Curriculum of studies at the Warsaw PhD School in Natural and BioMedical Sciences [Warsaw-4-PhD]

§ 1

1. Studies at the Warsaw PhD School in Natural and BioMedical Sciences (hereinafter: the School) are pursued in the following specializations:

   - **biology** — organized by the Nencki Institute of Experimental Biology of the Polish Academy of Sciences (Nencki Institute PAN) and the International Institute of Molecular and Cell Biology in Warsaw (IIMCB)
   - **chemistry** — organized by the Institute of Organic Chemistry of the Polish Academy of Sciences (IChF PAN) and the Institute of Organic Chemistry of the Polish Academy of Sciences (IChO PAN)
   - **physics** — organized by the Centre for Theoretical Physics of the Polish Academy of Sciences (CFT PAN), the Institute of Physics of the Polish Academy of Sciences (IF PAN), and the Institute of High Pressure Physics of the Polish Academy of Sciences "UNIPRESS" (IWC PAN)
   - **medicine** — organized by the Maria Skłodowska-Curie National Institute of Oncology - State Research Institute (NIO-PIB) and the Institute of Psychiatry and Neurology (IPiN)

§ 2

The functions of heads of each of the specializations shall be filled by the representatives of the following institutes: Nencki Institute PAN — biology, IChO PAN — chemistry, IF PAN — physics, NIO-PIB — medicine.

§ 3

1. Education in the School lasts 4 years and creates conditions for:
   - pursuing scientific research and preparing a PhD dissertation in an interdisciplinary scientific environment
   - reinforcing and expanding knowledge in the field of natural and biomedical sciences
   - acquiring practical skills required in scientific research
   - presenting the results of scientific research

   within the framework of individual research plans of the PhD students, aligned with the specialization-specific guidelines referred to in § 1, at Level 8 of the PRK (Polish Qualification Framework).

§ 4

1. Education in the School is delivered through four types of classes:
   - **Specialization lectures** — classes held in a lecture hall, related to the specializations pursued at the School.
   - **Specialization tutorials/training** — practical classes providing education within the scope of the skills, research tools/methods, and procedures related to the specializations pursued at the School.
   - **Specialization seminars** — scientific seminars, related to the specializations pursued at the School.
   - **Additional (beyond the specializations) classes** — classes that develop the researcher's skills regardless of the specialization selected.

§ 5

1. The basic list of **specialization classes** (including specialization lectures, specialization tutorials/training and

specialization seminars) organized by the School on a regular basis is provided in Enclosure 1 to this Curriculum, along with indication of which entity is responsible for the classes and corresponding ECTS credits.

2. The basic list of additional (beyond the specializations) classes organized by the School is provided in Enclosure 2, along with the corresponding ECTS credits.

3. Periodical updates to the lists referred to in sections 1 and 2 shall be published at the School's website not later than 7 days before the commencement of the relevant semester.

4. Classes that are credited on the basis of an attendance record shall require 70% attendance of the PhD student as a minimum.

5. The School's Programme Board may specify the minimum number of registered attendants, required for a particular class to proceed.

§ 6

1. Over the period of 4 years of their education at the School, each PhD student has to earn **at least 30 ECTS credits**, of which **at least 25 ECTS credits** must be awarded for the specialization classes and **at least 3 ECTS credits** must be awarded in total for completion of additional (beyond the specializations) classes.

2. Subject to § 9(4) and § 9(5) of the *Regulations of the Warsaw PhD School in Natural and BioMedical Sciences*, detailed requirements concerning the selection of specialization classes referred to in § 5(1) above, are provided separately for each specialization, in Enclosures 3, 4, 5 and 6 to this curriculum.

3. *The schedule of the implementation of the curriculum in the first year of studies* and *The individual research plan* (see: § 7 of the Regulations of the Warsaw PhD School in Natural and BioMedical Sciences) shall provide a detailed schedule of classes and a credit-award plan for the individual PhD student — while taking into account the requirement of obtaining at least 15 ECTS credits during the first two years of education at the School.

§ 7

Any doubts concerning interpretation of this Curriculum, matters arising from it, or issues not regulated herein shall be resolved by the School's Programme Board.

§ 8

This Curriculum shall enter into force as of October 1, 2026.

Enclosure no. 1 to the Curriculum of studies at the Warsaw PhD School in Natural and BioMedical Sciences

List of specialization classes

concerns classes referred to in § 5(1) of the Curriculum

Title	Type	Leading institute	Hours	ECTS	Learning outcomes
Interdisciplinary lectures - contemporary questions of science	L	Warsaw-4-PhD	10	1	P8S_WK, P8S_WG, P8Z_WO, P8Z_WZ, P8S_KO, P8S_KK
Neurobiology I	L	Nencki Institute	30	3	P8S_WG, P8S_UW, P8S_KK
Neurobiology II	L	Nencki Institute	30	3	
Biochemistry I	L	Nencki Institute	30	3	
Biochemistry II	L	Nencki Institute	30	3	
Methodological advances in molecular and structural biology I, every second year	L	IIMCB	30	3	P8S_WG, P8S_UW, P8S_KK
Methodological advances in molecular and structural biology II, every second year	L	IIMCB	30	3	P8S_WG, P8S_UW, P8S_KK
Statistics for biologists	L	Nencki Institute	15	2	P8S_UW
Bioethics	L	Nencki Institute	15	2	P8S_WG2, P8S_KO1, P8S_KO2, P8S_KR1
Advanced methods of biology (updated schedule available on the School's website)	L	Nencki Institute	15	2	P8S_WG, P8S_UW, P8S_KK
The Institute seminar	S	Nencki Institute/IIMCB	15/sem	1	P8S_UK
Neuroanatomy workshop	T	Nencki Institute	30	2	P8S_WG, P8S_UW, P8S_KK
Individual tutorial under the supervision of the dissertation supervisor	T	Nencki Institute/IIMCB	30/sem	1	P8S_UU
Podstawy Chemii Fizycznej I: Chemia kwantowa i spektroskopia (PL)	L	IChF	30	3	P8S_WG,
Podstawy Chemii Fizycznej II: Termodynamika (PL)	L	IChF	30	3	
Podstawy Chemii Fizycznej III: Kinetyka chemiczna (PL)	L	IChF	30	3	
Podstawy Chemii Fizycznej IV: Struktura materii (PL)	L	IChF	30	3	
Podstawy Chemii Fizycznej V: Elektrochemia (PL)	L	IChF	30	3	

Basic Physical Chemistry I: Quantum chemistry & spectroscopy	L	IChF	30	3	P8S_WG,
Basic Physical Chemistry II: Thermodynamics	L	IChF	30	3	
Basic Physical Chemistry III: Chemical kinetics	L	IChF	30	3	
Basic Physical Chemistry IV: Structure of matter	L	IChF	30	3	
Basic Physical Chemistry V: Electrochemistry	L	IChF	30	3	
Practical course on basics of mathematics & physics, Part I - Mathematics	L	IChF	15	3	P8S_WG
Practical course on basics of mathematics & physics, Part II - Physics	L	IChF	15	3	P8S_WG
15 hour courses of “Methods of Physical Chemistry” series (an updated list available on the School's website)	L	IChF	15	3	P8S_WG, P8Z_WZ
1-2 days specialization training of “Tools of Physical Chemistry” series (an updated list available on the School's website)	T	IChF	1-2 days	1,5	P8Z_WO, P8S_UO, P8S_UW
Doctoral seminar	S	IChF	-	1/yr	P8S_UK, P8S_UW, P8S_KK, P8Z_KW
Advanced methods of identification of organic compounds	L	IChO	15	2	P8S_WG, P8Z_WT, P8Z_WZ, P8S_UW
Organic Reaction Mechanism	L	IChO	15	2	
Methods in organic synthesis	L	IChO	15	2	
Organic stereochemistry	L	IChO	15	2	
Grant applications in organic chemistry	T	IChO	15	2	P8S_UW, P8S_UO, P8S_KR
Target fusion strategies	L	IChO	15	2	P8S_WG, P8Z_WT, P8Z_WZ, P8S_UW
Modern methods in organic synthesis part II	L	IChO	15	2	
Stereocontrolled organic synthesis	L	IChO	15	2	
Heterocyclic chemistry	L	IChO	15	2	
Analytical methods in supramolecular chemistry and nanochemistry	L	IChO	15	2	
Computational chemistry and chemical bond theory	L	IChO	15	2	
Self-assembled Monolayers - on border of organic chemistry and physics	L	IChO	5	1	
Chemistry and properties of polycyclic hydrocarbons	L	IChO	5	1	
Physical Organic Chemistry	L	IChO	5	1	

Classical and non-classical approaches in total synthesis	L	IChO	5	1	
Chemistry of carbenes	L	IChO	5	1	
Introduction to medicinal chemistry	L	IChO	5	1	
Selected topics of modern organic chemistry (kept up to date on the school and IChO webpages)	L	IChO	5	1	P8S_WG, P8Z_WT, P8Z_WZ, P8S_UW
Introduction to contemporary physics I	L	IF	30	3	P8S_WG
Introduction to contemporary physics II	L	IF	30	3	
Solid state physics I	L	IF	30	3	P8S_WG, P8S_UW, P8Z_WT
Solid state physics II	L	IF	30	3	
Superconductivity	L	IF	30	3	
Selected Topics in Physics	L	IF	30	3	
Physics of magnetism and superconductivity (once per 2 years)	L	IF	30	3	
Quantum information theory I (once per 2 years)	L	IF	30	3	
Quantum information theory II (once per 2 years)	L	IF	30	3	
Selected topics of theoretical physics I	L	CFT	30	3	P8S_WG, P8S_UW
Selected topics of theoretical physics II	L	CFT	30	3	
Introduction to atomic physics (once per 2 years)	L	IF	30	3	P8S_WG, P8S_UW, P8Z_WT
Molecules and photons (once per 2 years)	L	IF	30	3	
Ultracold quantum gases (once per 2 years)	L	IF	30	3	
Introduction to theoretical and computational biophysics (once per 2 years)	L	IF	30	3	
Molecular biophysics I (once per 2 years)	L	IF	30	3	
Molecular biophysics II (once per 2 years)	L	IF	30	3	
Condensed matter theory (once per 2 years)	L	IF	30	3	
Physics of crystal growth I (once per 2 years)	L	IWC	30	3	P8S_WG, P8S_UW, P8Z_WZ, P8Z_WO
Physics of crystal growth II (once per 2 years)	L	IWC	30	3	
Experimental techniques (lab tour)	T	IF / IWC	15	1	P8Z_WO,P8S_WG
Journal club	S	IF	15	1	P8S_UK, P8S_WG, P8Z_WT
PhD seminar on fundamental physics	S	IF	15	1	
Yearly PhD symposium	S	IF / IWC / CFT	15	1	P8S_UK, P8S_KK, P8Z_KW, P8S_UW

IHPP PAS Seminar on Nitride Semiconductors	T	IWC	15	1	P8S_UK, P8S_WG, P8Z_WT, P8Z_WZ
Individual tutorial under the supervision of the dissertation supervisor	T	IWC		1	P8S_UU
Advanced topics in modern day physics	L	IF / IWC / CFT	30	3	P8S_WG, P8S_WK, P8S_KK, P8S_UW
Workshops on methods in physics	L	IF	10	1	P8Z_WT, P8Z_WO, P8S_WG, P8Z_UN
Molecular medicine	L	NIO-PIB/IPiN	15	3	P8S_WG, P8S_UW, P8S_KK
Genetics and immunology of Cancer	L	NIO-PIB	15	3	P8S_WG, P8S_UW, P8S_KK
Neurogenetics	L	IPiN	10	2	P8S_WG, P8S_UW, P8S_KK
Cancer Epidemiology	L	NIO-PIB	10	2	P8S_WG, P8S_UW, P8S_KK
Epidemiology of nervous system diseases	L	IPiN	5	1	P8S_WG, P8S_UW, P8S_KK
Clinical oncology basics	L	NIO-PIB	10	2	P8S_WG, P8S_UW, P8S_KK, P8S_KO, P8S_UU
Neurobiological and psychosocial foundations of nervous system diseases	L	IPiN	15	3	P8S_WG, P8S_UW, P8S_KK
Preclinical studies in oncology	L	NIO-PIB	5	1	P8S_WG, P8S_UW, P8S_KK, P8S_UO
Preclinical studies in nervous system diseases	L	IPiN	5	1	P8S_WG, P8S_UW, P8S_KK
Radiobiology	L	NIO-PIB	10	2	P8S_WG, P8S_UW, P8S_KK
History of oncology in Poland	L	NIO-PIB	5	1	P8S_WG
Departmental seminars	S	NIO-PIB	10	2	P8S_UK
Clinical training in research methodology	T	IPiN	10	2	P8S_WG, P8S_UW, P8S_KK
Individual tutorial under the supervision of the dissertation supervisor	T	NIO-PIB		3	P8S_UU
Individual tutorial under the supervision of the dissertation supervisor	T	IPiN		3	P8S_UU
Next generation sequencing workshop	T	NIO-PIB	15	3	P8S_WG, P8S_UW, P8S_KK
PhD seminar/Scientific seminars in IPiN	S	IPiN	20	4	P8S_UK, P8S_UW, P8S_KK

Selected lectures in the cycle of *"Training for medical doctors in the Institute of Psychiatry and Neurology"*	L	IPiN	10	2	P8S_WG, P8S_UW, P8S_KK

Section

Legend:

L – Lectures

T – Training/Tutorial

S – Seminars

Enclosure no. 2 to the curriculum of studies at the Warsaw PhD School in Natural and BioMedical Sciences

Additional (beyond specialization) courses
concerns classes referred to in § 5(2) of the curriculum

Workshops or lectures to develop the methodology of scientific research and research skills, organized by the School and outside the School, among others:

- Preparing grant proposals (lecture / workshops, 1 ECTS)
  [Learning outcomes: P8S_UU, P8S_UO]

- Patenting research results and protection of intellectual property (lecture / workshops, 1 ECTS)
  [Learning outcomes: P8S_KR, P8S_WK, P8S_KO, P8Z_KP]

- Writing scientific publications (lecture / workshops, 1ECTS)
  [Learning outcomes: P8S_UK]

- The art of public presentations (lecture / workshops, 1 ECTS)
  [Learning outcomes: P8S_UK]

- Scientific research ethics (lecture / workshops, 1 ECTS)
  [Learning outcomes: P8S_WK, P8S_KK, P8S_KR]

- Critical reading of scientific papers (workshop, 1 ECTS)
  [Learning outcomes: P8S_WG, P8S_UW, P8S_KK]

- Methodology of scientific research (lecture / workshop, 1 ECTS)
  [Learning outcomes: P8S_WK, P8S_KK, P8S_KR]

Classes of this group may be taken at any of the research entities.

Enclosure no. 3 to the curriculum of studies at the Warsaw PhD School in Natural and BioMedical Sciences

Detailed requirements for specialization in Biology
regarding classes referred to in § 5(1) of the curriculum

A. Specialization lectures

1. It is necessary to obtain a minimum of 10 ECTS credits during the first two years of study at the School by passing the following exams:
   a) Profile lectures conducted in Nencki Institute or in the International Institute of Molecular and Cell Biology in Warsaw. It is required to pass an exam of both Neurobiology lectures or both Biochemistry lectures (6 ECTS credits in total) or both Methodological advances in molecular and structural biology lectures.
   - Neurobiology I (30 hrs, 3 ECTS)
   - Neurobiology II (30 hrs, 3 ECTS)
   - Biochemistry I (30 hrs, 3 ECTS)
   - Biochemistry II (30 hrs, 3 ECTS)
   - Methodological advances in molecular and structural biology I (30 hrs, 3 ECTS)
   - Methodological advances in molecular and structural biology II (30 hrs, 3 ECTS)

   b) Statistics for biologists (15 hrs, 2 ECTS)
   c) Bioethics (15 hrs, 2 ECTS)

B. Specialization training

It is necessary to obtain a minimum of 4 ECTS credits during the four years of study at the School. Training may take place within the framework of classes organized by the Nencki Institute of the Polish Academy of Sciences, by the International Institute of Molecular and Cell Biology in Warsaw or other units of the School, The list of training courses available to all doctoral students of the School, along with ECTS credits and the name of the unit responsible for the training, can be accessed at the School's website.

C. Specialization seminars

Tt is compulsory to regularly attend the Nencki Seminar or the IIMCB Seminar (8 semesters, minimum 8 ECTS credits in total) and to hold an annual presentation at the PhD student conference of the Nencki Institute of PAS or at a reporting session of IIMCB PhD students (4 ECTS credits during the four years of study at the School). This requirement can be met, partially or fully, by participating in another seminar at the School, while obtaining the aforementioned minimum number of ECTS credits.

Enclosure no. 4 to the curriculum of studies at the Warsaw PhD School in Natural and BioMedical Sciences

Detailed requirements for specialization in Chemistry
regarding classes referred to in § 5(1) of the curriculum

Profile: Physical chemistry

A. Specialization lectures

1. The course *Basic Physical Chemistry* organized by IChF in Polish and English language. It is necessary to obtain a minimum of 9 ECTS credits during the four years of study at the School. Lectures, ending with exams, shall be selected from the following:

- I. Quantum chemistry and spectroscopy (30 hrs, 3 ECTS)
- II. Thermodynamics (30 hrs, 3 ECTS)
- III. Chemical kinetics (30 hrs, 3 ECTS)
- IV. Structure of the matter (30 hrs, 3 ECTS)
- V. Electrochemistry (30 hrs, 3 ECTS)

2. Additional specialization lectures passed by an exam (offered by any scientific entity) related to the topic of the PhD dissertation being pursued. Including especially the lectures delivered within the course series of *Basic Physical Chemistry* or *Methods of Physical Chemistry* (IChF). It is necessary to obtain a minimum of 4 ECTS credits during the four years of study at the School.

B. Specialization training

It is necessary to obtain a minimum of 6 ECTS credits during the four years of study at the School. It is recommended to limit the choice to laboratory training organized by IChF (as part of the *Tools of Physical Chemistry* training series) or similar classes provided by other units of the School; the updated list of training courses available, along with ECTS credits and the name of the unit responsible for the training can be accessed at the website.

C. Specialization seminars

Compulsory is regular attendance and an annual presentation delivered at the PhD seminar of IChF (4 ECTS credits during the four years of study at the School). This requirement can be met, partially or fully, by participating in another seminar at the School, while obtaining the aforementioned minimum number of ECTS credits.

Profile: Organic chemistry

A. Specialization lectures

1. Specialization lectures concluded by an exam. It is necessary to obtain a minimum of 8 ECTS credits during the first three years of study.

a) Advanced methods of identification of organic compounds (15 hrs, 2 ECTS)
b) Mechanisms of organic reactions (15 hrs, 2 ECTS)
c) Methods of organic synthesis (15 hrs, 2 ECTS)
d) Basics of organic stereochemistry (15 hrs, 2 ECTS)

2. Other specialization lectures concluded by an exam, related to the subject of the PhD dissertation - to be selected from the list available at the School's website. It is necessary to obtain a minimum of 6 ECTS credits during the first three years of study.

B. Specialization training

It is necessary to obtain a minimum of 3 ECTS credits during the four years of study at the School. Including:

- 1 ECTS - Individual tutorial under the supervision of the dissertation supervisor - to be conducted during the first semester- P8S_UW, P8S_UO, P8S_KK
- 2 ECTS - for training with regard to writing grant applications and preparing an organic chemistry project - to be conducted during the four years of education at the School

C. Specialization seminars

It is necessary to obtain a minimum of 6 ECTS credits during the four years of study at the School:

- 2 ECTS - for regular attendance at the Seminars organized by IChO (8 semesters) - P8S_ WG
- 2 ECTS - credit for two PhD seminars (in the second and fourth semester) - P8S_UK, P8S_UW, P8S_KK, P8Z_KW, P8S_UK
- 2 ECTS - for participation in the seminars of research groups - P8S_WG, P8S_UW, P8S_UK, P8S_UU

These requirements can be met, partially or fully, by participating in another seminar at the School, while obtaining the aforementioned minimum number of ECTS credits.

Enclosure no. 5 to the curriculum of studies at the Warsaw PhD School in Natural and BioMedical Sciences

Detailed requirements for specialization in Physics
regarding specialization classes referred to in § 5(1) of the curriculum

A. Specialization lectures

1) A minimum of 12 ECTS credits should be obtained from at least 4 lectures concluded with examinations.
2) The list of compulsory lectures for doctoral students affiliated with an institute shall be drawn up by the specialization head or deputy specialization head affiliated with the institute.

2a) Doctoral students affiliated with IF have a choice of three research profiles: Solid state physics, Atomic and molecular physics, Biophysics, with the following mandatory lectures (credit via exam):

Solid state physics:

Solid state physics I	(3 ECTS, 30 hrs)
Solid state physics II	(3 ECTS, 30 hrs)
Physics of magnetism and superconductivity	(3 ECTS, 30 hrs)
Condensed matter theory	(3 ECTS, 30 hrs)

Atomic and molecular physics:

Molecules and photons	(3 ECTS, 30 hrs)
Introduction to atomic physics	(3 ECTS, 30 hrs)
Quantum information theory I	(3 ECTS, 30 hrs)

Biophysics:

Introduction to theoretical and computational biophysics	(3 ECTS, 30 hrs)
Molecular biophysics I	(3 ECTS, 30 hrs)
Molecular biophysics II	(3 ECTS, 30 hrs)

2b) Doctoral students affiliated with IWC have a choice of two research profiles: Semiconductor Physics - Experimental, Semiconductor Physics - Theoretical with the following requirements:

Semiconductor Physics - Experimental

I. mandatory lectures:

Solid State Physics I + II	(3 + 3 ECTS, 30 + 30 hrs)
Crystal Growth: Physics, Technology and Modeling	(3 + 3 ECTS, 30 + 30 hrs)

II. optional lectures (decision to be made by a supervisor)

Quantum mechanics I + II	(3 + 3 ECTS, 30 + 30 hrs)
Electrodynamics	(3 ECTS, 30 hrs)
Experimental methods in physics	(3 + 3 ECTS, 30 + 30 hrs)
Introduction to contemporary physics I + II	(3 + 3 ECTS, 30 + 30 hrs)

Semiconductor Physics – Theoretical

I. mandatory lectures:

Solid State Physics I + II	(3 + 3 ECTS, 30 + 30 hrs)

II. optional lectures (decision to be made by a supervisor)

Crystal Growth: Physics, Technology and Modeling	(3 + 3 ECTS, 30 + 30 hrs)
Quantum mechanics I + II	(3 + 3 ECTS, 30 + 30 hrs)
Electrodynamics	(3 ECTS, 30 hrs)
Condensed matter theory	(3 ECTS, 30 hrs)

2c) Doctoral students affiliated with CFT: At least 2 lectures from the "Selected topics of theoretical physics" series (3 ECTS, 30 hours each).

3) Doctoral students affiliated with IFPAN and CFT PAN who do not have a master's degree in physics should also pass the exams on:

Introduction to contemporary physics I	(3 ECTS, 30 hrs)
Introduction to contemporary physics II	(3 ECTS, 30 hrs)

B. Specialization training (4 ECTS credits should be obtained) P8S_UK, P8S_UW, P8S_WG, P8S_UU

Requirements for doctoral students affiliated with IF:

- Attending a faculty or thematic seminar relevant to the subject of the doctoral thesis and presenting the results of your own research once a year. 1 ECTS/year (minimum 3 years)
- Experimental techniques (lab tour) 1 ECTS (minimum 1 semester)

Requirements for doctoral students affiliated with IWC:

- Attending the IHPP PAS seminar on high pressure research, carried out at IWC PAN - 1 ECTS per year.
- Individual tutorial under the supervision of the dissertation supervisor (1 ECTS/cycle)

Requirements for doctoral students affiliated with CFT:

- Research work under the supervision of the thesis supervisor and attendance at the CFT PAN doctoral seminar, including presentation of own research results once a year (1 ECTS/year). The CFT doctoral seminar may be replaced by another thematic seminar appropriate to the topic of the doctoral dissertation if the former is not offered in a given academic year.

C. Specialization seminars (minimum 4 ECTS credits should be obtained)

Journal club	1 ECTS/semester
Attending IHPP PAS Seminar on Nitride Semiconductors	1 ECTS/semester
Yearly physics specialization PhD symposium	1 ECTS/year

This requirement may be met, in part or in full, by participating in another seminar of the School with the above mentioned minimum number of ECTS credits.

D. With the consent of the head of specialization affiliated with the Institute, or his deputy, some classes may be taken at an institution outside the Doctoral School, if they are relevant to the subject of the doctoral thesis and correspond to training at level VII or VIII of the Polish Qualifications Framework (PQF).

Enclosure no. 6 to the curriculum of studies at the Warsaw PhD School in Natural and BioMedical Sciences

Detailed requirements for specialization in Medicine
regarding classes referred to in § 5(1) of the curriculum

Profile: Oncology

A. Specialization lectures conducted in the English language

1) Specialization lectures concluded by an exam. It is necessary to obtain a minimum of 8 ECTS credits during the first three years of study.

Molecular medicine	3 ECTS/15 hrs
Genetics and immunology of cancer	3 ECTS/15 hrs
Cancer Epidemiology	2 ECTS/10 hrs
Clinical oncology basics	2 ECTS/10 hrs
Preclinical studies in oncology	1 ECTS/5 hrs

2) Other specialization lectures concluded by an exam (to be selected from the list available at the School's website), related to the subject of the PhD dissertation, among others:

Radiobiology	2 ECTS/10 hrs
History of oncology in Poland	1 ECTS/5 hrs

B. Specialization training conducted in Polish or English (the choice of language depends on PhD students' nationality)

Individual tutorial under the supervision of the dissertation supervisor - 6 ECTS credits (no more than 3 ECTS credit per year)

C. Specialization seminars given in the English language

During the 4 years of study at the Doctoral School, a minimum of 4 ECTS credits must be earned.

- Departmental/Clinical Seminars - 1 ECTS
  1 ECTS is awarded for participation in lectures and seminars organized at the NIO (institute-wide or departmental). Documented attendance at at least 15 lectures/seminars is required during the 4 years of study.
  This requirement can be met in part or in full by participating in other School seminars.
- Doctoral Seminar - 1 ECTS – minimum 8 seminar/year
  1 ECTS are awarded for regular participation in doctoral seminars organized by doctoral students affiliated with the NIO and for an giving a presentation as part of the doctoral.
  Documented attendance at at least 30 seminars during the 4 years of study is required.
- Doctoral Symposia/Conferences
- 1 ECTS - for active participation in a symposium (presentation)

Profile: Neuropsychology and Psychiatry

A. Specialization lectures

Epidemiology of nervous system diseases	1 ECTS/ 5 hrs
Neurogenetics	2 ECTS/10 hrs
Neurobiological and psychosocial foundations of nervous system diseases	3 ECTS/15 hrs
Preclinical studies in nervous system diseases	1 ECTS/5 hrs
Molecular medicine	3 ECTS/15 hrs

Other specialization lectures related to the subject of the PhD dissertation within the series of *"Training for medical doctors in the Institute of Psychiatry and Neurology"*

2 ECTS/10 hrs

B. Specialization training

Clinical training in research methodology	2 ECTS
Individual tutorial under the supervision of the dissertation supervisor	3 ECTS

C. Specialization seminars

PhD seminar	2 ECTS
IPiN research seminars	2 ECTS

These requirements can be met, partially or fully, by participating in another seminar at the School, while obtaining the aforementioned minimum number of ECTS credits