Appendix number 1.5 to The Rector UR Resolution No. *12/2019*

**SYLLABUS**

**concerning the cycle of education 2022-2028**

(date range)

## Academic year 2023/2024

1. **BASIC INFORMATION CONCERNING THIS SUBJECT**

|  |  |
| --- | --- |
| Subject | **P** |
| Course code \* | **Pm/CB** |
| Faculty of (name of the | **Medical College of The University of Rzeszów** |
| leading direction) |
| Department Name | **Medical College of The University of Rzeszów** |
| 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 |  |
| First and Last Name of the |  |
| Teacher |  |
|  |  |
|  |  |

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

* 1. **Forms of classes, number of hours and ECTS**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Semester | Lecture | Exercise | Conversation | Laboratory | Seminar | ZP | Practical | Other | **Number** |
| No. | **of points** |
| **ECTS** |
| V | 30 | 40 | - | - | - | - | - | - | 6 |
| VI | 30 | 40 | - | - | - | - | - | - | 4 |
| Total | 60 | 80 | - | - | - | - | - | - | 10 |

* 1. **The form of class activities**

+ Classes are in the traditional form

Classes are implemented using methods and techniques of distance learning

* 1. **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.

1. **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 learing effect** | **Reference to directional** |
| **defined for the subject** | **effects** |
| EK\_01 | knows pathological | C.W26 |
| nomenclature |

|  |  |  |
| --- | --- | --- |
| EK\_02 | knows the basic mechanisms | C.W27 |
| of cell and tissue damage |
| EK\_03 | knows the clinical course of | C.W28 |
| specific and non-specific |
| inflammations and the |
| regeneration processes of |
| tissues and organs |
| EK\_04 | knows the definition and | C.W29 |
| pathophysiology of shock, |
| with particular emphasis on |
| differentiation of the causes of |
| shock and multiple organ |
| failure |
| EK\_05 | knows the etiology of | C.W30 |
| hemodynamic disorders, |
| mechanisms of reversible and |
| irreversible injury with |
| morphological consquences. |
| EK\_06 | knows the issues of detailed | C.W31 |
| organ pathology, macro- and |
| microscopic pictures and the |
| clinical course of pathological |
| changes in individual organs |
| EK\_07 | knows the consequences of | C.W32 |
| developing pathological |
| changes for topographically |
| neighboring organs |
| EK\_08 | knows the external and | C.W33 |
| internal, modifiable and |
| unmodifiable pathogens |
| EK\_09 | lists the clinical forms of the | C.W34 |
| most common diseases of |
| individual systems and |
| organs, metabolic diseases as |
| well as disorders of the water- |
| electrolyte and acid-base |
| balance |
| EK\_10 | is able to use the antigen- | C.U8 |
| antibody reaction in current |
| modifications and techniques |
| for the diagnosis of |
| autoimmune and neoplastic |
| diseases |
| EK\_11 | is able to relate images of | C.U11 |
| tissue and organ damage with |
| clinical symptoms of the |
| disease, clinical history and |
| laboratory test results |
| EK\_12 | analyses the reactive, | C.U12 |
| defensive and adaptive |

|  |  |  |
| --- | --- | --- |
|  | phenomena as well as |  |
| regulatory disturbances |
| caused by the etiological |
| factor |
| EK\_13 | acquires the skills of | K.05 |
| perceiving and recognizing |
| own limitations and making |
| self-assessment of educational |
| deficits and needs |
| EK\_14 | develops the ability to use | K.07 |
| objective sources of |
| information |
| EK\_15 | develops the ability to | K.08 |
| formulate conclusions from |
| own measurements or |
| observations |

1In 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.

* 1. **Content curriculum**

## 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, |
| diabethic 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. |

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| --- | --- |
| **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 |

* + 1. **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 |

## 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.

1. **EVALUATION METHODS AND CRITERIA**
   1. **Ways of verifying learning outcomes**

|  |  |  |
| --- | --- | --- |
| **Symbol of effect** | **METHODS OF ASSESSMENT OF LEARNING OUTCOMES** | **Form of classes** |
| **(E.G.TESTS, ORAL EXAMS, WRITTEN EXAMS,** | **(lectures,** |
| **PROJECT, REPORT, OBSERVATION DURING CLASSES)** | **exercises)** |
| EK\_ 01 – EK\_09 | written exam (multiple choice questions - MCQ) | L, E |
| EK\_ 10 – EK\_12 | practical exam, observation during classes, discussion | E |
| during classes |
| EK\_ 13 – EK\_15 | observation during classes, discussion during classes | E |

## 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

## 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 | 6 |
| academic teacher (participation in consultations, |
| examination) |
| Non-contact hours - student's own work | 120 |
| (preparation for classes, examinations, writing a |
| paper, etc.) |
| Total numer 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***.*

1. **TRAINING PRACTICES IN THE SUBJECT**

|  |  |
| --- | --- |
| **NUMBER OF HOURS** | - |
| **RULES AND FORMS OF APPRENTICESHIP** | - |

1. **LITERATURE**
2. **ROBBINS BASIC PATHOLOGY**, TENTH EDITION. 2018 BY ELSEVIER INC. ISBN: 978-0-323-35317-5

International Edition: 978-0-323-48054-3

1. Supplementary literature:

Scientific literature: articles in scientific journals

Acceptance of the head of the unit or authorized person