

Framework Program of Education in the Doctoral School of Science and Natural Sciences

Field:	Field of Natural Sciences, Field of Veterinary Sciences
Disciplines:	Astronomy, Mathematics, Biological Sciences, Chemical Sciences, Physical Sciences, Earth and Environmental Sciences, Veterinary Medicine
Duration of education:	4 years
Number of ECTS credits:	34
Total number of teaching hours:	320 (including 60 hours of work placement)

Module I: Basic courses / 120 hours/ 20 ECTS

1. Course Lecture I /30 hours/ E/ 3 ECTS.
2. Course Lecture II /30 hours/ E/ 3 ECTS.
3. Course Lecture in an additional discipline (other than the doctoral discipline), / 30 hours/ E/ 3 ECTS.
- 4. Interdisciplinary seminar /30 hours, 3 ECTS.**
- 5. Supervisor mentoring / 8 ECTS.**

Module II: Professional development courses / 80+60 =140 hours / 9 ECTS

1. Scientific Information: tools for search and processing of scientific and didactics resources / 10 hours/ 1 ECTS.
2. Creative Thinking / 10 hours/ 1 ECTS
3. Techniques of Scientific and Popular Science Presentations / 10 hours/ 1 ECTS.
4. Organisation and Financing of Research / 15 hours/ 2 ECTS.
5. Scientific Writing / 15 hours/ 2 ECTS.
6. Elements of Copyright and Patent Law / 10 hours / 1 ECTS.
7. Problems of Ethics, Open Science and Open Innovation / 10 hours / 1 ECTS.
8. Work placement / 60 hours / 0 ECTS .

Module III: Specialist courses / 60 hours/ 5 ECTS

- 1. Specialist course no. 1 / laboratory / module / lecture / specialist seminar / selected by the supervisor in agreement with the director of the school / 30 hours/ 3 ECTS.**
2. Specialist course no. 2 /laboratory/ module/lecture/specialist seminar / selected by the supervisor in agreement with the director of the school / 30 hours/ 2 ECTS.

OR (option for Course No. 2)

Discussion class in specialist English as a foreign language / 30 hours/ 2 ECTS.

Notes

1. The program of education in the doctoral school, in accordance with the Act of 20 July 2018 - *Law on Higher Education and Science* (Journal of Laws of 30 August 2018, item 1668) is NOT a study program. Therefore, it is based on "modular" courses that are not conducted in a semester system. This means, for example, that workshops on preparing grant applications are held over two days, 1-2 times a year. One part of the workshop may be conducted by invited experts from the National Science Centre (NCN) or the Foundation for Polish Science (FNP). The second part may take place under the supervision of the NCU staff experienced in securing funds from institutions that conduct grant competitions.
2. Classes in Module I may be partially conducted in English by foreign or domestic experts/researchers invited to participate.
3. Work placement (Module II) may primarily take the form of teaching activities. They should consider the individual research plan of the doctoral student, selected in agreement with the school director and the supervisor.
4. Specialised Module. Classes elected by the doctoral student in consultation with the supervisor and the school director based on the needs related to the individual research plan.
5. A mid-term assessment is conducted in the middle of the four-year education period in accordance with the *Act on Higher Education and Science*, the framework of which is defined both in the Act and in the Rules of Doctoral School of Exact and Natural Sciences.
6. The School program of education and the description of learning outcomes are based on the characteristics of the second degree for qualifications at level 8 of the Polish Qualification Framework, specified in the Regulation of the Minister of Science and Higher Education of November 14, 2018 on the characteristics of the second degree of learning outcomes for qualifications at levels 6-8 of the Polish Qualification Framework (Journal of Laws of 2018, item 2218).

**Learning Outcomes in the Field of Natural Sciences
for the disciplines: Astronomy, Mathematics, Biological Sciences,
Chemical Sciences, Physical Sciences, Earth and Environmental Sciences**

Learning Outcomes	Code of the Descriptor Component of the Polish Qualifications Framework – Level 8
KNOWLEDGE (knows and understands)	
advanced knowledge in the field of natural sciences, specific to the chosen discipline and the scope of research conducted	P8S_WG
modern research methodologies relevant to the discipline	P8S_WG
ethical and legal foundations for conducting scientific research involving humans and animals (pertaining to biological sciences))	P8S_WK
principles of disseminating research findings	P8S_WK
principles of knowledge transfer to the socio-economic sphere	P8S_WG P8S_WK
methodology and evaluation methods for the educational process	P8S_WG P8S_WK
a comprehensive grasp of the most important theories and concepts within the discipline of the doctoral study	P8S_WG
the methodology, structure, and historical development of their discipline, as well as the fundamental issues and dilemmas of civilization related to their area of research	P8S_WG P8S_WK
SKILLS (can)	
independently gather literature related to a specific issue and critically analyse it	P8S_UW
present the results of their own work comprehensively and summarise the findings of others in the form of a scientific dissertation, publication, oral conference presentation, seminar paper, or poster	P8S_UK
independently solve scientific problems, formulate tasks aimed at finding solutions, make inferences, and extend the problem	P8S_UW P8S_UO
critically analyze the results of scientific research	P8S_UW
thanks to their strong command of the English language, can express themselves fluently in both speech and writing, present their own	P8S_UK P8S_UO

reports, and understand others' contributions	
transfer the results of scientific research to the economic and social spheres	P8S_UW P8S_UO
disseminate research findings and communicate effectively within the academic community	P8S_UK
apply various teaching methods and forms that facilitate the educational process at the academic level	P8S_UU
utilize tools from their discipline, including advanced mathematics and computer science, to describe processes and solve problems	P8S_WG
plan their own development and inspire and organise the development of others	P8S_UU P8S_UO
SOCIAL COMPETENCES (is ready to)	
uphold and promote the ethos of the scientific community and research in the fields of natural sciences	P8S_KR
advocate for the civilizational and social value of science and scientific research	P8S_KK
maintain a critical attitude towards their own and others' accomplishments in their scientific discipline, as well as towards prejudices and misconceptions related to science	P8S_KK
take responsibility for published content and act in accordance with the principles of scientific integrity and professional ethics	P8S_KO