



Educational objectives (max. 6 items)

- C1. Acquisition of the knowledge on the principles of laboratory diagnostics.
- C2. Understanding the basic rules underlying the design of differential diagnosis with respect to chosen common diseases.
- C3. Acquaintance with the basic laboratory tests applied in diagnosis.
- C4. Familiarity with the analysis and interpretation of the results of diagnostic tests.

Education result matrix for module/course in relation to verification methods of the intended education result and the type of class

Number of course education result	Number of major education result	Student who completes the module/course knows/is able to	Methods of verification of intended education results (forming and summarizing)	Form of didactic class <i>**enter the abbreviation</i>
K01	E. W3	<p>Knows the principles of diagnosis of the most common internal diseases in children (with the application of appropriate laboratory tests):</p> <ul style="list-style-type: none"> d) anaemias, haemorrhagic diatheses, cancer diseases e) vomiting, diarrhoea, gastrointestinal bleeding, ulcers, hepatobiliary tract diseases f) urinary tract infections, nephrolithiasis, kidney failure, nephritis. g) growth disturbances, thyroid and parathyroid glands diseases, adrenal gland diseases, diabetes, obesity 	test, report, essay	L, LC
K02	E. W7	<p>Knows the principles of diagnosis of the most common internal diseases in adults (with the application of appropriate laboratory tests), including:</p> <ul style="list-style-type: none"> a) cardiovascular diseases (e.g. myocardial ischemia, cardiac insufficiency) b) respiratory tract diseases, including respiratory failure c) gastrointestinal diseases, including hepatobiliary system dysfunction d) endocrine diseases, including hypothalamus, pituitary, thyroid and parathyroid gland pathologies, dyslipidaemia, metabolic syndrome, diabetes e) urinary tract diseases, including kidney infection f) haematopoietic system diseases, including haemorrhagic diathesis i) acid-base balance disturbances, including acidosis, alkalosis 		



K03	E.W24	Knows the principles of the early diagnosis and screening tests in cancer diseases		
K04	E.W37	Knows types of biological material applied in laboratory diagnostics, and the principles of its uptake for tests procedures.		
K05	E.W38	Knows theoretical and practical basis of laboratory diagnostics.		
K06	E.W39	Knows and understands the options and constraints of laboratory tests in emergency.		
K07	E.W40	Knows indications for the administration of monitoring therapy.		
S 01	E.U12	Performs differential diagnosis of the most common diseases in adults and children.	Observation of the students performance during laboratory classes, and discussion on the obtained results, report,	LC
S 02	E.U14	Recognizes life-threatening states (on the basis of laboratory tests)		
S 03	E.U15	Recognizes the state characteristic for alcohol and drugs of abuse intake (on the basis of laboratory tests results)		
S 04	E.U24	Interprets the results of laboratory tests and identifies the reasons of deviations.		
S 05	E.U29	Is able to conduct simple procedures, including:		
	i)	strip tests and the measurement of glucose concentration in blood		
** L - lecture; SE - seminar; AC – auditorium classes; MC – major classes (non-clinical); CC – clinical classes; LC – laboratory classes; SCM – specialist classes (magister studies); CSC – classes in simulated conditions; FLC – foreign language course; PCP practical classes with patient; PE – physical education (obligatory); VP – vocational practice; SS – self-study, EL – E-learning .				
Please mark on scale 1-5 how the above effects place your classes in the following categories: communication of knowledge, skills or forming attitudes: Knowledge: 5 Skills: 5				
Student's amount of work (balance of ECTS points)				
Student's workload (class participation, activity, preparation, etc.)			Student Workload (h)	
1. Contact hours:			43	
2. Student's own work (self-study):			15	
Total student's workload			58	
ECTS points for module/course			2	
Comments				



Content of classes (please enter topic words of specific classes divided into their didactic form and remember how it is translated to intended educational effects)

Lectures

1. (1h) The proper choice of laboratory investigations in disease. Limitation and interpretation of results.
2. (1h) Laboratory diagnostics of urinary tract diseases, and overall urine analysis.
3. (1h) Laboratory diagnostics associated with disturbances of calcium-phosphate metabolism.
4. (1h) Laboratory diagnostics of electrolyte and acid-base imbalance.
5. (2h) Diagnostic tests applied in cancer diseases.
6. (1h) Laboratory investigation of thyroid disorders.
7. (1h) Laboratory tests for acute myocardial infarction.
8. (1h) Clinical enzymology.
9. (1h) Plasma proteins in pathology.
10. (1h) Laboratory tests applied in the estimation of the secretory function of gastrointestinal tract.
11. (1h) Toxicological diagnostics.
12. (1h) Final test in laboratory diagnostics.

Seminars

- 1.
- 2.
- 3.

Practical classes

1. (3h) Sources of error in laboratory practice.
2. (1h) Application of alkaline phosphatase determination in serum in diagnosis of hepatobiliary diseases and bone diseases.
3. (1h) Diagnostic significance of gamma-glutamyltransferase measurement in serum in hepatobiliary diseases.
4. (3h) Application of aminotransferases determination in diagnosis of liver diseases and myocardial infarction.
5. (1h) Diagnostic tests indicative of iron deficiency and iron overload (quantitative determination of free and bound iron in blood serum).
6. (5h) Basic diagnostic tests applied for the evaluation of lipid metabolism disturbances (including determination of lipids profile and lipid peroxidation level in serum).
7. (5h) Diet in prophylaxis of obesity, metabolic syndrome and diabetes (examination of blood glucose level after administration of foods with different glycemic indices).
8. (4h) Diagnostic analysis of physiological fluids (including urine and cerebrospinal fluids).
9. (4h) Determination of the elements of clotting system.
10. (3h) Assessment of erythrocytes resistance to hemolysis.



Other													
1.													
2.													
3.													
<i>etc. ...</i>													
Basic literature (list according to importance, no more than 3 items)													
1. Geoffrey Beckett, Simon Walker, Peter Rae, Peter Ashby "Lecture Notes: Clinical Biochemistry" 9 th edition, Wiley-Blackwell, 2013, ISBN 978-1-118-71510-9													
2. Handbook of Diagnostic Tests, Lippincott Williams & Wilkins, Third Edition, ISBN 1-58255-203-7													
3. Carl A. Burtis, Edward A. Ashwood "Tietz Fundamentals of Clinical Chemistry"													
Additional literature and other materials (no more than 3 items)													
1. William Marshall, Stephen Bangert „Clinical Chemistry” ISBN 0 7234 3328 3 Elsevier Books													
2. Nancy A. Brunzel "Fundamentals of Urine and Body Fluid Analysis", Third Edition, ISBN 978-1-4377-0989-6, Elsevier													
3. Thomas M. Devlin "Textbook of Biochemistry with clinical correlation"													
Didactic resources requirements (e.g. laboratory, multimedia projector, other...)													
1. Laboratories, lecture halls.													
2. Laboratory utilities; water baths, centrifuges, incubators, spectrophotometers, glassware, pipettes, microscopes.													
3. Multimedia projectors, whiteboards.													
Preliminary conditions (minimum requirements to be met by the student before starting the module/course)													
Students should have the knowledge covering the material in physiology and biochemistry at the level required for the students of Medical Faculty.													
Conditions to receive credit for the course (specify the form, criteria and conditions of receiving credit for classes included in the module/course, admission terms to final theoretical or practical examination, its form and requirements to be met by the student to pass it and criteria for specific grades).													
<p>In order to receive credit for laboratory diagnostics it is compulsory to actively participate in practical classes, properly conduct the experiments designed in the course plan, obtain credit for the laboratories, and receive at least 56% for the final assignment composed of the report and the test.</p> <p>Students' attendance at the classes is compulsory. All of the absences must be made up for in the form of an additional assignment delivered by the teacher. Absences include classes on which the student was absent because of justified reasons as well as rector's days and dean's hours.</p> <p>A credit for all the laboratories as well as a submission of the final report is a prerequisite for participation in the final test in diagnostics (composed of single-choice questions). The report is prepared on the basis of selected results of laboratory tests conducted during the practical classes. The final test comprises theoretical material from lectures and practical classes.</p> <p>Students' achievements during the course are evaluated in accordance with the scale given below:</p>													
<table border="1"> <thead> <tr> <th>Grade:</th> <th>Criteria for course</th> </tr> </thead> <tbody> <tr> <td>Very Good (5.0)</td> <td>92 – 100%</td> </tr> <tr> <td>Good Plus (4.5)</td> <td>83 – 91%</td> </tr> <tr> <td>Good (4.0)</td> <td>74 – 82%</td> </tr> <tr> <td>Satisfactory Plus (3.5)</td> <td>65 – 73%</td> </tr> <tr> <td>Satisfactory (3.0)</td> <td>56 – 64%</td> </tr> </tbody> </table>		Grade:	Criteria for course	Very Good (5.0)	92 – 100%	Good Plus (4.5)	83 – 91%	Good (4.0)	74 – 82%	Satisfactory Plus (3.5)	65 – 73%	Satisfactory (3.0)	56 – 64%
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Satisfactory (3.0)	56 – 64%												



Name of unit teaching course:	Department of Medical Biochemistry
Address	Chałubińskiego 10, 50-368 Wrocław
Phone	784-13-70
E-mail	e-mail: w1-4@umed.wroc.pl

Person responsible for course:	Dr Izabela Berdowska
Phone	784 13 92
E-mail	izabela.berdowska@umed.wroc.pl

<i>List of persons conducting specific classes:</i>	<i>degree/scientific or professional title</i>	<i>Discipline</i>	<i>Performed profession</i>	<i>Form of classes</i>
Iwona Bednarz-Misa	Doctor of Medical Sciences, specialist in medical laboratory diagnostics	Medical biology	Academic teacher (adjunct), laboratory diagnostician, biochemist	Laboratories, lectures
Izabela Berdowska	Doctor of Medical Sciences	Medical biology	Academic teacher (adjunct), biochemist	Laboratories, lectures
Agnieszka Bronowicka-Szydełko	Doctor of Medical Sciences	Medical biology	Academic teacher (adjunct), laboratory diagnostician, biochemist	Laboratories
Ireneusz Ceremuga	Doctor of Medical Sciences	Medical biology	Academic teacher (senior lecturer) laboratory diagnostician, biochemist	Laboratories
Małgorzata Krzystek-Korpaczka	Doctor hab. of Medical Sciences	Medical biology	Academic teacher (adjunct), biochemist	Laboratories
Krzysztof Matusiewicz	Doctor of Medical Sciences	Medicine	Academic teacher (adjunct), medical doctor	Laboratories, lectures
Małgorzata Matusiewicz	Doctor of Medical Sciences	Medical biology	Academic teacher (senior lecturer) biochemist	Laboratories, lectures
Magdalena Mierzchała-Pasierb	Doctor of Medical Sciences	Medical biology	Academic teacher (adjunct), biochemist	Laboratories
Paweł Serek	Doctor of Medical Sciences	Medical biology	Academic teacher (assistant) laboratory diagnostician,	Laboratories



Ewa Seweryn	Doctor of Medical Sciences	Medical biology	Academic teacher (adjunct), biochemist	Laboratories
Bogdan Zieliński	Doctor of Medical Sciences	Medical biology	Academic teacher (adjunct), biochemist	Laboratories

Date of Syllabus development

15.07.2018

Syllabus developed by

Dr Izabela Berdowska

Signature of Head of teaching unit

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Signature of Faculty Dean

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FACULTY OF MEDICINE
VICE-DEAN FOR STUDIES IN ENGLISH

Prof. Andrzej Hendrich, PhD

