UNIWERSYTET MEDYCZNY W ŁODZI

Resolution No. 4/2026
of January 29, 2026
of the Senate of the Medical University of Lodz

on the programme of studies at the International Doctoral School

Pursuant to Article 28(1)(12) and Article 201(4) of the Act of July 20, 2018 – Law on Higher Education and Science (Journal of Laws of 2024, Item 1571, as amended), § 21(2)(1) and § 76(1) of the Statutes of the Medical University of Lodz of June 27, 2019 as amended, the Senate of the Medical University of Lodz hereby adopts the following resolution:

§ 1

The International Doctoral School run by the Medical University of Lodz specifies the programme of studies in the following disciplines: pharmacology and pharmacy, medical sciences and health sciences. The programme of studies is enclosed the Annex hereto.

§ 2

The programme of studies specified in § 1:
1) includes obligatory classes, elective courses, professional placement training and the following modules of elective thematic courses:
   a) molecular research,
   b) survey research,
   c) drug design and development: from concept to industry;
   d) organization and management in healthcare,
   e) artificial intelligence in medicine and health sciences;
2) applies to the cycle of studies commencing in the academic year 2026/2027.

§ 3

The Resolution becomes effective upon being adopted.

RECTOR
Prof. Janusz Piekarski, MD PhD

cc:
- Intranet/Public Information Bulletin

Annex to Resolution No. 4/2026
of January 29, 2026
of the Senate of the Medical University of Lodz

PROGRAMME OF STUDIES
AT THE INTERNATIONAL DOCTORAL SCHOOL

I. General outline of the programme of studies

The International Doctoral School is an organized form of education for doctoral students. It is run by the Medical University of Lodz in the following disciplines: pharmacology and pharmacy, medical sciences and health sciences.

Education at the International Doctoral School:
1) lasts eight semesters and ends with submission of a doctoral dissertation;
2) ensures preparation for obtaining the doctoral degree;
3) is provided in compliance with the programme of studies and an individual research plan.

The leading lecture language at the International Doctoral School is English.

Implementation of the programme of studies at the International Doctoral School results in achieving learning outcomes at level 8 of the Polish Qualifications Framework specified in the Act of December 22, 2015 on the Integrated Qualifications System (Journal of Laws of 2024, Item 1606) and regulations passes under Article 7(3) thereof.

The programme of studies at the International Doctoral School includes:
1) module I – obligatory courses (175 hours; classes common to all the disciplines);
2) module II - elective thematic courses (at least 40 hours in the educational cycle), enabling doctoral students to acquire knowledge in the field of:
   a) molecular research (40 hours),
   b) survey research (40 hours),
   c) drug design and development: from concept to industry (40 hours),
   d) organization and management in healthcare (40 hours),
   e) artificial intelligence in medicine and health sciences (40 hours),
3) module III – elective courses (at least 40 hours in the educational cycle; classes conducted in the form of seminars);
4) professional placement training in the form of conducting classes or participating in them (total 170 hours).

II. RELATION OF THE PROGRAMME OF STUDIES WITH THE MISSION AND DEVELOPMENT STRATEGY OF THE MEDICAL UNIVERSITY OF LODZ

The programme of studies at the International Doctoral School complies with the mission of the Medical University of Lodz and was developed based on its key idea, i.e. ensuring an outstanding quality of conducted research studies, updating educational offer in response to the needs of the community, particularly patients and entities providing healthcare services, making a significant contribution to development of the healthcare system by promoting modern prevention and treatment standards, and establishing strong relations of cooperation with institutions that carry out public health tasks at the regional, national and international level.

The programme of studies at the International Doctoral School complies with the development strategy of the Medical University of Lodz, including the objectives specified for the field of science and research and development activity, i.e. increasing the impact of the University's research activity on development of science, synergy of research, innovation and implementation, and advancement of clinical studies.

III. MAIN LEARNING OBJECTIVES

The main learning objective at the International Doctoral School is submission of a doctoral dissertation by a doctoral student and preparation for obtaining the doctoral degree.

The main learning objectives at the International Doctoral School also include:

1) preparing doctoral students for work involving teaching, research as well as research and development, also in an international community;
2) acquiring the skill of taking advantage of the world's scientific achievements, identifying and solving research problems, planning and conducting research studies as well as analyzing their results for the purpose of patents, publications or presentations at scientific conventions;
3) obtaining high research competencies and scientific independence by doctoral students;
4) preparing doctoral students for autonomous planning of their own scientific development and facing professional and public challenges, including the ethical aspect and responsibility, in compliance with the European Charter for Researchers;
5) preparing doctoral students for exchange of research experience and ideas, also in an international community;
6) preparing doctoral students for a professional career in institutions of the social and social environment-economic sector?;
7) strengthening the hard and soft competencies of doctoral students, thus enabling them to efficiently carry out their duties in their professional work;
8) providing best practices aimed at promoting the team nature of research, scientific and teaching work, which will contribute to multidirectionality and mutuality of relations within the team, as well as to an interdisciplinary approach to research problems.

The International Doctoral School promotes mobility of students and establishing of international relations by providing doctoral students with an opportunity for participation in international exchange programmes and international scientific conferences, as well as preparing doctoral students, in the course of education conducted in cooperation with foreign universities or scientific institutions, to obtain a joint doctoral degree.

IV. Preliminary requirements – candidate profile

Admission to the International Doctoral School may be applied for by a candidate holding a professional title of *magister*, *magister inżynier* or an equivalent title, being a graduate of the fields of studies such as in particular:

1) medicine;
2) medicine and dentistry;
3) pharmacy;
4) physiotherapy;
5) public health;
6) biotechnology;
7) biology;

8) other fields of study that prepare graduates to work in healthcare units, in particular: management, economics, law, logistics, sociology, psychology.

In exceptional cases, justified by top quality scientific achievements, the International Doctoral School may also admit a graduate of a first-cycle programme or a student who completed the third year of a uniform long-cycle programme. Scientific achievements of a candidate are assessed by the Recruitment Committee which may ask a relevant scientific discipline council or the Scientific Council of the Medical University of Lodz for their opinion.

Candidates applying for admission to the International Doctoral School should have competences and scientific achievements that allow for taking up education at level 8 of the Polish Qualifications Framework in the following disciplines: pharmacology and pharmacy, medical sciences, health sciences. They should also have knowledge of the English language at B2 level at least.

V. PROCEDURE OF RECRUITMENT TO THE INTERNATIONAL DOCTORAL SCHOOL

Candidates applying for admission to the International Doctoral School are recruited through a contest under the rules and regulations specified by the Senate of the Medical University of Lodz. The results of the contest are open to the public. Both candidates being Polish citizens and foreigners may apply for admission to the International Doctoral School.

Limits of admissions to the International Doctoral School, for specific scientific disciplines in which studies are offered, are set by the Rector based on applications for awarding places at the International Doctoral School filed by the heads of the University research and teaching and teaching units in a given academic year and an analysis of costs of educating doctoral students incurred by the University.

The procedure of recruitment to the International Doctoral School includes the following stages:
1) registration in the University electronic recruitment system by candidates;
2) submission of documents required in the recruitment procedure by candidates;
3) verification of documents submitted by candidates;
4) qualification procedure;
5) entry into the register of doctoral students or issue of an administrative decision.

In the qualification procedure, a candidate is awarded recruitment points in particular for the following: results of exams in the English language and a major subject, the average grade obtained for the period of first-cycle and second-cycle programmes of studies or a unified long-cycle programme of studies and scientific achievements. Candidates are qualified for admission to the International Doctoral School based on ranking lists.

A candidate applying for admission to the International Doctoral School is obliged to present an outline of a research project, in Polish or English language, related to the selected topic of a research study.

The rules of recruitment to the International Doctoral School, including those for candidates applying for admission under programs or projects financed with external funds, are specified in a separate resolution of the Senate.

VI. DESCRIPTION OF INTENDED LEARNING OUTCOMES

A description of the intended learning outcomes includes characteristics of the second level for qualifications at level 8 of the Polish Qualifications Framework as specified in the Regulation of the Minister of Science and Higher Education of November 14, 2018 on the characteristics of the second level of learning outcomes for qualifications at levels 6-8 of the Polish Qualifications Framework (Journal of Laws, Item 2218). The learning outcomes refer to the following scientific disciplines: pharmacology and pharmacy, medical sciences, health sciences.

Key descriptive categories	Description component code	Characteristics of the second level of learning outcomes for qualifications at level 8 of the Polish Qualifications Framework
KNOWLEDGE (a person knows and understands):		
Scope and depth of understanding – completeness of the cognitive perspective and dependencies	P8S_WG	• to an extent allowing for a review of the existing paradigms - the world's achievements, including theoretical fundamentals and general issues as well as selected detailed issues related to a specific scientific discipline; • main development trends of the scientific disciplines in which studies are offered; • methodology of scientific research; • rules of dissemination of research findings results, also as open access resources.
Context – conditions and effects	P8S_WK	• fundamental dilemmas of the contemporary civilization; • economic, legal, ethical and other significant conditions of research activity; • basic principles of transfer of knowledge to economic and social sphere and commercialization of research findings and related know-how.
SKILLS (a person is able to):		
Applying knowledge in practice – problem solving and performed tasks	P8S_UW	• apply knowledge in different fields of science for creative identification, formulation and innovative solutions of complex problems or performance of various research tasks, in particular: - define the objective and subject of research studies, formulate a research hypothesis, - develop research methods, techniques and tools and apply them creatively, - draw conclusions based on research findings; • make a critical analysis and assessment of research findings, expert activity and other creative studies

		and their contribution to the development of knowledge; • transfer research findings into the economic and social sphere.
Communication – interpreting and making statements, dissemination of knowledge in the scientific community and using a foreign language	P8S_UK	• communicate on specialized topics to an extent ensuring active participation in an international scientific community; • disseminate results of scientific activities, including in popular forms; • initiate a debate; • participate in scientific discourse; • use a foreign language at B2 level of the Common European Framework of Reference for Languages to an extent required for participation in international scientific and professional community.
Work organization – planning and teamwork	P8S_UO	• plan and perform individual and team research undertakings, also in an international community.
Learning – planning one's own development as well as development of others	P8S_UU	• independently plan and act for the purpose of one's own development as well as inspire and organize development of others; • plan courses or groups of courses and conduct them using modern methods and tools.
SOCIAL COMPETENCE (a person is ready to):		
Evaluation – critical approach	P8S_KK	• critically assess achievements in a given scientific discipline; • critically assess one's own contribution to the development of a given scientific discipline; • recognize the significance of knowledge for solving cognitive and practical problems.
Responsibility – fulfilling social tasks and acting for the public interest	P8S_KO	• fulfil social responsibilities of researchers and creators; • initiate activities for the public interest; • think and act as an entrepreneur.

Professional role – independence and development of the ethos	P8S_KR	• maintain and develop the ethos of scientific community, including: - conducting research activity in an independent way, - respect the principle of public property of research findings and the rules of intellectual property protection.

VII. VERIFICATION OF THE LEARNING OUTCOMES

Following completion of a course in a subject specified in the programme of studies, the learning outcomes achieved by doctoral students are verified in exams, credit tests or credits with grades. The form of obtaining a credit is defined in the schedule of implementation of the studies programme. Doctoral students are informed about the procedure of holding an exam or awarding a credit by an academic teacher before the commencement of a cycle of classes.

Exams and credit tests may be a written or spoken verification of knowledge and skills. Credits may be awarded based on written papers (essays) on a given subject, multimedia projects or presentations prepared by doctoral students.

The learning outcomes achieved by a doctoral student are also verified by assessment of:

1) a doctoral student's presentations given during an open doctoral seminar - an annual review session involving a presentation of research hypotheses, methods and research findings given in English;
2) implementation of an individual research plan, including a schedule of the doctoral dissertation preparation, conducted by an evaluation committee in the form of a mid-semester grade in the middle of the education period; the mid-semester grade results in a satisfactory or unsatisfactory result, and the result together with justification is open to the public.

VIII. SCHEDULE OF IMPLEMENTATION OF DOCTORAL STUDIES PROGRAMME

(for the cycle of education starting in the academic year 2026/2027)

The schedule of implementation of studies programme at the International Doctoral School defines:
1) subjects taught in obligatory and elective courses, including the number of hours thereof;
2) number of hours of professional placement training;
3) plan of obligatory and elective courses and professional placement training in each semester of studies;
4) forms of conducting classes and awarding credits for courses and professional placement training.

MODULE I – OBLIGATORY COURSES
(common for all the disciplines)

YEAR 1 (SEMESTERS 1 and 2)

No.	Name of the course	Type of classes	Total number of hours	Form of awarding a credit

						for the course
		lecture	practical class	seminar		
1	Occupational health and safety training		4		4	CREDIT
2	Plagiarism and research abuses (e-learning)	1			1	CREDIT
3	Medical statistics		15		15	EXAM
4	Fundamentals of didactics		10		10	CREDIT WITH A GRADE
5	Legal protection of intellectual property (2h) Commercialization of research studies (3h)	2		3	5	CREDIT
6	Scientific information – library training, using the University databases, bibliometric parameters, library workshop, information search, reference management software		8		8	CREDIT WITH A GRADE
7	Legal conditions of conducting medical experiments and preparing an application to the Bioethics Committee			5	5	CREDIT WITH A GRADE
8	Ethical aspects of research studies and the Code of Ethics for Research Workers			3	3	CREDIT WITH A GRADE
9	Structure of a scientific paper		4		4	CREDIT
10	Health informatics		15		15	CREDIT WITH A GRADE
11	Principles of conducting research studies and preparing scientific publications	5		10	15	CREDIT WITH A GRADE
12	DOCTORAL SEMINAR – PUBLIC DEBRIEFING SESSION			10	10	EXAM
	TOTAL	7	56	31	95	

13	PROFESSIONAL PLACEMENT TRAINING (conducting or co-participation in conducting of teaching classes for students)		20		20	CREDIT

YEAR 2 (SEMESTERS 3 and 4)

No.	**Name of the course**	**Type of classes**			**Total number of hours**	**Form of awarding a credit for the course**
		lecture	practical class	seminar		
1	English language		30		30	EXAM
2	Preparation of a scientific application to the National Science Centre (NCN)	5	15		20	CREDIT
3	DOCTORAL SEMINAR – PUBLIC DEBRIEFING SESSION			10	10	EXAM
	TOTAL	5	45	10	60	
4	PROFESSIONAL PLACEMENT TRAINING (conducting or co-participation in conducting of teaching classes for students)		50		50	CREDIT

YEAR 3 (SEMESTERS 5 and 6)

No.	**Name of the course**	**Type of classes**			**Total number of hours**	**Form of awarding a credit for the course**
		lecture	practical class	seminar		
1	DOCTORAL SEMINAR – PUBLIC DEBRIEFING SESSION			10	10	EXAM
	TOTAL			10	10	
2	PROFESSIONAL PLACEMENT TRAINING (conducting or co-participation in conducting of teaching classes for students)		50		50	CREDIT

YEAR 4 (SEMESTERS 7 and 8)

No.	Name of the course	Type of classes			Total number of hours	Form of awarding a credit for the course
		lecture	practical class	seminar		
1	DOCTORAL SEMINAR – PUBLIC DEBRIEFING SESSION			10	10	EXAM
	TOTAL			10	10	
2	PROFESSIONAL PLACEMENT TRAINING (conducting or co-participation in conducting of teaching classes for students)		50		50	CREDIT

MODULE II – THEMATIC COURSES

The doctoral student chooses at least one of the four thematic modules:
1) molecular research;
2) survey research;
3) drug design and development: from concept to industry;
4) organization and management in healthcare;
5) artificial intelligence in medicine and health sciences.
Each module includes at least 40 hours of classes.

1. MOLECULAR RESEARCH

During their studies, doctoral students acquire knowledge on molecular techniques, as well as legal and ethical aspects of animal-model research and cell-model research. Large-scale analysis, data visualization and basic bioinformatic methods are also presented. The courses are conducted in English.

No.	Name of the course	Type of classes			Total number of hours	Form of awarding a credit for the course
		lecture	practical class	seminar		
1	Collection and protection of material for research			2	2	EXAM
2	Standard methods of protein quantification and metabolite detection		4	2	6	

3	Standard methods of assessment of gene mutation, structural variations and expression		4	2	6	
4	Filing an application for an opinion with the Ethics Committee for Animal Testing	2			2	
5	Animal models in basic research			4	4	
6	Cell cultures		2	2	4	
COMPUTR / MICROSCOPE LABORATORY	Visualization of life processes – microscope studies		2	2	4	
	Large-scale research – proteomics, transcriptomics, metabolomics	2	2		4	
	Molecular data analysis – methods of analysis and visualization of large-scale data and modelling of biological processes		8		8	
	TOTAL	4	22	14	40	

2. SURVEY RESEARCH

The aim of the module is to present specific features of survey, economic, psychometric and social research studies in medicine and health sciences. During the classes, doctoral students acquire knowledge on techniques applied in creation, validation and translation of specialized surveys, assumptions of pharmacoeconomic analyses and costs of medical procedure efficiency. They also get familiar with open-access epidemiology databases and existing medical data registers. The preferable language in which classes are held is English.

No.	**Name of the course**	**Type of classes**			**Total number of hours**	**Form of awarding a credit for the course**
		lecture	practical class	seminar		
1	Demographic and quality-of-life coefficients			3	3	EXAM
2	Epidemiological research issues	2			2	
3	Qualitative research in medicine		3		3	
4	Creation and standardization of psychometric tests		4		4	
5	Results reported by patients			2	2	

6	Pharmacoeconomic analyses and efficiency cost in medicine	2			2	
7	Working with foreign-language survey tools			2	2	
8	Population survey research	2			2	
9	Quality standards in survey research	2			2	
10	Legal aspects of processing and protection of personal data in survey research	2			2	
Computer laboratory	Repositories of survey research		2		2	
	Creation and validation of one's own survey questionnaire		6		6	
	Statistical analysis of survey data		8		8	
	TOTAL	10	23	7	40	

3. DRUG DESIGN AND DEVELOPMENT: FROM CONCEPT TO INDUSTRY

This module aims to provide interdisciplinary knowledge of the complete drug development process—from biological target identification and molecule design, through bioanalytical, pharmacokinetic, and toxicological studies, to industrial development, registration, and commercialization. The module aims to develop critical analysis skills for research and development strategies, to understand regulatory aspects, and to prepare doctoral students for collaboration in the scientific and industrial environments. Classes are held in semesters II–VI.

No.	Name of the course	Type of classes			**Total number of hours**	**Form of awarding a credit for the course**
		lecture	practical class	seminar		
1	Introduction to drug design		6	9	15	EXAM
2	Drug development process – bioanalytical, pharmacokinetic and regulatory aspects			15	15	
3	Selected aspects of industrial pharmacy		4	6	10	
	TOTAL	0	10	30	40	

4. ORGANIZATION AND MANAGEMENT IN HEALTHCARE

Within this module, PhD students will become familiar with management topics most needed in the healthcare system, such as: methods of organizing individual and team work, human resources management, and the use of marketing to shape consumer behavior in the healthcare market. Classes are held in semesters II-VI.

No.	Name of the course	Type of classes			**Total number of hours**	**Form of awarding a credit for the course**
		lecture	practical class	seminar		
1	Organization of work and management of facilities in the healthcare sector	10	10		20	EXAM
2	HR management	6	4		10	
3	Marketing and consumer behavior on the healthcare services market	6	4		10	
	TOTAL	22	18		40	

5. ARTIFICIAL INTELLIGENCE IN MEDICINE AND HEALTH SCIENCES

This module aims to familiarize doctoral students with modern artificial intelligence (AI) techniques and tools, with a particular emphasis on generative models and deep and machine learning. During the course, doctoral students acquire the theoretical knowledge and practical skills necessary to independently apply AI for scientific purposes, such as in medical data analysis, biological process modeling, clinical trials, and therapy personalization. The program emphasizes an interdisciplinary approach that also considers ethical and legal aspects of AI development and implementation in medical sciences. Courses are held in semesters II–VI.

No.	Name of the course	Type of classes			**Total number of hours**	**Form of awarding a credit for the course**
		lecture	practical class	seminar		
1	Introduction to Artificial Intelligence (AI) in Medicine and Health Sciences	3			3	EXAM
2	Machine learning and deep learning methods		3	6	9	

3	Natural Language Processing (NLP) and Generative AI Models	2	4		6	
4	Artificial Intelligence in Clinical Trials	2		6	8	
5	Recommender systems and therapy personalization using AI		3		3	
6	Ethical, legal and social aspects of using AI	3			3	
Computer Lab	AI in telemedicine and in the analysis of data from medical devices		4		4	
	Bioinformatics and AI in genomic and proteomic research		4		4	
	TOTAL	10	18	12	40	

MODULE III – ELECTIVE COURSES
(seminars)

The elective courses are chosen by doctoral students from among courses offered by the University research and teaching units in each academic year. The total number of hours of elective classes during the period of studies may not be lower than 40 hours.
To complete an elective course, a doctoral student must be awarded a credit.

TOTAL NUMBER OF HOURS

	Module I – obligatory courses	**Module II –thematic courses (molecular research or survey research)***	**Module III – electives (seminars)**	**Professional placement training**	**Total**
Year 1	95	40*	40	20	
Year 2	60			50	
Year 3	10			50	
Year 4	10			50	
Total	175	40*	40	170	425

* At least one of the following thematic modules to choose from: molecular research, survey research, drug design and development: from concept to industry, organization and management in healthcare, and artificial intelligence in medicine and health sciences. Each module consists of 40 hours.