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

SYLLABUS

concerning the cycle of education 2018-2024

Academic year: 2020/2021

1. BASIC INFORMATION CONCERNING THIS SUBJECT

Subject	Laboratory diagnostics
Course code/module *	DL/E
Faculty of (name of the leading direction)	Medical Faculty, University of Rzeszów
Department Name	Institute of Medical Sciences
Field of study	Medical
level of education	Uniform master studies
Profile	General academic
Form of study	Stationary, non- Stationary
Year and semester	3rd year, 1st semester
Type of course	obligatory
Language	English
Coordinator	Joanna Gustalik, MD
First and Last Name of the Teachers	Joanna Gustalik, 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**
5	20	-	-	-	24	-	-	-	3

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

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

CREDIT WITH GRADE

2.BASIC REQUIREMENTS

Basic knowledge of biochemistry, physiology, pathophysiology and immunology.

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

3.1 Objectives of this course

C1	Present basic knowledge on the application of laboratory tests.
C2	Present different types of laboratory tests and their clinical usage in the context of biochemistry and physiology of the main organ systems of the human body.
C3	Familiarize students with: a. proper use of laboratory tests in clinical practice b. medical consequences of disease on the major organ systems reflected in lab test results; c. appropriate use of reference values; d. significance of factors influencing the results and interpretation of laboratory test results.
C4	Present the students how to properly interpret laboratory test results and apply it to daily clinical situations.

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	Student understands basic principles of diagnostic laboratory	E.W40
EK_02	Student understands possibilities and pitfalls of laboratory tests in emergencies	E.W41
EK_03	Student knows what kind of biological materials can be tested in laboratory and how to take samples properly to ensure appropriate analyses	E.W39
EK_04	Student has knowledge on diagnosing diseases of: 1. cardio-vascular system 2. respiratory system 3. digestive system 4. endocrine system 5. urinary system	E.W7.1-5
EK_05	Student knows which laboratory test to choose in order to diagnose blood disorders, rheumatic diseases, allergic diseases and how to interpret the results	E.W7.6-8
EK_06	Student knows how to interpret antibody-antigen reaction in current modifications and techniques of diagnosing infectious, allergic, autoimmune and neoplasmatic diseases as well as blood disorders.	C.U8
EK_07	Student can interpret laboratory tests results and identify causes of irregularities	E.U24.

[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	Student knows the principles of blood, urine, CSF and other body fluids collection for laboratory testing and knows how to interpret the results	E.U28.
EK_09	Student knows basic principles of laboratory tests in fetal and children diseases	E.W5

3.3 CONTENT CURRICULUM

A. Problems of the lecture

	Problem of the lecture	Number of hours
1	Introduction to the subject. Biological materials used in medical laboratory. Anticoagulants. Analytical and statistical concepts in data analysis.	3
2	Basic hematology.	3
3	Coagulation disorders. Leukemias. Lymphomas. Bone marrow disorders.	3
4	Cardiac markers. Hiperlipidemias.	2
5	Infectious diseases testing. Toxicology.	3
6	Neoplastic disease markers. Enzymes – laboratory testing and its significance.	3
7	Laboratory diagnostics of the endocrine system.	3

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

	Problem of the seminar	Number of hours
1	Urinalysis and laboratory tests in kidney diseases.	3
2	Immunohematology. Anemias. Policytemias.	3
3	Laboratory tests in liver diseases. Diagnosing and laboratory managing of diabetes.	2
4	Cerebro-spinal fluid. Body fluids.	3
5	Blood gases. Calcium-phosphorus balance.	3
6	Interpretation of laboratory test results – revision and discussion panel part I	5
7	Interpretation of laboratory test results – revision and discussion panel part II. Test (credit with a grade – 1,5 hours)	5

3.4 Didactic methods

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

Seminars: multimedia presentation, discussion, distance learning methods

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	TEST	L, S
EK_ 02	TEST	L, S
EK_03	TEST	L, S
EK_04	TEST	L, S
EK_05	TEST	L, S
EK_06	TEST	L, S
EK_07	TEST	L, S
EK_08	TEST	L, S
EK_09	TEST	L, S

4.2 Conditions for completing the course (evaluation criteria)

Written exam (50 multiple choice questions)

ASSESSMENT CRITERIA:

5.0 - HAS KNOWLEDGE OF THE EDUCATION CONTENT AT THE LEVEL OF 93% -100%

4.5 - SHOWS KNOWLEDGE OF THE CONTENT OF EDUCATION AT THE LEVEL OF 85% -92%

4.0 - SHOWS KNOWLEDGE OF THE CONTENT OF EDUCATION AT THE LEVEL OF 77% -84%

3.5 - SHOWS KNOWLEDGE OF THE CONTENT OF EDUCATION AT THE LEVEL OF 69% -76%

3.0 - SHOWS KNOWLEDGE OF THE CONTENT OF EDUCATION AT THE LEVEL OF 60% -68%

2.0 - SHOWS KNOWLEDGE OF THE EDUCATIONAL CONTENT BELOW 60%

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	44
Contact hours (with the teacher) participation in the consultations, exams	2
Non-contact hours - student's own work (preparation for classes, exam, writing a paper, etc.)	45
SUM OF HOURS	91
TOTAL NUMBER OF ECTS	3

** 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. Laposata's Laboratory Medicine Diagnosis of Disease in Clinical Laboratory Third Edition, Michael Laposata, 2018, McGraw-Hill
2. Clinical Chemistry, 8th edition, Michael Bishop, Edward Fody, Larry Schoeff, 2017, Jones & Bartlett Publisher

Additional literature

Understanding Laboratory Tests: A Quick Reference, Robin Maunder, 2011, Elsevier Canada

Acceptance Unit Manager or authorized person