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

SYLLABUS

concerning the cycle of education 2019-2025

Academic year **2020/2021**

1. BASIC INFORMATION CONCERNING THIS SUBJECT

Subject	**Pathophysiology**
Course code *	**Pf/B**
Faculty of (name of the leading direction)	**College of Medical Sciences, University of Rzeszów**
Department Name	**Department of Human Pathophysiology**
Field of study	**Medical Direction**
Level of education	**Uniform Master's Studies**
Profile	**Practical**
Form of study	**Stationary**
Year and semester	**Year II, Semester 4 and Year III, Semester 5**
Type of course	**Obligatory**
Language	**English**
Coordinator	**Prof. dr hab. n. med. Maciej Machaczka**
First and Last Name of the Teachers	**Prof. dr hab. n. med. Maciej Machaczka; Dr hab. n. med. Mariusz Dąbrowski, prof. UR; dr n. med. Łukasz Błażowski; dr n. med. Agnieszka Gala-Błądzińska; dr n. med. Tomasz Stepek; lek. med. Elżbieta Łach-Pasko; dr n. med. Piotr Futyma**

*** - 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	Praktical	Other	**Number of points ECTS**
4	30	24	-	-	9	-	-	-	6
5	30	21	-	-	6	-	-	-	5

1.2. The form of class activities

x classes are in the traditional form

x classes are implemented using methods and techniques of distance learning

ACCORDING TO THE DECISION OF THE RECTOR UR LECTURES AND SEMINARS WILL BE CONDUCTED IN THE ON-LINE FORM, AND EXERCISES IN DIRECT OR DISTANCE LEARNING

1.3 Examination Forms: : EXAMINATION

2.BASIC REQUIREMENTS

Knowledge of human anatomy, histology, physiology, cell biology, genetics, immunology and biochemistry

3. OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING

METHODS 3.1 Objectives of this course

C1	The aim of education is to familiarize the student with the knowledge of the relationship between the action of pathogenic factors causing the disturbance of homeostasis and the development of the disease and its clinical symptoms
C2	Explaining the differences in the functions of the system under the conditions of the disease, learning the etiopathogenesis of the most important diseases and the pathophysiological foundations of diagnostic and therapeutic procedures
C3	Integrating basic medical disciplines and linking them with clinical education

3.2 OUTCOMES FOR THE COURSE

EK (the effect of education)	The content of learning outcomes defined for the class (module)	Reference to directional effects [1]
EK_01	KNOWS AND UNDERSTANDS THE WAYS OF COMMUNICATION BETWEEN CELLS AND BETWEEN CELL AND EXTERNAL CELL MATRIX, AND THE PATHS OF TRANSMISSION OF SIGNALS IN THE CELL, AS WELL AS EXAMPLES OF DISORDERS IN THESE PROCESSES LEADING TO THE DEVELOPMENT OF CANCER AND OTHER DISEASES	**B.W17.**
EK_02	KNOWS AND UNDERSTANDS THE AGING MECHANISM	**B.W23.**
EK_03	KNOWS AND UNDERSTANDS THE BASIC QUANTITATIVE PARAMETERS DESCRIBING THE PERFORMANCE OF PARTICULAR SYSTEMS AND ORGANS, INCLUDING NORMAL VALUES AND DEMOGRAPHIC FACTORS AFFECTING THE VALUE OF THESE PARAMETERS	**B.W24.**
EK_04	KNOWS AND UNDERSTANDS THE RELATIONSHIP BETWEEN THE BALANCING FACTORS OF BIOLOGICAL PROCESSES AND PHYSIOLOGICAL AND PATHYOLOGICAL CHANGES	**B.W25.**
EK_05	KNOWS AND UNDERSTANDS THE EFFECT OF OXIDATIVE STRESS ON CELLS AND ITS SIGNIFICANCE IN THE PATHOGENESIS OF DISEASES AND IN THE AGING PROCESSES	**C.W47.**
EK_06	KNOWS AND UNDERSTANDS THE CONSEQUENCES OF VITAMINS OR MINERALS DEFICIENCY AND THEIR EXCESS IN THE BODY	**C.W48.**
EK_07	KNOWS AND UNDERSTANDS THE CONSEQUENCES OF INADEQUATE EATING, INCLUDING LONG-TERM STARVING, TAKING EXCESSIVE MEALS AND USING AN UNBALANCED DIET AS WELL AS DISORDERS OF DIGESTION AND ABSORPTION OF DIGESTIVE PRODUCTS	**C.W50.**

[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.

EK_08	CAN PERFORM SIMPLE FUNCTIONAL TESTS ASSESSING THE HUMAN ORGANISM AS A SYSTEM OF STABLE STABLE REGULATION (STRESS TESTS, EXERCISE TESTS) AND INTERPRETING THE NUMERICAL DATA ON BASIC PHYSIOLOGICAL VARIABLES	**B.U7.**
EK_09	CAN E ASSOCIATE IMAGES OF TISSUE AND ORGAN DAMAGE WITH CLINICAL SYMPTOMS OF THE DISEASE, HISTORY AND LABORATORY RESULTS	**C.U11.**
EK_10	CAN ANALYZE REACTIVE, DEFENSIVE AND ADAPTIVE PHENOMENA AND DISTURBANCES OF REGULATION CAUSED BY AN ETHIOLOGICAL FACTOR	**C.U12.**
EK_11	CAN DESCRIBE CHANGES IN THE FUNCTIONING OF THE ORGANISM IN THE SITUATION OF HOMEOSTASIS DISORDERS, AND IN PARTICULAR, DETERMINE ITS INTEGRATED RESPONSE TO PHYSICAL EXERCISE, EXPOSURE TO HIGH AND LOW TEMPERATURE, LOSS OF BLOOD OR WATER, SUDDEN PIONIZATION, TRANSITION FROM SLEEP TO WAKE-UP	**C.U20.**
EK_12	IS READY TO SEE AND RECOGNIZE YOUR OWN LIMITATIONS AND SELF-ASSESS YOUR DEFICIT AND EDUCATIONAL NEEDS	**K.05**
EK_13	IS READY TO FORMULATE CONCLUSIONS FROM OWN MEASUREMENTS OR OBSERVATIONS	**K.08**
EK_14	IS READY TO ACCEPT RESPONSIBILITY RELATING TO DECISIONS MADE IN THE FRAMEWORK OF PROFESSIONAL ACTIVITY, INCLUDING IN THE CATEGORIES OF OWN SAFETY AND OTHER PERSONS	**K.11**

3.3 CONTENT CURRICULUM

A. Problems of lectures

Health and disease. Course of illness. Disease prevention. Pathophysiological terminology
Outline of cell pathophysiology. Disorders of cell differentiation and proliferation
Inflammation, infection, tissue regeneration. Excessive inflammatory response. COVID-19
Basic signs and symptoms
Genetic and developmental disorders. Immune disorders
Thermoregulation disorders. Fever. Hypothermia and hyperthermia
Pathophysiology of aging
Circulatory system pathophysiology
Disorders of the hormonal regulation of calcium and phosphate metabolism and the secretion of sex hormones
Digestive system pathophysiology
Hormonal regulation and metabolism disorders. Pathophysiology of the endocrine system
Influence of environmental factors on the human body
Neoplasms
An outline of the problem of rare diseases
Hematopoietic cell transplantation and CAR-T
Disturbances of hemostasis, hematopoiesis and lymphatic system
Pathophysiology of life threatening conditions. Acute respiratory failure. Acute kidney injury
Stroke – symptoms, causes, methods of treatment. Acute life-threatening conditions of traumatic origin
Disorders of secretion and excretion
Acid-base, water-electrolyte and calcium-phosphate imbalances
Pathophysiology of the respiratory system. Allergic diseases, anaphylaxis, food allergy, atopic dermatitis
Diabetes and eating disorders

B. Problems of auditorium, seminar, laboratory and practical classes

Circulatory system pathophysiology. Emergencies in cardiology
Pathophysiology of the digestive system, liver and pancreas
Central nervous system pathophysiology
Pathophysiology of the endocrine system
Pathophysiology of the respiratory system
Pathophysiology of the immune system and allergic diseases
Pathophysiology of the urinary system
Pathophysiology of connective tissue diseases
Pathophysiology of the hematopoietic system and coagulation disorders
Disorders of the acid-base and water-electrolyte balance

Diabetes, eating disorders, metabolic syndrome, protein metabolism disorders, dyslipidemias, obesity
Peripheral nervous system, thermoregulation, sense organs
Selected disorders of the reproductive system. Pregnancy, childbirth, postnatal period

3.4 Didactic methods

Lectures: problem lecture, lecture with multimedia presentation, distance learning methods

Exercises: text analysis with discussion, project method (research, implementation, practical project), group work (task solving, discussion), didactic games, distance learning methods
Seminars: lecture with multimedia presentation, literature analysis, distance learning methods **Student's own work:** work with a book, article, teacher's material

4. METHODS AND EVALUATION CRITERIA

4.1 Methods of verification of learning outcomes

Symbol of effect	Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes)	Form of classes
EK_ 01 – EK_ 07	WRITTEN ASSESSMENT, TEST, OBSERVATION DURING CLASSES	LECTURES, SEMINARS, CLASSES
EK_ 08 – EK_ 14	WRITTEN ASSESSMENT, TEST, OBSERVATION DURING CLASSES	CLASSES, SEMINARS

4.2 Conditions for completing the course (evaluation criteria)

Oral exam on the entire course (lectures, seminars, classes, students own work) at the end of teaching the subject.

Student’s attendance in scheduled activities is obligatory.

Lectures and seminars

Written or oral credit.

Knowledge assessment (EK_01-EK_07):

5.0 - student shows knowledge of education content at the level of 93–100%
4.5 - student shows knowledge of education content at the level of 85–92%
4.0 - student shows knowledge of education content at the level of 77–84%
3.5 - student shows knowledge of education content at the level of 69–76%
3.0 - student shows knowledge of education content at 60–69%
2.0 - sudent shows knowledge of education content below 60%

Laboratory classes:

1. Full class attendance.
2. Written or oral test from the thematic module

Skill assessment (EK_05, EK_06):

5.0 – student actively participates in classes, is well prepared to classes, correctly interprets relationships and draws the right conclusions, he flawlessly performs simple functional tests assessing the human body

4.5 – student actively participates in classes, with a little help of the teacher, he correctly interprets occurring phenomena, performs simple functional tests assessing the human body with a little help of the teacher

4.0 – student actively participates in classes, with greater help of the teacher, is corrected by the teacher, he is not always able to solve the problem by himself and perform simple functional tests assessing the human body

3.5 – student participates in classes, his knowledge does not allow for a holistic presentation of the discussed problem, without the help of the teacher draws wrong conclusions and incorrectly performs simple functional tests assessing the human body

3.0 – student participates in classes, he formulates conclusions that require correction by the teacher, he makes minor mistakes and does not fully understand the cause-and-effect relationships, often incorrectly performs simple functional tests assessing the human body

2.0 – student passively participates in classes, his statements are substantive incorrect, he does not understand the problems and cannot perform simple functional tests assessing the human body

5. Total student workload required to achieve the desired result in hours and ECTS credits

Activity	**The average number of hours to complete the activity**
Contact hours (with the teacher) resulting from the study schedule of classes	120
Contact hours (with the teacher) participation in the consultations, exams	8
Non-contact hours - student's own work (preparation for classes, exam, writing a paper, etc.)	147
SUM OF HOURS	275
TOTAL NUMBER OF ECTS	11

** 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

Basic literature: 1. Pathophysiology. By Ivan Damjanov. Saunders, New York, 2009 2. Color Atlas of Pathophysiology. By Stefan Silbernagl and Florian Lang. Thieme, Stuttgart, 2016 3. Handouts delivered by teachers
Additional literature 1. Robbins Basic Pathology. By Vinay Kumar, Abul Abbas and Jon Aster. Elsevier, Philadelphia, 2018 2. Guyton and Hall. Textbook of Medical Physiology. By John Hall. Elsevier, Philadelphia, 2016 3. Database UpToDate® https://www.uptodate.com/contents/search 4. Recommended articles from peer-reviewed scientific medical journals

Acceptance Unit Manager or authorized person

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