# Programme of Studies

**at the Doctoral School of Medical and Health Sciences**

**The main objectives**

1. Programme of Studies at the Doctoral School of Medical and Health Sciences (DSMHS) was developed in accordance with the Act of July 20, 2018, Law on Higher Education and Science, and the current JU guidelines.
2. The education in DSMHS lasts for eight semesters and following the Doctoral Programmes (hereinafter DP) based on the Study Programme (SP) and the Individual Research Plan (IRP).
3. DPs are offered in one or more disciplines in which the Jagiellonian University has the authority to award a doctor's degree.
4. The IRP has to be presented to the DP Head within 12 months from the start of the education. After consulting the supervisor, the programme committee and the doctoral committee, if appointed, the DP Head approves the plan.
5. The study programme in DSMHS leads to learning outcomes for qualifications at level 8 of the Polish Qualifications Framework.
6. The languages of the study programme are Polish and English.
7. Persons with a degree of MA/MSc., MSc. Engineer or equivalent in any other discipline and persons referred to in Article 186(2) of the Act may apply to DSMHS. The requirement is verified at the registration stage.
8. The number of ECTS credits assigned to the programme is at least 40 ECTS credits, of which: minimum 30 ECTS credits are related to preparing a PhD student to conduct and publish scientific research, including 25 ECTS credits obtained by the end of the IV semester.
9. PhD students may choose optional courses at other faculties outside of JU Medical College in a total maximum of 3 ECTS credits.
10. The specific requirements and eligibility criteria for the doctoral programme are specified in the DSMHS Recruitment Procedures, approved by the JU Senate.

# Study programme evaluation

1. The supervisor oversees a PhD student's SP and IRP.
2. The SP and IRP implementation is periodically assessed by the doctoral committee and, if not appointed, by an evaluation team composed of a supervisor/s, a DP Head and a representative of the DSMHS Council, based on the report submitted by a PhD student.
3. The first evaluation takes place no later than 12 months after entering education. Subsequent evaluations are carried out at least once every 12 months on the dates specified in IRP.
4. The change of IRP, particularly the change of dates related to individual PhD student's duties, requires the DP Head's approval.
5. The DP Head may approve other classes with the appropriate ECTS credits that are not specified in SP.
6. By the end of the fourth semester, the PhD student shall be subject to a mid-term evaluation before the committee. The Director appoints the committee at the DP Head's request, at least three months before the scheduled date for the mid-term evaluation.
7. DP Head sets the evaluation deadline.
8. The PhD student submits an IRP and SP implementation report at the latest 30 days before the mid-term evaluation committee's scheduled meeting.
9. The mid-term evaluation committee meetings are attended by its members and PhD students, excluding the supervisor and auxiliary supervisor. In the first part of the examination, a PhD student presents his/her accomplishments so far. Then, during a closed session, the committee elaborates on a mid-term evaluation with a substantive justification.

# Competence evaluation:

In the Doctoral School of Medical and Health Sciences, a PhD student acquires the following competences:

1. competences covering advanced theoretical issues relevant to the scientific DSMHS profile and methodological competences preparing for conducting and publishing scientific research;
2. academic competences (e.g. scientific publications, scientific communication, fundraising for research, research ethics, dissemination of research results, etc.);
3. professional and soft competences (e.g. career planning, preparation for teaching, project management, managerial skills, business communication, etc.);
4. a PhD student who intends to obtain qualifications necessary to conduct didactic work is obliged to undergo internships in conducting classes or participating in their conducting in the amount not exceeding 60 didactic hours for the entire DSMHS education cycle.

# Description of the Study Programme:

The DSMHS Study Programme consists of four modules:

Module I: Methodological education (compulsory part);

Module II: Education in secondary scientific competences (compulsory part;

Module III: Specialist education (optional courses);

Module IV: Complementary professional and soft skills education (optional courses).

The Study Programme is implemented by selecting courses belonging to a particular module. Each module specifies the range of common activities offered by DSMHS for all doctoral programmes, courses dedicated to the specific Doctoral Programme only, and courses offered in the student's Individual Research Plan.

An obligatory research internship of at least two weeks, conducted at a research centre abroad, is introduced into the Doctoral School's Study Programme. The internship will be financed under available JU programmes in bilateral agreements or other programmes, including Erasmus plus. The internship will be implemented after the mid-term evaluation. After agreeing with the supervisor, the PhD student applies to a foreign research centre and applies for its funding.

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| **Symbol****of learning outcomes** | **A graduate of the Doctoral School of Medical and Health Sciences:** | **Reference to learning outcomes set out in the Regulation**\*) |
| **KNOWLEDGE:**  |
| W\_1 | knows and understands a scientific research methodology covering theoretical foundations and general issues related to the represented discipline of medical and health sciences taught at the doctoral school. | P8S\_WG |
| W\_2 | knows and understands scientific research methodology covering selected complex issues relevant to the discipline in which the doctoral dissertation is prepared to the degree that allows for a revision of the existing paradigms. | P8S\_WG |
| W\_3 | knows and understands economic, legal and ethical determinants of research activity and its aspects. | P8S\_WK |
| W\_4 | is familiar with the knowledge transfer and commercialization of research results. | P8S\_WK |
| W\_5 | has basic knowledge of acquiring research projects: sources of funding and current procedures (application for grants, evaluation of applications) | P8S\_WG |
| W\_6 | knows and understands the rules for scientific results dissemination, also in the open-access mode, and the basic principles for the knowledge transfer to the economic and social sphere, including the basic principles for the commercialization of scientific research activity and know-how related to these results. | P8S\_WK |
| W\_7 | knows and understands modern concepts, methods and tools for teaching or training activity. | P8S\_WK |
| W\_8 | knows and understands global achievements, including theoretical foundations, general issues and selected specific issues related to the discipline in which the doctoral dissertation is prepared. | P8S\_WG |
| W\_9 | knows and understands the main development trends of scientific disciplines crucial for education in medical and health sciences. | P8S\_WG |
| W\_10 | knows and understands selected paradigms in the field of science in which the doctoral programme is carried out. | P8S\_WG |

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| **SKILLS:** |
| U\_1 | using his/her knowledge, can critically analyze and evaluate the results of scientific research achievements in the discipline represented and his/her contribution to its development. | P8S\_UW |
| can formulate new solutions to problems within established and modified methodological paradigms. |
| can creatively apply and develop methods, techniques and research tools appropriate for the conducted research. |
|  is able to make conclusions based on scientific research results. |
| U\_2 | can disseminate or transfer the results of scientific activities also in popular forms. | P8S\_UK |
| U\_3 | can prepare an application for funding of a research project. | P8S\_UW |
| U\_4 | can speak a modern foreign language to the degree that enables participation in an international scientific and professional environment, in particular in connection with the involvement in conferences, seminars, workshops, etc., at home and abroad; can establish contacts for the exchange of experience and communicate on specialist topics at the B2 level of the Common European Framework of Reference for Languages, with specialists in his/her scientific and professional discipline, as well as with people from outside these environments. | P8S\_UK |
| U\_5 | can plan and implement an individual or team research or creative project, also in an international environment. | P8S\_UO |
| U\_6 | can document and present the results of research work, and prepare scientific publications– respecting appropriate principles and the rules of intellectual property protection. | P8S\_UW |
| U\_7 | can participate in the scientific discourse and initiate a debate. | P8S\_UK |
| U\_8 | can independently plan and act for his/her own scientific and professional development as well as inspire and organize other people's development. | P8S\_UU |
| U\_9 | can develop and give classes within his/her ​​scientific and professional activity and with the use ofmodern methods and tools. | P8S\_UU |
| U\_10 | can transfer the results of research work into the economic and social sphere; can analyze the potential for transferring research results to the economic and social sphere and initiate actions to implement such transfer. | P8S\_UW |

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| U\_11 | can define the purpose and subject-matter of the research, formulate a research hypothesis, develop methods, techniques and research tools and apply them creatively based on the research results. | P8S\_UW |
| U\_12 | using his/her knowledge, can critically analyze and evaluate research result, expert activities and other creative works, and their contribution to knowledge development.  | P8S\_UW |
| U\_13 | can use knowledge from a given scientific discipline to creatively identify, formulate and innovatively solve complex problems or perform research tasks. | P8S\_UW |
| U\_14 | can critically refer to the current state of research in the discipline in which his/her doctoral project is implemented. | P8S\_UW |
| **SOCIAL COMPETENCES:** |
| K\_1 | is ready for a critical evaluation of his/her scientific achievements and expert activities within the discipline in which the doctoral dissertation is prepared. | P8S\_KK |
| K\_2 | is ready for a critical evaluation of his/her contribution to developing the scientific discipline in which the doctoral dissertation is prepared. | P8S\_KK |
| K\_3 | can define the role of methodological paradigms of his/her discipline and the disciplines in solving social problems. | P8S\_KO |
| K\_4 | can identify the need to formulate new research paradigms within the discipline in which is his/her doctoral project is implemented. | P8S\_KR |
| K\_5 | is ready to fulfil the social obligations of researchers and creators and initiate public interest activities by properly disseminating information and opinions on scientific achievements to the public, training specialists, and other activities leading to a knowledge-based society. | P8S\_KO |
| K\_6 | is ready to think and act in an enterprising way, creating new ideas and seeking innovative solutions with representatives of other disciplines; is prepared for intellectual challenges in scientific/professional and public sphere and taking responsibility for his/her decisions. | P8S\_KO |
| K\_7 | is ready to maintain and develop the ethos of research and creative environments, including researching independently, taking into account i.a. existing financial and infrastructural constraints; is ready to respect the principle of public ownership of research results together with the principles of intellectual property protection. | P8S\_KR |
| K\_8 | can recognize the importance of knowledge from other disciplines and domains (other than the one in which the doctoral programme is implemented) in addressing cognitive and practical problems. | P8S\_KR |
| K\_9 | is ready to consider in his/her research the solutions proposed by other disciplines of knowledge. | P8S\_KR |

STUDY PROGRAMME OF THE DOCTORAL SCHOOL OF MEDICAL AND HEALTH SCIENCES

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| **STUDY PROGRAMME** |
| **Class module** | **Form of classes/credit** | **Total amount of hours** | **SEMESTER** | **ECTS** |
| **Module I: Methodological education (compulsory part)** |
| Research methodology in medical and health sciences – Part I | seminars/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | I | 1 |
| Library databases – evaluation and verification of medical publications (national/international) | classes/ credit with a grade | **25 h**(5 contact hours/ 20h individual work) | I | 1 |
| Ethical and legal aspects of human and animal biomedical research (completing forms to the ethics and bioethics committee).Personal data protection rules | seminars, classes/ credit with a grade | **50 h**(15 contact hours/ 35h individual work) | I | 2 |
| Dissemination of research results. Principles of writing for publication and oral presentations techniques.Protection of intellectual property – Part I | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | II | 1 |
| Methods for computer-assisted analysis of research results (databases). Biostatics part I | seminars, classes/ credit with a grade | **75 h**(25 contact hours/ 50h individual work) | II/III | 3 |

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| Principles of operation, scope of research, equipment and financing university and non-university modern research centres | lecture, seminar/ credit with a grade | **30** contact hours | II | 1 |
| Medical English – presentation of English-language publications related to the discipline and individual research plan | classes/ credit with a grade | **90 h**(30 contact hours/ 60h individual work) | I/II | 3 |
| Individual workshops with the supervisor | seminar, classes/ credit with a grade | **240 h**(8 x 15 contact hours/8 x 15 h individual work) | I-VIII | 8 |
| **Module II: Education in secondary scientific competences (compulsory part** |
| Current principles of applying and obtaining funds for financing research projects.Management of national and international research projects | seminar, workshops/ credit with a grade | **90 h**(30 contact hours/ 60h individual work) | I/II | 3 |
| Protection of intellectual property – Part II. Patent and implementation procedures(working with patent attorney) | seminar, classes/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | IV | 1 |

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| English-language presentation of research results. Discussion | outgoing school – discussion sessions / credit with a grade | **50 h**(15 contact hours/ 35h individual work) | III/IV | 2 |
| The most important recent scientific achievements in medical andhealth sciences | lectures, seminars/ credit with a grade | **60 h**(20 contact hours/ 40h individual work) | III/IV | 2 |
| Basics of didactics at medical university. Effective teaching methods in medical, pharmaceutical and health sciences | seminars, classes/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | II | 1 |
| Professional traineeship in medical didactics – effective teaching methods in medical sciences | co-teaching or teaching students | **60 h** | III-VI | 2 |
| **Module III: Specialist education (optional courses);** |
| Methodology part II | seminar, classes/ credit with a grade | **60 h**(20 contact hours / 40h individual work) | III/IV | 2 |
| Biostatics part II | seminar, classes/ credit with a grade | **60 h**(20 contact hours / 40h individual work) | III/IV | 2 |

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| Systematic reviews | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Research techniques in biomedicine | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| The importance of biomarkers in medicine.Precision and personalized medicine | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Modern imaging techniques in medical sciences | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Organization and financing of health protection in Poland | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | VI | 1 |
| Multidimensional models in data analysis | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | V - VI | 1 |
| European health systems | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | VI | 1 |

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| Critical literature review | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-IV | 1 |
| Modern organic chemistry methods for new drug research | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Selected aspects of pharmacotherapy safety: monitored therapy, pharmacogenomics, in vitro methods in drug safety assessment | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Food-drug interactions – clinical aspects | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Biological medicines and biosimilars. Generic drugs | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Naturopathy | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| **Module IV: Complementary professional and soft skills education (optional courses).** |
| Media in scientific work. Planning and building academic career | seminars, classes/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | V | 1 |

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| Dissemination of research results at national and international level | seminars, classes/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | V | 1 |
| Principles of academic entrepreneurship: setting up a business, raising funds for implementation research. Start-ups – legal and financial aspects | lecture, seminar/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | VI - VII | 1 |
| New medical technologies and philosophy | lecture, seminar/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | VI - VII | 1 |
| Artificial intelligence in medical sciences | lecture, seminar/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | VI - VII | 1 |
| Second language course | seminar, discussion session/ credit with a grade | **60 h**(30 contact hours / 30h individual work) | III-IV | 2 |
| The basics of interpersonal communication | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Teaching medical communication | seminars, workshops/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Clinical psychology | seminars, workshops/ credit with a grade | **30h**(15 contact hours/ 15h individual work) | III-VI | 1 |

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| Personalized educationin medical didactics (tutoring, monitoring, coaching).Tutoring in PBL. Workshop with PBL. | seminars, workshops/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | III-VI | 1 |
| Advanced assessment methods | seminars, workshops/ credit with a grade | **30 h**(10 contact hours / 20h individual work) | III-VI | 1 |
| Marketing authorization of medicinal products, medical devices and cosmetics | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Pharmaceutical aspects of plant and macrofungi biotechnology | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Bioinformatics databases in pharmaceutical sciences | seminars, classes/ credit with a grade | **30 h**(15 contact hours/ 15h individual work) | III-VI | 1 |
| Additional education:Beginner PhD students must complete Occupational Safety & Health training by the end of the first semester on the dates specified by the JU Medical College OSH Inspectorate. |

PQF – Polish Qualifications Framework according to the Regulation of the Ministry of Science and Higher Education on the second stage descriptors for qualifications at levels 6-8 of the Polish Qualifications Framework

# Final provisions

The study programme in the discipline of medical and health sciences at the Doctoral School of Medical and Health Sciences shall enter into force on the resolution date.