Appendix No. 1.5 to the Rector of the University of Rzeszów Resolution No. 7/2023

SYLLABUS

Concerning the cycle of education **2025- 2031**

Academic year 2027/2028

1. BASIC COURSE/MODULE INFORMATION

Course/Module title	**Pathology**
Course/Module code *	**Pm/CB**
Faculty (name of the unit offering the field of study)	**Faculty of Medicine, University of Rzeszow**
Name of the unit running the course	**Department of Pathology**
Field of study	**Medical direction**
Qualification level	**Uniform master studies**
Profile	**General Academic**
Study mode	**Stationary/ non- stationary**
Year and semester of studies	**Year III semester: V, VI**
Course type	**Obligatory**
Language of instruction	**English**
Coordinator	**Dr Elżbieta Łach-Pasko, MD**
Course instructor	**Dr Elżbieta Łach-Pasko, MD**

** - as agreed at the faculty*

1.1. Learning format – number of hours and ECTS credits

Lectures	Classes	Lab classes	Seminars	Practical classes	Internships	Others	**ECTS credits**
30	40	-	-	-	-	-	6

1.2. Course delivery methods

- conducted in a traditional way
- involving distance education methods and techniques

1.3. Course/Module assessment (exam, pass with a grade, pass without a grade)

2.PREREQUISITES

Completed courses in anatomy, histology, and physiology.

3. Objectives, Learning Outcomes, Course Content, and Instructional Methods

3.1. Course/Module objectives

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. Course/Module Learning Outcomes

EK (learning EFFECT)	Content of the learning effect defined for the subject	Reference to directional effects (KEK)
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 processes of regeneration tissues and organs	C.W28
EK_04	knows the definition and pathophysiology of shock, with particular emphasis on differentiation causes of shock and multiple organ failure;	C.W29
EK_05	knows the etiology of hemodynamic disorders, retrograde and progressive changes;	C.W30
EK_06	knows the issues of detailed organ pathology, macro- and microscopic images and the clinical course of pathomorphological changes in individual organs	C.W31
EK_07	knows the consequences of developing pathological changes for neighboring topographically of organs	C.W32
EK_08	knows external and internal pathogens, modifiable and non-modifiable;	C.W33
EK_09	lists the clinical forms of the most common diseases of individual systems and organs, metabolic diseases and disorders of water-electrolyte and acid-base balance	C.W34
EK_10	can use the antigen-antibody reaction in the current modifications and techniques for the diagnosis of autoimmune diseases and cancer	C.U8
EK_11	can relate images of tissue and organ damage to clinical symptoms of the disease, history and laboratory test results	C.U11
EK_12	analyzes reactional, defensive and adaptive phenomena as well as regulatory disorders caused by the etiological factor	C.U12
EK_13	acquires the ability to perceive and recognize his/her own limitations and to make 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 one's 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. Course content

A. Lectures

Lecture #	Themes
Lecture 1	Introduction to pathology. Basic concepts: histopathological, cytological, intraoperative and autopsy examination. Histochemical and immunohistochemical studies. Molecular research. Stages of pathological diagnosis. Examples.
Lecture 2	Adaptation processes: atrophy, growth, hypertrophy, metaplasia. Degenerations, necroses and apoptosis - definitions, pathomechanism. 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.
Lecture 16	Oral cavities: 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 17	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 18	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 19	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 20	Pancreas: congenital anomalies, acute and chronic pancreatitis, pancreatic neoplasms. Examples.
Lecture 21	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 22	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 23	Soft tissue tumors: tumor of adipose tissue, fibrous tumors, smooth muscle tumors, tumors of uncertain origin. Examples.
Lecture 24	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.
Lecture 25	Central nervous system: edema, herniation, hydrocephalus, cerebrovascular diseases, trauma, congenital malformation, perinatal brain injury, infections, diseases of myelin, tumors. Examples.
Lecture 26	Non neoplastic diseases of skin. Tissue reaction patterns: lichenoid, psoriasiform, spongiotic, vesiculobullous, granulomatous, vasculopathic. Examples.

Lecture 27	Skin neoplasms. Benign and premalignant epithelial lesions, malignant epidermal tumors, melanocytic lesions. Examples.
Lecture 28	Immunohistochemistry in the diagnosis of primary and metastatic cancer.
Lecture 29	The role of pathology in personalized medicine: immunohistochemical and molecular biomarkers in NSCLC, malignant melanoma, colorectal cancer, breast cancer and others.
Lecture 30	Pathologic Quiz Cases

B. Classes, tutorials/seminars, colloquia, laboratories, practical classes

Course#	**Course content**
1.	Organizational exercises
2.	Adaptation processes: atrophy, hypertrophy, hyperplasia, metaplasia. degeneration, necrosis and apoptosis.
3.	Inflammation, regeneration, repair and scarring.
4.	Haemodynamic 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.	Pleural diseases: inflammation, primary and metastatic tumors of the pleura. Mediastinal diseases: inflammations, developmental disorders, primary tumors, thymomas, germ cell tumors.
12.	Non-cancerous lung diseases: developmental disorders, emphysema, pneumonia, granulomatous diseases: sarcoidosis, tuberculosis, vasculitis and granulomatosis, Langerhans cell histiocytosis, hypersensitivity pneumonitis, idiopathic pulmonary fibrosis, pneumoconiosis.
13.	Lung neoplasms: small cell and non-small cell carcinoma, non-epithelial neoplasms, lung metastases.
14.	Pathology of the female genital organs: ovaries, fallopian tubes, uterus, vagina, vulva. Diseases of the mammary gland: inflammation, hyperplasia, involution, benign and malignant neoplasms, epithelial-mesenchymal neoplasms, breast cancer: histological and molecular classification.
15.	Semester test
16.	Pathology of the female genital organs: ovaries, fallopian tubes, uterus, vagina,

	vulva. Diseases of the mammary gland: inflammation, hyperplasia, involution, benign and malignant neoplasms, epithelial-mesenchymal neoplasms, breast cancer: histological and molecular classification.
17.	Oral cavities: diseases of teeth and supporting structures, inflammatory lesion, proliferative lesions of the oral cavity, neoplasms of oral cavity, xerostomia, sialadenitis, salivary gland tumors
18.	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.
19.	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.
20.	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
21.	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.
22.	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.
23.	Soft tissue tumors: tumor of adipose tissue, fibrous tumors, smooth muscle tumors, tumors of uncertain origin
24.	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.
25.	Non neoplastic diseases of skin. Tissue reaction patterns: lichenoid, psoriasiform, spongiotic, vesiculobullous, granulomatous, vasculopathic.
26.	Skin neoplasms. Benign and premalignant epithelial lesions, malignant epidermal tumors, melanocytic lesions
27.	Immunohistochemistry in the diagnosis of primary and metastatic cancer.
28.	The role of pathology in personalized medicine: immunohistochemical and molecular biomarkers in NSCLC, malignant melanoma, colorectal cancer, breast cancer and others
29.	Semester test

3.4. Methods of Instruction

Lecture: lecture with multimedia presentation

Classes: multimedia presentation, demonstration of cases of current histopathological diagnostics in correlation with clinical data, learning macroscopic and microscopic evaluation 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. Educational e-consultations.

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

4. ASSESSMENT TECHNIQUES AND CRITERIA

4.1. Methods of evaluating learning outcomes

Learning outcome	Methods of assessment of learning outcomes (e.g. test, oral exam, written exam, project, report, observation during classes)	Learning format (lectures, classes, ...)
EK_ 01-EK_06	**WRITTEN TEST**	L
EK_ 07-EK_09	**WRITTEN ASSESSMENT** **OBSERVATION DURING CLASSES**	EXERCISE

4.2. Course assessment criteria

Lectures:

Written test

Knowledge assessment (EK_01-EK_06):

5.0 - shows knowledge of each of the content of education at the level of 90% -100%

4.5 - shows knowledge of each of the content of education at the level of 84% -89%

4.0 - shows knowledge of each of the content of education at the level of 77% -83%

3.5 - shows knowledge of each of the content of education at the level of 70% -76%

3.0 - shows knowledge of each of the content of education at the level of 60% -69%

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

Exercises:

1. full participation and activity in the exercises

2. partial written tests

Rating range: 2.0 - 5.0

Skills assessment (EK_07-EK_12):

5.0 - the student actively participates in the classes, is well prepared, prepares the preparation correctly and recognizes pathogens under the microscope

4.5 - the student actively participates in the classes, with a little help from the teacher properly prepares the preparation and recognizes pathogens under the microscope

4.0 - the student actively participates in the classes, prepares the preparation with the help of the teacher and recognizes pathogens 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, he often makes mistakes while preparing the preparation and incorrectly recognizes pathogens under the microscope

3.0 - the student participates in the classes, formulates conclusions that require correction on the part of the teacher, however, making large mistakes during the preparation of the preparation and incorrectly recognizes pathogens under the microscope

2.0 - the student passively participates in the classes, the statements are factually incorrect, he does not understand the problems, during the preparation of the preparation he makes a wrong and incorrectly recognizes pathogens under the microscope.

5. TOTAL STUDENT WORKLOAD NEEDED TO ACHIEVE THE INTENDED LEARNING OUTCOMES – NUMBER OF HOURS AND ECTS CREDITS

Activity	Number of hours
Scheduled course contact hours	70
Other contact hours involving the teacher (consultation hours, examinations)	1,5
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	150
Total number of hours	223,5
Total number of ECTS credits	5-

** One ECTS point corresponds to 25-30 hours of total student workload*

6. INTERNSHIPS RELATED TO THE COURSE/MODULE

Number of hours	-

Internship regulations and procedures	-

7. INSTRUCTIONAL MATERIALS

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

Approved by the Head of the Department or an authorised person.