## .Annex No. 3 to the Resolution of the Senate No. 37 of 29 April 2025

## Framework Education Program

## at the Doctoral School of Medical and Health Sciences

## of Nicolaus Copernicus University in Toruń

## Academia Medica Bydgostiensis

|  |  |
| --- | --- |
| Field: | medical and health sciences |
| Disciplines: | pharmaceutical sciences, medical sciences, health sciences |
| Duration of study: | 4 years |
| Number of ECTS credits: | 58 |
| Total number of teaching hours: | 395 (including 180 hours of professional practice) |

## Knowledge

The doctoral student knows and understands:

**Code Content PRK**

|  |  |  |
| --- | --- | --- |
| **EK\_W01** | The doctoral student knows and understands methodology of scientific research covering theoretical foundations and general issues relevant to medical, pharmaceutical, and health sciences taught at the doctoral school. | P8S\_WG |
| **EK\_W02** | The doctoral student knows and understands methodology of scientific research including selected specific issues relevant to the discipline in which the dissertation is prepared, enabling a revision of existing paradigms. | P8S\_WG |
| **EK\_W03** | The doctoral student knows and understands economic, legal, and ethical conditions of research activity and its aspects. | P8S\_WK |
| **EK\_W04** | The doctoral student has knowledge of transfer and commercialization of research results. | P8S\_WK |
| **EK\_W05** | The doctoral student knows and understands the basics of obtaining research projects: sources of funding and applicable procedures (grant application, project review). | P8S\_WG |
| **EK\_W06** | The doctoral student knows and understands the principles of disseminating scientific results, including open access, and the basic principles of transferring knowledge to the economic and social sphere, including commercialization of research results and associated know-how. | PBS\_WG |
| **EK\_W07** | The doctoral student knows and understands modern concepts, methods, and tools for conducting educational or training activities. | P8S\_WK |
| **EK\_W08** | The doctoral student knows and understands global scientific achievements, including theoretical foundations, general issues, and selected specific issues relevant to the discipline in which the doctoral dissertation is being prepared | P8S\_WG |
| **EK\_W09** | The doctoral student knows and understands the main developmental trends of the scientific disciplines essential for education in the field of medical, pharmaceutical, and health sciences | P8S\_WG |
| **EK\_W10** | The doctoral student knows and understands selected paradigms of the scientific discipline in which the doctoral project is being conducted. | P8S\_WG |
| **EK\_W11** | The doctoral student knows and understands the basic rights and responsibilities in the area of safety and hygiene of education, and the rules applicable during classes | P8S\_WK |
| **EK\_W12** | The doctoral student knows and understands the principles of safe conduct at the site of an incident, including basic CPR and procedures for assisting an unconscious person. | P8S\_WK |
| **EK\_W13** | The doctoral student knows and understands the fundamental dilemmas of contemporary civilization. | P8S\_WK |

## Skills

The doctoral student is able to:

**Code Content PRK**

|  |  |  |
| --- | --- | --- |
| **EK\_U01** | The doctoral student is able to use their knowledge to critically analyze and assess the results of scientific research, the achievements of the represented discipline, and their own contribution to the development of this discipline; to formulate new solutions to problems within existing and modified methodological paradigms; to creatively apply and develop methods, techniques, and tools appropriate for the research; and to draw conclusions based on scientific research results. | P8S\_UW |
| **EK\_U02** | The doctoral student is able to disseminate or transfer scientific research results, including in popular forms. | P8S\_UK |
| **EK\_U03** | The doctoral student is able to prepare an application for funding a research project. | P8S\_UW |
| **EK\_U04** | The doctoral student is able to use a modern foreign language to participate in international academic and professional environments, especially in the context of attending conferences, seminars, workshops, etc., at home and abroad; to establish contacts for the exchange of experiences; and to communicate on specialized topics at level B2 of the Common European Framework of Reference for Languages, with specialists in their academic and professional field and with persons outside these environments. | P8S\_UK |
| **EK\_U05** | The doctoral student is able to plan and implement individual and team research or creative projects, including in an international environment. | P8S\_UO |
| **EK\_U06** | The doctoral student is able to document and present the results of research work and to prepare scientific publications in accordance with the rules for such publications and respecting intellectual property protection principles. | P8S\_UW |
| **EK\_U07** | The doctoral student is able to participate in scientific discourse and initiate debate | P8S\_UK |
| **EK\_U08** | The doctoral student is able to independently plan and act for their own scientific and professional development, as well as to inspire and organize the development of other persons. | P8S\_UU |
| **EK\_U09** | The doctoral student is able to develop and deliver courses in their scientific and professional field using modern methods and tools. | P8S\_UU |
| **EK\_U10** | The doctoral student is able to transfer research results to the economic and social sphere, to analyze the potential for such transfer, and to initiate actions aimed at its implementation. | P8S\_UW |
| **EK\_U11** | The doctoral student is able to define the aim and subject of research, formulate a research hypothesis, develop and creatively apply methods, techniques, and tools, and draw conclusions based on the research results. | P8S\_UW |
| **EK\_U12** | The doctoral student is able to critically analyze and assess the results of research, expert activities, and other creative works, as well as their contribution to the development of knowledge. | P8S\_UW |
| **EK\_U13** | The doctoral student is able to use knowledge in their scientific field to creatively identify, formulate, and innovatively solve complex problems or perform tasks of a research nature. | P8S\_UW |
| **EK\_U14** | The doctoral student is able to critically reflect on the current state of research in the field in which their doctoral project is being conducted. | P8S\_UW |
| **EK\_U15** | The doctoral student is able to identify potential threats to life and health during and outside classes and to act appropriately in response. | P8S\_UU |
| **EK\_U16** | The doctoral student is able to avoid endangering their own health and assess their capacity when providing first aid. | P8S\_UU |
| **EK\_U17** | The doctoral student is able to communicate effectively in a modern foreign language in everyday life, both in writing and orally. | P8S\_UK |
| **EK\_U18** | The doctoral student is able to communicate on specialist topics to actively participate in the international scientific environment | PBS\_UK |
| **EK\_U19** | The doctoral student is able to implement modern concepts, methods, and tools for educational or training activities. |  |

## Social competences

The doctoral student is ready to:

**Kod Treść PRK**

|  |  |  |
| --- | --- | --- |
| **EK\_K01** | The doctoral student is ready to critically assess scientific achievements and expert activities within the scientific discipline in which the doctoral dissertation is being prepared. | P8S\_KK |
| **EK\_K02** | The doctoral student is ready to critically assess their own contribution to the development of the scientific discipline in which the doctoral dissertation is being prepared. | P8S\_KK |
| **EK\_K03** | The doctoral student is ready to define the role of methodological paradigms of their discipline and those belonging to the field of knowledge in solving social problems. | P8S\_KO |
| **EK\_K04** | The doctoral student is ready to identify the need to formulate new research paradigms within the field of knowledge to which the discipline in which the doctoral project is being conducted belongs. | P8S\_KR |
| **EK\_K05** | The doctoral student is ready to fulfill the social responsibilities of researchers and creators, and to initiate activities for the public interest, including providing society with appropriate information and opinions on scientific achievements, participating in the training of specialists, and engaging in other activities that promote the development of a knowledge-based civil society. | P8S\_KO |
| **EK\_K06** | The doctoral student is ready to think and act entrepreneurially, create new ideas, and seek innovative solutions in collaboration with representatives of other disciplines; take on intellectual challenges/risks in scientific/professional and public spheres; and take responsibility for the consequences of their decisions. | P8S\_KO |
| **EK\_K07** | The doctoral student is ready to uphold and develop the ethos of research and creative communities, including conducting research independently, considering limitations (e.g., financial or infrastructural), and respecting the principle of public ownership of research results, including intellectual property rights. | P8S\_KR |
| **EK\_K08** | The doctoral student is ready to recognize the significance of knowledge from other disciplines and fields (different from the one in which the doctoral project is being conducted) in solving cognitive and practical problems. | P8S\_KK |
| **EK\_K09** | The doctoral student is ready to take into account, in their research, solutions proposed by other disciplines and fields of knowledge. | P8S\_KK |
| **EK\_K10** | The doctoral student is ready to comply with legal regulations concerning safety and hygiene of education and the need to update them in light of changes in the legal environment. | P8S\_KO |
| **EK\_K11** | The doctoral student is ready to observe the principles of safety and hygiene during and outside of classes, to provide assistance to others, and to take responsibility for the life and health of themselves and others. | P8S\_KO |

## Education Plan

### Year I

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module I: Methodology of scientific research activity | General methodology of scientific research | seminar | 10 | 2 | graded credit | obligatory | 1 | **EK\_W01, EK\_U11, EK\_U06, EK\_K09** |
| Scientific medical information | seminar | 4 | 1 | credit | obligatory | 1 | **EK\_W01** |
| Legal basics and ethics in scientific research | seminar | 4 | 1 | credit | obligatory | 1 | **EK\_W13, EK\_W03, EK\_K05, EK\_K10** |
| Biostatistics | seminar | 10 | 3 | exam | obligatory | 1 | **EK\_W01, EK\_U11, EK\_U01, EK\_U06, EK\_K01, EK\_K02** |
| tutorial | 20 |
| Supervisory mentoring | supervisory mentoring | - | 2 | graded credit | obligatory | 1 | **EK\_W08, EK\_W10, EK\_W09, EK\_W02, EK\_W01, EK\_W03, EK\_U11, EK\_U13, EK\_U01, EK\_U12, EK\_U14, EK\_U06, EK\_U05, EK\_K01, EK\_K02, EK\_K09, EK\_K05, EK\_K03, EK\_K04, EK\_K07, EK\_K08** |
| Research project management | seminar | 5 | 2 | graded credit | obligatory | 1 | **EK\_W03, EK\_U01, EK\_U03, EK\_U05, EK\_U08, EK\_K01, EK\_K02, EK\_K07** |
| tutorial | 5 |
| Systematic reviews | seminar | 5 | 2 | graded credit | obligatory | 1 | **EK\_W08, EK\_W10, EK\_W02, EK\_U01, EK\_U12, EK\_U14, EK\_U02, EK\_K01, EK\_K02** |
| tutorial | 5 |
| Doctoral forum – public reporting session | discussion seminar | 10 | 2 | graded credit | obligatory | 1 | **EK\_W08, EK\_W09, EK\_W06, EK\_W07, EK\_U01, EK\_U12, EK\_U02, EK\_U07, EK\_K02, EK\_K08, EK\_K05** |
| Writing and publishing scientific articles | seminar | 5 | 2 | graded credit | obligatory | 1 | **EK\_W08, EK\_W10, EK\_W09, EK\_U01, EK\_U06, EK\_U02** |
| tutorial | 5 |
| Module II: Methodology of teaching in higher education | Teaching in higher education | lecture | 4 | 1 | credit | obligatory | 1 | **EK\_W11, EK\_U08, EK\_U09, EK\_U19, EK\_K10** |
| Professional practice | professional practice | 30 | 2 | graded credit | obligatory | 1 | **EK\_W07, EK\_U08, EK\_K05, EK\_U09** |
| Module III A: Multidimensional development of research competencies | English in biomedical research | tutorial | 30 | 2 | exam | obligatory | 1 | **EK\_U04, EK\_U17** |
| Elements of occupational safety and health | self-study | 4 | - | credit | obligatory | 1 | **EK\_W12, EK\_U15, EK\_U16, EK\_K10, EK\_K11** |

### Supplementary education – Year II

The doctoral student is obliged to choose at least 2 out of 4 elective classes, including 1 subject in English.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module III B:  Multidimensional development of research competencies | Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 1 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 1 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 1 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 1 | **EK\_W08, EK\_W09, EK\_K08** |
|  |  |  | 160 | 24 |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module I: Methodology of scientific research activity | Doctoral forum – public reporting session | discussion seminar | 10 | 2 | graded credit | obligatory | 2 | **EK\_W08, EK\_W09, EK\_W06, EK\_W07, EK\_U01, EK\_U12, EK\_U02, EK\_U07, EK\_K02, EK\_K08, EK\_K05** |
| Open science and open innovation | e-learning | 4 | 1 | credit | obligatory | 2 | **EK\_W09, EK\_W06, EK\_W04, EK\_U02, EK\_U07, EK\_K09, EK\_K05, EK\_K07** |
| Supervisory mentoring | supervisory mentoring | - | 2 | graded credit | obligatory | 2 | **EK\_W08, EK\_W10, EK\_W09, EK\_W02, EK\_W01, EK\_W03, EK\_U11, EK\_U13, EK\_U01, EK\_U12, EK\_U14, EK\_U06, EK\_U05, EK\_K01, EK\_K02, EK\_K09, EK\_K05, EK\_K03, EK\_K04, EK\_K07, EK\_K08** |
| Module II: Methodology of teaching in higher education | Professional practice | professional practice | 60 | 3 | credit | obligatory | 2 | **EK\_W07, EK\_U08, EK\_K05, EK\_U09** |
| Module III A: Multidimensional development of research competencies | Sources of scientific research funding | lecture | 5 | 2 | graded credit | obligatory | 2 | **EK\_W05, EK\_W03, EK\_U01, EK\_U03, EK\_U05, EK\_U08, EK\_K01, EK\_K02, EK\_K09, EK\_K04, EK\_K07** |
| workshops | 10 |
| Techniques of presentation and popularization of scientific knowledge | seminar | 5 | 2 | graded credit | obligatory | 2 | **EK\_W06, EK\_W04, EK\_U06, EK\_U10, EK\_U02,** |
| workshops | 5 |

### YEAR II

### Supplementary education Year II

The doctoral student is obliged to choose at least 2 out of 4 elective classes, including 1 subject in English.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module III B:  Multidimensional development of research competencies | Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 2 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 2 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 2 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 2 | **EK\_W08, EK\_W09, EK\_K08** |
|  |  |  | 103 | 14 |  |  |  |  |

### YEAR III

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module I: Methodology of scientific research activity | Doctoral forum – public reporting session | discussion seminar | 10 | 2 | graded credit | obligatory | 3 | **EK\_W08, EK\_W09, EK\_W06, EK\_W07, EK\_U01, EK\_U12, EK\_U02, EK\_U07, EK\_K02, EK\_K08, EK\_K05** |
| supervisory mentoring | Supervisory mentoring | - | 2 | graded credit | obligatory | 3 | **EK\_W08, EK\_W10, EK\_W09, EK\_W02, EK\_W01, EK\_W03, EK\_U11, EK\_U13, EK\_U01, EK\_U12, EK\_U14, EK\_U06, EK\_U05, EK\_K01, EK\_K02, EK\_K09, EK\_K05, EK\_K03, EK\_K04, EK\_K07, EK\_K08** |
| Module II: Methodology of teaching in higher education | Professional practice | professional practice | 60 | 3 | credit | obligatory | 3 | **EK\_W07, EK\_U08, EK\_K05, EK\_U09** |
| Module III A: Multidimensional development of research competencies | Communication in science, collaboration in a multidisciplinary and international environment | lecture | 4 | 1 | credit | obligatory | 3 | **EK\_W05, EK\_W03, EK\_W04, EK\_U03, EK\_U04, EK\_U18, EK\_U07, EK\_U05, EK\_U19, EK\_K08, EK\_K09, EK\_K06** |
| Intellectual property protection. Principles of commercialization | seminar | 10 | 2 | graded credit | obligatory | 3 | **EK\_W06, EK\_W13, EK\_W03, EK\_W04, EK\_U03, EK\_U06, EK\_U10, EK\_K06, EK\_K07** |

### Supplementary education Year III

The doctoral student is obliged to choose at least 2 out of 4 elective classes, including 1 subject in English.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module III B:  Multidimensional development of research competencies | Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 3 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 3 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 3 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 3 | **EK\_W08, EK\_W09, EK\_K08** |
|  |  |  | 88 | 12 |  |  |  |  |

### YEAR IV

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module I: Methodology of scientific research activity | Doctoral forum – public reporting session | discussion seminar | 10 | 2 | graded credit | obligatory | 3 | **EK\_W08, EK\_W09, EK\_W06, EK\_W07, EK\_U01, EK\_U12, EK\_U02, EK\_U07, EK\_K02, EK\_K08, EK\_K05** |
| Supervisory mentoring | Supervisory mentoring | - | 2 | graded credit | obligatory | 3 | **EK\_W08, EK\_W10, EK\_W09, EK\_W02, EK\_W01, EK\_W03, EK\_U11, EK\_U13, EK\_U01, EK\_U12, EK\_U14, EK\_U06, EK\_U05, EK\_K01, EK\_K02, EK\_K09, EK\_K05, EK\_K03, EK\_K04, EK\_K07, EK\_K08** |
| Module II: Methodology of teaching in higher education | Professional practice | professional practice | 30 | 2 | credit | obligatory | 3 | **EK\_W07, EK\_U08, EK\_K05, EK\_U09** |

### Supplementary education Year IV

The doctoral student is obliged to choose at least 2 out of 4 elective classes, including 1 subject in English.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module | Name | Form of classes | Hours | ECTS | Form of verification | Obligatoriness | Year | Learning outcomes |
| Module III B:  Multidimensional development of research competencies | Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 4 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 4 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 4 | **EK\_W08, EK\_W09, EK\_K08** |
| Current scientific achievements in the field of medical, pharmaceutical, and health sciences - elective classes | e-learning | 2 | 1 | credit | elective | 4 | **EK\_W08, EK\_W09, EK\_K08** |
|  |  |  | 44 | 8 |  |  |  |  |

P8S\_WG

Requirements: The doctoral student knows and understands:

- to a degree enabling the revision of existing paradigms – the global body of knowledge, including theoretical foundations, general issues, and selected specific issues relevant to the scientific or artistic discipline.

The doctoral student knows and understands the global body of knowledge, including theoretical foundations, general issues, and selected specific issues appropriate to the discipline in which the doctoral dissertation is being prepared (**EK\_W08)**

**Courses:**

* + - * Doctoral forum – public reporting session
      * Writing and publishing scientific articles
      * Current scientific achievements in the field of medical, pharmaceutical, and health sciences (elective)
      * Supervisory mentoring
      * Systematic reviews

The doctoral student knows and understands selected paradigms of the field of science in which the doctoral project is being conducted (**EK\_W10)**

**Courses:**

* + - * Writing and publishing scientific articles
      * Supervisory mentoring
      * Systematic reviews

- the main developmental trends of the scientific or artistic disciplines in which education takes place.

The doctoral student knows and understands the main developmental trends of scientific disciplines important to education in the field of medical, health, and pharmaceutical sciences (**EK\_W09)**

**Courses:**

* + - * Supervisory mentoring
      * Writing and publishing scientific articles
      * Current scientific achievements in the field of medical, pharmaceutical, and health sciences (elective)
      * Open science and open innovation
      * Doctoral forum – public reporting session

- methodology of scientific research

The doctoral student knows and understands the methodology of scientific research covering selected specific issues relevant to the discipline in which the doctoral dissertation is being prepared, to a degree enabling the revision of existing paradigms (**EK\_W02)**

**Courses:**

* + - * Systematic reviews
      * Supervisory mentoring

The doctoral student knows and understands the methodology of scientific research, including theoretical foundations and general issues related to the represented field of medical and health sciences, as taught in the doctoral school (**EK\_W01)**

**Courses:**

* + - * General methodology of scientific research
      * Biostatistics
      * Supervisory mentoring
      * Scientific medical information

- principles of disseminating the results of scientific activities, also in open access mode

The doctoral student knows and understands the principles of disseminating the results of scientific activity, also in the open access mode, and the basic principles of transferring knowledge to the economic and social sphere, including the basic principles of commercialization of the results of scientific activity and know-how related to these results (**EK\_W06)**

**Courses:**

* + - * Techniques of presentation and popularization of scientific knowledge
      * Doctoral forum – public reporting session
      * Intellectual property protection. Principles of commercialization
      * Open science and open innovation

The doctoral student has basic knowledge about obtaining research projects: sources of funding and procedures (grant applications, evaluation) (**EK\_W05)**

**Courses:**

* + - * Communication in science, collaboration in a multidisciplinary and international environment
      * Sources of scientific research funding

P8S\_WK

-fundamental dilemmas of modern civilization

The doctoral student knows and understands the fundamental dilemmas of contemporary civilization.**(EK\_W13)**

**Courses:**

* Intellectual property protection. Principles of commercialization
  + - * Legal basics and ethics in scientific research

The doctoral student knows and understands modern concepts, methods and tools for conducting teaching or training activities (**EK\_W07)**

**Courses:**

* + - * Doctoral forum – public reporting session
      * Professional practice

The doctoral student knows and understands the basic rights and obligations in the field of health and safety of education and the rules that apply during classes (**EK\_W11)**

**Courses:**

* + - * Teaching in higher education

The doctoral student knows and understands the principles of safe conduct at the scene of an incident, including basic cardiopulmonary resuscitation and treatment of an unconscious person (**EK\_W12)**

**Courses:**

* + - * Elements of occupational safety and health

- economic, legal, ethical and other conditions of scientific activity

The doctoral student knows and understands the economic, legal, ethical and other conditions of research activities and their aspects (**EK\_W03)**

**Courses:**

* + - * Legal basics and ethics in scientific research
      * Supervisory mentoring
      * Research project management
      * Sources of scientific research funding
      * Communication in science, collaboration in a multidisciplinary and international environment
      * Intellectual property protection. Principles of commercialization

- basic principles of knowledge transfer to the economic and social sphere and commercialization of research results and know-how related to these results

The doctoral student has knowledge of knowledge transfer and commercialization of research results

(**EK\_W04)**

**Courses:**

* + - * Intellectual property protection. Principles of commercialization
      * Open science and open innovation
      * Techniques of presentation and popularization of scientific knowledge
      * Communication in science, collaboration in a multidisciplinary and international environment

P8S\_UW

The doctoral student is able to:

- use knowledge from various scientific or artistic fields to creatively identify, formulate, and innovatively solve complex problems or perform research-related tasks. In particular:

• define the aim and subject of scientific research, formulate a research hypothesis

• develop, apply creatively, and improve research methods, techniques, and tools

• draw conclusions based on research results

The doctoral student is able to define the purpose and subject of research, formulate a research hypothesis, develop research methods, techniques and tools, and creatively apply them to draw conclusions based on research results.(**EK\_U11)**

**Courses:**

* + - * General methodology of scientific research
      * Supervisory mentoring
      * Biostatistics

The doctoral student is able to use knowledge from their discipline to creatively identify, formulate, and innovatively solve complex problems or conduct research-related tasks (**EK\_U13)**

**Courses:**

* + - * Supervisory mentoring

- perform critical analysis and evaluation of the results of scientific research, expert activities, and other creative works and their contribution to the development of knowledge

The doctoral student is able to use the acquired knowledge to critically analyze and evaluate the results of scientific research, the achievements of the represented scientific discipline and their own contribution to the development of this discipline, formulate new solutions to problems within the framework of existing and modified methodological paradigms; - creatively apply and develop research methods, techniques and tools appropriate for the conducted research, draw conclusions based on the results of scientific research (**EK\_U01)**

**Courses:**

* + - * Biostatistics
      * Research project management
      * Systematic reviews
      * Writing and publishing scientific articles
      * Doctoral forum – public reporting session
      * Sources of scientific research funding
      * Supervisory mentoring

The doctoral student is able to use the knowledge they possess to critically analyze and evaluate the results of research, expert activity and other creative works and their contribution to the development of knowledge.(**EK\_U12)**

**Courses:**

* + - * Systematic reviews
      * Doctoral forum – public reporting session
      * Supervisory mentoring

The doctoral student is able to critically assess the current state of research in the discipline of the doctoral project (**EK\_U14)**

**Courses:**

* + - * Systematic reviews
      * Supervisory mentoring

-transfer research results to the economic and social spheres

THE DOCTORAL STUDENT IS ABLE TO:

The doctoral student is able to prepare applications for research project funding (**EK\_U03)**

**Courses:**

* + - * Research project management
      * Sources of scientific research funding
      * Communication in science, collaboration in a multidisciplinary and international environment
      * Intellectual property protection. Principles of commercialization

The doctoral student is able to document and present the results of scientific research and prepare scientific publications in accordance with formal and ethical standards, including intellectual property protection (**EK\_U06)**

**Courses:**

* + - * General methodology of scientific research
      * Biostatistics
      * Writing and publishing scientific articles
      * Techniques of presentation and popularization of scientific knowledge
      * Intellectual property protection. Principles of commercialization
      * Supervisory mentoring

The doctoral student is able to transfer research results to the economic and social spheres, assess possibilities for such transfer, and initiate actions to realize it (**EK\_U10)**

**Courses:**

* + - * Techniques of presentation and popularization of scientific knowledge
      * Intellectual property protection. Principles of commercialization

P8S\_UK

The doctoral student is able to:

- communicate on specialized topics to actively participate in the international scientific environment

The doctoral student is able to use a modern foreign language to a degree that allows participation in an international scientific and professional environment, in particular in connection with participation in conferences, seminars, workshops, etc. in the country and abroad - establish contacts for the exchange of experiences and communicate on specialist topics at the B2 level of the Common European Framework of Reference for Languages, with specialists in their scientific and professional discipline, as well as with people from outside these environments (**EK\_U04)**

**Courses:**

* + - * English in biomedical research
      * Communication in science, collaboration in a multidisciplinary and international environment

The doctoral student is able to communicate on specialized topics to actively participate in the international scientific environment (**EK\_U18)**

* + - * Communication in science, collaboration in a multidisciplinary and international environment

- disseminate the results of scientific activities, also in popular forms to initiate debate

The doctoral student is able to disseminate or transfer scientific findings, also in popular forms (**EK\_U02)**

**Courses:**

* + - * Systematic reviews
      * Writing and publishing scientific articles
      * Doctoral forum – public reporting session
      * Open science and open innovation
      * Techniques of presentation and popularization of scientific knowledge

-participate in scientific discourse

The doctoral student is able to participate in scientific discourse and initiate debate (**EK\_U07)**

**Courses:**

* + - * Doctoral forum – public reporting session
      * Open science and open innovation
      * Communication in science, collaboration in a multidisciplinary and international environment

- use a foreign language at level B2 of the Common European Framework of Reference for Languages to a degree that allows participation in an international scientific and professional environment

The doctoral student is able to use a modern foreign language at level B2 of the Common European Framework of Reference for Languages (CEFR), enabling effective communication in both academic and everyday contexts ( **EK\_U17)**

**Courses:**

* + - * English in biomedical research

P8S\_UO

- plan and implement individual and team research or creative projects, including in an international environment

The doctoral student is able to plan and implement individual and team research or creative projects, including in an international environment (**EK\_U05)**

**Courses:**

* + - * Communication in science, collaboration in a multidisciplinary and international environment
      * Supervisory mentoring
      * Research project management
      * Sources of scientific research funding

P8S\_UU

- independently plan and act for their own scientific and professional development, and inspire and organize the development of others

The doctoral student is able to independently plan and act for their own scientific and professional development, and inspire and organize the development of others (**EK\_U08)**

**Courses:**

* + - * Research project management
      * Teaching in higher education
      * Professional practice
      * Sources of scientific research funding

-plan and deliver teaching or training sessions using modern methods and tools

The doctoral student is able to plan and deliver teaching or training sessions using modern methods and tools (**EK\_U09)**

**Courses:**

* + - * Teaching in higher education
      * Professional practice

The doctoral student is able to implement modern concepts, methods, and tools for teaching or training (**EK\_U19)**

**Courses:**

* + - * Teaching in higher education
      * Communication in science, collaboration in a multidisciplinary and international environment

The doctoral student is able to identify potential threats to health and life during and outside of class activities and respond appropriately (**EK\_U15)**

**Courses:**

* + - * Elements of occupational safety and health

The doctoral student is able to avoid exposing oneself to health risks and assess one’s capabilities when administering first aid (**EK\_U16)**

**Courses:**

* + - * Elements of occupational safety and health

P8S\_KK

The doctoral student is ready to:

- critically assess the scientific achievements and expert activities within the discipline in which the doctoral dissertation is being prepared

The doctoral student is ready to critically assess the scientific achievements and expert activities within the discipline in which the doctoral dissertation is being prepared

(**EK\_K01)**

**Courses:**

* + - * Biostatistics
      * Supervisory mentoring
      * Research project management
      * Systematic reviews
      * Sources of scientific research funding

- critically assess their own contribution to the development of the discipline in which the doctoral dissertation is being prepared

The doctoral student is ready to critically assess their own contribution to the development of the discipline in which the doctoral dissertation is being prepared (**EK\_K02)**

**Courses:**

* + - * Biostatistics
      * Supervisory mentoring
      * Research project management
      * Systematic reviews
      * Sources of scientific research funding
      * Doctoral forum – public reporting session

- recognize the value of knowledge from other disciplines and fields (different from the one in which the doctoral project is conducted) in solving cognitive and practical problems

The doctoral student is ready to recognize the value of knowledge from other disciplines and fields (different from the one in which the doctoral project is conducted) in solving cognitive and practical problems (**EK\_K08)**

**Courses:**

* + - * Current scientific achievements in the field of medical, pharmaceutical, and health sciences (elective)
      * Communication in science, collaboration in a multidisciplinary and international environment
      * Doctoral forum – public reporting session
      * Supervisory mentoring

The doctoral student is ready to consider in their own research the solutions proposed by other disciplines and fields of knowledge (**EK\_K09)**

**Courses:**

* + - * General methodology of scientific research
      * Open science and open innovation
      * Sources of scientific research funding
      * Communication in science, collaboration in a multidisciplinary and international environment
      * Supervisory mentoring

P8S\_KO

- fulfill the social responsibilities of researchers and creators

The doctoral student is ready to fulfill the social responsibilities of researchers and creators, including initiating activities in the public interest by communicating scientific achievements, educating specialists, and contributing to the development of a knowledge-based civil society (**EK\_K05)**

**Courses:**

* + - * Legal basics and ethics in scientific research
      * Doctoral forum – public reporting session
      * Professional practice
      * Techniques of presentation and popularization of scientific knowledge
      * Supervisory mentoring
      * Open science and open innovation

- initiate activities in the public interest of thinking and acting in an entrepreneurial manner

The doctoral student is able to define the role of methodological paradigms in their own discipline and others in solving social problems (**EK\_K03)**

**Courses:**

* + - * Supervisory mentoring

The doctoral student is ready to think and act entrepreneurially, create new ideas, collaborate with representatives of other disciplines, seek innovative solutions, take on intellectual risk, and assume responsibility for their decisions (**EK\_K06)**

**Courses:**

* + - * Intellectual property protection. Principles of commercialization
      * Communication in science, collaboration in a multidisciplinary and international environment

The doctoral student is ready to comply with legal regulations regarding educational safety and hygiene, and recognize the need for updates based on legal changes (**EK\_K10)**

**Courses:**

* + - * Teaching in higher education
      * Elements of occupational safety and health
      * Legal basics and ethics in scientific research

The doctoral student is ready to adhere to safety and hygiene principles during and outside classes, assist others, and take responsibility for their own and others’ health and life (**EK\_K11)**

**Courses:**

* + - * Elements of occupational safety and health

P8S\_KR

- uphold and develop the ethos of research and creative communities, including:

• conduct scientific activities in an independent manner

• respect public ownership of research results,

taking into account the principles of intellectual property protection

The doctoral student is able to identify the need to formulate new research paradigms within the field of knowledge related to their doctoral discipline (**EK\_K04)**

**Courses:**

* + - * Supervisory mentoring
      * Sources of scientific research funding

The doctoral student is ready to uphold and develop the ethos of research and creative environments, including conducting research independently, taking into account existing limitations resulting from, for example, financial or infrastructural reasons, respecting the principle of public ownership of research results, taking into account the principles of intellectual property protection. (**EK\_K07)**

**Courses:**

* + - * Research project management
      * Sources of scientific research funding
      * Intellectual property protection. Principles of commercialization
      * Supervisory mentoring
      * Open science and open innovation