diseases
- to become familiar with the basic principles of diagnosing operational, preparation and treatment within the general surgery
- enable student to raconalo estimates and indicates acute surgical diseases, witch if timelu treatment is not diagnosed and treated may end fatally
- to enable the student to evaluate and treat surgival diseases of the central nervous system, neck and chest organs, cardiac and vascular diseases, digestive diseases, urological diseases, children's surgical disease, plastic and reconstructive corrections, locomotor system injuries and internal organs

11. Brief content:

Theoretical course:

- **General and military surgery**
- **Disease and surgical treatment of the central nervous system**
- **Disease and surgical treatment of lung disorder**
- **Disease and surgical treatment of the disorder of cardiac and vascular diseases**
- **Disease and surgical treatment of the disorder of the digestive system**
- **Disease and surgical treatment of the disorder of the urogenital system**
- **Disease and surgical treatment of violations of children's diseases**
- **Disease and surgical treatment of the disorder of the skin with plastic and reconstructive surgery interventions**
- **Disease and surgical treatment of injuries locomotory system**

Practical classes:

Mastering clinical skills and practical application of the gained theoretical knowledge

12. **Methods of studying:** Interactive lectures, tutorials and seminars

13.	Total available time:		600 classes	
14.	Organization of the course		335 classes - theoretical course, practical course, seminars 265 classes - home individual learning	
15.	Forms of teaching activities	15.1.	Theoretical course	103 classes
		15.2.	Practical course, Seminars Team building	Practical: 180 classes Seminars: 52 classes
16.	Other forms of activities	16.1.	Practice	classes
		16.2.	Individual tasks	classes
		16.3.	Individual (home) learning	265 classes

17. **Method of assessment**

Continuous checking (test): 6 written test

Covers all areas of surgery in various combinations, depending on the group in which the student listens in the current schedule: 1. General Surgery and Traumatology
2. Thoracic vascular and cardiac surgery
3. Digestive surgery
4. Neurosurgery
5. Urology
6. Children and Plastic and Reconstructive Surgery

The students from one test can get: 2-4 points
total for six tests: 12-24 points

Final exam: practical + oral

1. Practical part (according to the catalog od skills): examination of the patient, diagnosis, therapy **8-12 points**
2. Oral part (integrative) – 4 questions that are not questioned in details, but integrative knowledge is important for understanding the entity of the case and the medical practice **24-40 points**

(for 10=40 points; for 9 = 37-39 points; for 8=34-36 points; for 7=31-33 points; for 6=28-30 points)

- The student is obligated to win a minimum of the envisaged points for each part of the exam, to be able to registered points for the final exam. Otherwise, the test is considered not passed.

***attendance theoretical teaching**

51% - 60% - 2 points
61% - 70% - 4 points
71% - 85% - 6 points
86% - 100% - 8 points

****Practical teaching** (45 group exercises with a duration of 4 hours)
Attendance: 0.15 points

*Assessment of the complete exam is gained based on the sum of the scores obtained from all the activities (lectures, tutorials, seminars, colloquia, final exam)

Complete final exam:
The exam represents a combination of colloquia that are not passed and the final exam. The student is obliged first to pass colloquiums witch during the year has not passed, and then proceed to take the final exam. If a student does not pass all colloquia, has not right to access the final exam.

18.	Grading criteria	up to 59 points	5 (five) F

	(points / grade)	from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the seven continual assessments (colloquiums); If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam. The final grade is formed according to the official rating table, and of the sum of the points from all the activities, the continuous checks and the final exam.	
20.	Language of instruction	Macedonian	
21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching	
22.	Textbooks • General and Special surgery: Prof. d-r J.Panovski • Thoracic surgery: Prof- d-r G. Kondov • Vascular surgery (script) Prof. d-r T.Andreevska • Plastic and Reconstructive Surgery (script): Prof- d-r GJ. Gjokic • Neuro surgery: Prof. d-r J.Ugrinovski, Prof. d-r. S.Jovkovski, Prof. d-r. I. Pangovski, Prof. d-r K.Lozance, Prof. d-r V.Stolevski • Clinical Traumatology: Prof. d-r I.Todorov, Prof. d-r S.Jovkovski, Prof. d-r V.Georgiev, Prof. d-r M.Gavrilovski, Prof d-r Z.Spirovski, Prof. d-r V.Janevski • Extended lectures of urology, digestive and Paediatric Surgery • General surgery: Prpic, Bukurov and co.		
1.	Subject	**SEMINAR / CLINICAL PRACTICE**	
2.	Code	MED 621	
3.	Study Program	General surgery	
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy	
5.	Degree of education (first or second cycle)	Integrated 6-year study	
6.	Study year/semester	Fourth (IV) and Fifth (V) / Eleventh(XI) and twelfth (XII)	7.Number of credits: 14
8.	**Responsible teacher**	Cheaf of Department of Surgery Doc. d-r Boro Dzonov	
9.	Preconditions	Filled condition for X semester	
10.	**Teaching goals:** • Introducing with diagnostic and therapeutic procedures in the field of clinical surgery		

11.	**Brief content**: **Theoretical course:** • Filling surgical history

	• Characteristic of history taking on every department • Characteristic of clinical examination on the departments of: • Abdominal Surgery • Pediatric Surgery • Thoracic vascular surgery • Urology • Neurosurgery • Traumatology • Plastic Surgery • Intensive care • Participation in the daily work in clinics • Participation in everyday surgical work on the surgical departments • Treatment of a patient in an unconscious state • reanimation of a patient in an unconscious state (ventilatory and cardiac resuscitation) • First aid for bleeding • First aid for fractures • Immobilization techniques (transport and permanent) • bandaging wounds • Tratman of wounds and their suture • Incision of abscess • Local treatment of burns • Giving parenteral therapy and intravenous infusions • Investigation of prostate with rectal tushe • Placement of a nasogastric tube • Endotracheal intubation • See placing traheostomiska cannula • Placement of a urinary catheter • Assisting thoracic puncture • see setting thoracic drainage • Assist in reposition hernia • Punctuates wrist • Assist in the reposition of fracture • Gives local anesthesia • Assist with basic operations (hernia plastic, gall surgery gall bladder, appendix surgery) • Investigation of large joints • Other minor interventions Clinical practice will be organized within 4 working weeks with a full time of 8 hours. There will be 2 tensus during the XI and XII semester. During the tensus, the departments and mentors change. Everyday activities of the student will be recorded in a separate log of activities that will be verified with the mentor's signature

12.	**Methods of studying:** • Participation in vocational meetings on the clinics • Participation in morning visits • Participation in the daily work of the departments at the Surgery Clinic • Participation in surgical interventions in the field of surgery **Knowledge and understanding:** Student will acquire the theoretical knowledge in the field of surgery related to admission of patients in hospital setting, will acquaint the characteristics of history taking on each department, as well as the characteristics of clinical examination on each department. He will be introduced with the procedures for setting up a working diagnosis, treatment plan and surgical treatment of individual clinical cases. **Crucial Skills**:

	The student will be able to apply the gained knowledge, to develop surgical culture and introduction to surgical principles. After he finishes the practice he will know basically to treat the emergency surgical patient, with the opportunity to do a basic surgical skill. Also he/she will be able to assist on surgical interventions.			
13.	Total available time:		420 hours classes	
14.	Organization of the course		320 classes – hours of exercise 100 classes – domestic studying Teaching will take place within 4 weeks for 8 hours	
15.	Forms of teaching activities	15.1.	Theoretical course	/ classes
		15.2.	Practical course, Seminars Team building	Practical: 320 classes
16.	Other forms of activities	16.1.	Practice	320 classes
		16.2.	Individual tasks	theoretical knowledge in the field of surgery related to admission of patients in hospital setting, as well as the characteristics of clinical examination on each department.
		16.3.	Individual (home) learning	100 classes

17.	**Method of assessment** The student is required to attend and actively participate in ongoing turnuses Scoring the student activities *****Practice: 20 days for 8 hours Attendance: 2.5 points Activity: 2.5 points **The student assessment is descriptive (passed)**	
18.	Grading criteria (points / grade)	The student should score at least 60 points. The student's assessment is descriptive (passed)
19.	Requirement for signature and taking the final exam	• in order to get a signature, the student is required to attend on 2 tensus during the XI and XII semester **Conditional criteria for assessment of knowledge:** • In order to get a signature, the student should obtain minimum points, • If the student has not obtained the minimum points, he/she will be obligated to pass them. • The student's assessment is descriptive (**passed**)
20.	Language of instruction	Macedonian

Type of activity	Po ints	
	Min.	**Max.**
Practice	**60**	**100**

21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching		
22.	Textbooks • Bates' Clinical Reviews and Landing History, Authors: Lin. S. Bakli and Piter. G. Shilagi. 2012			
1.	Subject	**SEMINAR / MODULE - SURGERY**		
2.	Code	MED 622		
3.	Study Program	General surgery		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Fourth (IV) and Fifth (V) / Eleventh(XI) and twelfth (XII)	7.Number of credits	14
8.	**Responsible teacher**	Cheaf of Department of Surgery Doc. d-r Boro Dzonov		
9.	Preconditions	Filled condition for X semester		
10.	**Teaching goals:** • On seminars that are problematically conceptualized with case repot on patients, the current pathology is being processed. The student gets the opportunity to familiarize the wide surgical goal			

11.	**Brief content**: **Theoretical course:** • Theoretical process on cases for adequate topics • Solving cases on adequate topics • Problems conceptualized seminars combined with the case report • teaching is organized for 5 days after 4 hours. will be organized 2 tours during the XI and XII semester			
12.	**Methods of studying:** • takes place mentoring principle with professors.The student actively participates in discussions and public presentations of cases.The student will work each day by system rotation in seminar groups of 20 students, there will be a meeting with experts, will participate in the discussion "for" and "against" .Will perform tutoring model teaching by addressing cases **Knowledge and understanding:** • The student will acquire the knowledge to create a diagnostic algorithm, working diagnosis and surgical treatment plan of individual clinical case **Crucial Skills**: • The student will be able to make the proper choice of treatment for a particular disease with appropriate to the specifics of the individual patient			
13.	Total available time:		30 hours classes	
14.	Organization of the course		20 classes - seminars 10 classes – domestic studying Teaching will take place within 5 days for 4 hours	
15.	Forms of teaching activities	15.1.	Theoretical course	30 classes
		15.2.	Practical course, Seminars Team building	Practical: / Seminars: 20 classes
16.	Other forms of activities	16.1.	Practice	/ classes
		16.2.	Individual tasks	Seminar work (power point presentation)
		16.3.	Individual (home) learning	10 classes

17.	**Method of assessment** • Final exam: solving case (seminar work) min. max. written part: points 15 - 30 Oral part: points 15 - 30 *Seminar work / project (presentation written or oral) • Active participation: min. max. Seminars: points 30 - 40 * The seminars are organized for 5 days after 4 hours. Presence: 4 points Activity: 4 points	
18.	Grading criteria (points / grade)	The student should score at least 60 points. The student's assessment is descriptive (passed)
19.	Requirement for signature and taking the final exam	• in order to get a signature, the student is required to attend and actively participate in the seminars and to get the minimum predicted points for the seminar **Conditional criteria for assessment of knowledge:** • In order to get a signature, the student should obtain minimum points, and to present a seminar paper; • If the student has not obtained the minimum points, he/she will be obligated to pass them before the final seminar (power point) presentation. • The student's assessment is descriptive (**passed**)
20.	Language of instruction	Macedonian
21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching
22.	Textbooks • Bates' Clinical Reviews and Landing History, Authors: Lin. S. Bakli and Piter. G. Shilagi. 2012	

1.	Subject	**CLINICAL INVESTIGATION 1 AND 2**
2.	Code	MED 314
3.	Study Program	General medicine
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy
5.	Degree of education (first or second cycle)	Integrated 6-year study

6.	Study year/semester	Third (III)/ Fifth (V) and Sixth (VI)	7.Number of credits	6+8
8.	Responsible teacher	Cheaf of Department of Surgery - Doc. d-r Boro Dzonov, Cheaf of Department of Pediatcs - Prof. d-r Kata Martinova and Cheaf of Department of Internal medicina – Prof. d-r Kata Martinova		

9.	Preconditions		**For Clinical trial 1:** Obtained credits (passed exams) of Anatomy 3, Physiology 1, Pathopshysiology 1, signature of Physiology 2 and Microbiologu iwth Parasitology1 **For Clinical trial 2:** Obtained credits (passed exams) of Biochemistry 1, Physiology 2, signature of Pathology 1, Pathophysiology 2 and Clinial trial 1	
10.	**Teaching goals:** • Acquiring theoretical knowledge and skills in the examination of the patient and further examination in Clinical medicine			
11.	**Brief content**: **Theoretical teaching:** • History (patient interrogation) in children and adults • General status in children and adults • Symptoms and signs of disease following the organic the systems • Principles review of systems • Special examinations of systems **Practical teaching:** • Practical application of theoretical knowledge			
12.	**Methods of studying:** • Interactive theoretical teaching, active work with patients **Knowledge and understanding:** Student will acquire the theoretical and practice knowledge in the field of Clinical Investigation to admission of patients in hospital setting, as well as the characteristics of clinical investigation on each department. He will be introduced with the procedures for setting up a working diagnosis, and treatment plan of individual clinical cases. **Crucial Skills**: The student will acquire the skills to master the methods and techniques for examination of patient and proper interpretation and other „paraclinical findings”			
13.	Total available time:		102+116 hours classes	
14.	Organization of the course		Theoretical teaching: 90 hours/classes Practical teaching: 128 hours/classes	
15.	Forms of teaching activities	15.1.	Theoretical course	90 / classes
		15.2.	Practical course, Seminars Team building	Practical: 128 classes
16.	Other forms of activities	16.1.	Practice	/ classes
		16.2.	Individual tasks	interactive theoretical teaching, active work with patients
		16.3	Individual (home) learning	/ classes

17. **Method of assessment**

The student is obligated to attend and to be included in the monitoring of all activities to get signet.

Scoring of student activities

Type of activity	Points	
	Min	**Mah**
Theoretical teaching	1	5
Practical teaching	12	16
Final Exam - written	9	15
Final exam – written + oral	38	64
Total	**60**	**100**

*Presence Theory
51% - 60% - 2 points
61% - 70% - 4 points
71% - 80% - 6 points
81% - 90% - 8 points
91% - 1000% - 10 points

**Practical teaching: each practical work with patients brings 0.4 points (128 exercises)
Presence – 0.5 points
To be active in the practical teaching – 0.3 points

18.	Grading criteria (points / grade)	Assessment of the overall exam is obtained according to the table estimates, based on the sum of the scores obtained from all activities and points of each part of the final exam
19.	Requirement for signature and taking the final exam	The student is obligated to attend and to be included in the monitoring of all activities to get signet. To accede to the final exam the student should obstain a minimum score of theoretical and practical training • **Final exam:** Written (test) + practical + oral 1. Written part (test) : 9 – 15 points 2. Practical part: practical performance review 3 systems: 20-34 points 3. Oral part: theoretical discussion of specific topics: 18-30 points
20.	Language of instruction	Macedonian
21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching
22.	Textbooks • Basic: Authorized teaching of Chairs.	

ELECTIVE SUBJECTS

1.	Title of the subject	**PHYSIOLOGY IN HYPOBARIC AND HYPERBARIC AMBIENT**				
2.	Code	MEDI-16				
3.	Study program	General medicine				
4.	Subject of the study program	UKIM, Medical Faculty Skopje				
5.	The level of educational program	Undergraduate Integrative Program				
6.	Academy year / semester	Second / IV	7.	Number of ECTS credits	1	
8.	Professor	Prof. D-r Beti Dejanova				
9.	Required criteria for the subject	Passed exam of Physiology 1				
10.	**The aim of the study program:** • Physiology of high altitude: The influence of low atmospheric pressure on human body. • Physiology of hyperbaric conditions: The influence of high atmospheric pressure on human body.					
11.	**The content of the study subject : Theoretical program:** • Barometric pressures at different altitude • Parcial pressures of oxygen and carbon dioxide at different altitude • Oxygen saturation of hemoglobine at different altitude. The influence of acute hypoxia • Aclimatization at oxygen low partial pressure • Working capacity at high altitude • Acute and chronic mountain disease • Barometric pressure under the sea level • The influence of high partial pressures on gases: nitrogen, carbon dioxide and oxygen • Acute and chronic oxygen intoxication. Oxidative stress • Decompression. Kesonic disease. • Therapy with hyperbaric oxygen. **Seminar program:** Different issues in physiology of hypobaric and hyperbaric ambient.					
12.	**Methods of learning:** Interactive teaching (theory), seminar work					
13.	Total period for studying	30 hours				
14.	Study time divisions					
15.	Forms of teaching activities	15.1	Theoretical lessons	5 hours		
		15.2	Practical lessons (laboratory, clinical, seminars) student team work	Seminar work: 10 hours		
16.	Other forms of studying	16.1	Project tasks			
		16.2	Personal task	5 hours		
		16.3	Studying at home	10 hours		

17.	Type of points estimation				
	17.1	Tests	Writing test	points	min-max 12 - 20
		Final exam	Oral exam	points	min - max 12 - 20
	17.2	Seminar exam	Seminar work	point	min - max 24 - 40
	17.3	Active participation	Theoretical lessons Practical lessons	points points	min - max 12 - 20 /

18.	Criteria for estimation (points/marks)	to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to100 points	10 (ten) A

19.	Required criteria to exam	To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is needed. The final mark is formed by summarizing the points of certain activities.
20.	Language of subject performance	English
21.	Method of teaching activity evaluation	Student anonym evaluation of the subject, the program and the teaching stuff

22. Literature

22.1 Obliged literature

	Author	Title	Editor	Year
1	Dejanova B.	Physiology in special conditions of hypobaric and hyperbaric ambient	Maric-S – Skopje	2010
2	Guyton A.	Medical Physiology	All editions	2000 and on

22.2 Additional literature

Р.бр	Author	Title	Editor	Year
1	Powers SK, Howley ET	Exercise and environment. In: Exercise physiology	McGraw-Hill Int Edition	2007

1.	Title of the course	**APPLICATION OF METHODS FOR SURVIVAL-SURVIVAL TIME ANALYSIS**				
2.	Code	MEDI-33				
3.	Study program	General medicine a				
4.	The organizer of the study program (unit, ie institute, department, department)	UKIM-Medical faculty Department of epidemiology with biostatistics and medical.informatics				
5.	Degree of education (first or second cycle)	Integrated cycle				
6.	Academic year / semester	Second / IV third, fourth, fifth	7.	Number of ECTS credits	1	
8.	professor	**prof. Rozalinda Isjanovska**				
9.	Prerequisites for enrolling the subject	passed the exam from biostatistics				
10.	Objectives of the course program (competences): • Provide knowledge and application of survival-survival-time analysis methods in everyday medical practice					
11.	Course content: Theoretical instruction: 1. Introduction and general information; 2. Censored observations; 3. Analytical techniques and survival methods; 4. Life chart or survival table; 5. Kaplan-Meier's method - Examination; 6. Risk in survival analysis; 7. Comparison of two surviving curves; 8. Geham or generalized Wilcoxon test; 9. Log-rank test; 10. Regression model - Proportional hazard models (Cox-model, Cox-like model); Practical classes: Computer application and performing the methods of survival time analysis (Statistica for windosw); Seminar work: processing of a given research					
12.	Learning Methods: Interactive teaching (theoretical), exercises, seminar work					
13.	Total available time	30				
14.	Distribution of time					
15.	Forms of teaching activities	15.1	Lectures - theoretical instruction	5		
		15.2	Exercises (laboratory, clinical), seminars, team work	Exercises 10 Seminars 5		

16.	Other forms of activity	16.1	Project assignments	
		16.2	Individual tasks	5
		16.3	Home learning	5

17.	Method of grading			points
	17.1	Final exam	oral part points 20- 30	min.-max.
	17.2	Seminar work / project (presentation: written and oral)	Seminar work points	min.-max. 20- 30
	17.3	Active participation	Theory points Practical points	min.-max 10 - 20 10 - 20

18.	Evaluation criteria (points / grade)	59 points	5 (five) F
		60 - 68 points	6 (six) E
		69 - 76 points	7 (seven) D
		77 - 84 points	8 (eight) C
		85 - 92 points	9 (nine) B
		93 -100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	Conditional criteria: In order to obtain a signature, a student is required to attend the theoretical, practical classes and seminars and to win a minimum score In order to enter the final exam, the student should prepare a written paper in writing and prepare a computerized compilation. The grade for the course is formed according to the rating table, based on the sum of the points from all the activities, the continuous checks and the final exam.
20.	Language	English
21.	Method of monitoring the quality of teaching	Student anonymous evaluation of the course and the teachers and collaborators participating in the teaching

22.	Literature					
	22.1	Compulsory literature				
		No	Author	Title	Publisher	Year
		1	Aviva Petrie&Caroline Sabin-	Medical Statistics at a Glance	Blackwell Science	2009
	22.2	Additional literature				
		No	Author	Title	Publisher	Year

1.	**Subject**	**CONTEMPORARY EPIDEMIOLOGICAL RESEARCH - EQUALITY AND EQUITY FOR ALL RESPONDENTS**
2.	**Code**	MEDI-37

3.	**Study Program**	General Medicine

4.	**Organizing Institution (Unit, Institute, Chair, Department)**	Department of Epidemiology and Biostatistics with medical informatics, Medical faculty, University "St. Kiril and Metodij", Skopje, R.Macedonia			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year/semester**	по избор 7.		Број на 1 кредити	ЕКТС
8.	**Responsible teacher**	Prof. Vesna Velikj Stefanovska, MD MSc PhD			
9.	**Preconditions for taking the subject**	None			
10.	**Teaching goals of the Aims of study program (competencies):** • Studying modern, newly-designed methods of epidemiological research • Indicate ways to apply them in scientific research work • Acquiring knowledge and skills for creating scientific work • Components of the right to health - equality and equity				
11.	**Content of the study program:** **Theoretical classes:** • Introduction to the course - general principles and key elements of newly designed methods in modern epidemiological research • A second / third generation epidemiological research method • Clinical epidemiological studies • RAR method for rapid assessment and response • PAR method • Methods for increasing the representativeness of the sample • Applying the components of the right to health (equity and equity) when selecting the respondents • Recognizing and overcoming discrimination and disparities in scientific research **Practical classes:** • Exercise 1 - applying a second generation of epidemiological research • Exercise 2 - applying for a third generation of epidemiological research • Exercise 3 - applying the RAR method in practice • Exercise 4 - applying the PAR method in practice • Exercise 5 - increasing the representativeness of the sample • Exercise 6 - showing a movie with experiences of vulnerable groups and discussion • Exercise 7 - recognition of discrimination and disparities in scientific research Seminar work: application of modern epidemiological research in the creation of scientific work				
12.	**Methods of studying:** **Interactive teaching, practical course, seminars**				
13.	**Total number of hours:**		30 hours		
14.	**Distribution of available time**				
15.	**Distribution of available time**	15.1	Lectures-theoretical course	5 hours	

		15.2	Practical (laboratory, clinical), seminars, team work	Practical work 8 hours Seminars 2 hours

1.	Subject	**ENDOCRINE DYSREGULATION, BIOMARKERS IN CARDIAC FAILURE AND TECHNIQUES OF VISUALISATION**		
2.	Code	MEDI-38		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Pathophysiology		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	Third year/VI	7. Number of credits	1
8.	**Responsible teacher**	Assoc. Prof. Venjamin Majstorov, PhD, MD		
9.	Preconditions	Exam of Pathophysiology 1, Signature of Pathophysiology 2		
10.	Teaching goals: To get introduced with the mechanisms of endocrine dysregulation and biomarkers in cardiac failure, possibilities for cardiac failure visualisation and their application in practice			

11.	Brief content: **Theoretical course** • Pathophysiology of endocrine disorders in cardiac failure and mechanisms of release of various biomarkers • Special review on pathophysiological mechanisms of symphatetic nervous system hyperreactivity in cardiac failure • Techniques of visualisation and quantification of cardiac symphatetic hyperreactivity • Application of visualisation techniques in risk stratification and cardiac failure prognosis **Practical lessons** • Discussion on disorders in cardiac failure, demonstration of some visualisation techniques and their application **Seminar** • Disorders in cardiac failure-work on separate parts

12.	**Methods of studying:** Ex cathedra teaching and interactive teaching during lectures and practical trainings, writting and preparing presentation, independent study by using textbooks, computer assisted learning			
13.	Total available time:		30 classes	
14.	Organization of the course		15 classes - theoretical course, practical course, seminars 15 classes - home individual learning	
15.	Forms of teaching activities	15.1.	Theoretical course	5 classes
		15.2.	Practical course, Seminars	5 classes 5 classes
16.	Other forms of activities	16.1.	Practice	/
		16.2.	Individual tasks	/
		16.3.	Individual (home) learning	15 classes
17.	Method of assessment			

<table>
<tr><td></td><td>17.1</td><td>Tests</td><td>Students are obliged to follow actively all recommended activities, including participation in the continuous testing of knowledge in order to get signature

Scoring the student's activities:

<table>
<tr><th>Activity</th><th>Minimum points</th><th>Maximum points</th></tr>
<tr><td>Lectures</td><td>10</td><td>20</td></tr>
<tr><td>Individual student's activity</td><td>10</td><td>20</td></tr>
<tr><td>Seminar paper</td><td>40</td><td>60</td></tr>
<tr><td>Total</td><td>60</td><td>100</td></tr>
</table>

Oral examination min-max 15-25</td></tr>
<tr><td></td><td></td><td>Final exam</td><td></td></tr>
<tr><td></td><td>17.2</td><td>Seminar paper/project (oral/written presentation)</td><td>min–max
Seminar paper - written form/ presentation 25-35</td></tr>
<tr><td></td><td>17.3</td><td>Active participation</td><td>min–max
Theoretical course 10-20
Practical course 10-20</td></tr>
<tr><td>18.</td><td colspan="2">Grading criteria (points / grade)</td><td>up to 59 points — 5 (five) F
from 60 to 68 points — 6 (six) E
from 69 to 76 points — 7 (seven) D
from 77 to 84 points — 8 (eight) C
from 85 to 92 points — 9 (nine) B</td></tr>
</table>

		from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities, to write a seminar and prepare presentation in order to take the final exam. The grade in the final exam is given according to the grading table, and on basis of the sum of points obtained in all of the activities	
20.	Language of instruction	English	
21.	Method of monitoring the quality of teaching process	Anonymous evaluation of the subject and lecturers will be done at the end by the students.	

22.	Textbooks					
	22.1.	Mandatory				
		1.	Kasper D, Fauci A	Harrison's Principles of Internal Medicine		
		2.	Leonard S. Lilly	Pathophysiology of Heart Disease	Wolters Kluwer	
		3.	Ziessman O'Malley Thrall	Nuclear medicine The Requisites	Elsevier Mosby	2006
	22.2.	Additional				
		1.	McPhee SJ, Ganong WF:	Pathophysiology of disease. An introduction to clinical medicine	Langee medical Books/McGraw-Hill, New York	2003

1.	**Subject**	**FETAL PHYSIOLOGY**			
2.	**Code**	MEDI 112			
3.	**Study Program**	**General medicine / High schools**			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Institute of Physiology and Anthropology Department of physiology			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Second/II	7.	Number of credits	1

8.	**Responsible teacher**		Prof. Sunchica Petrovska MD, PhD	
9.	**Preconditions**		Passed exam from Physiology 1	
10.	**Teaching goals of the study program (competencies):** • To learn about the fetal physiology • Gaining knowledge on specificity of the functional characteristics of fetal organic systems during intrauterine maturation			
11.	**Theoretical course:** • Amnionic fluid and fetal body fluids • Physiology of the heart and circulatory system • Physiology of the respiratory system • Physiology of the gastrointestinal system and metabolism • Physiology of the urinary system and acid-base balance • Physiology of the nervous and neuroendocrine system			
12.	**Methods of studying:** Interactive lectures, seminars			
13.	**Total no. of hours:**		15	
14.	**Distribution of the available time**		15 hours lectures, 30 hours home studying	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	10 hours
		15.2	Seminars,	5 hours

16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	30 hours

17.	**Assessment of knowledge:**			points
	17.1	1. Seminar work/project presentation: written 2. Seminar work/project presentation: oral	min.-max. 18-30 … points min.- max. 30 -50…points	
	17.2	Active participation	Theoretical course	min.-max. points 12-20

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C

		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** 1. The student is obliged to participate actively in the theoretical course in order to get a signature. 2. In order to approach the final exam, the student is obliged to write and present a seminar paper.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	

		Mandatory textbooks				
			Author	Title	Publisher	Year
	22.1	1	S. Petrovska	Fiziologija na fetus	Medicinski fakultet, Skopje	2012
		2	Gajton A	Medicinska fiziologija	Savremena administracija, Beograd	2008
		3	Blackburn ST	Maternal, fetal and neonatal physiology	Elsevier	2007
		4	Thorburn GD	Textbook of fetal physiology	Oxford University	1994

1.	Subject	**GENERAL PATHOPHYSIOLOGY OF HOMEOSTASIS**		
2.	Code	MEDI-29		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Pathophysiology		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	End of summer semester (25 students)	7.Number of credits	1
8.	**Responsible teacher**	Prof. Daniela Miladinova, PhD, MD		
9.	Preconditions	Exam of Physiology 1, Signature of Pathophysiology 1		

10.	Teaching goals: **Lectures**: To get introduced with the mechanisms of homeostatic systems, basic homeostasis disorders types, kinds of homeostatic mechanisms compensation and adaptation **Practices**: Demonstration of glucose, potassium and acid-base control systems **Seminars**: Integrated approach in studing various systems of homeostasis			
11.	Brief content: **Theoretical course** • homeostasis • homeostatic systems properties • general pathophysiology of various homeostatic disorders, overload, conflicts, setpoint changes, oscilations, negative feed-back disruption, positive feed-back, homeostatic mechanisms adaptation **Practical lessons** • genome homeostasis, immunity as homeostatic mechanism			
12.	**Methods of studying:** Classic - Ex cathedra teaching and interactive teaching during lectures and practical trainings, seminars writting an presentation, independent study by using textbooks, computer assisted learning			
13.	Total available time:			30 classes
14.	Organization of the course			7 classes - theoretical course 3- practical course 5- seminars 30 classes - home individual learning
15.	Forms of teaching activities	15.1.	Theoretical course	7 classes
		15.2.	Practical course, Seminars	3 classes 5 classes
16.	Other forms of activities	16.1.	Practice	/
		16.2.	Individual tasks	/
		16.3.	Individual (home) learning	30 classes
17.	Method of assessment			
	17.1 Tests	Students are obliged to follow actively all recommended activities, including participation in the continuous testing of knowlidge in order to get signature Scoring the student's activities:		

Activity	Minimum points	Maximum pooints
Lectures	10	20
Individual student's activity	10	20
Seminar paper	40	60
Total	60	100

	17.2	Seminar paper/project (oral/written presentation)	Seminar paper - written form Seminar paper - presentation	min – max 12 20 12 20
	17.3	Active participation	Students are obliged to follow actively all recommended activities, including participation in the continuous testing of knowlidge in order to get signature The grade in the final exam is given accrding to the grading table, and on basis of the sum of points obtained in all of the activities	
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities.	
20.	Language of instruction		English	
21.	Method of monitoring the quality of teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.	
22.	Textbooks			
	22.1.	Mandatory		
		1. Serafimov N: Skopje, 1997	General pathophysiology of homeostasis,	1997
		2. Gamulin S et all:	Pathophysiology. Jumena, Zagreb,	2005
	22.2.	Additional		
		1. McPhee SJ, Ganong WF:	Pathophysiology of disease. An introduction to clinical medicine	Langee medical Books/McGraw-Hill, New York 2003

1.	Subject	**PATHOPHYSIOLOGY OF INFLAMMATION**		
2.	Code	MEDI-30		
3.	Study Program	General Medicine		
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University, Medical Faculty, Department of Pathophysiology		
5.	Degree of education (first or second cycle)	Integrated 6-year study		
6.	Study year/semester	End of summer semester (25 students)	7.Number of credits	1
8.	**Responsible teacher**	Associate prof. Ana Ugrinska, PhD, MD		
9.	Preconditions	Exam of Physiology 1, Signature of Pathophysiology 1		

<table>
<tr><td>10.</td><td colspan="5">Teaching goals:
Lectures: To get introduced with the etiology and the pathogenesis of acute and chronic inflammation and local and general reaction of the organism to the inflammation
Practices:demonstation of experimentaly induced inflammation in experimental animal
Seminars: Integrated approach in studing various pathophysiologial aspects of inflammation</td></tr>
<tr><td>11.</td><td colspan="5">Brief content:
Theoretical course:
• etiology and pathogenesis of acute and chronic inflammation
• pathogenetic effects of inflammation
• inflammation changes
• manifestations and biochemical assessment of inflammation existence and intensity
Practical lessons:
• demonstration of articular infection and inflammation Seminars: chemical mediators of inflammation, biological inflammatory syndrome</td></tr>
<tr><td>12.</td><td colspan="5">Methods of studying:
Classic - Ex cathedra teaching and interactive teaching during lectures and practical trainings, seminars writting an presentation, independent study by using textbooks, computer assisted learning</td></tr>
<tr><td>13.</td><td colspan="3">Total available time:</td><td colspan="2">30 classes</td></tr>
<tr><td>14.</td><td colspan="3">Organization of the course</td><td colspan="2">7 classes - theoretical course
3- practical course
5- seminars
30 classes - home individual learning</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Forms of teaching activities</td><td>15.1.</td><td>Theoretical course</td><td>7 classes</td></tr>
<tr><td>15.2.</td><td>Practical course, Seminars</td><td>3 classes
5 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td>/</td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td>/</td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td>30 classes</td></tr>
<tr><td>17.</td><td colspan="5">Method of assessment</td></tr>
</table>

<table>
<tr><td></td><td>17.1</td><td>Tests</td><td colspan="4">Students are obliged to follow actively all recommended activities, including participation in the continuous testing of knowlidge in order to get signature

Scoring the student's activities:

<table><tr><td>Activity</td><td>Minimum points</td><td>Maximum pooints</td></tr><tr><td>Lectures</td><td>10</td><td>20</td></tr><tr><td>Individual student's activity</td><td>10</td><td>20</td></tr><tr><td>Seminar paper</td><td>40</td><td>60</td></tr><tr><td>Total</td><td>60</td><td>100</td></tr></table></td></tr>
<tr><td></td><td>17.2</td><td>Seminar paper/project (oral/written presentation)</td><td colspan="4">min – max
Seminar paper - written form 12 20
Seminar paper - presentation 12 20</td></tr>
<tr><td></td><td>17.3</td><td>Active participation</td><td colspan="4">Students are obliged to follow actively all recommended activities, including participation in the continuous testing of knowlidge in order to get signature

The grade in the final exam is given accrding to the grading table, and on basis of the sum of points obtained in all of the activities</td></tr>
<tr><td>18.</td><td colspan="2">Grading criteria (points / grade)</td><td>up to 59 points</td><td colspan="3">5 (five) F</td></tr>
<tr><td></td><td colspan="2"></td><td>from 60 to 68 points</td><td colspan="3">6 (six) E</td></tr>
<tr><td></td><td colspan="2"></td><td>from 69 to 76 points</td><td colspan="3">7 (seven) D</td></tr>
<tr><td></td><td colspan="2"></td><td>from 77 to 84 points</td><td colspan="3">8 (eight) C</td></tr>
<tr><td></td><td colspan="2"></td><td>from 85 to 92 points</td><td colspan="3">9 (nine) B</td></tr>
<tr><td></td><td colspan="2"></td><td>from 93 to 100 points</td><td colspan="3">10 (ten) A</td></tr>
<tr><td>19.</td><td colspan="2">Requirement for signature and taking the final exam</td><td colspan="4">The student is required to actively follow all of the planned activities.</td></tr>
<tr><td>20.</td><td colspan="2">Language of instruction</td><td colspan="4">English</td></tr>
<tr><td>21.</td><td colspan="2">Method of monitoring the quality of teaching process</td><td colspan="4">Attendance of students to classes and interactive participation in theoretical and practical lessons.</td></tr>
<tr><td>22.</td><td colspan="6">Textbooks</td></tr>
<tr><td></td><td rowspan="2">22.1.</td><td colspan="5">Mandatory</td></tr>
<tr><td></td><td>1.</td><td>Gamulin S et all:</td><td>Pathophysiology.</td><td>Jumena, Zagreb,</td><td>2014</td></tr>
</table>

1.	Subject		Optional subject **BALNEOCLIMATOTHERAPY**		
2.	Code		MEDI 84		
3.	Study Program		General Medicine		
4.	Institution (Unit, Institute, Chair, Department)		Ss Cyril and Methodius University, Medical Faculty, Department of Anatomy		
5.	Degree of education (first or second cycle)		Integrated 6-year study		
6.	Study year/semester		Nine (IX) / Nine (IX)	7.Number of credits	9
8.	**Responsible teacher**		Assoc. Prof. Biljana Mitrevska, MD, PhD, PRM specialist		
9.	Preconditions		None		
10.	Teaching goals: • To get knowledge of the natural sources of some physical agents (sun, sea, mineral water, peloids); • To get knowledge of the methods of treatment in balneoclimatotherapy • To get knowledge with the mineral waters, species, their effects on the patients and their application • To have the ability to apply mineral water in the treatment of the diseased and the injured • To get to know the role of climatotherapy in the treatment • To become familiar with peloidotherapy, her activity and application • To know about thalassotherapy				
11.	Brief content: **Theoretical course:** • Mineral waters, classification, mechanism of action, methods of application • Peloidotherapy, peloid forms, their deposit, preparation and regeneration • Physico-chemical properties of peloid, methods and techniques for application • Climatotherapy, climatic factors, climate conditions and their effects on the body • Thalassotherapy, coastal climate, sea water and its effects on the body • Heliotherapy • Inhalation therapy • Spa treatments in Macedonia				
12.	**Methods of studying:** theoretical lessons				
13.	Total available time:		30 classes		
14.	Organization of the course		15 classes - theoretical course, 15 classes - home individual learning		
15.	Forms of teaching activities	15.1.	Theoretical course		15 classes
		15.2.	Practical course, Seminars		
16.	Other forms of activities	16.1.	Practice		
		16.2.	Individual tasks		
		16.3.	Individual (home) learning		15 classes
17.	Method of assessment				

	17.1	Tests	min – max **1** **Continual assessment** 18-30 points	
			1 Final test points 18-30 (if they have not passed the continuous check) The student is obliged to achieve a minimum of the expected points. In contrast, the exam is not considered.	
	17.2	Seminar paper/project (oral/written presentation)	1 seminar paper/project points	min – max 36-60
	17.3	Active participation	Theoretical course Attending the theoretical lessons 51% -60% 6 points 61% -70% 7 points 71% -80% 8 points 81% - 90% 9 points 91% - 100% 10 points	min – max 6-10
18.	Grading criteria (points / grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam		The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, a student is required to attend the theoretical classes and to get a minimum points. The grade for the subject is formed according to the rating table, based on the points from all the activities, the continuous checks and the final exam.	
20.	Language of instruction		English	
21.	Method of monitoring the quality of teaching process		Student anonymous evaluation of the subject and the teachers and collaborators participating in the teaching	
22.	Textbooks			
	22.1.	Mandatory		
		1.	Basics of Physical Therapy	Erieta Nikolik-Dimitrova	Laser Jet, Skopje RM	2011

		2.	Physical Therapy	Vukasin Mihajlovik	Obodsko slovo, Rijeka Crnojevika	2002
	22.2.	Additional				

1.	Subject	**EXERCISE THERAPY**			
2.	Code	MEDI 78			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	"Ss Cyril and Methodius" University, Faculty of Medicine, Institute of Physical medicine and rehabilitacion			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semester	Nine IX	7.	Number of credits	1
8.	**Responsible teacher**	Ass.Prof.Valentina Koevska, PhD,MD			
9.	Preconditions	Filled in enrollment in IX semester			
10.	Teaching goals: • Introduction to basic principles of the use of kinesitherapy in prophylaxis and in the process of medical rehabilitation. • Introduction with kinesitherapy methods and the means of kinesitherapy • Introduction with kinesitherapy as a therapeutic procedure with its own indications and contraindications • Link the efficacy of kinesitherapy with other physical agents				

11.	Brief content: **Theoretical course:** • The place of kinesitherapy in physical medicine and rehabilitation • Biological effects of kinesitherapy on locomotor, nervous, cardiovascular, respiratory and digestive systems • The influence of kinesitherapy on the psychic, social and professional position of the patient • Goals of kinesitherapy • Principles of kinesitherapy • Means of kinesitherapy • Dosage of kinesitherapy • The starting position of the exercises • Kinesitherapy equipment • Methods of monitoring and recording in kinesitherapy • Recreational gymnastics and kinesitherapy through sporting activities	
12.	**Methods of studying:** Interactive teaching during lectures and independent study by using textbooks	
13.	Total available time:	30 classes

14.	Organization of the course		15 classes - theoretical course 15 - home individual learning	
15.	Forms of teaching activities	15.1	Theoretical course	15 classes
		15.2	Practical course, Seminars	
16.	Other forms of activities	16.1	Practice	
		16.2	Individual tasks	
		16.3	Individual (home) learning	15 classes

	Method of assessment		
	17.1	Tests	min – max **Continual assessment** points18- 30
		Final exam	min.-max. Written part points 18-30 The student is obliged to achieve a minimum of the expected points. In contrast, the exam is considered unfit.

	17.2	Seminar work / project (presentation: written and oral)	Seminar work -1	min.-max points 36-60
	17.3	Active participation	min.-max. Theoretical instruction * Attended the theoretical lessons 51% -60% 6 points 61% -70% 7 points 71% -80% 8 points 81% - 90% 9 points 91% - 100% 10 points	points 6-10

18.	Grading criteria (points / grade)	up to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A
19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:**	

		In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the three continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the subject and the teachers and collaborators participating in the teaching

22.	Textbooks					
	22.1	Mandatory				
		1.	Miroslava Stojanovska	Fundimentals of kinesitherapy	Pergament Pablic, Skopje, R.M.	2010
	22.2	Additional				

		1.	Erieta NikolicDimitrova	Exercise therapy (Kinesitherapy), Physical Medicine and Rehabilitation	Skopje:Laserjet,	2011
		2.	Martin. D. Hofman et al. Eds De Lisa et al.	Terapeutical exercises, In Physical medicine and rehabilitation Principle and Practices		2011
		2	Eds. Randall Braddom	Physical Medicine and Rehabilitation. - Some Chapters		2011

1.	Subject	**PHYSICAL AGENTS IN PAIN TREATMENT**
2.	Code	MEDI 90
3.	Study program	Study for Doctors of Medicine
4.	Institution (Unit, Institute, Chair, Department)	"Ss Cyril and Methodius" University, Faculty of Medicine, Institute for Physical Medicine and Rehabilitation, Cathedra of Physical Medicine and Rehabilitation

5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semestar	Fifth/IX	7.	Number of ECTS credits	1
8.	Responsible teacher	Prof. Erieta Nikolikj Dimitrova, MD, MSc, PhD, PRM specialist			
9.	Preconditions	Requirement for the ninth semester fulfilled			
10.	**Teaching goals:** - To acquire knowledge for fundamentals of physical agents - To acquire knowledge for physiological and therapeutic effects of some physical modalities - To acquire knowledge about usage of these methods in treatment and research - To acquire knowledge and training for applying physical modalities in treatment of acute pain - To acquire knowledge and training for applying physical modalities in treatment of chronic pain				

11.	**Brief content** **Theoretical course:** - Fundamentals of electrotherapy - Galvanic currents - Iontophoresis - Dyadinamic currents - Interferential currents - High Frequency currents (Short currents) - Transcutaaneous electrical nerve stimulation - Therapeutic ultrasound - Low level laser therapy - Low frequency electromagnetic field - Shock wave therapy - **Practical lessons:**			
12.	**Methods of studying:** Interactive teaching during lectures, independent study by using textbooks.			
13.	Total available time:		30 classes	
14.	Organization of the course		15 classes - theoretical course, 15 classes - home individual learning	
15.	Forms of teaching activities	15.1	Lectures-theoretical lessons	15 classes
		15.2	Practical instructions, clinical lessons, team work	

16.	Other forms of activities	16.1	Practice	
		16.2	Individual tasks	7 classess
		16.3	Individual home learning	8 classes
17.	Method of assessment			
	17.1	Tests	min – max Continual assessment - 1 (written) 18-30 points	
		Final exam	Final exam: final test + seminar Final test is written 18-30 points The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	

	17.2	Seminar paper/project (oral/written presentation)	Seminar -1	min – max 36-60
	17.3	Active participation	Theoretical course	min – max 6-10 points

18.	Grading criteria (points / grade)	up to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
		from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to 100 points	10 (ten) A

19.	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. **Conditional criteria for assessment of knowledge:** In order to get a signature, the student should obtain minimum points in both theoretical courses. The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.
20.	Language of instruction	English
21.	Method of monitoring the quality of teaching process	Student's anonymous evaluation of the subject and teaching stuff who are involved in the education.

22. Литература

22.1 Задолжителна литература

Р.бр	Автор	Наслов	Издавач	Година
1	Erieta Nikolikj-Dimitrova,	Textbook: Fundamentals of Physical therapy	Laserjet Skopje	2011

22.2 Дополнителна литература

Р.бр	Автор	Наслов	Издавач	Година
1	Eds.J. De Lisa	In Physical Medicine and Rehabilitation. Principles and Practice Some Chapters: - Therapeutic physical modalities		2011

		2	Eds. Randall Braddom	In Physical Medicine and Rehabilitation. Some Chapters: - Modalities of physical agencies		2011

1.	**Subject**	**PHYSIOLOGY OF SLEEP**			
2.	**Code**	MEDI-22			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Institute of Physiology and Anthropology			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Second/IV	7.	Number of credits	1
8.	**Responsible teacher**	Prof. Sanja Mancevska MD, PhD			
9.	**Preconditions:**	Passed exam of Physiology 1			
10.	**Teaching goals of the study program (competencies):** • To be able to define and to explain the physiological basis of sleep, the sleep phases, the nature and the function of neurotransmitters and the factors that influence the circadian rhythm. • To be able to recognize and differentiate between the basic sleep disorders				
11.	**Contents of the study program:** **Theoretical and practical courses:** • The state of alertness and sleep. Theories of the alertness -sleep cycle • Sleep stages: REM phase and slow wave (non REM) sleep and their characteristics • Registration of brain activity in a state of alertness and sleep • Neurotransmitters and sleep: the role of neurotransmitters in the maintenance of the alertness-sleepiness cycle (excitatory and inhibitory neurotransmitters) • Melatonin and circadial rhythm of sleep and its disorder due to time zones				

	• Sleep physiology and dream theories • Physiological effects of sleep and its impact on the nervous system and other organic systems • Factors affecting sleep: diet, physical activity, age, etc. • Insomnia and physiological approach to address it. • The concept of insomnia, hypersomnia, and narcolepsy. Seminar work: selected parts of physiology of sleep..
12.	**Methods of studying:** Interactive lectures, laboratory practice .
13.	**Total no. of hours:** 30 hours

14.	**Distribution of the available time**		15 hours lectures, laboratory 15 hours home studying	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	5 hours
		15.2	Practical (laboratory, clinical), seminars, team work	10 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	5 hours
		16.3	Home studying	10 hours

17.	**Assessment of knowledge:**			points
	17.1	Tests	Written exam	min.- max. total 12-20 points
		Final exam	Oral exam	min.-max. 12-20 point
	17.2	Seminar work/project (presentation: written and oral)	Seminar works points	min.- max. 24- 40
	17.3	Active participation	Theoretical course	min.-max. points 12-20

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is
		needed. The final mark is formed by summarizing the points of certain activities.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	

	22.1	Mandatory textbooks				
			Author	Title	Publisher	Year
		1	Widmaier E, Raff H, Strang K.	Vander's Human Physiology: The Mechanisms of Body Function.	McGraw -Hill Education	2013
		2	Guyton AC, Hall JE.	Textbook of Medical Physiology 12 th edition.	Elsevier, London,	2011
		3	Naiman R.	Healing night: The science and spirit of sleeping, dreaming, and awaking.	Barnes and Noble	2006

1.	**Subject**	**SPORT PHYSIOLOGY**			
2.	**Code**	MEDI 112			
3.	**Study Program**	**General medicine / High schools**			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Institute of Physiology and Anthropology Department of physiology			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Second/II	7.	Number of credits	1
8.	**Responsible teacher**	Prof. Sunchica Petrovska MD, PhD			
9.	**Preconditions**	Passed exam from Physiology 1			
10.	**Teaching goals of the study program (competencies):** • Gaining knowledge on influence of physical exercise on muscles, cardiovascular, respiratory and neuroendocrine system • Gaining knowledge on muscle fatigue • To learn about the physiological mechanisms of recovering • Gaining knowledge on influence of external temperature on human body during physical exercise and gender and physical exercise				

11.	**Theoretical course:** • Muscle strength, muscle power and endurance; muscle energetic systems • Oxygen consumption and respiratory ventilation during exercise • Oxygen consumption and cardiac output during exercise • Oxygen diffusion capacity in athletes • Physical activity as a stress factor • Fatigue and types of fatigue (biochemical changes and phases of muscle fatigue) • The basic physiological mechanisms of recovery process (reconstitution of glycogenlactic acid system, recovery of the aerobic system) • Thermoregulation during physical exercise under conditions of high and low external temperature • Gender differences in muscle strength, muscle power, cardiorespiratory endurance, endocrinology and metabolism.			
12.	**Methods of studying:** Interactive lectures, seminars			
13.	**Total no. of hours:**		15	
14.	**Distribution of the available time**		15 hours lectures, 30 hours home studying	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	10 hours
		15.2	Seminars,	5 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	30 hours
17.	**Assessment of knowledge:**			points
	17.1	1. Seminar work/project presentation: written 2. Seminar work/project presentation: oral	min.-max. 18-30 … points min.-max. 30 -50…points	
	17.2	Active participation	Theoretical course	min.-max. points 12-20
18.	Knowledge assessment criteria: (points/grade)	up to 59 points		5 (five) F
		60 to 68 points		6 (six) E
		69 to 76 points		7 (seven) D
		77 to 84 points		8 (eight) C
		85 to 92 points		9 (nine) B
		93 to 100 points		10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam		**Conditional criteria for assessment of knowledge:** 3. The student is obliged to participate actively in the theoretical course in order to get a signature. 4. In order to approach the final exam, the student is obliged to write and present a seminar paper.			
20.	Language of the course		English			
21.	Method for evaluation of the quality of education		Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1	Mandatory textbooks				
			Author	Title	Publisher	Year
		1	S. Petrovska	Osnovni na fiziologija na sportot	Mariv, Skopje	2010
		2	Gajton A	Medicinska fiziologija	Savremena administracija, Beograd	2008
		3	Foss ML, Keteyan SJ.	Fox' s physiological basis for exercise and sport	WCB/Mc Graw-Hill	1998

Subject	**OCCUPATIONAL DISEASES AND WORK-RELATED DISEASES**
Study program	General medicine
Code	MEDI-78
Study year	By choice
Semester	Winter/Summer, up to 20 students
Total no. of hours	15
Credits	1
Type of the subject	Elective
Preconditions	None
Conducted by	Department of Occupational medicine
Responsible teacher	Assoc. Prof. Dr. Jordan Minov
Address	Department of occupational medicine of the Republic of Macedonia, WHO Collaborative Center, II Makedonska Brigada 43, 1000 Skopje. Tel. +389 2621 428, e-mail occhemed@onnet.com
Key words	Medical Faculty, undergraduate studies, elective subject, occupational diseases, work related diseases

Aims of the study	• Studying the pathogenesis, diagnostics, treatment and prevention of occupational diseases and work-related diseases • Case reports and demonstration of epidemiological and clinical research of the occupational diseases and workrelated diseases • Seminar work in occupational pathology
Brief content	**Theoretical course** • Occupational diseases and work-related diseases – definition, legislation, pathogenesis, diagnostics, treatment and prevention • Occupational diseases and work-related diseases of the lungs • Occupational diseases of the liver • Occupational diseases of the locomotor system • Occupational malignant neoplasm **Practical course** • Asthma related to work/occupational asthma – case report • Lung diseases related to asbestos exposition – case report • Occupational contact dermatitis – case report • Occupational lead poisoning – case report • Occupational noise damages – case report **Seminar papers** • COPD related to professional exposition • Occupational zoonoses
Organization	**Theoretical course**: 5 hours **Practical course**: 5 hours **Seminars**: 5 hours

<table>
<tr><td>Specific recommendations for the course</td><td>The student is obliged to participate actively in all anticipated activities in order to get a signature.
Points for the activities of the student:
<table>
<tr><td>Activity type</td><td colspan="2">Points</td></tr>
<tr><td></td><td>Min</td><td>Max</td></tr>
<tr><td>Theoretical course</td><td>10</td><td>20</td></tr>
<tr><td>Practical course</td><td>10</td><td>20</td></tr>
<tr><td>Seminar</td><td>40</td><td>60</td></tr>
<tr><td>Total:</td><td>60</td><td>100</td></tr>
</table>
The grading of the student is descriptive (passed the exam)</td></tr>
<tr><td>Textbooks</td><td>Basic:
• Avtorizirani predavanja od predavacite
• Bislimovska Karadzinska J, Minov J, Risteska-Kuc S, Mijakoski D, Stoleski S. Medicina na trudot (vo faza na recenzija) Additional:
• Minov J. Bolesti na belite drobovi I plevrata povrzani so profesionalnata ekspozicija. Skopje : Pristopi, Institut za medicina na trudot na R. Makedonija, 2009</td></tr>
</table>

1.	**Subject**	**INTENSIVE CARE MEDICINE**			
2.	**Code**	MEDI-22			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of anesthesiology, reanimation and intensive care			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	V/Ninthtwelfth	7.	Number of credits	1
8.	**Responsible teacher**	Prof. Mirjana Shosholcheva, MD, PhD			
9.	**Preconditions:**	Passed exam in anesthesiology and reanimation			
10.	**Teaching goals of the study program (competencies):**				

	• The student will be acquainted with the basics of intensive care, critically ill patients and the required skills for their treatment • Elements of cardio-pulmonary resuscitation • The student will be acquainted with the principles of care and intensive treatment of the critically ill patients and with the skills needed in intensive care medicine				
11.	**Contents of the study program:** **Theoretical and practical courses:** • Intensive care medicine, organization of the intensive care unit, monitoring of the vital parameters • Critical conditions as a result of hypoxia • Critical conditions caused by circulatory disorders • Critical conditions with disorders of the body fluids homeostasis • Critical conditions and consciousness disorders • Critical conditions caused by digestive system disorders • Critical conditions caused by trauma • Critical conditions caused by head injuries • Critical conditions caused by chest/thorax injuries • Critical conditions caused by abdominal emergencies • Critical conditions caused by cardiac arrest in pregnant women • Critical conditions in cases of intoxications, burns, terminal extremes, drowning, electric shock • Artificial ventilation, central vein pathways, ports				
12.	**Methods of studying** Listening, demonstration, practical course and acquiring skills, discussion/consultation with the lecturers				
13.	**Total no. of hours:**			30 hours	
14.	**Distribution of the available time**			20 hours lectures, practical 15 hours home studying	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	10 hours	
		15.2	Practical skills in ICU, seminars,	10 hours	
		16.0	Home studying	10 hours	
17.	**Assessment of knowledge:**				points
	17.1	Tests		Written exam	min.- max. total 12-20 points
		Final exam		Oral exam	min.-max. 12-20 point
	17.2	Seminar work/project (presentation: written and oral)		Seminar works points	min.- max. 24- 40

	17.3	Active participation	min.-max. Theoretical course points 12-20

18.	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is needed. The final mark is formed by summarizing the points of certain activities.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

Mandatory textbooks

		Author	Title	Publisher	Year
22.1	1	Andrew D. Bersten, and Neil Soni	Oh's Intensive Care Manual	Elsevier Health Sciences	2013
	2	The ICU Book	Paul L. Marino.	Lippincott Williams and Wilkins,	2013
	3	Critical care	Jesse B. Hall, Gregory A. Schmidt	Nc Graw Hill, Medical	2006

1.	**Subject**	**ENZYMES – MARKERS FOR DIAGNOSIS AND PROGNOSIS OF DISEASES**			
2.	**Code**	MEDI-10			
3.	**Study program**	General medicine			
4.	**Organizer of the study program (Unit, i.e. Institute, Department)**	Ss. Cyril and Methodius University - Medical Faculty Department of Biochemistry and Clinical Biochemistry			
5.	**Degree of education (first or second cycle)**	Integrated cycle			
6.	**Academic year/semester**	Second/IV	7.	Number of ECTS credits	1
8.	**Responsible teacher**	Prof. Dr. Sonja Topuzovska			

9.	**Preconditions**	Signature from Biochemistry 1 and Biochemistry 2

10.	**Aims of the course program (competences):** • Teaching/studying of enzymes important for medical diagnostic practice • Demonstration and practical work on methods for determination of enzyme activity			
11.	**Contents of the course program:** **Theoretical course:** • Principles of enzymology • Isoenzymes and their significance • Methods for determination of enzymes • Enzymes important for diagnosis and prognosis of cardiovascular diseases • Enzymes important for diagnosis and prognosis of hepatic diseases • Enzymes in the neonatal period • Enzymes as tumor markers **Practical course:** • Tests for determination of enzymes and isoenzymes, continual, discontinual, electrophoretic **Seminar paper:** • Selected chapters from enzymology			
12.	**Learning methods:** Interactive teaching (theory), practical exercises, seminar paper			
13.	**Total no. of hours**		30 hours	
14.	**Distribution of the total no. of hours**		15 hours of teaching, exercises, seminars 15 hours studying at home	
15.	**Organization of the course program**	15.1	Lectures - theoretical course	5 hours
		15.2	Practical course (laboratory,	Exercises 5 hours Seminars 5 hours
			clinical), seminars, team work	
16.	**Other forms of activities**	16.1	Project tasks	hours
		16.2	Individual tasks	hours
		16.3	Studying at home	15 hours
17.	**Method of assessment**			points
	17.1 Tests			min.-max. 12 - 20
	Final exam		Oral exam points	min.-max. 15 - 25
	17.2 Seminar paper			min.-max

			Practical course	points	10 - 20

18.	**Assessment criteria**	Up to 59 points	5 (five) F
		from 60 to 68 points	6 (six) E
	(points/grade)	from 69 to 76 points	7 (seven) D
		from 77 to 84 points	8 (eight) C
		from 85 to 92 points	9 (nine) B
		from 93 to100 points	10 (ten) A

19.	**Condition for obtaining signature and taking the final exam**	**Conditional criteria:** In order to get a signature, a student needs to attend theoretical, practical classes and seminars as well as to obtain a minimum number of points In order to approach the final exam the student should submit a seminar paper in a written form and to prepare PPS. The grade for the subject is obtained according to the table of grades and based on the sum of points gained in all of the activities, continual assessment of knowledge and final exam.
20.	**Language of teaching and learning**	Macedonian
21.	**Method of monitoring the quality of teaching**	Students' anonymous evaluation of the subject and the teachers and associates participating in the teaching process.

22. **Textbooks**

Mandatory textbooks

	Num.	Author	Title	Publisher	Year
22.1	1	David M. Hawcroft	Diagnostic enzymology	Willey, London	1987

Additional textbooks

	Num.	Author	Title	Publisher	Year
22.2	1	Nada T. Majkić-Singh	Klinička enzimologija	AID Praktikum	1993

		/project (presentation: written and oral)	Seminar paper	points	25 - 35
	17.3	Active participation	Theoretical course	points	min.-max. 10 - 20

Subject:	**NUTRITIONAL ANTHROPOLOGY**
Study program:	General medicine
Semester:	Summer semester, the last week of June, in the premises of Department of physiology and anthropology, up to 10 students
Total no. of hours	15
Credits:	1
Type of the subject:	Elective
Preconditions:	Completed course in physiology 1 and signature from physiology 2
Program author:	Prof. Lidija Cingo Todorovska, PhD MD
Conducted by:	Department of physiology
Responsible teacher:	Prof. Lidija Cingo Todorovska, PhD MD todorovskalidija@ymail.com
Address:	Department of MEP physiology and anthropology, Medical faculty, 50 Divizija No. 6, 1000, Skopje tell: + 389 2 3111 774; fax: + 389 2 3113 627
Key words:	Medical faculty, graduated study, elective subject, nutritional anthropology, anthropometry, nutritional status.
Aims of the study:	To acquire the basic knowledge about the opportunities of anthropology and its methods in evaluation of nutritional status of individuals and population, and to master the methodology and procedures of nutritional assessment and nutritional monitoring.
Brief content:	***Theoretical course:*** **1. Introduction to nutritional anthropology:** definition; objective; methods; application of anthropometry in clinical diagnostics. **2. Nutritional anthropometry:** methodology; anthropological measurements, indexes and systems of classification. **3. Anthropometric standards:** historical data; purposes; methodology of creation and procedures of manipulation with anthropological standards. **4. Nutritional assessment of an individual:** doctrine and methodology of nutritional assessment; qualitative and quantitative graduation of nutritional status; principles and procedure of nutritional monitoring. **5. Assessment of nutritional risks in population:** methodology of assessment; creating nutritional intervention of the population; creating national programs for prevention. ***Practical course:*** **1.** Taking anthropometric measurements; calculation of anthropometric indexes; comparing with anthropometric standards and interpretation of the results. **2.** Analysis of the nutritional status; body composition; somatotype; growth and body development. **3.** Global assessment and gradation of the nutritional status according to anthropometry. **4.** Analysis of anthropological and nutritional status according to software programs. ***Integrative seminar:*** application of acquired knowledge and skills in actual clinical case.
Organization:	Theoretical course: 4 hours Practical course: 6 hours Seminar: 5 hours
Methods of studying	Interaktiv (theoretical) lectures, practical lectures (practical exercises) and integrative seminar.

Textbooks:	1. Pelto HG, Pelto JP, Messer E. Research Methods in Nutritional Anthropology. The United Nations University, 1989. 2. WHO Technical Report Series no. 854. Physical status: The use and interpretation of anthropometry. Report of the WHO Expert Committee, 1995. 2. L. Todorovska: Nutritional anthropology. Textbook for students of medicine, Skopje, 2013.

1.	**Subject**	**CONTEMPORARY APPROACH IN TREATMENT OF EPILEPSIES**			
2.	**Code**	MEDI - 3			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of neurology			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Second/IV	7.	Number of credits	1
8.	**Responsible teacher**	Ass. Prof. Gordana Kiteva-Trenchevska			
9.	**Preconditions:**	None			

10. **Teaching goals of the study program (competencies):**

- Introduction to the basic therapeutic principles in epilepsy treatment according to the guidelines given by the International League Against Epilepsy (ILAE), recommended by the Commission for diagnostic and therapeutic strategy of the ILAE, in accordance with evidence based medicine
- Introduction to the contemporary diagnostic protocols for epilepsies, classification of epilepsies, choosing the proper treatment for specific types of seizures and epilepsy, as well as the pharmacological properties of different antiepileptic drugs (AEDs)

11. **Contents of the study program: Theoretical course:**

- Correct diagnosis and classification of epilepsies: (Commission for diagnostic and therapeutic strategy of the ILAE- revision), therapeutic principles for epilepsies of the American Academy of neurology (AAN)
- Antiepileptic drugs –first line AEDs -indications and pharmacological characteristics
- New generation of AEDs indications and pharmacological characteristics
- Other treatment options for epilepsies – non pharmacological (ketogenic diet, vagus nerve stimulation –VNS, surgery for refractory epilepsies)

Practical course:

-working with patients with different types of seizures and epilepsies
-working with patients with focal epilepsies (medical history and treatment specificity)
- working with patients with generalized epilepsies (medical history and treatment specificity)
- Introduction to the specific features of different diagnostic methods (EEG, CT and MRI of the brain)
- project presentations by the students on different subjects:
-Contemporary diagnostic methods in epilepsies
-Contemporary classification of epilepsies
- AEDs (old and new generations)
- Refractory epilepsy
- clinical research of antiepileptic drugs

12.	**Methods of studying:** Lectures, PPP and interactive discussions, exercises, working in small groups, seminars			
13.	**Total no. of hours:**		15 hours	
14.	**Distribution of the available time**		5 hours lectures, 5 hours practical course, laboratory, 5 hours project presentation	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	5 hours
		15.2	Practical (laboratory, clinical), seminars, team work	50 hours
16.	**Other types of activities**	16.1	Project assignments	5 hours

17.	**Assessment of knowledge:**			points
	17.1	Tests	Theoretical course	min.- max. total 5-10 points
		Final exam	Practical course	min.-max. 5-10 point
	17.2	Seminar work/project (presentation: written and oral)	Final exam	min.- max. 20 - 35 points
	17.3	Active participation	Project presentation:	min.-max. points 30-45
			Total	min – max 60 - 100

	Knowledge assessment criteria: (points/grade)	up to 59 points	5 (five) F
		60 to 68 points	6 (six) E
		69 to 76 points	7 (seven) D
		77 to 84 points	8 (eight) C
		85 to 92 points	9 (nine) B
		93 to 100 points	10 (ten) A

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is needed. The final mark is formed by summarizing the points of certain activities.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	

22.1	Mandatory textbooks				
		Author	Title	Publisher	Year
	1	www.ilae.org			

1.	**Subject**	**EPIDEMIOLOGY AND HEALTH MANAGEMENT (MANAGERIAL EPIDEMIOLOGY)**
2.	**Code**	MEDI - 98
3.	**Study Program**	General medicine

4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Department of Epidemiology, Biostatistics and Medical Informatics			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Fifth/X	7.	Number of credits	1
8.	**Responsible teacher**	Prof. Dr. Dragan Danilovski, MD, PhD			
9.	**Preconditions:**	None			
10.	**Teaching goals of the study program (competencies):** The student should gain basic knowledge on health care, Health Management, Managerial Epidemiology and Manager responsibilities				
11.	**Contents of the study program:** **Theoretical course:** • - Improvement of Public Health Care • e-Health ; • "Shared Care" in Public Health • e-Health players; • How to more effective Management • Definition and description of Health Management • Manager responsibilities • Managerial epidemiology in Health management • Epidemiology and planning, management, control, Human Resources, financial management, • Integrative decision making in Health Care **Exercises**				
12.	**Methods of studying:** Interactive lectures, practice and video entry				
13.	**Total no. of hours:**	15 hours			
14.	**Distribution of the available time**	11 hours lectures, Seimnars: 4 hours			
15.	**Type of educational activity**	15.1	Lectures-theoretical course	11 hours	
		15.2	Practical (laboratory, clinical), seminars, team work	4 hours	
16.	**Other types of activities**	16.1			
17.	**Assessment of knowledge:**			points	
	17.1	Tests	Theoretical course	35-55	
		Final exam	Seminar paper	25-45	

			The final mark is formed by summarizing the points of certain activities.			
20.	Language of the course		English			
21.	Method for evaluation of the quality of education		Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1	Mandatory textbooks				
			Author	Title	Publisher	Year
		1	Epidemiology: Basic Textbook, 2007 Skopje			
		2	Specialized Epidemiology 2009 Skopje			
				Total 60-100 The assessment of knowledge is descriptive: passed/ failed the exam		
19.	Criteria for obtaining a signature and taking the final exam		**Conditional criteria for assessment of knowledge:** To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is needed.			

1.	**Subject**	**FUNDAMENTALS OF AESTHETIC SURGERY**

2.	**Code**	MEDI - 99				
3.	**Study Program**	General medicine				
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine University Clinic for Plastic and Reconstructive Surgery				
5.	**Educational degree (first or second cycle)**	Integrated cycle				
6.	**Study year /semester**	Fifth/X	7.	Number of credits	1	
8.	**Responsible teacher**	Prof. Smilja Tudzarova-Gjorgova				
9.	**Preconditions:**	None				
10.	**Teaching goals of the study program (competencies):** • Introduction to surgical techniques for aesthetic operations • Practical application - working with patients in a small room Seminar paper					
11.	**Contents of the study program:** **Theoretical hours :** lectures **Practical hours:** live surgery **Practice:** Work in aseptic surgical room					
12.	**Methods of studying:** Interactive lectures, practice and video entry					
13.	**Total no. of hours:**	15 hours				
14.	**Distribution of the available time**	5 hours lectures, 5 hours practical course, laboratory, 5 hours project presentation				
15.	**Type of educational activity**	15.1	Lectures-theoretical course	5 hours		
		15.2	Practical (laboratory, clinical), seminars, team work	10 hours		

16.	**Other types of activities**	16.1			
17.	**Assessment of knowledge:**				points
	17.1	Tests	Theoretical course		min.- max. total 5-25 points
		Final exam	Practical course		min.-max. 20-25 point
	17.2	Seminar work/project (presentation: written and oral)	Seminar pape	35 - 50 points	min.- max.
	17.3	Active participation			
			Total The student assessment is descriptive.		min – max 60 - 100

19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is needed. The final mark is formed by summarizing the points of certain activities.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	

	Mandatory textbooks				
22.1		Author	Title	Publisher	Year
	1	www.ilae.org			

1.	**Subject**	**NON PHARMACOLOGICAL AND PHARMACOLOGICAL THERAPY ON DIABETES TYPE 2**			
2.	**Code**	MEDI - 98			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Clinic for endocrinology , diabetes and metabolism diseases ;			
5.	**Educational degree (first or second cycle)**	Integrated cycle			
6.	**Study year /semester**	Fifth/X	7.	Number of credits	1
8.	**Responsible teacher**	Prof. Tatjana Milenkovikj, PhD MD			
9.	**Preconditions:**	None			
10.	**Teaching goals of the study program (competencies):**				

	• -to make a diet plan for the patient with diabetes • -to define appropriate amount of physical activity for each patient • -to advice adequate oral therapy to patients with diabetes type 2 • -to follow the effect of the advised oral therapy • -to combine the oral hypoglycaemias • -to make an indication for passing on an insulin therapy

<table>
<tr><td>11.</td><td colspan="5">Contents of the study program:
Theoretical course:
-basic nutrients and their maintenance in the components of healthy nutrition
-daily calorie needs, depending on individual needs
-basic and advanced counting of carbon hydrates, depending on the individual needs of the patient
-basic groups of oral hypoglycaemias, their indications, contraindications and their potential treatment
-proper combination of oral hypoglycaemias
-indications for a transfer to an insulin therapy, types of insulin and insulin regime Practical course:
- exercises for planning and implementing non pharmacological and pharmacological treatment in type 2 diabetes</td></tr>
<tr><td>12.</td><td colspan="5">Methods of studying: Interactive lectures, practice and video entry</td></tr>
<tr><td>13.</td><td colspan="3">Total no. of hours:</td><td colspan="2">15 hours</td></tr>
<tr><td>14.</td><td colspan="3">Distribution of the available time</td><td colspan="2">5 hours lectures, 5 hours practical course, laboratory, 5 hours project presentation</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Type of educational activity</td><td>15.1</td><td colspan="2">Lectures-theoretical course</td><td>7 hours</td></tr>
<tr><td>15.2</td><td colspan="2">Practical (laboratory, clinical), seminars, team work</td><td>8 hours</td></tr>
<tr><td>16.</td><td>Other types of activities</td><td>16.1</td><td colspan="2"></td><td></td></tr>
<tr><td rowspan="5">17.</td><td colspan="5">Assessment of knowledge: points</td></tr>
<tr><td>17.1</td><td>Tests</td><td colspan="3">Theoretical course 14</td></tr>
<tr><td></td><td>Final exam</td><td colspan="3">Practical course 26</td></tr>
<tr><td>17.2</td><td></td><td colspan="3">Final exam 60</td></tr>
<tr><td>17.3</td><td>Active participation</td><td colspan="3"></td></tr>
<tr><td></td><td></td><td colspan="4">Total 100
Final exam:
-The test contains 20 questions. 15 are multiple choice questions and 5 are fill in the blank questions: 50% from the points of the final exam
- 5 practical cases will be given to the student for which he/she will have to suggest a diet and the right treatment: 50% from the points of the final exam

The assessment of knowledge is descriptive: passed/ failed the exam</td></tr>
<tr><td>19.</td><td colspan="2">Criteria for obtaining a signature and taking the final exam</td><td colspan="3">Conditional criteria for assessment of knowledge:
To obtain signature, active presence at theoretical lessons are</td></tr>
</table>

		obliged. To enter the exam, seminar work (writing text and presenting) is needed. The final mark is formed by summarizing the points of certain activities.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities
22.	Literature	

Mandatory textbooks

	Author	Title	Publisher	Year
1	Vladimir Serafimov and coworkers	Intern medicine Skopje		
2	Tatjana Milenkovikj.	Education in the treatment of people with diabetes, Skopje		2006

1.	**Subject**	**PAIN THERAPY**
2.	**Code**	MEDI - 65
3.	**Study Program**	General medicine
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine KARIL
5.	**Educational degree (first or second cycle)**	Integrated cycle

6.	**Study year /semester**	Fifth/X	7.	Number of credits	1
8.	**Responsible teacher**	Prof. Jasminka Nanceva, PhD MD			
9.	**Preconditions:**	Completed course in Anesthesiology and reanimation			
10.	**Teaching goals of the study program (competencies):** Introducing the treatment of acute and chronic pain. Students will learn how to treat pain when it is the primary symptom. They will be introduced with the treatment of painful syndrome, pain evaluation skills, early steps of pain scale, special treatment of various types of pain and proper use of analgesics in treatment of pain within general medicine.				
11.	**Contents of the study program:** **Theoretical course:** Pain, clinical implications, types, segmental blocking pain, pain evaluation techniques, regime for pain treatment, strategy for treatment of acute pain, types of analgesics for system analgesia, back pain, the most common types of pain in medical practice, use of regional analgesia for the treatment of acute and chronic pain, treating chronic pain and techniques, blocks, method of application, palliative care and pain				
12.	**Methods of studying:** Listening, demonstration, practical performance and skills, discussion and consultation with lecturers				
13.	**Total no. of hours:**	15 hours			
14.	**Distribution of the available time**	8 hours lectures, Seimnars: 7 hours			

15.	**Type of educational activity**	15.1	Lectures-theoretical course	8 hours
		15.2	Practical (stay at pain clinic),	7 hours
16.	**Other types of activities**	16.1		
17.	**Assessment of knowledge:**			points
	17.1 Tests		Theoretical course	10-20
			Practical course	10-20
			Final exam	40-60
			Total	60-100
			The assessment of knowledge is descriptive: passed/ failed the exam	
19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is needed. The final mark is formed by summarizing the points of certain activities.		
20.	Language of the course	English		
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	Literature			
	22.1 Mandatory textbooks			

	Author	Title	Publisher	Year
1	Soljakova M and others.	Pain in Anesthesiology and reanimation	Literature for students at Medical Faculty	
2	Authorized literature of the members at the		Department of Anesthesiology, reanimation and Intensive care	

Subject	**ALLERGIC DISEASES OF THE UPPER RESPIRATORY TRACT**
Study program	General medicine
Code	MEDI-42
Study year	By choice
Semester	By choice
Total no. of hours	15

Credits	1
Type of the subject	Elective
Preconditions	None
Conducted by	Department of Internal Medicine
Responsible teacher	Prof. Dr. Dejan Dokic
Address	Pulmonary Medicine & Allergology Clinic, Vodnjanska 17, Skopje Phone:+389 2 3239-030; E-mail: dejand@hotmail.com
Key words	Medical Faculty, elective subject, allergies
Aims of the study	• Understanding the allergic processes in the upper airways. • Knowing the rate of the allergic processes in the upper airways, distribution in regions in the Republic of Macedonia; gender and age groups. • Recognizing the signs and symptoms and diagnosing allergic rhinitis and conjunctivitis. • Performing prick test, rhinomanometry and measuring the NO in the exhaled air of the nose. • Performing nasal and conjunctival provocation tests. • Being familiar with the current therapy of the allergic rhinitis and conjunctivitis.

<table>
<tr><td>Specific recommendations for the course</td><td>The student is obliged to participate actively in all anticipated activities, including the continual assessment of knowledge in order to get a signature.

Points for the activities of the student:
<table>
<tr><td>Activity type</td><td colspan="2">Points</td></tr>
<tr><td></td><td>Min</td><td>Max</td></tr>
<tr><td>Theoretical course</td><td>10</td><td>20</td></tr>
<tr><td>Practical course</td><td>10</td><td>20</td></tr>
<tr><td>Continual assessment</td><td>25</td><td>35</td></tr>
<tr><td>Practical exam</td><td>15</td><td>25</td></tr>
<tr><td>Total:</td><td>60</td><td>100</td></tr>
</table>
The assessment of knowledge is descriptive (passed/failed the exam)</td></tr>
<tr><td>Brief content</td><td>Theoretical course
• Allergic reactions, immediate and delayed; diagnosis and treatment of the allergic diseases
• Allergic rhinitis-pathogenesis, definition and classification
• Diagnosis and assessment of rhinitis
• Therapy for rhinoconjunctivitis
• Allergic Sinusitis
• Allergic Conjunctivitis
Practical course
• Continual assessment: performing and interpretation of the allergic diseases results
• Rhinomanometry: practical application, indications, performing and interpretation of the results
• Use of the rhinomanometry in the evaluation of nasal allergy
• Conjunctival provocation test, clinical application and interpretation of the results
• NO- nitrogen monoxide clinical applications and evaluation of the results</td></tr>
<tr><td>Organization</td><td>Theoretical course: 10 hours Practical course: 5 hours</td></tr>
<tr><td>Methods of studying</td><td>Lectures and discussions, practice</td></tr>
<tr><td>Anticipated results</td><td>Knowledge and understanding:
Knowledge and understanding: To achieve basic knowledge in allergy, especially of the upper airway. The lectures include introduction to allergology, epidemiology, clinical presentation, diagnosis and therapy of the allergic rhinitis and conjunctivitis.
Key skills:
The student will be able to apply in practice the acquired theoretical knowledge.</td></tr>
</table>

Textbooks	**Basic** • Allergy-S. Holgate • Essential Allergy-Mygind • Asthma and Rhinitis-S. Holgate • CDs and other materials in electronic form for the practical learning.

1.	Subject	**ELECTROCARDIOGRAPHY**			
2.	Code	MEDI-58			
3.	Study programme	General medicine			
4.	Institution (Unit, Institute Chair, Department)	Faculty of Medicine, St Cyril and Methodius University, Department of Internal Medicine, Clinic of cardiology			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semestar	4/VIII	7.	Number of EKTC credits	1
8.	Responsible teacher	prof. Ljubica Georgievska-Ismail MD, PhD, FESC			
9.	Prerequisite	Passed exam of clinical examination			

10.	The major aim of the course (competences): - To learn how to make a quality electrocardiogram - To learn how to recognize a normal electrocardiogram - To recognize essential disorders in conduction of impulses - To recognize atrial or ventricular arrhythmia - To recognize myocardial ischemia/ infarction - To recognize electrocardiographic indexes of structural cardiac disorders - To recognize rhythm on electro-stimulator - To recognize conditions that require urgent treatment
11.	Short contents (excerpt) of the course Theorethical lectures:

	- Electrical system of conducting and cardiac electro-physiology - Basic principles of electrocardiography and electrocardiogram (ECG paper, measuring, heart frequency, electrical axis, source of mistakes during the making of ECG) - Normal electrocardiogram, access to interpreting - Normal sinus rhythm and sinus rhythms - Disorders in conducting impulses - Rhythm disorders Atrial - Junctional - Ventricular - Myocardial ischemia and infarction - Atrial and ventricular loading Practical lectures: Exercising and interpreting of an electrocardiogram

12.	Methods of studying: Theorethical (interractive) teaching during the lectures and exercises (practical teaching)			
13.	Total available time:			30 hours
14.	Organization of the course			15 hours lectures and exercises 15 hours home learning Teaching will take place after working hours, four consecutive days in the week
15.	Forms of teaching activities	15. 1	Interactive teaching	9 hours
		15.2	Exercises	6 hours
16.	Other forms of activities	16.3	Home learning	15 hours
17.	Methods of assessement			
	17.1.	Quizzes		12-20 points
	17.2	Final exam-practical The student is obliged to recognize and describe 60% of the electrocardiogram that have been given to him		30-50 points
	17.3	Activity		18-30 points
18.	Grading criteria		Less than 59 points	5 (five) (F)
			from 60 to 68 points	6 (six) (E)
			from 69 to 76 points	7 (seven) (D)
			from 77 to 84 points	8 (eight) (C)

		from 85 to 92 points	9 (nine) (B)
		from 93 to 100 points	10 (ten) (A)
19.	Requirement for signature and taking the final exam	In order to obtain a signature and to enter the final exam, a student is required to attend the practical and lecture classes and to optain a minimum score The grade for the course is formed according to the rating table, based on the sum of the points from all the activities, and the continuous checks	
20.	Language of instruction	English	
21.	Method of monitoring the quality of teaching process	Student anonymous evaluation of the subject, the teacher and collaborators participating in the teaching	
22.	Teaching aids	Basic: • Georgievska-Ismail Ljubica i sor. Elektrokardiografija. Skopje: AzBuki, 2008 • CDs and other electronic materials for exercising	

1.	**Subject**	**WRIST AND HAND SURGERY**			
2.	**Code**	MEDI-81			
3.	**Study Program**	General medicine			
4.	**Organizing Institution (Unit, Institute, Chair, Department)**	UKIM-Faculty of Medicine Cathedra for Surgery, Skopje			
5.	**Educational degree (first or second cycle)**				
6.	**Study year /semester**	By choice/ summer	15.	Number of credits	1
8.	**Responsible teacher**	Prof. Viktor Kamiloski MD, PhD			
9.	**Preconditions:**	None			
10.	**Teaching goals of the study program (competencies):** • Students will be able to examine a patient with injuries of the hand and wrist, to refer him/her to different department for different analyses and to interpret the findings and establish a diagnosis • Students will be acquainted with the most common procedures of surgical treatment, and will be able to refer patients with wrist and hand trauma to surgical treatment.				

11.	**Contents of the study program:** **Theoretical and practical courses:** Theoretical course: lectures / seminars • History, historical perspectives of wrist and hand injuries, epidemiology and statistics • Applied surgical anatomy of the wrist and hand • Diagnosis and diagnostic procedures of wrist and hand injuries • Operating room, surgical sepsis and anti-sepsis of wrist surgery, regional block anesthesia, Riva and local anesthetic technique • Fractures of the distal radius, classification systems • Fractures of the distal ulna, classification systems • Tests for anatomical assessment of distal radius fracture • Surgical techniques for fractures of the distal radius • Injuries DRUJ: classification, diagnosis and treatment • Fractures and dislocation carpus • Surgical anatomy and kinetics of meta carpal bones and phalanges of the hand. Assessment, diagnosis and surgical treatment • Injury to the soft tissues and tendons of the hand with reconstruction. Surgical approach and operative techniques with possible complications. • Infections of the wrist and hand area and deep compartmental inflammation. Compressive neuropathy syndrome of medians, ulnaris radialis and interdigital nerves. Algodystrophy - diagnosis and treatment • Modern rehabilitation programs and exercises of the wrist and hand injuries Practical course: • Graphic templates and cadaveric dissections of surgical approaches • Surgical techniques for fractures of the distal radius (K-pins, external fixation, dorsal volar access, FSF – fragment specific fixation) Fractures and dislocations of carpus. Diagnosis and surgical treatment of scaphoid bone fracture. Matti - Russe surgical technique. Treatment of fractures and luxation of os lunatum (lunar and perilunar luxations). Modern surgical treatment of fractures of os capitatum, os hamatum, tirquetrum, trapezium and pisiforme.			
12.	**Methods of studying:** Interactive lectures, consulting clinic and operative room practice .			
13.	**Total no. of hours:**		15 hours	
14.	**Distribution of the available time**		1 hour theoretical lecture, 4 hours seminars, 10 hours practical teaching.	
15.	**Type of educational activity**	15.1	Lectures-theoretical course	1 hours
		15.2	Practical (laboratory, clinical), seminars, team work	14 hours
16.	**Other types of activities**	16.1	Project assignments	. . . hours
		16.2	Individual tasks	. . . hours
		16.3	Home studying	20 hours
17.	**Assessment of knowledge:**			points
	17.1 Tests		Practical assessment	min.- max. total 10-20 points

	Final exam	Oral exam	min.-max. 25-40 points
17.2	Seminar work/project (presentation: written and oral)	Seminar works points	min.- max. 20- 30
17.3	Active participation	Theoretical course	min.-max. points 5-10

18.	Knowledge assessment criteria: (points/grade)	Assessment of knowledge by practical examination of a patient with wrist and hand injury, a proposal for diagnostics, interpretation of the findings and proposals for further treatment The student assessment is descriptive.
19.	Criteria for obtaining a signature and taking the final exam	**Conditional criteria for assessment of knowledge:** To obtain signature, active presence at theoretical lessons are obliged. To enter the exam, seminar work (writing text and presenting) is needed. The final mark is formed by summarizing the points of certain activities.
20.	Language of the course	English
21.	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities

22. Literature

Mandatory textbooks

	Author	Title	Publisher	Year
22.1 1	Jupiter J, Ring D	Hand and wrist, AO Manual of fracture management	Thieme	2005
2	Fernandez DL, Jupiter JB	Fractures of the distal radius. A practical approach to management. Second edition.	Springer, New York,	2002
3	Касапинова К, Камилоски В.	Класификации во трауматологијата		2017

1.	Subject	**ABDOMINAL ULTRASONOGRAPHY**			
2.	Code	**MEDI**			
3.	Study program	General medicine			
4.	Institution (Unit, Institute, Chair, Department)	Faculty of Medicine, Ss Cyril and Methodius University, Departmen of Internal Medicine, Clinic of gastroenterohepatology			
5.	Degree of education (first or second cycle)	Integrated 6-year study			
6.	Study year/semester	VII, VIII semester	7.	Број на ЕКТС кредити	1
8.	Responsible teacher	Prof. d-r Rozalinda Popova Jovanovska			
9.	Preconditions	none			

<table>
<tr><td>10.</td><td colspan="4">The course program is intended for students with no experience in abdominal ultrasonography. The major aim is to learn the basics of abdominal ultrasonography including:
• The principles and how to perform abdominal ultrasonography.
• The first part is on anatomy, i.e. the recognition of the large abdominal organs and structures with emphasis on the liver, pancreas, gall bladher, biliary tree spleen, kidneys and major abdominal blood vessels.
• The second part will be in pathology, i.e. the most frequent hepatic, biliary tree, gall bladder and pancreatic abnormalities.
• Students will study on a real ultrasonography machine and complete abdominal ultrasound will be performed on patients.
• After the course, students will be able to recognize the abdominal organs (e.g. liver, gall bladder, kidneys, spleen), and the major abdominal vessels and liver vessels (portal vein, hepatic artery, liver veins).
• After the course, students will have knowledge of normal ultrasonographic findings of the abdominal organs.
• After the course, students will have knowledge of ultrasound findings in same pathological conditions of the abdominal organs (liver, gallbladder, bile ducts, pancreas, spleen).</td></tr>
<tr><td>11.</td><td colspan="4">Theoretical course:
• Basic principles of abdominal ultrasonography and performing ultrasound examination.
• Indications for ultrasonographic examination.
• Ultrasonographic findings of the liver, gallbladder, biliary tree and pancreas.
• Ultrasonographic findings of diffuse and focal liver diseases, gallbladder, bile ducts and pancreas abnormalities.
Clinical Practice:
• Performing ultrasonographic examination.
• Interpretation of ultrasonographic findings in healthy subjects.
• Interpretation of ultrasonographic findings in pathological conditions / diseases of the liver, gallbladder, biliary tract, pancreas, spleen, large vessels.</td></tr>
<tr><td>12.</td><td colspan="4">Methods of studying:
• Participation in theoretical lectures and discussion
• Participation in the daily work of the Departments of Ultrasound at the Clinic of Gastroenterohepatology and ultrasound examination of the patients</td></tr>
<tr><td>13.</td><td colspan="2">Total available time:</td><td colspan="2">15 classes</td></tr>
<tr><td>14.</td><td colspan="2">Organization of the course</td><td colspan="2">15 classes – hours of exercise
Teaching will take place during daily practice under mentor’s supervision</td></tr>
<tr><td rowspan="3">15.</td><td rowspan="3">Forms of teaching activities</td><td>15.1.</td><td>Lectures - theoretical course</td><td>3 classes</td></tr>
<tr><td>15.2.</td><td>Practical course,</td><td>12 classes</td></tr>
<tr><td></td><td>Seminars
Team building</td><td></td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other forms of activities</td><td>16.1.</td><td>Practice</td><td>12 classes</td></tr>
<tr><td>16.2.</td><td>Individual tasks</td><td>/</td></tr>
<tr><td>16.3.</td><td>Individual (home) learning</td><td>/</td></tr>
<tr><td>17.</td><td colspan="4">Method of assessment</td></tr>
</table>

	17.1.	Practice		50 - 80 points
	17.2.	Attendance		5 - 10 points
	17.3.	Activity		5 - 10 points
18.	Grading criteria (points / grade)		Less than 59 points	5 (five) (F)
			from 60 to 68 points	6 (six) (E)
			from 69 to 76 points	7 (seven) (D)
			from 77 to 84 points	8 (eight) (C)
			from 85 to 92 points	9 (nine) (B)
			from 93 to100 points	10 (ten) (A)
19.	Requirement for signature and taking the final exam		Conditional criteria: In order to obtain a signature and to enter the final exam, a student is required to attend the practical and lecture classes and to win a minimum score The grade for the course is formed according to the rating table, based on the sum of the points from all the activities, and the continuous checks	
20.	Language of instruction		English	
21.	Method of monitoring the quality of teaching process		Student anonymous evaluation of the subject, the teacher and collaborators participating in the teaching	