

Subject	PATHOLOGY
Study program	Three year professional studies for graduate medical nurse/technician
Code:	SMN/T-116
Study year:	First
Semester	First
Total no. of hours	40
Credits	2
Type of the subject	Mandatory
Preconditions	None
Conducted by:	Department of Pathology
Responsible teacher	Prof. Dr. Gordana Petrushevska
Address:	Institute of Pathology, Medical Faculty, 50 Divizija 6, 1000 Skopje Tel. +389 2 3166 911, e-mail: gpetrusevska@medf.ukim.edu.mk
Key words	Studies for medical nurses and technicians, basic subjects, pathology
Aims of the study	<ul style="list-style-type: none"> • Introduction to basic notions in pathology • Learning about influences of external and internal environment on pathological changes of tissues and organs
Brief content	<p>Theoretical course (30 hours):</p> <ul style="list-style-type: none"> • Basic mechanisms about diseases onset. • Cellular damage and death (types of damage, causes about the damage, mechanisms of damage: ischemic hypoxic damages, cellular damage with free radicals, chemical damages, damages with viruses, morphology of reversible and irreversible damaged cell). Cellular adaptation of growth and differentiation. • Disease etiology • Morphologic changes of diseased tissues and organs. Chemodynamic disorders (edema, hyperemia or congestion, hemorrhage, thrombosis, embolism, infarction, shock). Acute and chronic inflammation: etiological factors, morphological forms of the inflammation, systemic effects of the inflammation, defense of the organism from infectious causes, outcome from acute and chronic inflammation. • Cellular and humoral immunity with reactions of hypersensitivity, the most common autoimmune diseases. • Tumor pathology: definition, nomenclature, differences between benign and malignant tumors, tumor epidemiology, molecular basis of cancer, invasion and metastases, carcinogenesis. Defense of the organism from tumors, clinical signs of tumors. <p>Practical course (10 hours):</p> <ul style="list-style-type: none"> • Introduction to basic methods for diagnosis of morphological changes: biopsy, microscopy, biochemical methods. Biopsy and transportation of tissue samples and body fluids for cytological, histological analysis, histochemical, immunohistochemical, immunofluorescent, electron-microscopic technique, chromogenic and fluorescent in situ hybridization. Ex tempore biopsy. Microscopy by presenting representative cases of basic pathological changes in reversible and irreversible cellular damage, circulatory impairment, inflammatory processes and tumors. • Observation of autopsy or presentation of 10 surgical specimens from different body systems.
Organization	Theoretical course: 30 hours Practical course: 10 hours
Methods of studying	Lectures, practical course
Anticipated results	Knowledge and understanding:

	<p>The student will acquire knowledge about the influence of the environment on appearance of pathological changes of organs and tissues.</p> <p>Key skills: The student will be able to apply the knowledge of pathology in learning other medical subjects.</p>												
Specific recommendations for the course	<p>The student is obliged to participate actively in all anticipated activities, including the continual assessment of knowledge in order to get a signature.</p> <p>Points for the activities of the student:</p> <table border="1"> <thead> <tr> <th>Type of activity</th><th>Points</th></tr> </thead> <tbody> <tr> <td>Theoretical course</td><td>10-20</td></tr> <tr> <td>Practical course</td><td>15-20</td></tr> <tr> <td>Continual assessment</td><td>17-30</td></tr> <tr> <td>Final exam</td><td>18-30</td></tr> <tr> <td>Total:</td><td>60 - 100</td></tr> </tbody> </table> <p>Conditional criteria for assessment of knowledge: 1. In order to approach the final exam, the student has to acquire minimum points from the continual assessment. 2. In case the student has not achieved minimum points on continual assessment, he/she applies to take the complete final exam.</p>	Type of activity	Points	Theoretical course	10-20	Practical course	15-20	Continual assessment	17-30	Final exam	18-30	Total:	60 - 100
Type of activity	Points												
Theoretical course	10-20												
Practical course	15-20												
Continual assessment	17-30												
Final exam	18-30												
Total:	60 - 100												
Assessment of knowledge	<p>Continual assessment of knowledge – 1 (written)</p> <p>1. Cellular damage and cell death, cellular adaptation of growth and differentiation, etiology of diseases, hemodynamic disorders, acute and chronic inflammation 17 – 30 points</p> <p>Final exam*: written</p> <p>1. Cellular and humoral immunity, tumor pathology and methods for disease diagnosis 18 - 30 points</p> <p>Complete final exam*: is a combination of the test for continual assessment and final exam.</p> <p>* The student can approach the final and/or complete final exam in pathology only if he/she has acquired credit (has passed) in the subjects Anatomy and Physiology. * 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 activities, including the continual assessment and points from each segment of the final or complete final exam.</p>												
Textbooks	<p>Basic :</p> <ul style="list-style-type: none"> Selected chapters from lectures in general pathology, group of authors from the Department of Pathology Kumar V, Robbins SL, Cotran RS. Pathologic basis of disease, 6th ed. Elsevier Health Sciences, 1999 (Chapters: 1, 2, 3, 4, 6, 7) Authorized lectures by the teaching staff of the Department 												