

SYLLABUS

concerning the cycle of education 2019-2025
(date range)

Academic year 2021/2022

1. BASIC INFORMATION CONCERNING THIS SUBJECT

Subject	P
Course code *	Pm/CB
Faculty of (name of the leading direction)	Medical College of The University of Rzeszów
Department Name	Chair of Morphological Sciences
Field of study	Medical direction
Level of education	Uniform master studies
Profile	General academic
Form of study	Stationary/ non- stationary
Year and semester	Year III semester: V, VI
Type of course	Obligatory
Language	English
Coordinator	Dr hab. n.med.Ewa Kaznowska, Prof UR, MD, PhD
First and Last Name of the Teacher	Dr hab. n. med. Ewa Kaznowska, Prof UR, MD, PhD Dr med. Elżbieta Łach-Pasko, MD Lek. Piotr Przyczyna, MD Lek. Marta Kluz, MD

*** - According to the resolutions of Educational Unit**

1.1. Forms of classes, number of hours and ECTS

Semester No.	Lecture	Exercise	Conversation	Laboratory	Seminar	ZP	Practical	Other	Number of points ECTS
V	30	40	-	-	-	-	-	-	5
VI	30	40	-	-	-	-	-	-	5
Total	60	80	-	-	-	-	-	-	10

1.2. The form of class activities

+ Classes are in the traditional form

Classes are implemented using methods and techniques of distance learning

1.3. Examination Forms (exam, credit with a grade or credit without a grade)

SEMESTER V: LECTURE: CREDIT WITHOUT A GRADE, EXERCISES – CREDIT WITH A GRADE

SEMESTER VI: LECTURE - EXAM, EXERCISES - CREDIT WITH A

GRADE 2.BASIC REQUIREMENTS

Completed courses in anatomy, histology and physiology.

3. OBJECTIVES, OUTCOMES, AND PROGRAMME CONTENT USED IN

TEACHING METHODS 3.1 Objectives of this course

C1	Acquiring knowledge of general pathology in theoretical and practical form (analysis of the macroscopic image of pathological changes in organs, microscopic exercises and participation in the autopsy examination)
C2	Understanding the structural and functional changes in cells, tissues and organs during disease and treatment.
C3	Developing the ability to relate disease symptoms with structural changes in cells, tissues and organs.
C4	Learning about various types of pathological examinations and the ability to choose pathological diagnostic methods.

3.2. Outcomes for the course

EK (learning effect)	Content of the learning effect defined for the subject	Reference to directional effects
EK_01	knows pathological nomenclature	C.W26

EK_02	knows the basic mechanisms of cell and tissue damage	C.W27
EK_03	knows the clinical course of specific and non-specific inflammations and the regeneration processes of tissues and organs	C.W28
EK_04	knows the definition and pathophysiology of shock, with particular emphasis on differentiation of the causes of shock and multiple organ failure	C.W29
EK_05	knows the etiology of hemodynamic disorders, mechanisms of reversible and irreversible injury with morphological consequences.	C.W30
EK_o6	knows the issues of detailed organ pathology, macro- and microscopic pictures and the clinical course of pathological changes in individual organs	C.W31
EK_o7	knows the consequences of developing pathological changes for topographically neighboring organs	C.W32
EK_o8	knows the external and internal, modifiable and unmodifiable pathogens	C.W33
EK_o9	lists the clinical forms of the most common diseases of individual systems and organs, metabolic diseases as well as disorders of the water-electrolyte and acid-base balance	C.W34
EK_10	is able to use the antigen-antibody reaction in current modifications and techniques for the diagnosis of autoimmune and neoplastic diseases	C.U8
EK_11	is able to relate images of tissue and organ damage with clinical symptoms of the disease, clinical history and laboratory test results	C.U11
EK_12	analyses the reactive, defensive and adaptive	C.U12

	phenomena as well as regulatory disturbances caused by the etiological factor	
EK_13	acquires the skills of perceiving and recognizing own limitations and making self-assessment of educational deficits and needs	K.05
EK_14	develops the ability to use objective sources of information	K.07
EK_15	develops the ability to formulate conclusions from own measurements or observations	K.08

¹ In the case of a path of education leading to obtaining teaching qualifications, also take into account the learning outcomes of the standards of education preparing for the teaching profession.

3.3 Content curriculum

A. Themes of the lecture

SEMESTER V

Lecture #	Theme
Lecture 1	Introduction to pathology. Basic concepts: histopathological, cytological, intraoperative and autopsy examination. Histochemical and immunohistochemical studies. Molecular research. Stages of pathomorphological diagnosis. Examples.
Lecture 2	Adaptation processes: atrophy, growth, hypertrophy, metaplasia. Degenerations, necroses and apoptosis - definitions, pathomechanisms. Examples.
Lecture 3	Inflammation: pathomechanism, definitions, classifications, examples. Regeneration, repair, scarring. Examples.
Lecture 4	Hyperemia and ischemia. Edema, hemorrhage, shock, thrombosis, embolism, infarction, disseminated intravascular coagulation. Examples.
Lecture 5	Blood vessel disease: types of vascular wall response to damage, hardening of the arteries, atherosclerosis, aneurysms, arteritis, varicose veins, and cancer. Examples.
Lecture 6	Heart diseases: ischemic disease, infarction, left and right ventricular failure, cardiomyopathies, neoplasms. Pericardial diseases. Examples.
Lecture 7	Cancer: definition, terminology, tumor classification, benign and malignant neoplasms, differentiation, maturation, anaplasia, cataplasia, dysplasia. Pre-cancerous conditions and

	changes. The spread of neoplastic diseases. The influence of cancer on the host system. Paraneoplastic syndromes. Examples.
Lecture 8	Anemia—definitions, examples, pathomechanism, complications. Hemorrhagic diathesis - definitions, examples, pathomechanism, complications. Non-neoplastic and neoplastic diseases of the hematopoietic and lymphatic systems - examples, pathomechanism, morphological forms, complications. Examples.
Lecture 9	Non-neoplastic and neoplastic diseases of the bladder: inflammations, lupus nephritis, diabetic nephropathy, acute tubular necrosis. Benign and malignant neoplasms of kidney. Malignant neoplasm metastatic to kidney. Examples.
Lecture 10	Non-neoplastic and neoplastic diseases of the bladder. Diseases of the male reproductive system: orchitis, benign prostatic hyperplasia, prostate cancer. Tumors of the testicles and penis. Examples.
Lecture 11	Pleural diseases: inflammation, primary and metastatic tumors of the pleura. Mediastinal diseases: inflammations, developmental disorders, primary tumors, thymomas, germ cell tumors. Examples.
Lecture 12	Non-neoplastic pulmonary diseases: developmental disorders, emphysema, pneumonia, granulomatous diseases: sarcoidosis, tuberculosis, vasculitis and granulomatosis, histiocytosis H, hypersensitivity pneumonitis, idiopathic pulmonary fibrosis, pneumoconiosis. Examples.
Lecture 13	Lung neoplasms: small cell and non-small cell carcinoma, non-epithelial neoplasms, lung metastases. Examples.
Lecture 14	Pathology of the female genital organs: ovaries, fallopian tubes, uterus. Examples.
Lecture 15	Diseases of the mammary gland: inflammation, hyperplasia, involution, benign and malignant neoplasms, epithelial-mesenchymal neoplasms, breast cancer: histological and molecular classification. Examples.

SEMESTER VI

Lecture #	Theme
Lecture 1	Oral cavity: diseases of teeth and supporting structures, inflammatory lesion, proliferative lesions of the oral cavity, neoplasms of oral cavity, xerostomia, sialadenitis, salivary gland tumors. Examples.
Lecture 2	Gastrointestinal tract: esophagus, stomach: obstructive and vascular diseases of the esophagus, esophagitis, esophageal tumors, gastropathy and acute gastritis, chronic gastritis, peptic ulcer disease, mucosal atrophy, intestinal metaplasia, dysplasia, gastric polyps, neoplasm of the stomach, GIST. Examples.
Lecture 3	Gastrointestinal tract: small and large intestine: intussusception. Hirschsprung disease, abdominal hernia, vascular disorders of bowel, diarrheal disease, inflammatory bowel disease, colonic polyps, colorectal neoplasm, appendicitis, tumors of the appendix. Examples.
Lecture 4	Liver and gallbladder: acute, chronic and acute-on-chronic liver failure, viral hepatitis, autoimmune liver disease, metabolic liver disease, drug- and toxic- induced liver injury, benign and malignant liver tumor, cholecystitis, gallbladder neoplasms. Examples.
Lecture 5	Pancreas: congenital anomalies, acute and chronic pancreatitis, pancreatic neoplasms. Examples.

Lecture 6	Endocrine system: anterior pituitary tumors, hypopituitarism, posterior pituitary syndromes, hyperthyroidism, hypothyroidism, autoimmune thyroid disease, diffuse and multinodular goiter, thyroid neoplasms, parathyroid adenoma, carcinoma, hyperparathyroidism, hypoparathyroidism, diabetes mellitus, adrenocortical dysfunction, adrenocortical neoplasms, tumors of adrenal medulla, MEN syndromes. Examples.
Lecture 7	Bones and joints: osteoporosis, hyperparathyroidism, Paget disease, osteogenic and chondrogenic tumors, Ewing sarcoma, giant cell tumor of bone, fibrous dysplasia, osteoarthritis, rheumatoid arthritis, Lyme disease, tenosynovial giant cell tumor, gout and pseudogout. Examples.
Lecture 8	Soft tissue tumors: tumor of adipose tissue, fibrous tumors, smooth muscle tumors, tumors of uncertain origin. Examples.
Lecture 9	Peripheral nerves and muscles: patterns of nerve and muscle injury, disorders of neuromuscular junction: myasthenia gravis, Lambert-Eaton syndrome, inherited and acquired disorders of skeletal muscle, peripheral nerve sheath tumors, skeletal muscle tumors. Examples. Central nervous system: edema, herniation, hydrocephalus, cerebrovascular diseases, trauma, congenital malformation, perinatal brain injury, infections, diseases of myelin, tumors. Examples.
Lecture 10	Non neoplastic diseases of skin. Tissue reaction patterns: lichenoid, psoriasiform, spongiotic, vesiculobullous, granulomatous, vasculopathic. Examples.
Lecture 11	Skin neoplasms. Benign and premalignant epithelial lesions, malignant epidermal tumors, melanocytic lesions. Examples.
Lecture 12	Immunohistochemistry in the diagnosis of primary and metastatic cancer.
Lecture 13	The role of pathology in personalized medicine: immunohistochemical and molecular biomarkers in NSCLC, malignant melanoma, colorectal cancer, breast cancer and others.
Lecture 14	Pathologic Quiz Cases

B. Themes of laboratories and practical classes

SEMESTER V

No	Course content
1	Organizational exercises
2	Adaptation processes: atrophy, hypertrophy, hyperplasia, metaplasia. degeneration, necrosis and apoptosis.
3	Inflammation, regeneration, repair and scarring.
4	Hemodynamic disorders: shock, thrombosis, embolism, infarction, disseminated intravascular coagulation syndrome.
5	Blood vessel diseases: vascular wall response to damage, hardening of the arteries, atherosclerosis, aneurysms, inflammation of blood vessels, varicose veins, cancer
6	Heart diseases: ischemic disease, infarction, left and right ventricular failure, cardiomyopathies, neoplasms. Pericardial diseases.
7	Cancer: definition, terminology, tumor classification, benign and malignant neoplasms, differentiation, maturation, anaplasia, cataplasia, dysplasia. Pre-cancerous conditions and changes. The spread of neoplastic diseases. The influence of cancer on the host system. Paraneoplastic syndromes.
8	Anemia- definitions, examples, pathomechanism, complications. Hemorrhagic diathesis - definitions, examples, pathomechanism, complications. Non-neoplastic and neoplastic diseases of the hematopoietic and lymphatic systems - examples, pathomechanism,

	morphological forms, complications.
9	Non-cancerous kidney diseases: inflammation, diabetes, collagenosis, shock. Benign and malignant neoplasms, kidney metastases.
10	Non-neoplastic and neoplastic diseases of the bladder. Diseases of the male reproductive system: orchitis, benign prostatic hyperplasia, prostate cancer. Tumors of the testicles and penis
11	Non-cancerous lung diseases: developmental disorders, emphysema, pneumonia, granulomatous diseases: sarcoidosis, tuberculosis, vasculitis and granulomatosis, Langerhans cell histiocytosis, hypersensitivity pneumonitis, idiopathic pulmonary fibrosis, pneumoconiosis. Pleural diseases: inflammation, primary and metastatic tumors of the pleura. Mediastinal diseases: inflammations, developmental disorders, primary tumors, thymomas, germ cell tumors.
12	Lung neoplasms: small cell and non-small cell carcinoma, non-epithelial neoplasms, lung metastases.
13	Pathology of the female genital organs: ovaries, fallopian tubes, uterus, vagina, vulva.
14	Diseases of the mammary gland: inflammation, hyperplasia, involution, benign and malignant neoplasms, epithelial-mesenchymal neoplasms, breast cancer: histological and molecular classification.
15	Semester test

SEMESTER VI

No	Course content
1	Oral cavity: diseases of teeth and supporting structures, inflammatory lesion, proliferative lesions of the oral cavity, neoplasms of oral cavity, xerostomia, sialadenitis, salivary gland tumors
2	Gastrointestinal tract: esophagus, stomach: obstructive and vascular diseases of the esophagus, esophagitis, esophageal tumors, gastropathy and acute gastritis, chronic gastritis, peptic ulcer disease, mucosal atrophy, intestinal metaplasia, dysplasia, gastric polyps, neoplasm of the stomach, GIST.
3	Gastrointestinal tract: small and large intestine: intussusception. Hirschsprung disease, abdominal hernia, vascular disorders of bowel, diarrheal disease, inflammatory bowel disease, colonic polyps, colorectal neoplasm, appendicitis, tumors of the appendix.
4	Liver and gallbladder: acute, chronic and acute-on-chronic liver failure, viral hepatitis, autoimmune liver disease, metabolic liver disease, drug- and toxic- induced liver injury, benign and malignant liver tumor, cholecystitis, gallbladder neoplasms. Pancreas: congenital anomalies, acute and chronic pancreatitis, pancreatic neoplasms
5	Endocrine system: anterior pituitary tumors, hypopituitarism, posterior pituitary syndromes, hyperthyroidism, hypothyroidism, autoimmune thyroid disease, diffuse and multinodular goiter, thyroid neoplasms, parathyroid adenoma, carcinoma, hyperparathyroidism, hypoparathyroidism, diabetes mellitus, adrenocortical dysfunction, adrenocortical neoplasms, tumors of adrenal medulla, MEN syndromes.
6	Bones and joints: osteoporosis, hyperparathyroidism, Paget disease, osteogenic and chondrogenic tumors, Ewing sarcoma, giant cell tumor of bone, fibrous dysplasia, osteoarthritis, rheumatoid arthritis, Lyme disease, tenosynovial giant cell tumor, gout and pseudogout.
7	Soft tissue tumors: tumor of adipose tissue, fibrous tumors, smooth muscle tumors, tumors of uncertain origin
8	Peripheral nerves and muscles: patterns of nerve and muscle injury, disorders of neuromuscular junction: myasthenia gravis, Lambert-Eaton syndrome, inherited and acquired disorders of skeletal muscle, peripheral nerve sheath tumors, skeletal muscle

	tumors. Central nervous system: edema, herniation, hydrocephalus, cerebrovascular diseases, trauma, congenital malformation, perinatal brain injury, infections, diseases of myelin, tumors.
9	Non neoplastic diseases of skin. Tissue reaction patterns: lichenoid, psoriasiform, spongiotic, vesiculobullous, granulomatous, vasculopathic.
10	Skin neoplasms. Benign and premalignant epithelial lesions, malignant epidermal tumors, melanocytic lesions
11	Immunohistochemistry in the diagnosis of primary and metastatic cancer.
12	The role of pathology in personalized medicine: immunohistochemical and molecular biomarkers in NSCLC, malignant melanoma, colorectal cancer, breast cancer and others
13	Semester test

3.4 Teaching methods

Lecture: lecture with multimedia presentation. Lectures will be held remotely (on-line) using the MS Teams platform.

Practical classes: multimedia presentation, demonstration of current histopathological diagnostics in correlation with clinical data, learning macroscopic and microscopic assessment using the technique of light microscopy, immunohistochemistry and elements of molecular biology along with the preparation of a report, acquisition and improvement of the ability to recognize and properly differentiate specific morphological changes, compilation morphological changes with a clinical picture with the determination of the final epicrisis. E-learning consultations. Classes will be held in the form of direct contact, unless the Rector of the University of Rzeszów decides otherwise by issuing a relevant regulation.

Student's own work: work with the book and materials provided by the teachers in electronic form.

4. EVALUATION METHODS AND CRITERIA

4.1 Ways of verifying learning outcomes

Symbol of effect	METHODS OF ASSESSMENT OF LEARNING OUTCOMES (E.G. TESTS, ORAL EXAMS, WRITTEN EXAMS, PROJECT, REPORT, OBSERVATION DURING CLASSES)	Form of classes (lectures, exercises)
EK_ 01 – EK_09	written exam (multiple choice questions - MCQ)	L, E
EK_ 10 – EK_12	practical exam, observation during classes, discussion during classes	E
EK_ 13 – EK_15	observation during classes, discussion during classes	E

4.2 Conditions for passing the course (grading criteria)

Attendance at all forms of classes is MANDATORY.

Semester V

Lectures: Credit based on attendance. The subject ends with an examination after a one-year course.

Practical classes: Positive grade for all practical classes in the semester. Written test in the form of a multiple-choice MCQ test in the last week of the semester.

Semester VI

Practical classes: Positive grade for all tutorials in the semester. Written test in the form of a multiple-choice MCQ test in the last week of the semester.

Lectures: Credit based on attendance. The course ends with an examination after a one-year course.

EXAM

The condition for admission to the exam is passing the lectures, exercises and both semester tests. The exam consists of two parts: theoretical and practical.

Practical part - 20 multiple-choice MCQ questions requiring the diagnosis of a disease entity based on a description of a clinical case and a microscopic image attached as a photo.

Theoretical part - 100 MCQ multiple-choice questions.

Knowledge assessment:

5.0 - shows knowledge of each of the content of education at the level of 93% -100%

4.5 - shows knowledge of each of the content of education at the level of 86% -92%

4.0 - shows knowledge of each of the content of education at the level of 77% -85%

3.5 - shows knowledge of each of the content of education at the level of 69% -76%

3.0 - shows knowledge of each of the content of education at the level of 60% -68%

2.0 - shows knowledge of each of the content of education below 60%

Skill Assessment:

5.0 - the student actively participates in the classes, is well prepared, describes histopathological slide correctly and recognizes disease entities under the microscope

4.5 - the student actively participates in the classes, with a little help from the teacher properly describes histopathological slide correctly and recognizes disease entities under the microscope

4.0 - the student actively participates in the classes, describes histopathological slide correctly with the help of the teacher and recognizes disease entities under the microscope

3.5 - the student participates in the classes, his scope of preparation does not allow for a comprehensive presentation of the discussed problem, often makes mistakes while describing. histopathological slide and incorrectly recognizes disease entities under the microscope

3.0 - the student participates in the classes, formulates conclusions that require correction on the part of the teacher, however, making mistakes during the description of the histopathological slide and incorrectly recognizes disease entities under the microscope

2.0 - the student passively participates in the classes, the statements are factually incorrect, does not understand the problems, makes mistakes during the description of the histopathological slide and incorrectly recognizes disease entities under the microscope

5. TOTAL STUDENT WORK INPUT REQUIRED TO ACHIEVE THE INTENDED EFFECTS IN HOURS AND ECTS CREDITS

Form of activity	The average number of hours to complete the activity
Contact hours resulting from the schedule	140
Other activities with the participation of an academic teacher (participation in consultations, examination)	6
Non-contact hours - student's own work (preparation for classes, examinations, writing a paper, etc.)	120
Total number of hours	266
Total number of ECTS	10

*** IT SHOULD BE TAKEN INTO ACCOUNT THAT 1 ECTS POINT CORRESPONDS TO 25-30 HOURS OF TOTAL STUDENT WORKLOAD.**

6. TRAINING PRACTICES IN THE SUBJECT

NUMBER OF HOURS	-
RULES AND FORMS OF APPRENTICESHIP	-

7. LITERATURE

- 1. ROBBINS BASIC PATHOLOGY, TENTH EDITION. 2018 BY ELSEVIER INC. ISBN: 978-0-323-35317-5**
International Edition: 978-0-323-48054-3
- 2. Supplementary literature:**
Scientific literature: articles in scientific journals

Acceptance of the head of the unit or authorized person

