



Medical University of Warsaw
Faculty of Medicine - English Division
61 Żwirki i Wigury Street
02-091 Warsaw, Poland

[http: // www.wum.edu.pl/](http://www.wum.edu.pl/)

2nd YEAR CURRICULUM

6-year program

Academic year: 2026/2027

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Faculty of Medicine – Professor Paweł Włodarski MD, PhD

English Division – Faculty of Medicine – Assoc. Prof. Jacek Sieńko, MD, PhD.

DEAN’S OFFICE

Head of the Dean’s Office – Krystyna Jarzab, MA

Student Administration Officer (1st, 2nd and 3rd - Year) – Aleksandra Chilecka

Student Administration Officer (4th, 5th, 6th - Year) – Dominka Renik, MA and Patrycja Karpińska, MA

STUDENT GOVERNMENT REPRESENTATIVES:

President – Alexis Vourtsis

YEAR REPRESENTATIVE:

Vice President, Head of Academic Affairs – Alexander Steiner

Jad Alhoutari – 2 year

Vice President, Head of Student Affairs – Sylvie Marie Régine Etienne

Head of Communications and Administrative Management – Maria Kienitz

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SCHEDULE – ACADEMIC YEAR 2026/2027

6-year program

WINTER SEMESTER – 01.10.2026 – 21.02.2027

STUDENT'S ACADEMIC CLASSES: 01.10.2026 – 20.12.2026

04.01.2027 – 31.01.2027

WINTER HOLIDAYS: 21.12.2026 – 03.01.2027

EXAM SESSION: 01.02.2027 – 07.02.2027

DAYS OFF BETWEEN SEMESTER: 08.02.2027 – 14.02.2027

RETAKE EXAM SESSION: 15.02.2027 – 21.02.2027

SUMMER SEMESTER – 22.02.2026 – 30.09.2027

STUDENT'S ACADEMIC CLASSES: 22.02.2027 – 24.03.2027

01.04.2027 – 13.06.2027

EASTER HOLIDAYS: 25.03.2027 – 31.03.2027

DAYS OFF BEFORE EXAM SESSION: 14.06.2027 – 20.06.2027

EXAM SESSION: 21.06.2027 – 11.07.2027

SUMMER HOLIDAYS: 12.07.2027 – 30.09.2027

RETAKE EXAM SESSION: 30.08.2027 – 12.09.2027

*Announcement no. 90/2026 of the Rector of the Medical University of Warsaw
of April 13, 2026*

Curriculum of the 2nd year of 6-year 2026/2027 ED program and the list of contents

2nd year

page	subject	form of credit	semester	Total no of hours	including				ECTS
					lecture	seminar	class	practical	
5	Biochemistry with Elements of Chemistry	exam	1&2	180	30	65	85		17
13	Physiology with Pathophysiology	exam	1&2	220	40	99	84		19
28	Immunology	exam	2	40	15	25			3
33	Polish for Medicine	credit	1&2	60			60		5
39	Genetics	credit	2	25		8	17		2
44	Parasitology	exam	1	35		10	25		2
49	Medical Communication	credit	2	35	15	8	12		2
54	Hygiene and Epidemiology	credit	1	30		10	20		2
60	Research Methodology	credit	1	35	5	15	15		2
-	Optional course	credit	1&2	90		90			6
66	Vocational Training - Emergency medical care, family medicine	credit	2	120				120	4
				870	105	330	318	120	64



Biochemistry with elements of chemistry

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Exam after IV semester
Educational Unit / Educational Units	Chair and Department of Biochemistry, Faculty of Medicine 02-097 Warsaw, ul. Banacha 1 Phone: +48 (22) 57 20 693 e-mail: biochemia@wum.edu.pl https://biochemia.wum.edu.pl
Head of Educational Unit / Heads of Educational Units	Professor Marta Struga, MSc, PhD
Course coordinator	Professor Marta Struga, MSc, PhD; marta.struga@wum.edu.pl Phone: +48 (22) 57 20 693
Person responsible for syllabus	Ewa Usarek, PhD; ewa.usarek@wum.edu.pl
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	Dagmara Otto-Ślusarczyk, PhD; dagmara.otto@wum.edu.pl Michał Skrzycki, PhD; michal.skrzycki@wum.edu.pl Karolina Soroczyńska. MSc; karolina.soroczynska@wum.edu.pl Jolanta Szymańska-Majchrzak, PhD; jolanta.szymanska@wum.edu.pl Ewa Usarek, PhD; ewa.usarek@wum.edu.pl Barbara Żyżyńska-Granica, PhD; barbara.zyzynska@wum.edu.pl
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2. BASIC INFORMATION

Year and semester of studies	Year 1, Semesters 1 and 2 (winter and summer)	Number of ECTS credits	17.00
FORMS OF CLASSES	Number of hours	ECTS credits calculation	
Contacting hours with academic teacher			
Lecture (L)	30	1,2	
Seminar (S)	65	2,6	
Classes (C)	85	3,4	
e-learning (e-L)			
Practical classes (PC)			
Work placement (WP)			
Unassisted student's work			
Preparation for classes and completions	245	9,8	

3. COURSE OBJECTIVES

O1	To develop a solid understanding of the structures, properties, and metabolism of substances present in the body: proteins, carbohydrates, lipids, nucleic acids, vitamins, hormones; control and integration of metabolic pathways
O2	To give insight into understanding how metabolic processes can contribute to an explanation of pathological phenomena.
O3	To give the students experience in biochemical methodology to appreciate the clinical biochemistry techniques as diagnostic tools and to be able to interpret the results for appropriate diagnosis and follow up of patients.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING

Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)</i>
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Knowledge – Graduate* knows and understands:

G.K1	B.W1. water and electrolyte management in biological systems;
G.K2	B.W2. acid-base balance and the mechanism of action of buffers and their importance in body homeostasis;
G.K3	B.W3. the concepts of solubility, osmotic pressure, isotonicity, colloidal solutions and Gibbs-Donnan equilibrium;
G.K4	B.W9. the structure of lipids and polysaccharides and their functions in cellular and extracellular structures;
G.K5	B.W10. I-, II-, III- and IV-order structures of proteins and post-translational and functional modifications of proteins and their significance;
G.K6	B.W11. the function of nucleotides in the cell, the I- and II-strand structures of DNA and RNA and the structure of chromatin;
G.K7	B.W12. functions of the human genome, transcriptome and proteome and the methods used to study them, the processes of DNA replication, repair and recombination, transcription and translation and degradation of DNA, RNA and proteins, and the concepts of regulation of gene expression;
G.K8	B.W13. basic catabolic and anabolic pathways, how they are regulated and how they are influenced by genetic and environmental factors;
G.K9	B.W14. basic methods used in laboratory diagnostics, including protein and nucleic acid electrophoresis;
G.K10	B.W15. organ metabolism and the metabolic, biochemical and molecular basis of disease and therapy;
G.K11	B.W16. ways of communication between cells and between the cell and the extracellular matrix and signal transduction pathways in the cell, and examples of disruption of these processes leading to cancer and other diseases;
G.K12	B.W19. basics of excitation and conduction in the nervous system and higher nervous functions, as well as striated and smooth muscle physiology;
G.K13	B.W20. the function and regulation mechanisms of all organs and systems of the human body and the relationship between them;
G.K14	B.W26. principles of research for the advancement of medicine.

Skills– Graduate* is able to:

G.S1	B.U3. calculate the molar and percentage concentrations of compounds and the concentrations of substances in iso-osmotic, mono- and multi-component solutions;
G.S2	B.U4. calculate the solubility of inorganic compounds, identify the chemical basis of the solubility or the lack of the solubility of organic compounds and their practical relevance to dietetics and therapeutics;
G.S3	B.U5. determine the pH of a solution and the effect of pH changes on inorganic and organic compounds;
G.S4	B.U6. predict the direction of biochemical processes in relation to the energy status of cells;

G.S5	B.U8. use medical databases and correctly interpret the information they contain to solve problems in basic and clinical sciences;
G.S6	B.U11. plan and carry out scientific research and interpret the results and formulate conclusions;
G.S7	B.U12. use basic laboratory and molecular techniques.

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (non-compulsory)	
Number of effect of learning	Effects in the fields of:
Knowledge – Graduate knows and understands:	
K1	
K2	
Skills– Graduate is able to:	
S1	
S2	
Social Competencies – Graduate is ready for:	
SC1	
SC2	

6. CLASSES		
Form of class	Class contents	Effects of Learning
Lecture	1. Water and electrolyte balance in biological system.	G.K1; G.K3;
	2. Basic reactions of inorganic compounds in water solutions. Mechanism of buffer action and their importance in organism homeostasis.	G.K1; G.K2; G.K3; G.S2; G.S3;
	3. Characterization of main groups of organic compounds. Isomerism.	G.K4;
	4. Proteins.	G.K5; G.K7;
	5. Enzymes.	G.K8; G.K14;
	6. Nucleic acids structure, DNA replication. Expression of genetic information: transcription, translation.	G.K5; G.K6; G.K7;
	7. Tissue oxidation.	G.K8;
	8. Carbohydrate metabolism.	G.K4; G.K8; G.K10; G.K14;
	9. Lipid metabolism.	G.K4; G.K8; G.K10; G.K14;

	10. Protein turnover, ureogenesis. Amino acids metabolism.	G.K8; G.K10; G.K14;
	11. Metabolism of purine and pyrimidine nucleotides.	G.K6; G.K8; G.K10; G.K14;
	12. Blood.	G.K2; G.K10;
	13. Vitamins and hormones.	G.K8; G.K10; G.K11;
	14. Biochemical functions of the liver, brain, muscles, and kidney.	G.K2; G.K8; G.K10; G.K12, G.K13;
	15. Biotransformation. Metabolism of ethanol.	G.K8; G.K10;
Seminar	1. Chemical calculations (concentrations).	G.K1; G.S1;
	2. Biochemical calculations (buffers).	G.K1; G.K2; G.K3; G.S1; G.S2; G.S3;
	3. Analysis of organic compounds and inorganic ions.	G.K3; G.K4; G.S2;
	4. Proteins.	G.K5; G.K7;
	5. Enzymes.	G.K8; G.K14; G.S4;
	6. Nucleic acids.	G.K5; G.K6; G.K7;
	7. Tissue oxidation.	G.K8; G.S4;
	8. Carbohydrate metabolism, part 1.	G.K4; G.K8; G.K10; G.K14; G.S4;
	9. Carbohydrate metabolism, part 2.	G.K4; G.K8; G.K10; G.K14; G.S4;
	10. Lipid metabolism, part 1.	G.K4; G.K8; G.K10; G.K14; G.S4;
	11. Lipid metabolism, part 2.	G.K4; G.K8; G.K10; G.K14; G.S4;
	12. Protein turnover, ureogenesis.	G.K8; G.K10; G.K14; G.S4;
	13. Amino acids metabolism.	G.K8; G.K10;
	14. Metabolism of purine and pyrimidine nucleotides.	G.K6; G.K8; G.K10; G.K14;
	15. Blood.	G.K2; G.K10;
	16. Vitamins and hormones.	G.K8; G.K10; G.K11;
	17. Biochemical functions of the liver.	G.K8; G.K10; G.K13; G.S4;
	18. Biochemical functions of the brain, muscles, and kidney.	G.K2; G.K8; G.K10; G.K12, G.K13; G.S4;
	19. Clinical cases, part 1.	G.K8; G.K10; G.K13; G.K14; G.S5;
	20. Clinical cases, part 2.	G.K8; G.K10; G.K13; G.K14; G.S5;
Classes	1. Basic laboratory techniques.	G.K9; G.S1; G.S6; G.S7;
	2. Acid – base balance in organism, buffers.	G.K1; G.K2; G.S1; G.S3; G.S6; G.S7;
	3. Qualitative analysis of organic compound.	G.K4; G.S6; G.S7;
	4. Amino acids and proteins.	G.K5; G.S6; G.S7;
	5. Proteins, properties and methods of separation.	G.K5; G.K7; G.K9; G.S6; G.S7;
	6. Enzymes.	G.K8; G.K9; G.S4; G.S6; G.S7;

	7. Enzymes - kinetics.	G.K8; G.S6; G.S7;
	8. Nucleic acids.	G.K6; G.K7; G.K9; G.S6; G.S7;
	9. Carbohydrates - chemical properties.	G.K4; G.S6; G.S7;
	10. Carbohydrates – biochemical properties.	G.K4; G.K9; G.K10; G.K14; G.S6; G.S7;
	11. Lipids.	G.K4; G.K9; G.K10; G.K14; G.S6; G.S7;
	12. Digestive enzymes.	G.K10; G.S6; G.S7;
	13. Blood constituents.	G.K9; G.K10; G.K14; G.S6; G.S7;
	14. Diagnostic enzymes.	G.K9; G.K10; G.K14; G.S6; G.S7;
	15. Urine constituents.	G.K2; G.K9; G.K10; G.K14; G.S6; G.S7;
	16. Biochemistry all around us.	G.K4; G.K9; G.K14; G.S6; G.S7;

7. LITERATURE
Obligatory
1. General Chemistry with Qualitative Analysis – Whitten, Davis, Peck, VI ed., Saunders College Publishing. 2. Introduction to Organic Chemistry – Brown, W.H. Saunders College Publishing. 3. Biochemistry Lippincott's Illustrated Reviews, D.R. Ferrier (R.A. Harvey ed.), Wolters Kluwer, Lippincott, Williams & Wilkins. 4. Harpers' biochemistry, R.K. Murray, D.K. Granner, P.A. Mayers, V.W. Rodwell, Appleton & Lange.
Supplementary
1. An Introduction to Medicinal Chemistry, L.P. Graham, Oxford University Press. 2. Biochemistry. L. Stryer, W.H. Freeman & Company, New York. 3. Principles of Medical Biochemistry, G. Meisenberg, W.H. Simmons, Elsevier. 4. Medical Biochemistry, J.W. Baynes, M.H. Dominiczak, Elsevier. 5. Textbook of Biochemistry with clinical correlations, T.M. Devlin, Willey-Liss, Inc.

8. VERIFYING THE EFFECT OF LEARNING		
Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
G.K1; G.K2; G.K3; G.K4; G.K5; G.K6; G.K7; G.K8; G.K9; G.K10; G.K11; G.K12; G.K13; G.S1; G.S2; G.S3; G.S4; G.S5;	Continuous assessment during seminars – weekly tests	At least 60% of points
	Active discussion during seminars	Credit by the teacher
	Intermediate assessment tests (3 tests, 50 questions each, test questions with one correct answer) Final exam format: test consisting of 100 single-best-answer multiple-choice questions. Students are entitled to three examination attempts, of which the second and third are resit attempts. All examination attempts, including the resit examinations, are conducted in the same test format in a computer laboratory.	At least 55% of points

G.K1; G.K2; G.K3; G.K4; G.K5; G.K6; G.K7; G.K8; G.K9; G.K10; G.K12; G.K13; G.S1; G.S3; G.S6; G.S7;	Continuous assessment during laboratory classes – weekly tests	At least 60% of points
	Written laboratory reports	Credit by the teacher

9. ADDITIONAL INFORMATION

Biochemistry course coordinator: Ewa Usarek ewa.usarek@wum.edu.pl

Practical laboratory classes are held in the laboratory of the Biochemistry Department (Banacha St. 1, the building of the Faculty of Pharmacy, block I, the 1st floor).

Detailed schedules, updates, information, and useful files will be available on the e-learning platform from the beginning of October.

The Student is obligated to:

- attend all lectures, laboratory classes, and seminars (attendance list); being late for over 15 minutes is considered as an absence
- be prepared and participate in discussions during seminars and laboratory classes
- use university e-mail addresses s0xxxxx@student.wum.edu.pl

The Student must not:

- to copy lab reports, assignments, test or exam answers
- to allow someone else to copy another Student's report/assignments/test/exam
- to use electronic devices during the test or exam

Any violation of academic integrity, including the above, will be reported to the Dean's Office and may result in disciplinary proceedings in accordance with the University's regulations.

The student is entitled to two excused absences (in both semesters), provided they are supported by written confirmation. A student may make up a missed class by attending the corresponding class with another group, subject to prior approval from the course coordinator. Absences due to illness will only be excused with a medical certificate. The student must notify the course coordinator within three business days and submit a scanned copy of the medical certificate within seven business days from the date of its issuance. Documents submitted after this deadline will not be accepted.

Unexcused absences from classes are not permitted and may result in failure of the entire biochemistry course.

Unexcused absence from any intermediate assessment or the final exam will result in automatic failure.

Students can receive credit for the course and take the final exam if they successfully complete the laboratory classes, seminars, and all three assessment tests. Students who do not receive credit for the seminars or laboratory classes, fail one or more assessment tests, or fail the final exam are allowed two retake attempts.

For the second resit assessment or the second resit examination, a student may apply to the Dean for permission to have an observer appointed by the Student Government participate in the assessment or examination. The Dean may grant permission for a board examination or a board assessment if the student submits justified objections regarding the conduct of the examination or assessment. A board examination or board assessment is an extraordinary procedure and may not be regarded as an additional examination or assessment attempt.

Grading:

- 0 - 54 % - 2.0
- 55 - 63 % - 3.0
- 64 - 73 % - 3.5
- 74 - 83 % - 4.0
- 84 - 92 % - 4.5
- 93 - 100 % - 5.0

The final grade may be increased by additional points based on good performance in the intermediate tests, provided that all intermediate tests were passed on the first attempt.

- the average grade 4.75-5.00: 5 points

- the average grade 4.50-4.74: 3 points
- the average grade 4.25-4.49: 2 points

Students may join the Biochemistry Science Club “Explore”. To join the Club, students must successfully complete the Biochemistry course and pass the final examination. The person responsible is Barbara Żyżyńska-Granica, barbara.zyzynska@wum.edu.pl

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ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers



Physiology with pathophysiology

1. IMPRINT

Academic Year	2026/2027
Faculty	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical Sciences
Study Profile	general academic
Level of studies	uniform MSc
Form of studies	Full time studies
Type of module / course	obligatory
Form of verification of learning outcomes	exam
Educational Unit / Educational Units	Chair and Department of Experimental and Clinical Physiology (1MA) ul. Banacha 1b, 02-097 Warszawa e-mail: fiziologia@wum.edu.pl
Head of Educational Unit / Heads of Educational Units	Agnieszka Cudnoch-Jędrzejewska, MD, PhD, Professor
Course coordinator	Assoc. Prof. Kaja Kasarełto, PhD, e-mail: kaja.kasarello@wum.edu.pl Michał Kowara, MD, PhD, e-mail: michal.kowara@wum.edu.pl
Person responsible for the syllabus	Assoc. Prof. Kaja Kasarełto, PhD, e-mail: kaja.kasarello@wum.edu.pl Michał Kowara, MD, PhD, e-mail: michal.kowara@wum.edu.pl
Teachers	Agnieszka Cudnoch-Jędrzejewska, MD, PhD, Professor; Paweł Zalewski, PhD, Professor; Katarzyna Kamińska, PhD; Kaja Kasarełto, PhD; Michał Kowara, MD, PhD; Longin Niemczyk, MD, PhD; Katarzyna Romanowska-Próchnicka, MD, PhD; Ewa Sikorska, MD, PhD; Aleksandra Stangret, PhD; Mateusz Szudzik, PhD; Małgorzata Wojciechowska, MD, PhD; Agnieszka Wsół, MD, PhD; Tymoteusz Żera, MD, PhD;

2. BASIC INFORMATION

Year and semester of studies	2nd year – 3rd and 4th semesters	Number of ECTS credits	19.00
FORMS OF CLASSES		Number of hours	ECTS credits calculation
hours with an academic teacher			
Lecture (L)		40	1.6
Seminar (S)		99	4
Classes (C)		81	3.4
e-learning (e-L)		-	-
Practical classes (PC)		-	-
Work placement (WP)		-	-
Unassisted student’s work			
Preparation for classes and completions		255	10

3. COURSE OBJECTIVES

O1	The aim of teaching physiology is to provide students with an understanding of the mechanisms that ensure the normal functioning of the human body. It also seeks to develop their ability to integrate physiological processes and to view individual organs and systems as interdependent components of the organism as a whole. In addition, physiology teaching aims to explain the mechanisms responsible for the integration and coordination of organ functions, as well as the adaptive responses of the human body to the physiological challenges of everyday life and to extreme conditions.
O2	The aim of teaching pathophysiology is to enable students to understand the changes that occur in the body under the influence of pathogenic factors and the causes and mechanisms underlying these changes.
O3	The physiology and pathophysiology curriculum is aligned with the translational medicine curriculum. It provides a foundation for the comprehensive and critical analysis and understanding of symptoms and disease mechanisms, as well as for appropriate preventive, therapeutic, and rehabilitative management in subsequent clinical practice.

4. LEARNING STANDARDS – DETAILED LEARNING OUTCOMES

Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)</i>
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Knowledge – Graduate* knows and understands:

B.W1	Water and electrolyte balance in biological systems.
B.W2	Acid–base balance, the mechanisms of buffer systems, and their role in maintaining homeostasis.
B.W3	The concepts of solubility, osmotic pressure, isotonicity, colloidal solutions, and the Gibbs–Donnan equilibrium.
B.W4	The physical laws governing fluid flow and the factors affecting vascular resistance and blood flow.
B.W6	The physicochemical and molecular basis of the function of the sensory organs.
B.W13	The major catabolic and anabolic metabolic pathways, their regulation, and the influence of genetic and environmental factors on these pathways.
B.W15	Metabolic processes occurring in individual organs, as well as the metabolic, biochemical, and molecular basis of diseases and their treatment.
B.W16	Mechanisms of communication between cells and between cells and the extracellular matrix, intracellular signal transduction pathways, and examples of disorders of these processes leading to cancer and other diseases.
B.W17	Cell cycle, proliferation, differentiation, cellular aging (senescence), apoptosis, and necrosis, and their significance for the functioning of the organism.
B.W19	The mechanisms of excitation and conduction in the nervous system, higher nervous functions, and the physiology of skeletal and smooth muscles.
B.W20	The function and regulatory mechanisms of all organs and organ systems in the human body, as well as the interrelationships among them.
B.W21	The processes associated with aging and age-related changes in organ function.
B.W22	The basic quantitative parameters describing the functional capacity of organs and organ systems, including normal reference ranges and demographic factors influencing these values.
C.W4	The genetic basis of human blood groups and Rh incompatibility (Rh isoimmunization).
C.W24	The etiology, mechanisms, and consequences of hemodynamic disorders.
C.W25	Organ pathology, macroscopic and microscopic pathological changes, their clinical consequences, and pathological terminology.
C.W26	The pathogenesis of diseases, including their genetic and environmental determinants.
C.W27	The pathomechanisms and clinical manifestations of the most common diseases affecting individual organs and systems, metabolic diseases, and disorders of water–electrolyte, hormonal, and acid–base balance.
C.W36	The clinical manifestations of the most common acute poisonings caused by selected groups of drugs, alcohols, psychoactive substances, mushrooms, and heavy metals.
C.W38	The effects of oxidative stress on cells and its role in the pathogenesis of diseases and the aging process.
C.W39	The consequences of vitamin and mineral deficiencies and excesses.
C.W40	The causes and consequences of improper nutrition, including long-term undernutrition, overnutrition, unbalanced diets, and disorders of digestion and nutrient absorption.
D.W4	The concept of stress, including eustress and distress, the impact of stress on the etiopathogenesis and course of somatic diseases and mental disorders, and mechanisms of coping with stress.

E.W7	The environmental and epidemiological determinants, causes, symptoms, principles of diagnosis, and therapeutic management of the most common internal medicine diseases in adults and their complications.
E.W16	The environmental and epidemiological determinants, causes, symptoms, principles of diagnosis, and therapeutic management of the most common neurological diseases and their complications.
F.W15	Female reproductive functions, disorders affecting them, and the principles of diagnostic evaluation and therapeutic management.
F.W16	Male reproductive functions, disorders affecting them, and the principles of diagnostic evaluation and therapeutic management.

Skills – Graduate* is able to:

B.U1	Apply knowledge of the laws of physics to explain the effects of external factors, such as temperature, acceleration, pressure, electromagnetic fields, and ionizing radiation, on the human body.
B.U7	Perform simple functional tests to assess the human body as a stable regulatory system (challenge tests and exercise tests) and interpret numerical data on basic physiological variables.
C.U7	Correlate patterns of tissue and organ damage with the clinical manifestations of disease, the patient's medical history, and laboratory test results in order to establish the diagnosis of the most common diseases in adults and children.

**The Annex to the Regulation of the Minister of Science and Higher Education of 29 September 2023 refers to a 'graduate', not a 'student'.*

5. ADDITIONAL LEARNING OUTCOMES (OPTIONAL)

Learning outcome number	Learning outcomes in the following areas:
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Knowledge – Graduate knows and understands:

K1	the concept of a thesis, the difference between a law, a theory, and a hypothesis, and the strengths and weaknesses of hypotheses.
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Skills – Graduate is able to:

S1	Predict physiological responses in different situations.
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Social competencies – Graduate is ready to:

SC1	Engage in constructive discussion of scientific theories or hypotheses.
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6. CLASSES

Form of class	Class contents	Learning outcomes
Seminar and class	Block I. Week 1: Cell physiology. Extracellular and intracellular fluid composition. Transport of substances across cell membranes: functional properties of the cell membrane, diffusion, and active transport across the membrane. Ion channel function and classification. Donnan equilibrium. Generation of the resting membrane potential. Equilibrium potential for potassium ions. Characteristics of the potassium channels responsible for the resting membrane potential. Threshold potential. Generation of the action potential. Equilibrium potential for sodium ions. Characteristics	B.W3, B.W20, B.W22, B.U1, B.W13, B.W16, B.W17

	of the channels involved in the different phases of the action potential. Differences between resting and action potentials in excitable cells. Channelopathies (Bartter syndrome, Brugada syndrome, cystic fibrosis, long- and short-QT syndromes, malignant hyperthermia, migraine, and myasthenia gravis).	
Seminar and class	Block I. Week 2: Neuron physiology. Neurotransmitter systems of the brain. Neuron physiology. The neuron and its properties. Functional and structural classification of neurons. Definitions of the terms stimulus, excitability, and nerve impulse. Structure of peripheral nerves and the types and characteristics of nerve fibers. Classification of nerve fibers. Mechanisms of impulse conduction along nerve fibers. Continuous and saltatory conduction. Factors affecting conduction velocity along a nerve fiber. Characteristics and functions of dendrites. Classification of electrical and chemical synapses. Mechanism of neurotransmitter release: the vesicle cycle. Synaptic plasticity and factors regulating synaptogenesis. Nerve regeneration. Neurotransmitter systems of the brain. Acetylcholine, catecholamines, serotonin, and excitatory and inhibitory amino acids. Location of neurons that produce each type of neurotransmitter. Projections of these neurotransmitter systems in the central nervous system. Cotransmitters. Pre- and postsynaptic receptors. Role of neurotransmitters in the regulation of physiological processes. Effects of psychoactive substances on neurotransmitter pathways.	B.W19, B.W20, B.W22, C.W36, C.W39
Seminar and class	Block I. Week 3: The autonomic nervous system. Physiology of smooth, skeletal, and cardiac muscle cells. The autonomic nervous system General organization of the autonomic nervous system. Neurotransmitters and autonomic ganglia. Basic characteristics of sympathetic and parasympathetic function. Selective activation of target organs and mass activation by the sympathetic division. Effects of the autonomic nervous system on various tissues and organs. Poisoning with atropine, muscarine, and organophosphorus compounds. Horner syndrome. Physiology of smooth, skeletal, and cardiac muscle cells. Functional anatomy of skeletal muscle. Cellular and molecular mechanisms of muscle contraction. Energetics of muscle contraction. Characteristics of whole-muscle contraction. The neuromuscular junction and transmission of impulses from nerve terminals to skeletal muscle fibers. Muscle action potentials. Excitation-contraction coupling. Smooth muscle contraction. Regulation of contraction by calcium ions. Nervous and hormonal control of smooth muscle contraction. Physiology of cardiac muscle.	B.W19, B.W20, B.W22, B.U7, C.W36, C.W39
Seminar and class	Block I. Week 4: Physiology of the motor system – Part II. Motor control at the level of the spinal cord, cerebral cortex, brainstem, basal ganglia, and cerebellum. Organization of the spinal cord for motor control. Sensory receptors in skeletal muscles– muscle spindles and Golgi tendon organs – and their roles in muscle control. Flexor and withdrawal reflexes. Crossed extensor reflex. Reciprocal inhibition and reciprocal innervation. Postural and locomotor reflexes. Motor cortex and corticospinal tract.	B.W20, B.W22, B.U7

	Control of motor function by the brainstem. Vestibular sensation and the maintenance of equilibrium. Motor functions of the cerebellum and basal ganglia. Integration of the components of the motor control system.	
Seminar and class	Block I. Week 5: Pathophysiology of the motor system. Pre- and postsynaptic disorders of the neuromuscular junction (myasthenia gravis, Lambert-Eaton syndrome, and botulism). Myopathies. Channelopathies of striated muscle. Multiple sclerosis. Pyramidal tract lesions. Pathophysiology of selected disorders of the extrapyramidal system: Parkinson's disease, Huntington's disease, hemiballismus, essential tremor, and cerebellar ataxia. Decerebrate rigidity. Pathological nystagmus. Motion sickness.	B.W20, B.W22, B.U7, C.W25, C.W26, C.W27, C.U7, E.W16
Seminar and class	Block I. Week 6: Physiology and pathophysiology of the sensory systems. Physiological and pathological pain. Sensory systems: types of sensory receptors and the stimuli they detect. Transduction of sensory stimuli into electrical signals. Coding of stimulus intensity in neural pathways through spatial and temporal summation. Classification of somatic senses. Detection and transmission of tactile sensations. Sensory pathways carrying somatic signals to the central nervous system. Transmission through in the dorsal column-medial lemniscal system and the anterolateral pathway. Lesions of the somatosensory cortex. Disorders of sensory integration. Autism spectrum disorder. Pain: Characteristics of fast and slow pain. Pain receptors and their stimulation. Dual pathways for the transmission of pain signals to the central nervous system. Pain suppression (analgesia) system in the brain and spinal cord. Referred pain. Visceral pain. Thermal sensations. Practical aspects: pathological pain and principles of pain management, including the analgesic ladder and the use of opioids in acute and chronic pain.	B.W20, B.W22, B.U7
Seminar and class	Block I. Week 7: Physiology and pathophysiology of the sensory systems: vision, hearing, taste, and smell. Vision: physical principles of optics. Optics of the eye. Intraocular fluids. Anatomy and function of retinal structures. Photochemistry of vision. Color vision. Adaptation to light and darkness. The visual field and stereoscopic vision. Neural function of the retina. Visual pathways. Organization and function of the visual cortex. Eye movements and their control. Autonomic control of accommodation and pupillary diameter. Refractive errors of the eye – myopia (nearsightedness), hyperopia (farsightedness), and astigmatism. Strabismus. Cataracts. Glaucoma. Retinal detachment. Night blindness. Color blindness. Hearing: tympanic membrane and ossicular system. The cochlea and organ of Corti. Endolymph and perilymph. Conversion of acoustic waves into electrical impulses. Central auditory mechanisms.	B.W6, B.W20, B.W22, B.U7, C.W25, C.W26, C.W27, C.U7

	Vestibular sensation and maintenance of equilibrium. Basic audiological assessment: hearing tests. Conductive and sensorineural hearing loss. Hearing aids and cochlear implants. Taste and smell: the senses of taste and smell. Receptor cells. Transmission pathways. Gustatory and olfactory centers.	
Seminar and class at the Simulation Center	Block I. Week 8: Cerebral cortex and higher intellectual functions. Learning and memory. Limbic system. Behavior. Sleep. The brain's bioelectrical activity (EEG). Pathophysiology: sleep disorders, amnesia, dementia, mood disorders, and psychosis. Characteristics of the limbic system. Function of the prefrontal cortex. Innate behavior: unconditioned reflexes, instincts, imprinting, and drives. Adaptive behavior (classical and instrumental conditioning). Reward system. Definition of learning and memory. Classification and types of memory. Anatomy of memory. Long-term potentiation and long-term depression. Retrograde and anterograde amnesia. Effects of damage to the prefrontal cortex, hippocampus, surrounding temporal lobes, and amygdala. Dementia syndromes (Alzheimer's disease, vascular dementia, and Lewy body dementia). Sleep. The role of the reticular formation in regulating sleep and wakefulness. Examination of cerebral bioelectrical activity by electroencephalography (EEG). Stages of sleep in humans. Characteristics and physiological significance of REM and NREM sleep. Disturbances of biological rhythms: jet lag. Sleep deprivation, narcolepsy, and somnambulism. EEG abnormalities. Types of epilepsy.	B.W20, B.W22, E.W16
Seminar and class	Block I. Week 9: Summary seminar – students' oral presentations.	
Seminar and class	Block II. Week 10: Physiology and pathophysiology of blood. Blood composition. Blood proteins and their functions. Role of erythropoietin in the regulation of erythropoiesis. Structure and functions of erythrocytes. Classification of leukocytes. Functions of platelets. Iron metabolism. Hemoglobin: types and properties; the oxyhemoglobin dissociation curve. Transport of oxygen and carbon dioxide in the blood. ABO and Rh blood group systems. Basic diagnostic tests: erythrocyte sedimentation rate (ESR), hematocrit, and erythrocyte osmotic fragility. Red blood cell disorders: anemias and polycythemias. Hemoglobinopathies. White blood cell abnormalities: leukocytosis and leukopenia. Serological incompatibilities in the major blood group systems.	B.W20, B.W22, B.U1, C.W4, C.W25, C.W26, C.W27, C.W39, C.W40, C.U7, E.W7
Seminar and class	Block II. Week 11: Physiology of the cardiovascular system – Part I. Cardiac muscle: the heart as a pump and the function of the heart valves. Rhythmic excitation of the heart. Cardiac output. Overview of the circulation. Cardiac cycle. Cardiac conduction system. Control of excitation and conduction in the heart. Physical characteristics of the circulation. Normal cardiac output at rest and during physical activity. Control of cardiac output by venous	B.W4, B.W20, B.W22, B.U1,

	return: the Frank-Starling mechanism. Key hemodynamic parameters of cardiac function: : end-diastolic and end-systolic volumes, stroke volume, cardiac output, ejection fraction, and heart rate. Preload and afterload. Regulation of cardiac muscle contraction: contractility (homeometric regulation) and the Frank-Starling law (heterometric regulation). Effect of afterload on the velocity of cardiac muscle shortening (Hill's equation). Circulation: arteries, veins, and capillaries. Vascular distensibility. Arterial pressure pulsations. Veins and their function. Blood flow, velocity, resistance, and pressure. Continuity equation and Poiseuille's law. Laminar and turbulent flow.	
Seminar and class	Block II. Week 12: Physiology of the cardiovascular system – Part II. Neural and humoral regulation of cardiovascular function. Humoral control of tissue blood flow: vasoconstrictors, vasodilators, and vascular regulation by ions and other chemical factors. Neural regulation of the circulation. Specific features of neural control of arterial pressure. Renal-body fluid system for arterial pressure control. Role of the renin-angiotensin system in arterial pressure regulation. Integrated mechanisms of arterial pressure regulation. Definition of the arterial pressure set point. Changes in the arterial pressure set point in response to visceral and cutaneous pain, carotid sinus syndrome, cerebral hypoxia, increased intracranial pressure (Cushing's reflex), and changes in arterial blood oxygen and carbon dioxide levels Orthostatic hypotension.	B.W20, B.W22, B.U7
Seminar and class	Block II. Week 13: Physiology of the cardiovascular system – Part III. Role of the endothelium in regulating vascular tone. Organ-specific regulation of blood flow. Microcirculation. Pathophysiology of shock. Local control of blood flow in response to tissue needs. Mechanisms of blood flow control: acute and long-term regulation of local blood flow. Endothelium-derived vasoconstrictors and vasodilators (nitric oxide, prostaglandins, prostacyclin, thromboxane, endothelin, and adenosine). Specific mechanisms of acute blood flow control in the kidneys, brain, and skin. Structure of the microcirculation and capillary network. Capillary blood flow and vasomotion. Exchange of water, nutrients, and other substances between the blood and interstitial fluid. The interstitium and interstitial fluid. Fluid filtration across capillaries. The lymphatic system. Mechanisms of hydrostatic, oncotic, and lymphatic edema formation. Regulation of skeletal muscle blood flow at rest and during exercise. Coronary circulation: physiology, regulation, and myocardial metabolism. Circulatory shock and its management.	B.W20, B.W22
Seminar and class at the Simulation Center	Block II. Week 14: Physiology of the cardiovascular system – Part IV. Principles of electrocardiography. Fundamentals of electrocardiography: waveforms of the normal electrocardiogram. Electrical currents generated by the heart during the cardiac cycle. Electrocardiographic leads. Vector analysis of the normal electrocardiogram. Mean electrical axis of the QRS complex and its significance. Structure and properties of the cardiac conduction system. Sinus rhythm. Physical and electrophysiological	B.W20, B.W22, B.U7

	basis of electrocardiography. Defibrillation and electrical cardioversion. Selected ECG patterns and abnormalities: respiratory sinus arrhythmia, bradycardia, tachycardia, supraventricular arrhythmias (premature supraventricular complex, atrial flutter, and atrial fibrillation), ventricular arrhythmias (premature ventricular complex, ventricular tachycardia, and ventricular fibrillation), first-, second-, and third-degree atrioventricular blocks, asystole, myocardial ischemia, electrolyte disturbances, and pre-excitation.	
Seminar and class	Block II. Week 15: Pathophysiology of the cardiovascular system. Clinical case analysis involving disorders of the cardiovascular system.	B.W20, B.W22, C.W25, C.W26, C.W27, C.W38, C.U7, E.W7
Seminar and class	Block II. Week 16: First Midterm Examination – topics from Blocks I and II (winter semester).	
Seminar and class	Block III. Week 17: Physiology and pathophysiology of the urinary system. Kidney structure and vasculature. The nephron as the basic functional unit of the kidney. Formation of the glomerular filtrate (glomerular filtration: the filtration barrier and net filtration pressure). Assessment of renal function: calculation of creatinine clearance using the Cockcroft–Gault equation and estimation of glomerular filtration rate using the MDRD and CKD-EPI equations. Final urine formation (tubular transport). Regulation and autoregulation of renal blood flow. Pressure diuresis and other mechanisms affecting urine output. Neural regulation of renal blood flow and tubular transport (renal innervation and reflex regulation). Hormonal and humoral regulation of renal blood flow and tubular transport (the renin-angiotensin-aldosterone system, vasopressin, endothelins, nitric oxide, natriuretic peptides, dopamine, adrenomedullin, and cytokines). Mechanisms of urine concentration and dilution (countercurrent multiplication, countercurrent exchange, and urea recycling). Regulation of calcium and phosphate balance by the kidneys. Endocrine functions of the kidneys: erythropoietin and vitamin D activation. Role of the kidneys in blood pressure regulation. Pathophysiology: polyuria, oliguria, and anuria; diabetes insipidus (central and nephrogenic forms); acute kidney injury and chronic kidney disease; proteinuria; nephritic and nephrotic syndromes; nephrolithiasis; systemic effects of uremia; cystitis; and other urinary tract infections.	B.W20, B.W22, B.U1, B.U7, C.W25, C.W26, C.W27, C.U7, E.W7
Seminar and class	Block III. Week 18: Physiology and pathophysiology of fluid, electrolyte, and acid-base balance. Water and electrolyte balance. Body fluid compartments: volumes and composition. Ionic composition and osmolarity of body fluids. Regulation of the transport of osmotically active substances across biological membranes. Mechanisms regulating the distribution of water and electrolytes within the body. Regulating cell volume. Water, sodium, potassium, calcium, and phosphate balance. Mechanisms	B.W1, B.W2, B.W20, B.W22, C.W25, C.W26, C.W27, C.U7, E.W7

	regulating water and sodium balance. Dehydration and overhydration: types, mechanisms, and consequences. Electrolyte disorders: hyponatremia and hyponatremia, hyperkalemia and hypokalemia, hypercalcemia and hypocalcemia, and hypermagnesemia and hypomagnesemia. Acid-base balance. Volatile and nonvolatile acids. Extracellular and intracellular buffer systems. Role of the kidneys and respiratory system in maintaining pH. Methods for assessing acid-base balance. Regulation of cerebrospinal fluid pH. Primary acid–base disorders and secondary compensatory responses: respiratory and metabolic acidosis and alkalosis and their causes. Compensatory mechanisms in primary acid-base disorders: principles of the respiratory and renal compensation. Effects of acid-base disorders on fluid and electrolyte balance..	
Seminar and class	Block III. Week 19: Respiratory system – anatomical and biophysical basis of respiration. Mechanisms of pulmonary ventilation. Lung volumes and capacities. Alveolar ventilation. Anatomy of the respiratory system. Structure and function of the bronchial tree. Innervation of the airways. Structure and function of the pulmonary alveoli. Airway resistance. Surface tension. Surfactant. Work of breathing. Pulmonary shunt. Pulmonary circulation. Structure of pulmonary vessel walls. Pressure and resistance to blood flow in the pulmonary circulation. Regulation of pulmonary vascular diameter and the effect of the partial pressure of oxygen on pulmonary vascular smooth muscle. Neural and humoral regulation of respiratory function. Regulation of breathing and generation of the respiratory pattern. Regulation of the respiratory center: central and peripheral chemoreceptors. Airway and pulmonary receptors and associated reflexes: coughing, yawning, and responses to inhaled toxic substances.	B.W20, B.W22, B.U1, B.U7
Seminar and class	Block III. Week 20: Respiratory system – clinical physiology and pathophysiology. Basic diagnostic tests of the respiratory function, including spirometry. Differentiation between obstructive and restrictive ventilatory defects. Spirometric tests: bronchodilator reversibility and bronchial provocation tests. Body plethysmography in the diagnosis of restrictive ventilatory defects. Principles of mechanical ventilation. Acute and chronic respiratory failure. Pathophysiology of inflammatory diseases and infectious diseases of the respiratory system: laryngitis, bronchitis, pneumonia, viral respiratory infections, including COVID-19 and tuberculosis). Pathophysiology of obstructive and restrictive lung diseases: bronchial asthma, chronic obstructive pulmonary disease (COPD), emphysema, pneumoconiosis. Cystic fibrosis. Pulmonary embolism. Abnormal breathing patterns. Obstructive sleep apnea. Nicotine dependence. Acute mountain sickness (AMS).	B.W20, B.W22, B.U7, C.W25, C.W26, C.W27, C.W38, C.U7, E.W7

Seminar and class	Block III. Week 21: Integrated pathophysiology – respiratory and urinary system disorders and acid-base disturbances. Clinical case analysis involving respiratory system disorders, urinary system disorders, systemic diseases, and acid-base disturbances.	B.W20, B.W22, C.W25, C.W26, C.W27, E.W7
Seminar and class	Block III. Week 22: Summary seminar (Blocks II and III) – students' oral presentations.	
Seminar and class	Block IV. Week 23: Physiology and pathophysiology of the gastrointestinal system. Neurohormonal regulation of food intake. The enteric nervous system. Motility of the gastrointestinal and biliary tracts. Secretory functions of the digestive glands: salivary, gastric, pancreatic, and intestinal secretions. Interaction between the endocrine and exocrine functions of the pancreas. Structure and function of the liver. Digestion and absorption of water, electrolytes, vitamins, minerals, carbohydrates, proteins, and fats. Hepatic circulation: anatomical and functional characteristics. Disorders of gastrointestinal motility: vomiting, diarrhea, constipation, achalasia, gastroesophageal reflux disease. Peptic ulcer disease. Pathophysiology of the liver, gallbladder, and biliary tract: jaundice, viral hepatitis, acute liver failure, cirrhosis and portal hypertension, cholecystitis, autoimmune liver disease, Wilson's disease, and metabolic dysfunction-associated steatotic liver disease (MASLD). Pathophysiology of the pancreas: acute and chronic pancreatitis. Inflammatory bowel diseases: Lesniowski-Crohn's disease and ulcerative colitis. Disorders of digestion and absorption: celiac disease and pernicious anemia. Gastrointestinal neoplasms.	B.W20, B.W22, B.U1, C.W25, C.W26, C.W27, C.W40, C.U7, E.W7
Seminar and class	Block IV. Week 24: Endocrine system – Part I. The hypothalamic-pituitary-thyroid and hypothalamic-pituitary-adrenal axes: physiology and pathophysiology. Hypothalamic and pituitary hormones. The hypothalamic-pituitary-thyroid axis. TRH and TSH: regulation of secretion and mechanisms of action. Regulatory functions of thyroid hormones and their interactions with other hormones. The hypothalamic-pituitary-adrenal axis. CRH and ACTH: actions and regulation of secretion. Regulatory functions of glucocorticoids and mineralocorticoids. Hyperprolactinemia. Cushing's syndrome and Cushing's disease. Conn's syndrome. Hyperthyroidism and hypothyroidism. Disorders of the adrenal cortex and medulla.	B.W15, B.W20, B.W22, C.W25, C.W26, C.W27, C.U7, E.W7
Seminar and class	Block IV. Week 25: Endocrine system – Part II. Endocrine function of the pancreas. Hormonal regulation of growth and metabolism. The stress response. Hormonal regulation of growth and metabolism. Growth hormone: regulation of secretion and mechanism of action. Specificity and selectivity of the actions of individual growth factors in organs and tissues. Gigantism, acromegaly, and growth hormone deficiency.	B.W15, B.W20, B.W22, C.W25, C.W26, C.W27, C.U7, D.W4, E.W7

	The pancreas as an endocrine organ (glucagon and insulin). Type 1 and type 2 diabetes mellitus. Hypoglycemia. Functional neuroendocrine tumors: insulinoma and gastrinoma. Stress. Concepts of stress. Adaptive role of stress. Neuroendocrine mechanisms of the stress response: activation of the hypothalamic-pituitary-adrenal axis, secretion of vasopressin. Changes in brain neurotransmitter systems and activation of the sympathetic nervous system during stress. Physiological responses to acute and chronic stress. Effects of stress on the development of cardiovascular and psychiatric disorders. Post-traumatic stress disorder (PTSD).	
Seminar and class	Block IV. Week 26: Physiology and pathophysiology of the reproductive system, pregnancy, and childbirth. Lactation. Endocrine regulation of reproductive function. Sex hormones in women and men: mechanisms of action and regulation of secretion. The menstrual cycle (changes in hormone levels, the endometrium, and the vaginal mucosa). Sexual maturation and puberty. Menopause. Age-related changes in male reproductive function and late-onset hypogonadism (LOH). Klinefelter syndrome, Turner syndrome, disorders of sex development (DSD), including ovotesticular DSD, 46,XX DSD, and 46,XY DSD, hypogonadism, hyperprolactinemia, and endometriosis. Fertilization and implantation of the blastocyst. The maternal-fetal-placental unit: exchange between the mother and fetus and hormones of the maternal-fetal-placental unit. Fetal development. Physiological adaptations during pregnancy: hormonal, metabolic, cardiovascular, respiratory, genitourinary, gastrointestinal, and nervous system changes. Childbirth. Lactation. Female and male infertility. Risk factors for miscarriage. Diabetes and hypertension in pregnancy. Ectopic pregnancy. Fetal alcohol syndrome (FAS). Fetal growth restriction. Prematurity: causes and long-term consequences.	B.W20, B.W22, E.W7, F.W15, F.W16
Seminar and class	Block IV. Week 27: Energy expenditure at rest and during exercise. Thermoregulation. Obesity. Metabolic disorders. Central regulation of hunger and satiety. Adipose tissue as a source and target of hormones. Basal metabolic rate and resting metabolic rate. Whole-body energy balance. Principles of healthy nutrition. Metabolic disorders. Obesity and malnutrition. Heat production and heat exchange with the environment. Heat balance. Core body temperature and skin temperature. Limits of tolerance to changes in core temperature. The thermoregulatory system: central and peripheral thermoreceptors and the hypothalamic thermoregulatory center. Role of cutaneous circulation in thermoregulation. Regulation of sweating. Physiological responses to heat and cold. Acclimatization to high and low ambient temperatures. Hypothermia. Hyperthermia, including heatstroke: mechanism and diagnosis. Malignant hyperthermia. Fever.	B.W15, B.W20, B.W22, C.W25, C.W26, C.W27, C.W40, C.U7
Seminar and class	Block IV. Week 28: Physiology of physical exercise. Sex-related differences in exercise physiology. Muscle function during exercise: strength, power, endurance, and muscle energy systems. Energy substrate utilization during exercise. Effects of exercise training on muscle structure and performance. Cardiovascular responses to exercise. Thermoregulation during exercise. Fluid and electrolyte	B.W15, B.W20, B.W22, B.U7

	balance during exercise. Use of performance-enhancing substances in sport.. Health benefits of physical activity and exercise training.	
Seminar and class	Block IV. Week 29: Second Midterm Examination – topics from Blocks III and IV (summer semester).	
Seminar and class	Week 30: Summary seminar, consultations, and final retakes.	
Lecture	Inaugural lecture.	
Lecture	Brain neuroplasticity. Developmental disorders of neuroplasticity.	B.W13, B.W16, B.W17, B.W19, B.W21, C.W7, C.W25
Lecture	Neurodegenerative diseases.	B.W13, B.W16, B.W17, B.W19, B.W21, C.W7, C.W25
Lecture	Behavior. Limbic system. Prefrontal cortex. Neurobiology of speech.	B.W13, B.W16, B.W17, B.W19, B.W21, C.W7, C.W25
Lecture	Consciousness and awareness. Disorders of consciousness.	B.W13, B.W16, B.W17, B.W19, B.W21, C.W7, C.W25
Lecture	Hemostasis. Hemostatic disorders.	B.W22, C.W4, C.W25, C.W26, C.W27, C.W39, C.W40
Lecture	Electrocardiography: fundamentals of physiological and pathological ECG interpretation.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	The cardiac conduction system. Mechanisms of cardiac arrhythmias. Examples of the most common arrhythmias.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Short- and long-term regulation of blood pressure. Arterial hypertension.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Pathophysiology of the most common heart diseases.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Coronary artery disease. Myocardial infarction.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Pathophysiology of acute and chronic heart failure.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Thromboembolic disease. Pulmonary hypertension.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Pathophysiology of the most common respiratory system diseases. Basic diagnostic tests. Mechanical ventilation.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Pathophysiology of urinary system diseases. Basic diagnostic tests.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Pathophysiology of the most common diseases of the gastrointestinal system.	B.W22, C.W25, C.W26, C.W27, C.W38
Lecture	Hormonal regulation of metabolism. Regulation of calcium homeostasis. Hormonal regulation of growth. Pathophysiology of the endocrine system.	B.W15, B.W20, B.W22, C.W25, C.W26, C.W27
Lecture	Physiology and pathophysiology of pregnancy.	B.W22, E.W7, F.W15, F.W16
Lecture	Mechanisms of human adaptation to extreme conditions.	C.W13
Lecture	Physiology of aging. Lifestyle-related diseases.	B.W21, C.W38, E.W10

7. LITERATURE

Required reading

John E. Hall. Guyton and Hall Textbook of Medical Physiology. 14th ed. Elsevier; 2021.

Supplementary reading

Rodney A. Rhoades, David R. Bell. Medical Physiology: Principles for Clinical Medicine. 4th ed. Wolters Kluwer; 2013.

Gary D. Hammer, MD, PhD, and Stephen J. McPhee, MD. Pathophysiology of Disease: An Introduction to Clinical Medicine. 7th ed. McGraw-Hill; 2014.

8. VERIFICATION OF LEARNING OUTCOMES

Code of the course learning outcome	Methods of verifying the learning outcome	Pass criterion
B.W1,2,3,7,16,20,21-25 B.U1,7,9 C.W6,20,27,29,30,32-34,45,47-51 C.U11,20	Completion of all weekly sets on the e-learning platform.	Weekly sets (MCQs): students must achieve an average score of at least 3/5 across all weekly sets to qualify for the midterm MCQ test. If a weekly set is not completed, a score of 0 is assigned. Students with an average score below 3/5 must complete an additional qualifying assessment before the midterm MCQ test.
B.U1,7,9 B.W1-3, 7,16,2-25,33 C.U11,20 C.W22,27,29,30,32-34,45,47-51	Two midterm MCQ tests are held, one after each semester (the first after Blocks I and II, and the second after Blocks III and IV). Each test comprises 40 MCQs. Retake after a failed midterm examination: MCQ test If the retake is failed, the second retake is an oral examination conducted by the academic teacher responsible for the course during the summary seminar at the end of the academic year, before the examination session.	24/40 points (60%) required to pass. Retake: 60% of total points required to pass Second retake: completion confirmed by the examiner.
B.U1,7,9 B.W1-3, 7,16,2-25,33 C.U11,20 C.W22,27,29,30,32-34,45,47-51	Final examination: 100 MCQs. Covers topics from lectures, seminars, and classes. Retake examination: 100 MCQs. Second retake examination: oral examination.	60% of the points required to pass.

9. ADDITIONAL INFORMATION

ATTENDANCE AND ABSENCES

Attendance at lectures, seminars, and classes is compulsory. Over the entire course, four absences are permitted (seminars and classes are counted as separate activity). Any additional absence must be formally justified. All absences, including permitted absences, must be made up in the manner specified by the course coordinator.

SCIENTIFIC CLUBS

Information is available on the Department's website.

Students may participate in the Scientific Club and are invited to apply for membership after the final examination.

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ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers



Immunology

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Exam
Educational Unit / Educational Units	Department of Clinical Immunology Nowogrodzka 59 St, 02-006 Warsaw Tel.: (+48 22) 502 14 72, 502 12 60 Faks: (+48 22) 502 21 59 E-mail: ewa.rusinowicz@uckwum.pl Secretary: Ewa Rusinowicz <ewa.rusinowicz(at)uckwum.pl>, Head: Prof. Leszek Pączek <leszek.paczek(at)wum.edu.pl> Didactic coordinator: Dr hab. Beata Kaleta <beata.kaleta(at)wum.edu.pl>
Head of Educational Unit / Heads of Educational Units	Prof. Leszek Pączek <leszek.paczek(at)wum.edu.pl>
Course coordinator	Dr hab. Beata Kaleta <beata.kaleta(at)wum.edu.pl> Msc Dauta Kłosowska <danuta.klosowska(at)wum.edu.pl>
Person responsible for syllabus	Dr hab. Beata Kaleta <beata.kaleta(at)wum.edu.pl>
Teachers	Dr hab. n. med. i n. o zdr. Beata Kaleta Dr hab. n. med. Jan Borysowski Dr n. med. Monika Kniotek Dr hab. n. med. Radosław Zagożdżon Lek. Emilia Kniotek

2. BASIC INFORMATION				
Year and semester of studies	II year,4 semester		Number of ECTS credits	3,00
FORMS OF CLASSES		Number of hours	ECTS credits calculation	
Contacting hours with academic teacher				
Lecture (L)		15	0,60	
Seminar (S)		25	1,00	
Classes (C)				
e-learning (e-L)				
Practical classes (PC)				
Work placement (WP)				
Unassisted student's work				
Preparation for classes and completions		35	1.40	

3. COURSE OBJECTIVES	
O1	Familiarization with basic immunology in reference to elements of clinical immunology

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING	
Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>((in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023))</i>
Knowledge – Graduate* knows and understands:	
Skills– Graduate* is able to:	
C.W16	diagnostic principles for infectious, allergic, autoimmune and neoplastic diseases and blood diseases, based on the antigen-antibody reaction;
C.W18	specific and non-specific mechanisms of humoral and cellular immunity;
C.W19	major tissue compatibility system;
C.W20	types of hypersensitivity reactions, types of immunodeficiency and basics of immunomodulation;
C.W21	issues in the immunology of cancer and immune-mediated diseases and principles of immunotherapy;

C.W22	the genetic basis of donor and recipient selection and the basics of transplant immunology;
C.W42	molecular basis of cancer and issues in cancer immunology;
C.W43	practical elements of molecular biology and immunology used in the diagnosis and therapy of oncological diseases

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (non-compulsory)	
Number of effect of learning	Effects in the fields of:
Knowledge – Graduate knows and understands:	
K1	
Skills– Graduate is able to:	
S1	
Social Competencies – Graduate is ready for:	
SC1	

6. CLASSES		
Form of class	Class contents	Effects of Learning
Lectures	- RZ Introduction to the immune system: properties of immune response, features of innate and adaptive immunity, - Cells and tissues of the immune system: immune system cells, anatomy and functions of lymphoid tissues - Antibodies and antigens: antibody structure, synthesis, assembly and expression, antibody binding of antigens, structure-function relationships in antibody molecules - Antigen presentation to T lymphocytes and the function of Major Histocompatibility Complex Molecules: properties of antigens recognized by T cells, antigen capture and functions of antigen-presenting cells, the MHC, processing of protein antigens, presentation of nonprotein antigens to T cells - Immune receptors and signal transduction: features of antigen receptor signaling, T cell receptor complex and T cells signaling, B cell antigen receptor complex, attenuation of immune receptor signaling, cytokines and cytokine receptor signaling - Activation of T lymphocytes: recognition of antigen, role of costimulation in T cell activation, functional responses of T cells, decline of T cell responses - Activation of B cells and antibody production: antigen recognition and antigen-induced B cell activation, helper T cell-dependent antibody responses to antigens, regulation of humoral immune response	C.W16. C.W18. C.W19. C.W20. C.W21. C.W22. C.W42. C.W43.

	Differentiation and functions of effector T cells: subsets and properties of CD4+ and CD8+ T cells	
Seminars	- Circulation and migration of leukocytes: adhesion molecules, chemokines and chemokine receptors, leukocyte-endothelial interactions, leukocyte recruitment into tissues, migration of lymphocytes, neutrophils and monocytes - Innate immunity and natural killer cells: functions of innate immunity, pattern recognition receptors, cellular components of the innate immune system, soluble effector molecules of innate immunity, antiviral response and NK cells - Development of lymphocytes and antigen receptor gene rearrangement: lymphocyte development, rearrangement of antigen receptor genes in T and B cells, T and B cells development - Effector mechanisms of humoral immunity: neutralization of microbes and microbial toxins, antibody-mediated opsonization and phagocytosis, the complement system: pathways, receptors, regulation, functions, complement deficiencies - Specialized immunity at epithelial barriers and immune privileged tissues: immunity in the gastrointestinal, respiratory and genitourinary system, cutaneous immune system, immune-privileged tissues, immunity in the fetus and newborn - Immunity to microbes: immunity to extracellular and intracellular bacteria, fungi, viruses, parasites, strategies for vaccine development - Hypersensitivity disorders and allergy: causes of hypersensitivity diseases, mechanisms and classification of hypersensitivity reactions, diseases caused by antibodies and antigen-antibody complexes, diseases caused by T cells, therapeutic approaches for immunologic diseases, selected immunologic diseases: pathogenesis and treatment - Immunologic tolerance and autoimmunity: T and B cells tolerance, tolerance to commensal microbes and other foreign antigens, mechanisms of autoimmunity - Tumor immunology: tumor antigens, immune responses to tumors, evasion of immune responses by tumors, immunotherapy for tumors - Transplantation immunology: immune responses to allografts, patterns and mechanisms of allograft rejection, prevention and treatment of allograft rejection, xenogeneic transplantation, blood transfusion and ABO and Rh blood group antigens, hematopoietic stem cell transplantation - Primary immunodeficiencies: defects in innate immunity, SCID, antibody deficiencies, defects in T cells activation and function, multisystem diseases with immunodeficiency, therapy for primary immunodeficiencies - Acquired immunodeficiencies: causes, HIV structure, life cycle, clinical features of HIV. Immune response to HIV, treatment and prevention of AIDS and vaccine development	C.W16. C.W18. C.W19. C.W20. C.W21. C.W22. C.W42. C.W43.

7. LITERATURE

Obligatory

„Cellular and Molecular Immunology” (10th edition) (Cellular and Molecular Immunology, Abul K. Abbas & Andrew H. Lichtman & Shiv Pillai)

Supplementary

Riot, s Essential Immunology” (13th edition) by Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M Riott

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
C.W16. C.W18. C.W19. C.W20. C.W21. C.W22. C.W42. C.W43.	Exam – single choice test (50 questions) Correction exam - single choice test (50 questions) Second retake exam – oral exam (3-5 descriptive questions)	Obligatory attendance at all seminars and lectures. Active participation in seminars, adequate preparation for classes Obtaining more than 50% of the maximum number of points. EXAM CRITERIA: • 2.0 (failed): 0-25 points • 3.0 (satisfactory): 26 – 30 points • 3.5 (rather good): 31 – 35 points • 4.0 (good): 36 – 40 points • 4.5 (more than good): 41 – 45 points • 5.0 (very good): 46 – 50 points

9. ADDITIONAL INFORMATION

Detailed schedules, updates, information, and useful files will be available on our website (www.zik.wum.edu.pl) and on the e-learning platform from the beginning of February.

Attendance at seminars is mandatory and will be verified by checking the attendance list.

The Student is entitled to **two excused absences**, provided they are supported by written confirmation. Absences due to illness will only be excused with a medical certificate or doctor's note.

Unexcused absences from classes are not permitted and may result in failure of the entire immunology course.

The Student is obligated to be prepared and participate in discussions during seminars.

The Student is obligated to use university e-mail addresses s0xxxxx@student.wum.edu.pl

All classes take place in the Lindleya campus.

ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers

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Basic Polish for medicine

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	uniform MSc
Form of studies	Full-time studies
Type of module / course	obligatory
Form of verification of learning outcomes	completion
Educational Unit / Educational Units	Foreign Language Department The Didactic Center, ul. Trojdena 2a, 02-109 Warsaw sjosekretariat@wum.edu.pl , tel. 22 5720863 www.sjo.wum.edu.pl/
Head of Educational Unit / Heads of Educational Units	Maciej Ganczar, PhD, Professor at WUM maciej.ganczar@wum.edu.pl
Course coordinator	Anna Maczkowska, MA anna.maczkowska@wum.edu.pl
Person responsible for syllabus	Anna Maczkowska, MA anna.maczkowska@wum.edu.pl
Teachers	Maciej Ganczar, PhD, Professor at WUM Krystyna Luto, PhD Anna Maczkowska, MA

2. BASIC INFORMATION

Year and semester of studies	2 nd , 1 st and 2 nd semester	Number of ECTS credits	5.00
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FORMS OF CLASSES	Number of hours	ECTS credits calculation
Contacting hours with academic teacher		
Lecture (L)		
Seminar (S)		
Classes (C)	60	1,4
e-learning (e-L)		
Practical classes (PC)		
Work placement (WP)		
Unassisted student's work		
Preparation for classes and completions	160	3,6

3. COURSE OBJECTIVES	
O1	The 2 nd year Polish language course is designed to improve the students' command of the language and provide them with basic medical terminology and skills to communicate with an adult and paediatric patient at elementary level.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING	
Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)</i>
Knowledge – Graduate* knows and understands:	
D.W7	the specificity and role of verbal (conscious message construction) and non-verbal communication
Skills– Graduate* is able to:	
D.U5	critically analyse medical literature, including literature in in English, and draw conclusions
D.U6	communicate with the patient in one of the foreign languages at B2+ level of the Common European Framework of Reference for Languages
D.U11	adapt verbal communication to the needs of the patient, expressing themselves clearly and avoiding medical jargon;

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (*non-compulsory*)

Number of effect of learning	Effects in the fields of:
Knowledge – Graduate knows and understands:	
K1	names of basic symptoms, ailments, medical specialties and parts of hospital and hospital staff in Polish
K2	
Skills– Graduate is able to:	
S1	take a patient's history at elementary Polish language level (personal history; chief complaint (pain): location, radiation, quality, quantity, duration, frequency, aggravating and relieving factors, associated symptoms; past history; family history; drug history; social history; the review of systems)
S2	give simple instructions to an adult and paediatric patient during a physical examination and explain the doctor's intentions
Social Competencies – Graduate is ready for:	
SC1	continually broadening their knowledge

6. CLASSES

Form of class	Class contents	Effects of Learning
C1/2	Discussing the syllabus (the course content, learning outcomes and the methods of their verification; rules and regulations; credit receiving criteria). Everyday activities – verbs. Revision of Past and Present tense • The <i>trzeba/można</i> + infinitive construction • Revision of genitive, accusative and nominative cases; introduction of locative case and the verb “opiekować się”	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 3/4	Parts of the human body • The verb <i>boleć</i> (singular&plural/present&past tense) Organs of the human body • The cases of the noun and adjective in the singular&plural genitive, accusative, locative, instrumental and nominative – forms and uses	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 5/6	•Time expressions (revision) • Revision of the tenses (present&past). Distinction between imperfective & perfective verbs • Questions: <i>jak długo?, jak często?, ile razy?, od jak dawna?, O której godzinie?</i>	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 7/8	• Dative case – forms and usage • Hospital stay (case description) – vocabulary. Useful phrases (<i>weszać pogotowie, przyjąć do szpitala</i>)	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 9/10	• Hospital departments and staff • Giving directions	D.U6, D.W7, D.U11 K1 S1, S2, S3

C 11/12	• Medical specialties and specialists • Revision of genitive and locative cases (<i>do kardiologa, na oddziale, w szpitalu</i>) • names of organ systems	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 13/14	• types of medications • The verb <i>brać/wziąć</i> (singular/present&past tense) • basic ailments (<i>katar, kaszel, dreszcze</i>) • revision of 1st term vocabulary	D.U.6, D.W7, D.U11 K1 S1, S2, S3
C 15	Intermediate test	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 16/17	Instructions for the clinical examination of adults • Explaining the doctor's intentions to the patient	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 18/19	Instructions for the clinical examination of children • Explaining the doctor's intentions to the patient • The imperative mood	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 20/21	The common cold and flu – a patient's description of the symptoms in the present/past tense • usage of formal register (<i>pan/pani</i>) • question formation • taking history – basic rules	D.U6, D.W7, D.U11 K1 S1, S2, S3
C 22/23	Pain history – location, radiation, onset (timing, setting), previous similar pain, duration, character, severity, exacerbating and relieving factors, associated symptoms (vocabulary). • Common diseases • The verbs <i>chorować (na)</i> , <i>leczyć się (na)</i> (present&past tense), <i>umrzeć (na)</i> (past tense)	D.U5, D.U6, D.W7, D.U11 K1 S1, S2, S3
C 24/25	The medical interview: personal history (name, age, occupation, height, weight, marital/family status) social history – alcohol, smoking	D.U5, D.U6, D.W7, D.U11 K1 S1, S2, S3
C 26	The medical interview: chief complaint • past history – surgeries, injuries, hospital admissions, previous illnesses, birth control, pregnancies / births, menstrual periods, allergies	D.U5, D.U6, D.W7, D.U11 K1 S1, S2, S3
C 27/28	The medical interview: systemic inquiry (basic questions) Revision	D.U5, D.U6, D.W7, D.U11 K1 S1, S2, S3
C 29	Final test – written part	D.U5, D.U6, D.W7, D.U11 K1 S1, S2, S3
C 30	Final test – oral part	D.U5, D.U6, D.W7, D.U11 K1 S1, S2, S3

7. LITERATURE

Obligatory

Maciej Ganczar, Anna Maczkowska "Jak się pani dzisiaj czuje?" Podręcznik do nauki medycznego języka polskiego jako obcego

Supplementary

Handouts prepared by the teachers.

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
D.W7, D.5, D.U6, D.U11	Written test. Oral test.	To successfully complete the 2nd year Polish language course and obtain credit, a student is required to: - attend all classes (min. 13 out of 15 in a semester) A student who misses more than 2 classes per semester without a valid excuse will not be allowed to take the course tests and will not receive course credits (unless the absence was due to long-term illness confirmed by doctor's note and medical documentation and the student received a permission to obtain the credit from the Head of the Centre for Foreign Languages). The only valid excuse for absence is illness. Absences due to illness will be excused on presentation of a valid medical note. To justify an absence from classes, tests, or exams, the student is required to notify the course instructor by email or in writing no later than three working days after the date on which the class, test, or exam took place. The student is obliged to make up for each absence (excused or unexcused) by performing a special written/oral task assigned by the teacher OR by attending a class with another group (on teacher's permission). If a student misses a class, she/he must catch up on the missed material. It is the student's responsibility to communicate with the class teacher as soon as possible about any attendance issues. - come to classes punctually If a student arrives less than 15 minutes late three times per semester, it will count as one absence. Arriving to class more than 15 minutes late is counted as an absence. - actively participate in each class - complete all the assignments by the due date - pass the written intermediate progress tests during the winter and the summer semester and the course final written and oral tests (covering the coursework of both the winter and summer semesters) at the end of the summer semester. A student who fails the course tests can attempt two retakes. The retakes have the same format as the original tests. The final course grade a student receives is the average (arithmetic mean) of the written and oral test grades (grades of 2-5), or a grade of 3 for passing a retake. A minimum score of 60% must be obtained on each (written and oral) test to pass the course. A student who misses a scheduled test will receive a score of 0 (which equals failing) unless she/he notifies the class teacher of the reason for her/his failure to take the test within three days of the scheduled test date and makes up the missed test if the reason is justified at the date set by the class teacher.

	A student who fails the second retake of the final test needs to repeat the course. Students who are 'independent users' of the Polish language (Level B2 as described in the Common European Framework) may be exempted from attending the second year Polish language course (and the second year Polish language course provided they achieve the required score) if they pass the B2 level examination organised by the University's Centre for Foreign Languages (Studium Języków Obcych) at the beginning of the academic year. Students interested in taking the exam should check with their class teacher for the exam date, time and location at the first class meeting. The scale of grades is as follows: <table><tr><td>2.0 (failed)</td><td>Below 60%</td></tr><tr><td>3.0 (satisfactory)</td><td>60-69%</td></tr><tr><td>3.5 (rather good)</td><td>70-79%</td></tr><tr><td>4.0 (good)</td><td>80-85%</td></tr><tr><td>4.5 (more than good)</td><td>86-90%</td></tr><tr><td>5.0 (very good)</td><td>91-100%</td></tr></table>	2.0 (failed)	Below 60%	3.0 (satisfactory)	60-69%	3.5 (rather good)	70-79%	4.0 (good)	80-85%	4.5 (more than good)	86-90%	5.0 (very good)	91-100%
2.0 (failed)	Below 60%												
3.0 (satisfactory)	60-69%												
3.5 (rather good)	70-79%												
4.0 (good)	80-85%												
4.5 (more than good)	86-90%												
5.0 (very good)	91-100%												

9. ADDITIONAL INFORMATION

All detailed information about the course completion criteria and rules are listed in the Rules and Regulations of the Centre for Foreign Languages <https://sjo.wum.edu.pl/rules-and-regulations-centre-foreign-languages-2>

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ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers



GENETICS - BASIC

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Credit
Educational Unit / Educational Units	Department of Medical Genetics (1WY) Center for Biostructure Research, First Faculty of Medicine ul. Pawińskiego 3c, 02-106 Warszawa phone: +48 22 572 06 95, fax: +48 22 572 06 96 http://www.genetyka.wum.edu.pl e-mail: krzysztof.szczaluba@wum.edu.pl
Head of Educational Unit / Heads of Educational Units	Head of the Department: Rafał Płoski MD PhD
Course coordinator	Assoc. prof. Krzysztof Szczaluba MD PhD e-mail: krzysztof.szczaluba@wum.edu.pl tel. 22 572 06 95

Person responsible for syllabus	Assoc. prof. Krzysztof Szczaluba MD PhD e-mail: krzysztof.szczaluba@wum.edu.pl tel. 22 572 06 95
Teachers	Rafał Płoski MD PhD Joanna Kosińska PhD Agnieszka Pollak PhD Małgorzata Rydzanicz PhD Anna Walczak PhD Piotr Gasperowicz PhD Karolina Rutkowska MSc

2. BASIC INFORMATION

Year and semester of studies	2nd Year, 4th (spring) semester	Number of ECTS credits	2.00
FORMS OF CLASSES		Number of hours	ECTS credits calculation
Contacting hours with academic teacher			
Lecture (L)		-	-
Seminar (S)		8	0.5
Classes (C)		17 (live, contact classes:17)	0.5
e-learning (e-L)		-	-
Practical classes (PC)		-	-
Work placement (WP)		-	-
Unassisted student's work			
Preparation for classes and completions		25	1.00

3. COURSE OBJECTIVES

O1	The aim of the course is to present theoretical and laboratory basics of medical and clinical genetics. In the course, the main focus is on teaching how to make use of the obtained knowledge in practice.
O2	Students will also learn to interpret basic genetic analysis, understand principles of genetics counselling and will be acquainted with basic laboratory and statistical methods used in the research in the field of human genetics.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING

Code and number of effect of learning in accordance with standards of learning

Effects in the field of: *(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)*

Knowledge – Graduate* knows and understands:

C.W1	the normal human karyotype and the different types of sex determination;
C.W3	principles of inheritance of different numbers of traits, inheritance of quantitative traits, independent inheritance of traits and inheritance of extra-nuclear genetic information;
C.W5	genetic determinants of the most common single-gene, polygenic and multifactorial diseases, basic chromosome aberration syndromes, syndromes caused by genomic rearrangements, polymorphisms, epigenetic and post-transcriptional changes;
C.W6	factors affecting the primary and secondary genetic balance of the population;
C.W7	genetic determinants of congenital malformations and selected rare diseases and the possibility of their prevention;
C.W8	genetic diagnostic methods and the basic indications for their use;
C.W26	pathogenesis of diseases, including genetic and environmental conditions;

Skills– Graduate* is able to:

C.U1	chart and analyse bloodlines and identify clinical and bloodline features suggestive of a genetic basis for diseases;
C.U2	make decisions on the need for cytogenetic and molecular tests;
C.U3	read basic genetic test results, including karyotypes;
C.U4	determine genetic risk based on bloodline and genetic test result for chromosomal aberrations, genomic rearrangements, single-gene and multifactorial diseases;

** In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.*

5. ADDITIONAL EFFECTS OF LEARNING *(non-compulsory)*

Number of effect of learning

Effects in the fields of:

Knowledge – Graduate knows and understands:

K1	Student is able to work in a group in order to solve a problem from the field of genetics.
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6. CLASSES

Form of class	Class contents	Effects of Learning
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Seminars & Classes	1. Basics of genetic medical history and pedigree analysis. Modes of inheritance in human. Genomic imprinting. Drawing pedigrees based on clinical cases. Analysis of modes of inheritance 2. Calculating genetic risk in multifactorial diseases. Applicability of RR and OR in medical genetics. Calculating reoccurrence risk in monogenic diseases. Empirical estimation of disease likelihood in a family using Bayes theory 3. Usefulness of LR calculation in medical genetics. Calculating likelihood of pedigrees 4. <i>De novo</i> mutations. Calculating genetic risk considering mutagenesis 5. Genes identification and mapping. Linkage analysis 6. Introduction to cytogenetic testing. Chromosomal basis of human diseases. Methods in molecular cytogenetics. Analysis of cytogenetic results. Using online databases in CGH analysis. 7. Personalized medicine – whole-genome sequencing of DNA. Analysis of DNA sequencing results.	C.W1, C.W3, C.W5, C.W6, C.W7, C.W8, C.W26, C.U1, C.U2, C.U3, C.U4, K1
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7. LITERATURE		
Obligatory		
Medical Genetics Jorde, Carey, Bamshad 4th Edition Elsevier		
Supplementary		
-		
8. VERIFYING THE EFFECT OF LEARNING		
Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
C.U1, C.U2, C.U3, C.U4, K1	Report from completed task	Solving correctly a given task (drawing a pedigree based on clinical description of a family; interpreting a result of a genetic testing; calculating genetic risk; defining a term; explaining a biological process)
C.W1, C.W3, C.W5, C.W6, C.W7, C.W8, C.W26, C.U1, C.U2, C.U3, C.U4, K1	Credit (test)	Answering correctly to more than 50% of questions

9. ADDITIONAL INFORMATION
Students are obliged to attend all seminars and classes. No absence is accepted during classes and seminars. Each absence on classes and seminars would have to be covered with another group. Change of groups is possible only as an exchange with a person from another group. Being late for over 15 minutes counts as an absence.

Person responsible for students affairs: Assoc. prof. Krzysztof Szczaluba MD PhD krzysztof.szczaluba@wum.edu.pl

Evaluation criteria

Form of passing the course: *passing without a grade*

Pass	Criteria
Not passed	Getting 50% of points or less
Passed	Getting more than 50% of points

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ATTENTION

The final 10 minutes of the last class in the block/semester/year should be allocated to students' Survey of Evaluation of Classes and Academic Teachers.



Parasitology

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Exam
Educational Unit / Educational Units	Department of General Biology and Parasitology, 5 Chałubińskiego Str., 02-004 Warsaw, tel. (22) 6212607 e-mail: biologia@wum.edu.pl
Head of Educational Unit / Heads of Educational Units	Ph.D., Professor, Daniel Młocicki e-mail: Daniel.mlocicki@wum.edu.pl
Course coordinator	Ph.D., Associate Professor, Monika Dybicz, e-mail: monika.dybicz@wum.edu.pl
Person responsible for syllabus	Monika Dybicz, e-mail: monika.dybicz@wum.edu.pl
Teachers	Monika Dybicz, Daniel Młocicki, Aleksandra Sędzikowska

2. BASIC INFORMATION

Year and semester of studies	Year II, winter semester	Number of ECTS credits	2.00
FORMS OF CLASSES			

Contacting hours with academic teacher	Number of hours	ECTS credits calculation
Lecture (L)		
Seminar (S)	10	0,4
Classes (C)	25	1
e-learning (e-L)		
Practical classes (PC)		
Work placement (WP)		
Unassisted student's work		
Preparation for classes and completions	15	0,6

3. COURSE OBJECTIVES	
O1	The main objective is to provide necessary information on the biology, physiology and morphology of medically important parasites invading the tissues, organs and systems of the human body.
O2	Transfer of knowledge about current problems of medical parasitology, environmental factors of parasite invasion and dispersion, opportunistic species, pathogenesis and course of parasitic diseases in the states of immunosuppression or immunological defects and epidemiology of parasitic invasions.
O3	Making the future doctor aware of the dangers of parasites occurring in Poland and in the world.
O4	Learning the rules for conducting a correct parasitological interview with the patient.
O5	Introduction of the methods of modern laboratory diagnostics. Acquiring the student's ability to correctly interpret diagnostic test results.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING	
Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>((in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023))</i>
Knowledge – Graduate* knows and understands:	
C.W10	micro-organisms including pathogenic and those constituting the human microbiome, and human-invasive forms or life stages of selected parasites;

C.W11	the epidemiology of parasitic infections, including their geographical distribution
C.W12	the pathogenesis and pathophysiology of infections and contagions and the impact of pathogens such as parasites on the human body and population, including their modes of action, the consequences of exposure to them and the principles of prevention
C.W14	aetiology, pathogenesis, pathophysiology, routes of transmission, forms and prevention of iatrogenic infections;
C.W15	methods used in parasitological diagnosis (indications, principles of performance, interpretation of results)
C.W16	diagnostic principles for infectious, allergic, autoimmune and neoplastic diseases and blood diseases, based on the antigen-antibody reaction (in the field of parasitology)
C.W28	the different groups of medicinal products, their mechanisms and effects of action, their basic indications and contraindications and their basic pharmacokinetic and pharmacodynamic parameters;

Skills– Graduate* is able to:

C.U5	identify pathogens under the microscope
C.U6	interpret microbiological test results
C.U7	relate images of tissue and organ damage to clinical signs of disease, history and laboratory findings to establish a diagnosis in the most common diseases of adults and children (in the field of parasitology)

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (non-compulsory)

Number of effect of learning	Effects in the fields of:
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Knowledge – Graduate knows and understands:

K1	Health education issues.
K2	Rules of conducting the scientific research and disseminating their results.

Skills– Graduate is able to:

S1	Carry out diagnostics of parasitic diseases, assess and describe the somatic and mental state of the patient.
S2	Critically evaluate the results of scientific research and properly justify the position.

Social Competencies – Graduate is ready for:

SC1	Transfer of knowledge in the society about parasitological threats in the country and during foreign travel, especially to tropical and endemic regions.
SC2	Use of objective sources of information.

6. CLASSES

Form of class	Class contents	Effects of Learning
Seminars and practical classes	1. Introduction to parasitology. Host-parasite relationship. Nematodes of the gastrointestinal tract (<i>Ascaris lumbricoides</i>, <i>Enterobius vermicularis</i>, <i>Trichuris trichiura</i>). 2. Nematodes continued (<i>Ancylostoma duodenale</i>, <i>Necator americanus</i>, <i>Strongyloides stercoralis</i>, <i>Trichinella</i> spp.). 3. Flukes of the digestive and circulatory system (<i>Fasciola hepatica</i>, <i>Opisthorchis felinus</i>, <i>Dicrocoelium dendriticum</i>, <i>Fasciolopsis buski</i>, <i>Schistosoma</i> spp.). 4. Intestinal tapeworms (<i>Taenia solium</i>, <i>T. saginata</i>, <i>Rodentolepis nana</i>, <i>Hymenolepis diminuta</i>, <i>Dipylidium caninum</i>, <i>Diphyllobothrium latum</i>, <i>Spirometra erinaceieuropaei</i>). 5. Helminths invading human tissues and organs (<i>Echinococcus granulosus</i>, <i>E. multilocularis</i>, <i>Toxocara canis</i>, <i>Anisakis</i> spp.). 6. Filariiae (<i>Loa loa</i>, <i>Onchocerca volvulus</i>, <i>Wuchereria bancrofti</i>, <i>Brugia malayi</i>, <i>Dirofilaria repens</i>, <i>Dracunculus medinensis</i>). 7. Protozoa of the digestive system (<i>Giardia intestinalis</i>, <i>Entamoeba histolytica</i>/<i>E. dispar</i>, <i>E. coli</i>, <i>Endolimax nana</i>, <i>Iodamoeba butchlii</i>, <i>Balantidium coli</i>, <i>Blastocystis hominis</i>, <i>Pentatrichomonas hominis</i>). 8. Protozoa of the oral cavity and urogenital system (<i>E. gingivalis</i>, <i>Trichomonas tenax</i>, <i>T. vaginalis</i>). 9. Opportunistic and facultative protozoans (<i>Toxoplasma gondii</i>, <i>Cryptosporidium parvum</i>, <i>Cyclospora cayetanensis</i>, <i>Isospora belli</i>, <i>Sarcocystis</i> spp., <i>Acanthamoeba</i> spp., <i>Naegleria</i> spp.). 10. Cellular and tissue protozoans (<i>Plasmodium</i> spp., <i>Trypanosoma</i> spp., <i>Leishmania</i> spp., <i>Babesia</i> spp.). 11. Parasitic insects and pathogen carriers. 12. Parasitic arachnids and pathogen carriers. 13. Laboratory diagnostics of parasitic diseases. 14. Repetition. Discussing clinical cases. 15. Preparation recognition.	C.W10, C.W11, C.W12, C.W15, C.W16, C.U5, C.U6, C.U7

7. LITERATURE

Obligatory

1. Essentials of Medical Parasitology. Apurba Sankar Sastry, Sandhya Bhat K. JP Medical Ltd, 2018.
2. Parasitology workbook. Monika Dybicz, Aleksandra Sędzikowska. 2026.

Supplementary

Medical Parasitology. Rohela Mahmud, Yvonne Ai Lian Lim, Amirah Amir. Springer, 2018.
 Medical Parasitology. A Body System Approach. Khaled ElShewy. Springer, 2024.

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
C.W10, C.W11, C.W12, C.W15, C.W16, C.U5, C.U6, C.U7	Question answer or quiz during classes.	Correct answer to the question.
C.U5	Identification of 3 parasites specimen.	Correct identification of 100% specimen.

C.W10, C.W11, C.W12, C.W15, C.W16, C.U5, C.U6, C.U7	Exam in the form of a multiple choice test composed of 50 questions.	Obtaining over 55,00% points.
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9. ADDITIONAL INFORMATION

1. Students are required to prepare for the course, which will be verified by the student's answer or written test.
2. Due to contact with invasive material during classes, hygiene instructions should be strictly followed.
3. Attendance at all classes is obligatory, attendance should be on time. Absence from class is justified on the basis of a medical certificate or certificate of a random accident. Abandoned class should be done with another group or individually in exceptional situations after prior agreement with the person responsible for the subject (Ph.D. Monika Dybicz).
4. In the case of days off due to holidays, it is possible to make up for the seminars online on the Teams platform after prior arrangement with the lecturer.
5. Persons applying for transfer of the subject from previous years or from another university should write an application to the Head of the Department of General Biology and Parasitology and obtain permission of the Faculty Dean.
6. The number of the exam terms is determined in accordance with the study regulations.
7. There is Parasitological Scientific Club at the department. For more information contact: monika.dybicz@wum.edu.pl.

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ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers



Medical Communication

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Completion
Educational Unit / Educational Units	Studium Psychologii Zdrowia [Department of Health Psychology (DHP)] – seminars and practicals (in-person classes) ul. Litewska 14/16, 00-575 Warszawa, Tel. +48 22 116 92 11 Studium Komunikacji Medycznej [Department of Medical Communication (DMC)] – e-learning lectures ul. Litewska 14/16, 00-575 Warszawa, Tel. +48 22 116 92 270
Head of Educational Unit / Heads of Educational Units	DHP: Professor Dorota Włodarczyk, MA, PhD DMC: Antonina Doroszevska, MA, PhD
Course coordinator	Magdalena Łazarewicz, MA, PhD e-mail: magdalena.lazarewicz@wum.edu.pl
Person responsible for syllabus	Magdalena Łazarewicz, MA, PhD e-mail: magdalena.lazarewicz@wum.edu.pl
Teachers	Practicals: Magdalena Łazarewicz, MA, PhD (magdalena.lazarewicz@wum.edu.pl) Elżbieta Łazarewicz-Wyrzykowska, MA, PhD (ela.lazarewicz.wyrzykowska@gmail.com) E-learning lecture: Paulina Kumiega, MD (paulina.kumiega@wum.edu.pl)

2. BASIC INFORMATION			
Year and semester of studies	II year, 4 th semester (spring semester)	Number of ECTS credits	2.00
FORMS OF CLASSES	Number of hours	ECTS credits calculation	
Contacting hours with academic teacher			
Lecture (L)	15 (e-learning)	0.6	
Seminar (S)	8	0.3	
Classes (C)	12	0.5	
e-learning (e-L)			
Practical classes (PC)			
Work placement (WP)			
Unassisted student's work			
Preparation for classes and completions	15	0.6	

3. COURSE OBJECTIVES	
O1	Acquiring knowledge about the goals, principles and techniques of interpersonal communication.
O2	Learning methods to improve communication in medical practice and building a proper doctor-patient relationship.
O3	Learning and developing verbal and non-verbal communication skills in conversation with the patient.
O4	Development of knowledge and skills in collecting and transmitting information and building motivation for treatment and compliance with medical recommendations.
O5	Shaping the future doctor's attitude towards the patient based on respect, the right to autonomy, trust and empathy.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING	
Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)</i>
Knowledge – Graduate* knows and understands:	
D.W6	the concept of empathy and the phrases and behaviours used to express it;
D.W7	the specificity and role of verbal (conscious message construction) and non-verbal communication (e.g. facial expressions, gestures, silence and space management)

Skills– Graduate* is able to:	
D.U7.	develop and improve self-awareness, self-reflection and self-care, and reflect with others on their own way of communicating and behaving;
D.U9.	describe and critically evaluate their own behaviour and communication, taking into account the possibility of alternative behaviour;
D.U10.	use open-ended questions, closed questions, paraphrasing, clarification, internal and final summaries, signalling, active listening adequately to the situation (e.g. capturing and recognizing signals sent by the interlocutor, verbal and non-verbal techniques) and facilitation (encouraging the interlocutor to speak);
D.U11.	adapt verbal communication to the needs of the patient, expressing themselves clearly and avoiding medical jargon;
D.U12.	recognise and analyse difficult situations and communication challenges, including crying, strong emotions, anxiety, interruptions, awkward and sensitive issues, silence, withdrawal, aggressive and demanding behaviour, and deal with them in a constructive manner;
D.U13.	establish contact with the patient and the person accompanying the patient in order to build an appropriate relationship (e.g. 4 Habits Model: Invest in the beginning, Demonstrate empathy, Recognize the patient's perspective), Invest in the end);
D.U14.	look at the situation from the patient's perspective, building an appropriate conversational context and using the elicitation method, and then incorporating this into the construction of verbal messages.

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (non-compulsory)	
Number of effect of learning	Effects in the field of:
Knowledge – Graduate knows and understands:	
K1	-
Skills– Graduate is able to:	
S1	-
Social Competencies – Graduate is ready for:	
SC1	establishing and maintaining deep and respectful contact with the patient, as well as showing understanding for ideological and cultural differences
SC2	being guided by the patient's best interests
SC3	noticing and recognizing one's own limitations, making self-assessment of deficits and educational needs

6. CLASSES		
Form of class	Class contents	Effects of Learning
e-L	Functions of medical communication. Communication and patient satisfaction. The role of empathy in doctor-patient relationship. Methods of communication. Communication barriers and errors. Medical interview. Communication in medical team. Difficult conversations with patients. Motivational interviewing.	D.W6, D.W7, SC1, SC2

S1	The importance of communication for medical outcomes; basic rules of building a good doctor-patient/family relationship; showing respect and building rapport. Empathy and support - responding to patient's expectations and needs with empathy, eliciting and validating emotional state of patients during treatment process, providing emotional support to patients.	D.W6, D.U7, D.U9, D.U13, D.U14, SC1-SC3
S2	Goals and stages of medical consultation in the context of the doctor-patient relationship. Communication errors and methods to improve communication and empathy. Verbal and nonverbal aspects of communication; eliciting patient's perspective.	D.W7, D.U7, D.U9-D.U14, SC1-SC3
C1	Using communication techniques appropriate to the goals and stages of medical consultation, part 1	D.W6, D.W7, D.U7, D.U9-D.U14, SC1-SC3
C2	Using communication techniques appropriate to the goals and stages of medical consultation, part 2	D.W6, D.W7, D.U7, D.U9-D.U14, SC1-SC3
C3	Using communication techniques appropriate to the goals and stages of medical consultation, part 3	D.W6, D.W7, D.U7, D.U9-D.U14, SC1-SC3

7. LITERATURE

Obligatory

Materials provided withing the e-learning; PDF materials provided by the teacher during the course.

Supplementary

Silverman, J., Kurtz, S, Draper J (2008) Skills for Communicating with Patients. Radcliffe Publishing.

Lloyd, M., Bor R., Noble, L. (2019) Clinical Communication Skills for Medicine. Elsevier.

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
D.W6, D.W7, D.U10, SC1, SC2	Completing the e-learning course and submitting the written exercise required in the e-learning course.	Completion criterion: 80% progress, 80% passing grades in tasks, submission of the obligatory written assignment and obtaining at least 51% of points in the written assessment
D.W6, D.W7, D.U7, D.U9-D.U14, SC1-SC3	Active participation and implementation of tasks during seminars and classes according to the rules specified by the instructor. Preparation to the role-playing exercise. Task report.	Correct execution of tasks. Correctly prepared report.

9. ADDITIONAL INFORMATION

E-learning lectures (Department of Medical Communication)

Medical Communication lectures are conducted entirely via e-learning (8 modules). They will be held from November 2025 (winter semester) by the Department of Medical Communication. Detailed information regarding the schedule, format, and deadlines for e-learning courses is available on the e-learning.wum.edu.pl platform.

After completing the e-learning lectures students are obliged to submit a final written assessment on the platform. All the information regarding the assessment can be found on the e-learning.wum.edu.pl platform.

Those who fail the e-learning course (by either failing the final assessment or failing to complete other criteria) are entitled to a second attempt. This involves preparing an extra written assignment on medical communication. All the information regarding the retake extra written assignment will be sent to whom it may concern by the e-learning coordinator after the first assessment deadline.

Contact information to the e-learning coordinator: Paulina Kumięga, MD, paulina.kumiega@wum.edu.pl

Seminars and classes (Department of Health Psychology)

Attendance: Students are expected to attend and actively participate in all seminars and classes. One excused absence is permitted during the course. In the event of such an absence, students must make up the missed work. They should notify the instructor as soon as possible to determine the method for covering the missed material (specific tasks depending on the missed class).

Group changes (during seminars) or subgroup changes (during classes) are allowed only with prior approval from the course coordinator. Punctuality is essential. Arriving more than 15 minutes late will be counted as an absence and will require the student to complete additional task at the instructor's discretion, depending on the material missed.

To maintain a productive learning environment, students must turn off or silence all electronic devices that could disrupt the class.

Contact information to the course coordinator:

Magdalena Łazarewicz, MA, PhD
magdalena.lazarewicz@wum.edu.pl

The Department of Health Psychology runs the Psychological Students Science Club "Psyche" (in English) (contact information: magdalena.lazarewicz@wum.edu.pl).

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ATTENTION

The final 10 minutes of the last class in the block/semester/year should be allocated to students' Survey of Evaluation of Classes and Academic Teachers.



Hygiene and epidemiology

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Completion
Educational Unit / Educational Units	Department of Social Medicine and Public Health Medical University of Warsaw Pawiańskiego Str, 3a, 02-106 Warsaw
Head of Educational Unit / Heads of Educational Units	Professor Aneta Nitsch-Osuch, MD, PhD
Course coordinator	Professor Aneta Nitsch-Osuch, MD, PhD msizp@wum.edu.pl anna.jagielska@wum.edu.pl
Person responsible for syllabus	Anna Jagielska, MD, PhD – anna.jagielska@wum.edu.pl
Teachers	Anna Jagielska, MD, PhD – anna.jagielska@wum.edu.pl Katarzyna Okręglicka, MSc, PhD – katarzyna.okreglicka@wum.edu.pl Aleksandra Kozłowska, MSc, PhD – aleksandra.kozlowska@wum.edu.pl Katarzyna Lewtak, Md, PhD – katarzyna.lwetak@wum.edu.pl Klaudia Wiśniewska, MSc, PhD – klaudia.wisniewska@wum.edu.pl

2. BASIC INFORMATION

Year and semester of studies	2 nd year, 3 rd and 4 th semester		Number of ECTS credits	2.00
FORMS OF CLASSES		Number of hours	ECTS credits calculation	
Contacting hours with academic teacher				
Lecture (L)				
Seminar (S)		10	0.4	
Classes (C)		20	0.8	
e-learning (e-L)				
Practical classes (PC)				
Work placement (WP)				
Unassisted student's work				
Preparation for classes and completions		20	0,8	

3. COURSE OBJECTIVES	
O1	Presentation of the history, basic definitions and tasks of hygiene, epidemiology and health promotion
O2	Teaching about a healthy lifestyle: proper nutrition, proper physical activity, avoidance of addictions, healthy environment and others
O3	Teaching the principles to motivate patients to health-promoting behaviors
O4	Teaching the principles of prevention of infectious diseases and chronic non-communicable diseases
O5	Providing knowledge on epidemiological methods for assessing population health and disease risk factors

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING	
Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)</i>
Knowledge – Graduate* knows and understands:	
C.W14	aetiology, pathogenesis, pathophysiology, routes of transmission, forms and prevention of iatrogenic infections;

C.W17	principles of disinfection, sterilisation and aseptic management;
C.W26	pathogenesis of diseases, including genetic and environmental conditions;
G.W1	methods for assessing the health of individuals and populations, measures and principles of monitoring the health of populations, systems of classifying diseases and medical procedures;
G.W2	determinants of diseases, methods of identifying and examining disease risk factors, advantages and disadvantages of epidemiological research and principles of cause-and-effect inference in medicine;
G.W3	epidemiology of infectious diseases, including those related to health care, and non-infectious diseases, types and methods of prevention at various stages of the natural history of the disease, and the role and principles of epidemiological surveillance;
G.W9	legal regulations regarding transplants, artificial procreation, termination of pregnancy, aesthetic treatments, palliative care, persistent therapy, mental illnesses, infectious diseases;
G.W21	epidemiology of cancer diseases, in particular their nutritional, environmental and other lifestyle conditions affecting oncological risk;
G.W22	the importance of screening tests in oncology, including the risks associated with diagnostic tests of healthy people, and health benefits in relation to the most common cancer diseases in the Republic of Poland

Skills– Graduate* is able to:

G.U1.	describe the demographic structure of the population and, on this basis, assess and predict health problems of the population;
G.U2.	collect information on the conditions and presence of risk factors for infectious and non-communicable diseases and plan preventive activities at various levels of prevention;
G.U3.	interpret positive and negative measures of health;
G.U4	assess the epidemiological situation of infectious and non-communicable diseases in the Republic of Poland and in the world;
G.U10	organize the work environment in a way that ensures the safety of the patient and other people, taking into account the influence of human factors and ergonomic principles;

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (non-compulsory)

Number of effect of learning	Effects in the fields of:
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Knowledge – Graduate knows and understands:

K1	anthropometric, laboratory, and imaging diagnostic methods for assessing nutritional status
K2	social and economic consequences of nutritional disorders, with particular emphasis on hospital malnutrition
K3	environmental and epidemiological factors, causes, symptoms, and principles of diagnosis and therapeutic management regarding the most common internal diseases in adults and their complications: malnutrition
K4	indications and principles of nutritional therapy and fluid therapy tailored to requirements based on age, disease, and clinical status in various medical conditions;

Skills– Graduate is able to:

S1	estimate the requirement for individual nutrients
S2	assess nutritional status, taking into account the risk of disorders
S3	conduct patient health education, including nutritional education tailored to individual needs

Social Competencies – Graduate is ready for:

SC1	
SC2	

6. CLASSES		
Form of class	Class contents	Effects of Learning
S1	History of hygiene and epidemiology. Basic concepts and definitions	C.W14, C.W26, G.W1, G.W2,
S2	Modern tasks of health promotion with special attention to the role of the elements of a healthy lifestyle	C.W14, C.W26, G.W2, G.W3, G.W21, G.W22, K1-K4
S3	Epidemiological surveillance	C.W17, G.W3, G.U2, G.U10
S4	Current situation of noncommunicable diseases in Poland and in the world.	C.W26, G.W1, G.W2, G.W9, G.W21, G.W22, G.U2, G.W4, G.U10
S5	Health and the environment. Implementation of the health promotion at a workplace.	C.W17, G.W1, G.U1, G.U10
S6	Current situation of communicable diseases in Poland and in the world. New and re-emerging infectious diseases.	C.W14, G.W9, G.U1, G.U2, G.W3, G.W4
S7	The prevention of noncommunicable diseases	C.W26, G.W2, G.W21, G.U2, G.W4, K1-K4
S8	Types of epidemiological studies. Environmental epidemiology. Case – control and cohort studies. Clinical trial.	G.W1, G.W2, G.W3, G.U2, G.W4
S9	Hand hygiene as a fundamental method for preventing hospital infections and ensuring the safety of patients and medical staff. Hospital hygiene.	C.W17, G.U10
C1	Healthy lifestyle in everyday practice of medical doctors.	C.W14, C.W26, G.W2, G.W21, G.W22, S1-S3
C2	Methods to motivate patients to a healthy lifestyle	C.W14, C.W26, G.W2, G.W21, G.W22, S1-S3
C3	Identification of individual and environmental risk factors	G.U1, G.U2, G.W3, G.W4
C4	Prophylaxis for the treatment of early stages of non-communicable diseases.	G.W21, G.W22, G.U2, G.U10, S1-S3
C5	Methods for assessing the health status of individuals and populations. Death charts.	G.W3, G.W9, G.W4
C6	International Classification of Diseases and Health Problems.	G.W3, G.W9, G.W4
C7	Epidemiology in practice: study planning, interpretation of results, use of statistical methods, interpretation of results. Screening tests.	G.W1, G.W2, G.W3, G.U2, G.W4

C8	Methods for the prevention of infectious diseases at the population level. Anti-vaccine movements. Reporting of vaccine adverse effect (VAE) in every day medical practice.	C.W14, G.W9, G.U1, G.U2, G.W3, G.W4
C9	Reporting of an infectious disease to Sanitary Inspection. The outbreak of an infectious disease.	C.W14, G.W9, G.U1, G.U2, G.W3, G.W4
C10	Evaluation of the epidemiological situation of diseases widespread in the Republic of Poland and worldwide	C.W14, C.W26, G.W2, G.W21, G.W22
C11	Hand hygiene – practical classes	C.W14, C.W26, G.W2, G.W21, G.W22

7. LITERATURE

Obligatory

1. Friedman G.D. Primer of Epidemiology. McGraw-Hill, New York (available in the Institute)
2. Jędrychowski W, Muger U. Epidemiologic methods in studying chronic diseases. International Center for Studies & research in Biomedicine, Luxembourg 2000.
3. Ahrens W., Pigeot I. Handbook of Epidemiology. Springer-Verlag, Berlin, Heilderberg 2005 (selected chapters)
4. TUCKER KL et al. Modern nutrition in health and disease, 2024
5. www.who.org
6. <https://www.ecdc.europa.eu/en>
7. Polish Journal of Nutrition
8. American Journal of Preventive Medicine

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
C.W14, C.W17, C.W26, G.W1, G.W2, G.W3, G.W9, G.W21, G.W22, G.U1, G.U2, G.U3, G.U4, G.U10, K1-K4, S1-S3	Reviewing mandatory and supplementary course materials posted on the e-learning platform as part of independent study and preparation for practical classes. Attendance at all seminar sessions. Active participation in the seminar. Successful completion of practical exercises. Positive assessment of acquired skills and competencies by the instructor – exercise report. Credit for the seminar and practical class material is awarded based on a test comprising both multiple-choice and open-ended questions. The test takes place during the final class and consists of 30 test questions (1 point each) and 5 open-ended questions (2 points each).	100% attendance Obtaining credit from the instructor for mandatory tasks completed during the exercises. Credit - completion of the task in at least 61%. To pass a student needs to score at least >61% correct answers Assessment Criteria 2. 0 (failed) < 61% of points. 3. 0 (satisfactory) 61-75% 3. 5 (satisfactory +) 76-80% 4. 0 (good) 81-86% 4,5 (good +) 87-90% 5. 0 (very good) >90%

9. ADDITIONAL INFORMATION

Classes are conducted during the winter and summer semesters in accordance with the *Regulations of Studies at the Medical University of Warsaw* (an attachment to Resolution No. 23/2026 of the MUW Senate dated April 20, 2026).

- Course Coordinator: Anna Jagielska, MD, PhD; Department Teaching Assistant Professor: Katarzyna Okręglicka, MSc, PhDs
- Classes are held in the form of in-person seminars and practical exercises. The schedule of topics is available in the "Announcements" section of the e-learning platform for the *Hygiene and Epidemiology* course. The sequence of topics covered varies by group.
- Students should familiarize themselves with the recommended literature before attending seminars. Before attending practical classes, students should prepare for the practical component and review the materials made available via the e-learning platform. The platform also contains sample questions from the LEK exam (covering topics relevant to the classes).
- Students must arrive on time; the use of mobile phones and other electronic devices during class is prohibited except for purposes directly related to the seminar or practical exercises. Attending classes while under the influence of alcohol, intoxicants, psychotropic substances, substitute drugs, or new psychoactive substances—as defined by regulations on counteracting drug addiction—is prohibited (§ 20 of the STUDY REGULATIONS OF THE MEDICAL UNIVERSITY OF WARSAW, constituting an attachment to Resolution No. 23/2026 of the MUW Senate dated April 20, 2026). Should a student's actions constitute a disciplinary violation under § 21 of the aforementioned REGULATIONS, the appropriate university authorities will be notified immediately.
- Absences must be made up with another group, subject to prior arrangement regarding joining the class with the person responsible for instruction or the teacher conducting the specific class. The sequence of classes and their codes are listed separately for each group. Absences are excused in accordance with the procedures set out in § 23 and § 24 of the STUDY REGULATIONS OF THE MEDICAL UNIVERSITY OF WARSAW, constituting an attachment to Resolution No. 23/2026 of the Senate of the Medical University of Warsaw dated April 20, 2026. In particularly justified cases, making up an absence under individually determined conditions is permitted.
- Students are required to complete the course in the semester in which they began attending classes.
- Changing groups is possible with the consent of the course coordinator during the first four weeks of each semester (aleksandra.kozlowska@wum.edu.pl).
- In accordance with § 16 of the STUDY REGULATIONS OF THE MEDICAL UNIVERSITY OF WARSAW, constituting an attachment to Resolution No. 23/2026 of the Senate of the Medical University of Warsaw dated April 20, 2026, students making up curricular differences or applying to have a course credit—or a course credit and a colloquium grade—transferred/recognized are required to submit documents confirming the number of ECTS credits obtained and the grade from the colloquium/exam, along with an application approved by the Dean, by the end of October of the given calendar year. Students are required to attend classes until they obtain approval to transfer a course credit or to transfer both the course credit and the grade from a test or examination. Transferring a grade is possible upon obtaining written approval from the Head of the Department within the first four weeks of each semester.
- The course credit test will take place during the final class session for each group. A retake test will be held during the last week of classes of the semester (the specific date to be agreed upon with the course coordinator).
- In exceptional circumstances (e.g., an epidemic), the course regulations will be modified and posted on the e-learning platform for the "Hygiene and Epidemiology" course and on the Department's website.
- During classes, supplementary materials for the practical OSCE exam will be presented, covering topics such as the assessment of a patient's cardiovascular and metabolic risk, counseling on the prevention of lifestyle diseases, hand hygiene in medical settings, and epidemiological surveillance.
- We invite you to join the Student Scientific Society of Hygiene and Prevention at the Department of Social Medicine and Public Health.
- We also encourage you to visit our website at <https://msizp.wum.edu.pl>, where up-to-date information regarding the Department's activities and teaching-related announcements can be found.
- Please complete the course valuation survey at <https://my.wum.edu.pl>.

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ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers



Research Methodology

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical sciences
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Full-time studies
Type of module / course	Obligatory
Form of verification of learning outcomes	Completion
Educational Unit / Educational Units	Department of Methodology (1MN) Center for Preclinical Research, 1b Banacha Street, 3rd floor, room B06 e-mail: metodologia@wum.edu.pl, www.metodologia.wum.edu.pl Department of Health Economics and Medical Law Żwirki Wigury 81 Street, ZIAM building room no 5, tel. : 22 57-20-702 , e-mail: zep@wum.edu.pl www.zep.wum.edu.pl/

Head of Educational Unit / Heads of Educational Units	Assoc. Prof. Piotr Dziechciarz, MD, PhD
Course coordinator	Wiktor Paskal, MD, PhD, metodologia@wum.edu.pl
Person responsible for syllabus	Wiktor Paskal, MD, PhD, metodologia@wum.edu.pl
Teachers	Department of Methodology of Scientific Research Prof. Piotr Dziechciarz, MD, PhD Wiktor Paskal, MD, PhD Kacper Pełka MD, Dawid Mehlich MD, Klaudia Klicka MD, Michał Kopka MD, Albert Stachura MD, Department of Health Economics and Medical Law Prof. Aleksandra Czerw, PhD

2. BASIC INFORMATION			
Year and semester of studies	II year, III and IV semester	Number of ECTS credits	2
FORMS OF CLASSES		Number of hours	ECTS credits calculation
Contacting hours with academic teacher			
Lecture (L)		5 (3 in e-learning)	0.2
Seminar (S)		15 (15 in e-learning)	0.6
Classes (C)		15	0.6
e-learning (e-L)			
Practical classes (PC)			
Work placement (WP)			
Unassisted student's work			
Preparation for classes and completions		15	0,6

3. COURSE OBJECTIVES	
O1	To acquire the knowledge and skills necessary to conduct scientific research in accordance with Good Laboratory Practice (GLP) and Good Clinical Practice (GCP) standards.
O2	To systematize evidence-based knowledge (Evidence Based Medicine, EBM) necessary in daily medical practice.
O3	Introduction to sources of scientific data, ways of obtaining them and critical analysis. The phenomenon of pseudoscience.
O4	Gain the ability to plan and execute a simple scientific project and prepare the results for publication in scientific journals and presentation at conferences.
O5	Formation of correct ethical attitudes in scientific research.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING	
Code and number of effect of learning in accordance with standards of learning	Effects in the fields of: <i>(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)</i> <i>B. W23 B. W24, B. W26, D. W19</i> <i>B. U8, B. U9, B. U10, B. U11, D. U4, D. U5</i>

Knowledge – Graduate* knows and understands:

B.W23	basic IT and biostatistical tools used in medicine;
B.W24	basic methods of statistical analysis used in population and diagnostic studies;
B.W26	principles of research for the advancement of medicine
D.W19	the fundamentals of evidence-based medicine;

Skills– Graduate* is able to:

B.U8	use medical databases and correctly interpret the information they contain to solve problems in basic and clinical sciences;
B.U9	select an appropriate statistical test, carry out basic statistical analyses and use appropriate methods to present the results;
B.U10	classify scientific research methodology, including distinguishing between experimental and observational studies with their sub-types, ranking them according to the reliability of the results provided and correctly assessing the strength of scientific evidence;
B.U11	plan and carry out scientific research and interpret the results and formulate conclusions;
D.U4	demonstrate responsibility for improving their own skills and transferring knowledge to others;
D.U5	critically analyse medical literature, including literature in in English, and draw conclusions;

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (non-compulsory)	
Number of effect of learning	Effects in the fields of:

6. CLASSES		
Form of class	Class contents	Effects of Learning
Lectures	L1 - Creative scientific and research activities - conditions, requirements and legal protection. Conducting legal research in medicine and the biological sciences. Legally permissible animal, clinical, biomedical research. Protection of patients' personal data. Limits and legal conditions of creativity in medical and biological sciences. Copyright and industrial property rights. Lecture in the form of synchronous e-learning	BW.24, BW 26
	L2 - Science, not fiction. Means several words about manipulations in science. Unreliability and falsification in science. Manipulations in research design and interpretation. Problems of "predatory journals". Using scientific research in marketing and advertisement. Issues of pseudoscience. Lecture in the form of asynchronous e-learning	B.W26, D.W16
Seminars	S1 - Ethics in scientific research. Knowledge of regulations regarding the ethics of conducting animal and human research. Protection of sensitive data. The guidelines of the Declaration of Helsinki for the conduct of human research. Informed consent for research. Preparing an application to the bioethics committee. Animal research - EU and IACUC guidelines, principles of animal research design, legislation and preparation of applications to the Animal Ethics Committee. Seminar in the form of asynchronous e-learning	BW 26 BU11
	S2 - Fundamentals of EBM. Learning the principles of EBM, clinical research design. Types of scientific research. Research design - formulating a research question. Seminar in the form of asynchronous e-learning.	DW 19, BU 10
	S3 - Data types, basic statistics for research Identify the type of data obtained from research studies. Use and significance of PPV, NPV, OR, HR, CI95%. Determination of the minimum group size in the planned study. Seminar in the form of asynchronous e-learning.	BU10, BU11
	S4 - Medical databases. Effective use of medical databases to answer a scientific or clinical question. Basics of use and features of selected services for scientists and physicians. Seminar in the form of asynchronous e-learning	BU8, BU10, BU11
	S5 -Clinical trials Design, organization, methodology, phases of clinical trials. Interpretation of results including the most frequent errors. Use of research results in practice and medical technology assessment. Seminar in the form of asynchronous e-learning	BU8, BU10, BU11, BU23, BU24
	S6 - Methodology of preclinical research. Planning of pre-clinical research. Use of basic research results in clinical trials. Relevance and limitations of experimental studies. Seminar in the form of asynchronous e-learning	BU8, BU10, BU11, BU23, BU24
	S7 - Critical analysis of publications. Analysis of scientific articles using CONSORT and PRISMA guidelines. Systematic reviews and meta-analyses. Statistical versus clinical significance. Interpretation of survival using the Kaplan-Meier method Seminar in the form of asynchronous e-learning	BU 8, BU9, DU 4, DU 5

	S8 - Principles of preparing an abstract of a scientific article and a conference report. Rules for preparing clear and correct abstracts. Discussion of the most common mistakes made in scientific reports. Seminar in the form of asynchronous e-learning	BU 8, BU9, DU 4, DU 5
Classes	C1 - Data types, basic statistics for research Exercise complementary to the topic S3. Exercise in the form of asynchronous e-learning	BU 8, BU9, DU 4, DU 5
	C2 - Statistical analysis of scientific data. Statistical analysis of research data, interpretation of results, selection of optimal significance tests. Descriptive statistics, analysis of differences between groups. Practical use and interpretation of test results: Student's T-test, Mann-U-Whitney, Chi-square. Exercise in stationary form.	B.U 8, B.U9
	C3-C5 Exercises complementary to the topics of seminars S6-S8. Exercise in the form of synchronous e-learning.	BU 8, BU9, DU 4, DU 5
	C6 - Forms of scientific data presentation. Principles of graphic presentation of results. Creating clear charts, tables and diagrams. Tools helpful in preparing presentations. Practicing presentation of results. Exercise in the form of synchronous and asynchronous e-learning.	BU 8, BU9, DU 4, DU 5

7. LITERATURE

Obligatory

Materials on the e-learning platform prepared by the Department of Methodology

Supplementary

- Podstawy EBM czyli Medycyny opartej na danych naukowych dla lekarzy i studentów medycyny. Pod red. Piotra Gajewskiego, Romana Jaeschke, Jana Brożka. Wyd. Medycyna praktyczna, Kraków 2008, wyd. 1.
- Medical databases and professional medical journals – Pubmed, Embase, Scopus, Cochrane, Web of Science.
- Kodeks Etyki Lekarskiej, tekst jednolity z dnia 2 stycznia 2004r., zawierający zmiany uchwalone w dniu 20 września przez Nadzwyczajny VII Krajowy Zjazd Lekarzy, Warszawa 2004
- <https://poradnik-naukowy.gumed.edu.pl/>

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
D.W24, B.W23, B.W26, BU8, BU10, BU11, BU23, BU24, DU4, DU5	Credit of e-course (S, C): test questions and practical tasks in the form of e-learning Passing the final test from the materials on the e-learning platform	Credit for classes in the form of e-learning.
	Exercises and seminars (C, S) with an assistant: attendance, activity, realization of the topic, answering to the questions of the teacher and preparing a presentation on the last class.	Positive evaluation by the teacher.

9. ADDITIONAL INFORMATION (information essential for the course instructor that are not included in the other part of the course syllabus e.g. if the course is related to scientific research, detailed description of, information about the Science Club)

General comments.

The series of classes conducted by different Departments, led by the Department of Research Methodology, lasts for 6 weeks.

On the website of the Department of Research Methodology (<http://metodologia.wum.edu.pl/>) and on the e-learning platform there will be available schedules with information on how the classes will be conducted and the dates of classes for particular groups.

Full-time and e-learning synchronous classes (6 weekly meetings) will be held according to the schedule set for the following Dean's groups.

Seminars as well as Asynchronous Exercises and Lectures (C1, C5, W2) will be available on the e-learning platform (<https://e-learning.wum.edu.pl/login/index.php>) throughout the academic year.

The synchronous lecture (W1) takes place in the summer semester. The date will be communicated to the students at the beginning of the summer semester.

ATTENTION - the condition to take the last class in the schedule for a given group is a positive result of the final test on the e-learning platform. To take the test you need to read all obligatory materials on the platform and pass all sub-tests (otherwise the test will not be available).

We recommend that you familiarize yourself with the subsequent modules of the course on an ongoing basis. Many seminars (S3, S6-8, C6) constitute direct preparation for the exercise classes of the given topic (C2-C6) and the familiarisation with the material may be verified by the tutors during the classes.

Regulations and organization of classes:

1. Attendance at classes and seminars is compulsory.
2. Any absence from classes must be made up. Making up the classes at another time is possible only after an agreement with the Department, subject to availability. Inquiries about making up classes (e-learning and classes with an assistant) should be sent to: metodologia@wum.edu.pl
3. Part of the seminars is conducted in the form of e-learning. A student is obliged to do subsequent modules according to the schedule available on the e-learning platform.
4. Students are obliged to come to classes prepared to the content. Not being ready for classes is treated as an absence (especially during exercises C2-C6).
5. The condition to get the pass mark for the course is the participation in all classes and seminars and getting the positive mark of the assistant for the knowledge of the material provided for the given exercise and making and presenting the presentation during the last class.

The person responsible for didactics - Wiktor Paskal, MD, PhD. Contact via e-mail: metodologia@wum.edu.pl

Obtaining credit in the index is possible after completing all seminars, exercises and lecture in the summer semester.

There is a Student Scientific Society at the Department. Persons interested in cooperation are welcome to contact; SKN Supervisor - Wiktor Paskal, MD, PhD; e-mail: metodologia@wum.edu.pl.

The profile of the Department's scientific activity - <https://metodologia.wum.edu.pl/node/81>

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ATTENTION

The final 10 minutes of the last class of the block/semester/year should be allotted for students to fill out the Survey of Evaluation of Classes and Academic Teachers



INTERNSHIP AFTER THE SECOND YEAR OF STUDIES

Emergency medical care, family medicine

1. IMPRINT

Academic Year	2026/2027
Department	Faculty of Medicine
Field of study	Medicine
Main scientific discipline	Medical Science
Study Profile	general academic
Level of studies	uniform MSc
Form of studies	Full time studies
Type of module / course	obligatory
Form of verification of learning outcomes	Completion
Educational Unit / Educational Units	
Head of Educational Unit / Heads of Educational Units	
Course coordinator	Joanna Kacperczyk-Bartnik, MD, PhD, e-mail: joanna.kacperczyk-bartnik@wum.edu.pl (1W61) II Department of Obstetrics and Gynecology, MUW 2 Karowa St., 00-315 Warsaw Phone: 48 22 59 66 421
Person responsible for syllabus	
Teachers	

2. BASIC INFORMATION

Year and semester of studies	After the second year of studies	Number of ECTS credits	4
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FORMS OF CLASSES	Number of hours	ECTS credits calculation
Contacting hours with academic teacher		
Lecture (L)		
Seminar (S)		
Classes (C)		
e-learning (e-L)		
Practical classes (PC)		
Work placement (WP)	120= 90 hrs - primary health care (family medicine) 30 hrs - emergency care	4
Unassisted student's work		
Preparation for classes and completions		

3. COURSE OBJECTIVES	
O1	Acquiring practical skills in primary health care (family medicine)
O2	Acquiring practical skills in emergency care

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING	
Code and number of the effect of learning in accordance with standards of learning	Effects in the field of: <i>(in accordance with appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023)</i>

Knowledge – Graduate* knows and understands:

G.K1	
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In the field of primary health care (family medicine)

Skills– Graduate* is able to:

C.U11	prepare prescription formulation records of selected medicinal substances and issue prescriptions, including e-prescriptions, in accordance with legislation
D.U7	develop and improve self-awareness, self-reflection and self-care, and reflect with others on their own way of communicating and behaving;
D.U9	describe and critically evaluate their own behaviour and communication, taking into account the possibility of alternative behaviour;

D.U10	use open and closed questions, paraphrase, clarification, internal and final summaries, signaling, active listening (e.g. capturing and recognizing signals sent by the interlocutor, verbal and nonverbal techniques) and facilitation (encouraging the interlocutor to speak) appropriate to the situation;
D.U11	adapt verbal communication to the needs of the patient, expressing themselves clearly and avoiding medical jargon;
D.U12	recognise and analyse difficult situations and communication challenges, including crying, strong emotions, anxiety, interruptions, awkward and sensitive issues, silence, withdrawal, aggressive and demanding behaviour, and deal with them in a constructive manner;
D.U13	establish contact with the patient and the person accompanying the patient in order to build an appropriate relationship (e.g. 4 Habits Model: Invest in the beginning, Demonstrate empathy, Recognize the patient's perspective), Invest in the end);
D.U14	look at the situation from the patient's perspective, building an appropriate conversational context and using the elicitation method, and then incorporating this into the construction of verbal messages;
E.U1	take a medical history of an adult, including an older person, using skills regarding the content, process and perception of communication, taking into account the biomedical perspective and the patient's perspective
E.U2	take a medical history of the child and his/her caregivers, using skills regarding the content, process and perception of communication, taking into account the biomedical and patient perspectives; E.U3. take a medical history in a life-threatening situation using the SAMPLE scheme (S - Symptoms, A - Allergies, M - Medications, P - Past medical history, L - Last meal (last meal), E – Events prior to injury/illness (events before the accident/illness));
E.U5 pkt 1	perform a complete and focused physical examination of the adult appropriate to the specific clinical situation, including examination of: 1) physical examination
E.U6 pkt 1	conduct a complete and focused physical examination of the child from neonatal to adolescent period, adapted to the specific clinical situation, including examination of: 1) pediatric examination
E.U8	perform check-up tests, including comparing anthropometric and blood pressure measurements with data on percentile charts, and assessing the degree of puberty;
E.U9	recognize the most common symptoms of the disease in adults, use diagnostic tests and interpret their results, perform differential diagnosis, implement therapy, monitor the effects of treatment and assess indications for specialist consultation, in particular in the case of symptoms such as:
E.U10	recognize the most common symptoms of the disease in children, apply diagnostic tests and interpret their results, conduct differential diagnosis, implement therapy, monitor the effects of treatment and assess indications for specialist consultation, in particular in the case of symptoms such as:
E.U13	qualify the patient for vaccinations;
E.U18	keep the patient's medical records, including in electronic form, in accordance with the law;
G.U6	issue medical certificates and medical opinions, prepare opinions for the patient, authorized bodies and entities, prepare and maintain medical records (in electronic and paper form) and use information and communication tools and services in health care (e-health);

In the field of emergency assistance

Skills– Graduate* is able to:

E.U1	take a medical history of an adult, including an older person, using skills regarding the content, process and perception of communication, taking into account the biomedical perspective and the patient's perspective
E.U2	take a medical history of the child and his/her caregivers, using skills regarding the content, process and perception of communication, taking into account the biomedical and patient perspectives; E.U3. take a medical history in a life-threatening situation using the SAMPLE scheme (S - Symptoms, A - Allergies, M - Medications, P - Past medical history, L - Last meal (last meal), E – Events prior to injury/illness (events before the accident/illness));

E.U3	take a medical history in a life-threatening situation using the SAMPLE scheme (S - Symptoms, A - Allergies, M - Medications, P - Past medical history, L - Last meal (last meal), E – Events prior to injury/illness (events before the accident/illness));
E.U9	recognize the most common symptoms of the disease in adults, use diagnostic tests and interpret their results, perform differential diagnosis, implement therapy, monitor the effects of treatment and assess indications for specialist consultation, in particular in the case of symptoms such as:
E.U10	recognize the most common symptoms of the disease in children, apply diagnostic tests and interpret their results, conduct differential diagnosis, implement therapy, monitor the effects of treatment and assess indications for specialist consultation, in particular in the case of symptoms such as:
E.U18	keep the patient's medical records, including in electronic form, in accordance with the law;
E.U16	declare the patient dead;
F.U2	apply and change a sterile dressing;
F.U3	assess and treat a simple wound, including local anesthesia (superficial, infiltration), applying and removing surgical sutures, applying and changing a sterile surgical dressing;
F.U6	immobilise the limb on an ad hoc basis, including the choice of the type of immobilisation in typical clinical situations, and check the correctness of the limb's blood supply after the immobilisation dressing has been applied;
F.U8	treat external bleeding;
F.U11	perform BLS basic life support in adults, including using an automatic external defibrillator, in accordance with ERC guidelines;
F.U20	recognize ophthalmological conditions requiring urgent specialist assistance and provide initial pre-hospital assistance in cases of physical and chemical eye injuries;
G.U6	issue medical certificates and medical opinions, prepare opinions for the patient, authorized bodies and entities, prepare and maintain medical records (in electronic and paper form) and use information and communication tools and services in health care (e-health);

* In appendix to the Regulation of Minister of Science and Higher education from 29th of September 2023 „graduate”, not student is mentioned.

5. ADDITIONAL EFFECTS OF LEARNING (non-compulsory)	
Number of effect of learning	Effects in the fields of:
Knowledge – Graduate knows and understands:	
K1	
In the field of primary health care (family medicine)	
Skills– Graduate is able to:	
S1	familiarized himself with the scope of work of the clinic, including the procedure for registering patients, types of documentation, the method of its maintenance and the system of maintaining records in the clinic or centre, as well as the principles of issuing certificates of incapacity for work, other medical certificates, referrals for specialist examinations and the methods of completing them
In the field of In the field of emergency assistance	
Skills– Graduate is able to:	

S2	became familiar with the scope of activities of the emergency department, etc., maintaining documentation, ruling on temporary incapacity for work, referring patients to hospital, providing transport services, organizing rescue operations in cases of mass poisoning, illness, accidents, natural disasters, etc.
S3	Familiarized himself with the work of a paramedic during resuscitation, accident and pediatric ambulance trips or performing the same activities in hospital emergency departments
S4	assesses the patient's general condition, state of consciousness and awareness

Social Competencies – Graduate is ready for:

SC1	establishing and maintaining deep and respectful contact with the patient, as well as showing understanding for differences in worldviews and cultures
SC2	being guided by the patient's well-being
SC3	respecting medical confidentiality and patient rights
SC4	taking action towards the patient based on ethical principles, with awareness of the social conditions and limitations resulting from the disease
SC5	perceiving and recognizing one's own limitations and making self-assessment of deficits and educational needs
SC6	promoting pro-health behaviors
SC7	using objective sources of information
SC8	formulating conclusions from one's own measurements or observations
SC9	implementing the principles of professional camaraderie and cooperation in a team of specialists, including representatives of other medical professions, also in a multicultural and multinational environment
SC10	formulating opinions on various aspects of professional activity
SC11	taking responsibility related to decisions made as part of professional activity, including in terms of one's own safety and the safety of others

6. CLASSES

Form of class	Class contents	Effects of Learning
Work placement (WP)	Professional practice in primary healthcare (family medicine): - scope of work in a clinic: patient registration process, types of documentation, its maintenance, and the system for maintaining records in a clinic or center - principles for issuing certificates of incapacity for work, other medical certificates, referrals for specialist tests, and how to complete them - conducting an interview and physical examination of an adult patient - conducting an interview and physical examination of a child - assessment of a child's development during a physical examination with reference to normative growth charts, determining the level of sexual maturation - qualification for vaccinations - principles for the proper interpretation of the results of basic diagnostic tests	C.U11, D.U7, D.U9, D.U10, D.U11, D.U12, D.U13, D.U14, E.U1, E.U2, E.U5 pkt 1, E.U6 pkt 1, E.U8, E.U9, E.U10, E.U13, E.U18, G.U6, S1, SC1-SC11
Work placement (WP)	Professional practice in emergency care: - Scope of activities of the Hospital Emergency Department, maintaining records, determining temporary incapacity for work, referring patients to the hospital, providing transport services,	E.U1, E.U2, E.U3, E.U9, E.U10, E.U16, E.U18, F.U2, F.U3, F.U6, F.U8, F.U11, F.U20, G.U6,

	organizing rescue operations in cases of mass poisoning, illness, accidents, natural disasters, etc. - Working as a paramedic during accident and pediatric ambulance dispatches, performing the same activities in hospital emergency departments - Conducting a medical interview with an adult patient and with a child and their parents - Assessing the patient's general condition, level of consciousness, and awareness - Recognizing conditions that pose an immediate threat to life - Principles of proper interpretation of basic diagnostic test results - Procedures for trauma (applying a dressing or immobilization, dressing a wound) - Criteria for recognizing a patient's agony and declaring death - Maintaining patient medical records - Managing external bleeding - Basic life support with an automated external defibrillator and other life-saving procedures, as well as principles of first aid - Conditions ophthalmological requiring immediate specialist assistance, providing initial, qualified assistance in cases of physical and chemical eye injuries	S2, S3, S4, SC1-SC11
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7. LITERATURE
Obligatory
Supplementary

8. VERIFYING THE EFFECT OF LEARNING		
Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
C.U11, D.U7, D.U9, D.U10, D.U11, D.U12, D.U13, D.U14, E.U1, E.U2, E.U5 pkt 1, E.U6 pkt 1, E.U8, E.U9, E.U10, E.U13, E.U18, G.U6, S1, SC1-SC11	<u>PRIMARY HEALTH CARE (FAMILY MEDICINE)</u> Completed internship card and information about the internship coordinator with: - assessment of practical skills (made by the internship coordinator based on student observation) - max 6 points Rating scale: very good (5.0): 6 points good (4.0): 5 points sufficient (3.0): 3-4 points insufficient (2.0): below 3 points - assessment of social competences and professionalism (made by the internship coordinator based on student observation) - max 10 points Rating scale: very good (5.0): 9-10 points good (4.0): 7-8 points sufficient (3.0): 5-6 points insufficient (2.0): below 5.0 points	The condition for passing the internship is to obtain at least a satisfactory grade in terms of both the practical skills and social competences. Placement of the internship by the Internship Supervisor of the Medical University of Warsaw

E.U1, E.U2, E.U3, E.U9, E.U10, E.U16, E.U18, F.U2, F.U3, F.U6, F.U8, F.U11, F.U20, G.U6, S2, S3, S4, SC1-SC11	<u>EMERGENCY ASSISTANCE</u> Completed internship card and information about the internship coordinator with: - assessment of practical skills (made by the internship coordinator based on student observation) - max 12 points Rating scale: very good (5.0): 11-12 points good (4.0): 8-10 points sufficient (3.0): 6-7 points insufficient (2.0): below 6 points - assessment of social competences and professionalism (made by the internship coordinator based on student observation) - max 10 points Rating scale: very good (5.0): 9-10 points good (4.0): 7-8 points sufficient (3.0): 5-6 points insufficient (2.0): below 5.0 points	The condition for passing the internship is to obtain at least a satisfactory grade in terms of both the practical skills and social competences. Placement of the internship by the Internship Supervisor of the Medical University of Warsaw
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9. ADDITIONAL INFORMATION

Information on internships is available on the faculty website: <https://ed.wum.edu.pl/node/763>
Please read the Regulations for internships at the Faculty of Medicine, WUM, available on the website.
Internships are held during the summer holidays.

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VOCATIONAL TRAINING

Primary health care (family medicine) – 3 weeks – 90h

Emergency medical aid – 1 week – 30 h

2nd year, , 6-year program ED students

Faculty of Medicine

Second year students are expected to have their summer training according to following rule:

- a) a three-week family medicine training in the outpatients' department at a teaching hospital – 90h,
- b) a one-week training in the emergency medical aid service – 30h.

The head of the department or an appointed supervisor assigns a detailed program of the training and scheduled duties and also evaluates students' performance.

Responsible for the appropriate course of the training is a fully qualified specialist in a particular medical, laboratory or nursing area.

Students are expected to perform under supervision, all the nursing procedures typical of the outpatients' departments and to be involved in carrying out examinations or investigations in particular diagnostic laboratories and departments.

The ultimate goals of instruction provided in the outpatients' department are:

1. to acquaint students with procedures concerning patients' registration, types of records and filing system used in the outpatients' departments,
2. to provide information on rules of referring patients on sick leaves, releasing sickness certificates, referrals to specialists, filling in particular forms and letters
3. to teach the techniques of repairing surgical dressing materials and surgical instrument for sterilization,
4. to acquaint students with the functioning of the treatment room, to teach them to give subcutaneous, intracutaneous and intramuscular injections, to perform diagnostic tests and to interpret the results,
5. to teach the technique of application of plaster of Paris,
6. to teach the theory and, if possible, the practical application of the first aid in emergencies,
7. to prepare students to assist the physician in minor procedures,
8. to prepare students to assist the physician in examining outpatients and participating in home rounds.

Students' practical training in the Ambulance Service comprises the following:

1. instruction in the scope of activities provided by the service (completing and filing records, assessing the time of temporary work disability, referring patients to hospital, rendering transport service, organizing emergency / rescue operation in mass poisoning, epidemics, accidents, natural disasters etc.
2. assisting the physician in providing emergency aid and shadowing them on home calls.
3. assisting the physician in general, resuscitation, accident and emergency, pediatric and ob/ gyn ambulance calls.
4. instruction in life-saving procedures.

Throughout the course of the training students are expected to make records of their activities and procedures performed. They are also assessed by the instructor in charge and are finally granted their passing mark by the head of the department. Certificates written in English or translated should be submitted to the Dean's Office of the Medical University of Warsaw by September 20th of the subsequent academic year.