INFORMATION ABOUT THE COURSE

Laboratory diagnostics

1. Basic information

Field of studies field of medical and health sciences, discipline: medical sciences **Unit responsible for the field of studies** Faculty of Medicine Bydgoszcz University of Science and Technology **Level of studies** Uniform master's studies **Profile of studies** General academic **Form of studies** Full-time	**Studies cycle** …….. **Course code** 17-EMS-LAD-SP2 **Language** English **Obligatory** Yes

Prerequisites	Biochemistry knowledge
Introductory courses	Biochemistry
Coordinator	Piotr Gajewski, PhD

Study period	**Form of assessment** **Form and hours of classes**	**ECTS credits**
Summer semester	Passing with a grade Lecture 15h Exercise 30h Seminar 15h	4.0

2. Learning outcomes

Code	**Description of learning outcomes**	**Learning outcomes reference**
Knowledge (student knows and understands):		
K1	The graduate is familiar with the types of biological materials used in laboratory diagnostics and the principles of collecting material for testing.	E.W39., O.W1., O.W3., O.W4., O.W5.
K2	The graduate is familiar with the possibilities and limitations of laboratory testing.	E.W.40.
Abilities (student can do/perform):		
A1	The graduate is able to recognize the most common symptoms of disease in adults, apply diagnostic tests and interpret their results, perform differential diagnosis, implement therapy, monitor treatment effects, and assess indications for specialist consultation, particularly in the case of symptoms such as: 1) fever 2) weakness 3) loss of appetite 4) weight loss 5) shock 6) cardiac arrest 7) impaired consciousness, including fainting 8) swelling 9) rash 10) coughing and expectoration 11) hemoptysis 12) shortness of breath 13) discharge	E.U.9., E.U.10., E.U18., E.U19., O.U3., O.U5., O.U6., O.U7., O.U8., O.U9.

	from the nose and ear 14) chest pain 15) palpitations 16) cyanosis 17) nausea and vomiting 18) swallowing disorders 19) abdominal pain 20) blood in stool 21) constipation and diarrhea 22) jaundice 23) bloating and abdominal distension 24) anemia 25) lymphadenopathy 26) urinary disorders 27) hematuria and proteinuria 28) menstrual disorders 29) depression and anxiety 30) memory and cognitive disorders 31) headache	
A2	The graduate is able to recognize the most common symptoms of disease in children, apply diagnostic tests and interpret their results, perform differential diagnosis, implement therapy, monitor the effects of treatment, and assess the indications for specialist consultation, in particular in the case of symptoms such as: 1) fever 2) coughing and expectoration 3) shortness of breath 4) nasal and ear discharge 5) urinary disorders 6) rash 7) anemia 8) eating disorders 9) growth disorders 10) convulsions and consciousness disorders 11) palpitations 12) fainting 13) bone -joint pain 14) edema 15) lymphadenopathy 16) abdominal pain 17) constipation and diarrhea 18) blood in stool 19) dehydration 20) jaundice 21) cyanosis 22) headache 23) red eye syndrome	E.U10., O.U1., O.U3., O.U5., O.U6., O.U7., O.U8., O.U9
Social skills (the student is ready to):		
S1	The graduate is ready to act in the best interests of the patient.	O.K2.
S2	The graduate is prepared to uphold medical confidentiality and patient rights.	O.K3.
S3	The graduate is ready to draw conclusions from their own measurements or observations.	O.K8.
S4	Graduates are prepared to implement the principles of professional collegiality and teamwork, including with representatives of other medical professions, also in a multicultural and multinational environment.	O.K9.
S5	The graduate is prepared to recognize and acknowledge their own limitations, assess their own deficits and educational needs.	O.K5.

3. Programme contents

No.	Programme contents	Form of studies	Learning outcomes covered by the programme content
1	1. Markers in cancer diagnosis Plasma proteins in laboratory diagnostics 2. Enzymatic diagnostics 3. Laboratory diagnostics of water and electrolyte balance disorders Laboratory diagnostics of acid-base balance disorders Laboratory diagnostics of bone metabolism disorders	Lecture	K1, K2

	4. Laboratory diagnostics of atherosclerosis and lipid metabolism disorders Laboratory diagnostics of hormonal disorders 5. Diabetes 6. Laboratory plasma indicators of renal filtration, secretion, and reabsorption 7. Diagnostic value and quality control of laboratory tests 8. Laboratory diagnosis of erythropoiesis disorders Laboratory diagnosis of hematopoietic system proliferative diseases Laboratory diagnosis of hemostasis disorders 9. Laboratory testing of body excretions and secretions Immunological diagnosis of parasitic diseases 10. The role of laboratory diagnostics in disease diagnosis 11. Causes of pre-laboratory errors Diagnostic differences depending on gender and age		
2	1. Urine testing in kidney and urinary tract diseases Laboratory tests in diabetes and renal failure 2. Laboratory diagnosis of acute and chronic inflammation Plasma proteins 3. Laboratory tests in endocrinology Diagnostic significance of peripheral blood morphology Peripheral blood smear – diagnostic value 4. Basic hemostasis tests Electrolytes and acid-base balance 5. Clinical enzymology Laboratory tests of cerebrospinal fluid (CSF) and other body fluids 6. Laboratory diagnostics of the digestive system and parasitic diseases 7. Tumor markers 8. Lipid metabolism 9. Laboratory tests in emergency situations	Exericse, Seminar	K1, K2, A1, A2, S1, S2, S3, S4, S5

4. Methods of verifying and assessing the learning outcomes achieved by the student

Winter semester

Form of studies		
Lecture	**Methods of studies form:**	
	Lecture, Discussion	
	Methods of verification:	**Involvement:**
	Written test	100%
	Conditions for passing the course:	
	Written exam, single-choice test on lecture content. A passing grade on the test is guaranteed by obtaining 60% of the points.	
Exercise	**Methods of studies form:**	
	Laboratory exercise, Discussion, Group work	

	Methods of verification:	**Involvement:**
	Work report	10%
	Colloquium	70%
	Entrance test	10%
	Activity	10%
	Conditions for passing the course:	
	Class participation, completion of assigned laboratory exercises and reports, passing tests and entrance exams A passing grade on the test is guaranteed by receiving 60% of the points	
Seminar	**Methods of studies form:**	
	Case study, Discussion, Group work	
	Methods of verification:	**Involvement:**
	Presentation	70%
	Activity	10%
	Case study	20%
	Conditions for passing the course:	
	Class participation, preparation and presentation of a presentation on a topic given by the teacher	

Learning outcomes	**Methods of verification**						
	Written test	Work report	Activity	Entrance test	Colloquium	Presentation	Case study
K1	X	X	X	X	X	X	x
K2	X	X	X	X	X	X	X
A1	X	X	X	X	X	X	X
A2	X	X	X	X	X	X	X
S1					x	X	X
S2						X	X
S3	X	x	x	x	X	X	X
S4						x	X
S5	x	x	x	x	x	x	X

5. Student workload – balance of hours and ECTS credits

Students activity		**Student workload Number of hours**
Classes conducted with the direct participation of an academic teacher or other persons conducting classes	Lecture	15
	Exercise	30
	Seminar	15
Student's own work	Preparing for classes	10
	Studying literature	10
	Preparing for a test	20
	Preparing a presentation	5
Total student workload		105
ECTS		4

One (teaching) hour is 45 minutes.

6. Literature

The list of required and recommended literature will be provided by the lecturer at the first meeting.