

Name of the course	Pathology			Code	MSE301
Type of study program	Integrated University study program, Medicine			Year of study:	3
Credits (ECTS):	19	Semester:	V	Number of hours per semester (l+s+e)	210 (74+74+62)
Status of the course:	obligatory	Preconditions:	Passed all exams of the 2 nd year	Comparative conditions:	-
Access to course:	3 rd year medical students			Hours of instructions:	According to schedule
Course teacher:	Assistant professor Joško Petričević, MD, PhD				
Consultations:	Working days 11:00 – 12:00, or by appointment				
E-mail address and phone number:	josko.petricevic@yahoo.com				
Associate teachers	Professor Snježana Tomić, MD, PhD; Professor Valdi Pešutić Pisac, MD, PhD; Associate professor, Violeta Šoljić, MD, PhD; Jelena Todorović Barbuscia, MD, PhD; Dragana Karan-Križanac, MD, PhD Đani Godler, MD, MSc Sanja Draganović, MD				
Consultations:	-				
E-mail address and phone number:	-				
The aims of the course:	<p>The aim of the Pathology course is to teach students basic pathology and to introduce them with various diseases from an anatomic and a pathophysiologic point of view, with a strong emphasis on clinical-pathologic correlations.</p> <p>During this course the students will learn to recognize the abnormal morphological changes in cells, tissues and organs, and link these changes to the abnormal functions of the affected structures. During the program, students assist the autopsies at the Department of Pathology.</p>				
Learning outcomes (general and specific competences):	<p><u>General outcomes:</u></p> <ul style="list-style-type: none"> Applying the independent learning through the study in the way of critical and self-critical questioning of scientific truth. Demonstrating the possession of personal qualities: team work and personal contribution during the seminars that include clinical examples of diseases of different organs and organ systems. <p><u>Specific outcomes:</u></p> <ul style="list-style-type: none"> Understanding the pathogenesis of various pathologic lesions, i.e. the mechanisms which lead to pathologic changes. Describing the clinical consequences of altered morphology and function will be included to emphasize the clinical orientation of the entire course. Understanding the cell appearance, anatomical make up and chemical signatures within cells through macroscopic and microscopic analysis of samples from tissues and organs. Applying the postmortem examination, another important segment of the pathology during the practical training, in order to determinate the cause of death. 				
Course content (Syllabus):	The course will be presented in form of 37 teaching units. Every teaching unit is composed of lectures and seminars. Laboratory sessions are divided in 31 units which thematically follow the contents of the lectures and seminars.				
Format of instruction: (mark in bold)	Lectures	Exercises	Seminars	Independent assignments	
	Consultations	Work with mentor	Field work	Other	
	<p>Remarks:</p> <p>The teaching of each unit begins with a lecture, followed by seminars and exercises. During the seminar lesson, students resolve problem tasks in small groups; at the end of the seminar students take quiz-test, and then analyze the correct answers with explanations of problems.</p>				

	The course will include the study of autopsies, microscopic slides, visual and textual material stored in an electronic form and the required textbook. During the program, students assist the autopsies at the Department of Pathology.			
Student responsibilities:	Final exam; Seminar quiz-test; macroscopic and microscopic examination of affected organs; attendance and participation in class. Students will be evaluated based on: <ul style="list-style-type: none"> • Active participation in seminars and exercises. • Preparation of teaching units for seminars • Problem solving • Work in small groups 			
Screening student work: (mark in bold)	Class attendance	Class participations	Seminar essay	Practical training
	Oral exam	Written exam	Continuous assessment	Essay
Detailed evaluation within a <i>European system of points</i>				
STUDENTS RESPONSIBILITIES	HOURS	PROPORTIONS OF ECTS CREDITS	PROPORTIONS OF MARK	
Class attendance and engagement	(74+74+62)=210	7.0	0%	
Partial/Written Exam I	100	3.3	33%	
Partial/Written Exam II	100	3.3	33%	
Oral Exam	160	5.4	34%	
TOTAL	570	19	100%	
Further clarification:				
WRITTEN EXAM.				
The final exam is comprehensive and is designed to test student's knowledge of the entire material covered in this course, including general and organ system pathology. The written exam is administered in two mandatory partial exams (P1 and P2) and one mandatory final exam.				
The first partial exam (P1) includes general pathology, cardiovascular system, the respiratory system and the hematopoietic and lymphoid system. The second partial exam (P2) includes the rest of the chapters. Each partial exam test has 150 multiple choice questions. The first 30 questions (practical examination) relate to the electronic images shown during the course and stored on the CD. The remaining 120 multiple choice questions are the theoretical part of the exam. These two components of the examination are scored together, and 150 correct answers will be counted as 100%. The students need to correctly answer at least 60% of questions to pass the partial exam (90 correct answers). Scores:				
90 – 104 (2)				
105 – 119 (3)				
120 – 134 (4)				
134 – 150 (5)				
Results from partial exams, taken during the course, are valid only until the end of the respective academic year.				
ORAL EXAM				
The oral exam consists of 6 questions (2 questions from general pathology, 4 questions from special pathology). Students draw cards with certain questions, and it is not allowed to change the drawn cards.				
The final grade for the entire course is calculated by adding scores from all partial exams (P1 – 1/3 of the final score; P2 – 1/3 of the final score), and oral exam (1/3 of the final score).				
Required literature:	Kumar V, Abbas A, Aster J: Robbins Basic Pathology, 10th edition, Elsevier, 2017. The Internet Pathology Laboratory for Medical Education courtesy of Prof. Edward C. Klatt, MD, Mercer University School of Medicine available on https://webpath.med.utah.edu/ .			
Additional literature:	Power point presentations used during lecturers and seminars.			
Additional information about the course	Monitoring methods of teaching quality: <ul style="list-style-type: none"> - student questionnaire - quality analysis by students and teachers - exam results analysis - report of the office for teaching quality - external evaluation (visit of team for quality control) 			

Annexes: calendar classes

<i>The number of teaching units</i>	TOPICS AND LITERATURE
I.	Title: CELL PATHOLOGY I
	Short description: <i>Cell Injury. Reversible Cell Injury. Intracellular Accumulations. Cellular Adaptation.</i>
	Literature: Aforementioned required and additional literature
II.	Title: CELL PATHOLOGY II
	Short description: <i>Irreversible Cell Injury</i>
	Literature: Aforementioned required and additional literature
III.	Title: INFLAMMATION – PART I
	Short description: <i>Types of inflammation. Signs of inflammation. Components of inflammatory reaction. Cellular recruitment. Chemical mediators.</i>
	Literature: Aforementioned required and additional literature
IV.	Title: INFLAMMATION – PART II
	Short description: <i>Acute inflammation. Defects in leukocyte function. Wound healing. Chronic inflammation. Morphologic types of acute and chronic inflammation. Systemic manifestations of inflammation.</i>
	Literature: Aforementioned required and additional literature
V.	Title: FLUID AND HEMODYNAMIC DISORDERS
	Short description: <i>Edema. Dehydration. Hyperemia. Congestion. Hemorrhage. Hemostasis and Thrombosis. Embolism. Infraction. Shock.</i>
	Literature: Aforementioned required and additional literature
VI.	Title: IMMUNOPATHOLOGY – PART I
	Short description: <i>Hypersensitivity reactions. Immune reactions to transplanted organs and tissues</i>
	Literature: Aforementioned required and additional literature
VII.	Title: IMMUNOPATHOLOGY – PART II
	Short description: <i>Autoimmune Diseases. Immunodeficiency Diseases. Amyloidosis.</i>
	Literature: Aforementioned required and additional literature
VIII.	Title: NEOPLASIA – PART I
	Short description: <i>Classification of Neoplasms. Biology of Invasion and Metastasis. Epidemiology of Neoplasms.</i>
	Literature: Aforementioned required and additional literature
IX.	Title: NEOPLASIA – PART II
	Short description: <i>Carcinogenesis. Tumor Immunology. Clinical Features of Cancer. Diagnostic laboratory tests in Oncology.</i>
	Literature: Aforementioned required and additional literature
X.	Title: GENETIC AND DEVELOPMENTAL DISEASES
	Short description: <i>Principles of Teratology. Errors of Morphogenesis. Chromosomal Abnormalities. Single Gene Abnormalities. Multifactorial Inheritance. Diseases of Infancy and Childhood. Birth Injury. Erythroblastosis Fetalis. SIDS.</i>
	Literature: Aforementioned required and additional literature
XI.	Title: THE CARDIOVASCULAR SYSTEM – BLOOD VESSELS
	Short description: <i>Atherosclerosis. Hypertensive Vascular Disease. Vasculitis. Aneurysms. Veins. Lymphatic Vessels. Tumors of Blood Vessels. Tumors of the Lymphatic System.</i>
	Literature: Aforementioned required and additional literature
XII.	Title: THE CARDIOVASCULAR SYSTEM – PART I
	Short description: <i>Pathology of Heart Failure. Congenital Heart Disease. Ischemic Heart Disease. Hypertensive Heart Disease.</i>
	Literature: Aforementioned required and additional literature
XIII.	Title: THE CARDIOVASCULAR SYSTEM – PART II
	Short description: <i>Acquired Valvular and Endocardial Diseases. Primary Myocardial Diseases. Diseases of the Pericardium. Cardiac Tumors. Heart Transplantation.</i>
	Literature: Aforementioned required and additional literature
XIV.	Title: THE RESPIRATORY SYSTEM – PART I
	Short description: <i>Larynx. Congenital Anomalies of the Lungs. Atelectasis. Vascular Lung Diseases. Pneumonia.</i>

	Literature: Aforementioned required and additional literature
XV.	Title: THE RESPIRATORY SYSTEM – PART II
	Short description: <i>Chronic Obstructive Pulmonary Diseases. Restrictive Pulmonary Diseases. Tumors. Diseases of the Pleura. Mediastinal Diseases.</i>
	Literature: Aforementioned required and additional literature
XVI.	Title: THE HEMATOPOIETIC AND LYMPHOID SYSTEM - PART I
	Short description: <i>Anemia. Polycythemia. Disorders of Hemostasis.</i>
	Literature: Aforementioned required and additional literature
XVII.	Title: THE HEMATOPOIETIC AND LYMPHOID SYSTEM - PART II
	Short description: <i>Quantitative disorders of white blood cells. Neoplastic Disorders of Bone Marrow. Lymphadenitis. Lymphadenopatia. Non-Hodgkin Lymphoma. Neoplastic Disorders of Histiocytes and Dendritic Cells.</i>
	Literature: Aforementioned required and additional literature
XVIII.	Title: HEAD AND NECK PATHOLOGY
	Short description: <i>Nose and Paranasal Sinuses. Nasopharynx. Oral Cavity. Peridental Diseases. Salivary Glands. Ear. Eye.</i>
	Literature: Aforementioned required and additional literature
XIX.	Title: DERMATOPATHOLOGY
	Short description: <i>Heritable Skin Diseases. Infectious Diseases. Immunological Diseases. Systemic Manifestations. Idiopathic Skin Diseases. Neoplasms.</i>
	Literature: Aforementioned required and additional literature
XX.	Title: THE GASTROINTESTINAL SYSTEM – PART I
	Short description: <i>Diseases of the esophagus. Diseases of the stomach and duodenum.</i>
	Literature: Aforementioned required and additional literature
XXI.	Title: THE GASTROINTESTINAL SYSTEM – PART II
	Short description: <i>Disease of the small and large intestine. Appendix. Peritoneum.</i>
	Literature: Aforementioned required and additional literature
XXII.	Title: THE LIVER AND BILIARY SYSTEM – PART I
	Short description: <i>Clinical Evaluation of Hepatic Diseases. Vascular Hepatic Disorders. Hepatitis. Toxic Liver Injury. Infections. Chronic Hepatic Disorders.</i>
	Literature: Aforementioned required and additional literature
XXIII.	Title: THE LIVER AND BILIARY SYSTEM – PART II
	Short description: <i>Immunological Hepatic Disease. Cirrhosis. Tumors and Tumor like Lesions. The Gallbladder and Extrahepatic Bile Ducts.</i>
	Literature: Aforementioned required and additional literature
XXIV.	Title: THE PANCREAS
	Short description: <i>Developmental abnormalities; Inflammatory diseases. Diabetes. Neoplasms. Neuroendocrine Tumors.</i>
	Literature: Aforementioned required and additional literature
XXV.	Title: THE URINARY TRACT – PART I
	Short description: <i>Developmental disorders of the Kidney. Glomerular diseases.</i>
	Literature: Aforementioned required and additional literature
XXVI.	Title: THE URINARY TRACT – PART II
	Short description: <i>Tubulointerstitial diseases. Vascular diseases. Urolithiasis. Tumors of the Kidney. Ureter. Urinary Bladder. Urethra.</i>
	Literature: Aforementioned required and additional literature
XXVII.	Title: BONES AND JOINTS – PART I
	Short description: <i>Developmental and genetic disorders. Infections. Metabolic disorders. Bone Fracture. Neoplasms of the Bone.</i>
	Literature: Aforementioned required and additional literature
XXVIII.	Title: BONES AND JOINTS – PART II; MUSCLES AND PERIPHERAL NERVES
	Short description: <i>Joints. Soft tissue Tumors. Peripheral Nerve. Skeletal Muscle. Neuromuscular diseases.</i>
	Literature: Aforementioned required and additional literature
XXIX.	Title: THE BREAST
	Short description: <i>Developmental abnormalities; Inflammatory diseases, Fibrocystic Change and Proliferative Breast Disease, Tumors, Stromal breast tumors, Male breast pathology</i>

	Literature: Aforementioned required and additional literature
XXX.	Title: THE MALE REPRODUCTIVE SYSTEM
	Short description: <i>Developmental abnormalities, Inflammatory diseases, Vascular disorders, Infertility, Tumors</i>
	Literature: Aforementioned required and additional literature
XXXI.	Title: THE FEMALE REPRODUCTIVE SYSTEM – PART I
	Short description: <i>Developmental abnormalities, Inflammatory diseases; Vulva; Vagina, Cervix, Uterus.</i>
	Literature: Aforementioned required and additional literature
XXXII.	Title: THE FEMALE REPRODUCTIVE SYSTEM – PART II
	Short description: <i>Fallopian tube; Ovary, Endometriosis; Placenta and Pathology of pregnancy</i>
	Literature: Aforementioned required and additional literature
XXXIII.	Title: THE ENDOCRINE SYSTEM – PART I
	Short description: <i>Pituitary diseases, Thyroid diseases</i>
	Literature: Aforementioned required and additional literature
XXXIV.	Title: THE ENDOCRINE SYSTEM – PART II
	Short description: <i>Diseases of the parathyroid glands, Diseases of the adrenal cortex, Diseases of the adrenal medulla; Multiple Endocrine Neoplasia</i>
	Literature: Aforementioned required and additional literature
XXXV.	Title: THE NERVOUS SYSTEM – PART I
	Short description: <i>General pathology of central nervous system; Developmental disorders; Trauma</i>
	Literature: Aforementioned required and additional literature
XXXVI.	Title: THE NERVOUS SYSTEM – PART II
	Short description: <i>Cerebrovascular diseases, Infections</i>
	Literature: Aforementioned required and additional literature
XXXVII.	Title: THE NERVOUS SYSTEM – PART III
	Short description: <i>Demyelinating diseases, Toxic and Metabolic diseases Neurodegenerative diseases, Tumors</i>
	Literature: Aforementioned required and additional literature