ASSUMPTIONS OF EDUCATION PROCESS

I. GENERAL INFORMATION

1. Name of institution providing education: **University of Bialystok**
2. Name of doctoral school: **Doctoral School at the University of Bialystok**
3. Form of studies: **full-time (on-site)**
4. Duration of studies: **4 years = 8 semesters**

II. GENERAL ASSUMPTIONS

1. The Doctoral School is designed for graduates of second-cycle degree programs or equivalent, holding a Master of Science, Master of Science in Engineering, or an equivalent professional title. It is intended those who wish to conduct scientific research in the field of humanities, social sciences, or exact and natural sciences, aiming to acquire in-depth knowledge in this area as well as research methodology and teaching experience.
2. The primary mission of the School is to provide scientific resources and support for doctoral students conducting research projects that lead to a doctoral dissertation.
3. Education at the Doctoral School, highly individualized, creates conditions for:
    a. enhancing knowledge and competences within the selected scientific discipline,
    b. expanding knowledge across other disciplines and fields of science,
    c. developing of scientific independence,
    d. acquiring soft skills essential to function in the socio-economic environment and to collaborate with representatives of other social groups,
    e. participating in the life of scientific community both in the country and abroad,
    f. receiving constructive evaluation that support the doctoral student's development.
4. A doctoral student is required to attend classes included in the education program. Classes at the Doctoral School are conducted on-site and take the form of lectures and seminars. The presence and activity of doctoral students, their participation in discussions, initiating topics for consideration, and a critical approach to the issues discussed are obligatory.
5. A doctoral student is required to conduct a research project and prepare a doctoral dissertation in a chosen discipline. The research is carried out under the direct supervision of a supervisor or supervisors. Doctoral student, in consultation with the supervisor, prepares an Individual Research Plan, the implementation of which is subject to annual and mid-tem evaluation.
6. Before beginning their studies, first-year doctoral students must complete mandatory occupational safety and health training (Polish BHP).
7. The Doctoral School curriculum is divided into 5 modules.
8. MODULE 1. GENERAL EDUCATION (6 ECTS)
   The module includes subjects mandatory for all doctoral students, forming a group of courses attended jointly by all doctoral students at the School.
    a) Course outside the discipline (elective) – the doctoral student selects one course (seminar) from the Doctoral School’s offerings, outside their own discipline. This course may be taken in any year of study.
    b) Soft skills 1 and 2 courses (elective) – the doctoral student selects two courses (seminars) from the Doctoral School’s offerings.

c) Two mandatory courses on intellectual property protection and the commercialization of research.

9. MODULE 2. EDUCATION IN THE FIELD OF SCIENCE (6 ECTS)
   The module consists of 3 seminars attended jointly by doctoral students from the same field of science. These courses prepare doctoral students for teaching (Academic didactics 1 and 2), applying for grants (Forms of financing of exact and natural sciences), as well as to prepare publications and scientific presentations.
10. A doctoral student pursuing education in Polish may choose and take courses in English from Module 1. General education and Module 2. Education in the field of science, if they are offered in both languages during the same academic year.
    With the consent of the School Director and the approval of the supervisor, the doctoral students may conduct their doctoral seminar in English.
11. MODULE 3. EDUCATION IN DISCIPLINES (22 ECTS)
    The number of modules corresponds to the number of disciplines in which doctoral students can study at the Doctoral School.

    Field of exact and natural sciences

    Disciplines: mathematics, physical sciences

    In each discipline, there are specialized English-language seminar (Journal Club), which conclude with an exam, and an additional course (Statistics in physical sciences and, for mathematics, Spectral theory and functional calculus).

    Additionally, doctoral students take two advanced-level courses in a subject within the chosen discipline (Advanced mathematics 1 and 2, Advanced physics 1 and 2).

    Doctoral students studying mathematics and physical sciences also complete two courses on selected topics in contemporary mathematics and contemporary physics, respectively.

    Furthermore, they participate in specialized seminars (for 3 years).

12. MODULE 4. PREPARATION OF DOCTORAL DISSERTATION (16 ECTS)
    Throughout their education, doctoral students participate in their supervisor's doctoral seminar for 15 hours per semester. The seminars require close scientific collaboration between doctoral student and the supervisor. The evaluation of the doctoral student during the doctoral seminars not only assesses progress in preparation of doctoral dissertation but also the implementation of other components of the Individual Research Plan.
13. MODULE 5. PROFESSIONAL APPRENTICESHIP (6 ECTS).
    The professional apprenticeship prepares a doctoral student to work as an academic teacher. It is conducted in the form of teaching by the doctoral student in their discipline of research. In exceptional cases, the professional apprenticeship may involve the doctoral student participating in courses conducted by another academic teacher. The supervisor decides about the form of the apprenticeship. Above all, the professional apprenticeship is carried out as a part of courses organized by the supervisor's department. The number of practice hours ranges from at least 15 hours to no more than 60 per year, starting from the second year of education. The apprenticeship is completed in a given year based on an observation protocol of the courses conducted by the course coordinator , supervisor, and/or head of the department. The observation protocol is submitted by the doctoral student along with the annual report.

13. The verification of learning outcomes occurs during the implementation of courses outlined in this program, as well as scientific and other activities of the doctoral student planned as a part of the Individual Research Plan and carried out in subsequent years of study. The method of verifying learning outcomes is specified in detail in the course syllabi available in USOS and, in relation to the scientific sphere, in individual research plans agreed with supervisors and approved by the Director of Doctoral School.

III. EDUCATION MODULES/COURSES

Field of exact and natural sciences
Disciplines: mathematics, physical sciences

Name of module/course		Reference to the assumed learning outcomes	Ways of verifying the assumed learning outcomes	ECTS	Hours	Semester
Module 1. General education						
1	Course outside the discipline	SD_WK01, SD_KK03	passing/not passing	2	15	any
2	Soft skills 1	SD_UU01, SD_UK03	passing/not passing	1	5	1
3	Soft skills 2	SD_UU01, SD_UK03	passing/not passing	1	5	1 or 3
4	Copyright and protection of intellectual property	SD_WK03, SD_WK04, SD_KR01	passing/not passing	1	5	1
5	Commercialization of research	SD_WG05, SD_WK05, SD_UW05, SD_KO03	passing/not passing	1	5	1 or 3
Module 2. Education in the field of science						
6	Academic didactics 1	SD_UK03, SD_UU01, SD_UU02, SD_UU03, SD_KO01	passing grade	1	10	1 or 2
7	Academic didactics 2	SD_UK03, SD_UU01, SD_UU02, SD_UU03, SD_KO01	passing grade	1	10	3 or 4
8	Forms of financing of exact and natural sciences	SD_WK02, SD_WK03, SD_WK04, SD_WK05, SD_UW05, SSD_KO03, SD_UO01,SD_KR01	passing grade	2	15	1 or 2
9	Publications and presentations in exact and natural sciences	SD_WG02, SD_WG05, SD_UW02, SD_UK02, SD_KK01, SD_KO02	passing grade	2	15	1 or 2
Moduł 3. Education in disciplines						
MODULE #3L MATHEMATICS						
26	Journal Club (Specialized English)	SD_UK01, SD_UK04, SD_KK01	PASSING GRADE/ EXAM	6	45	2-4
27	Spectral theory and functional calculus	SD_WG04, SD_UW02, SD_UW03, SD_UW04, SD_UK03, SD_KK01	PASSING GRADE	4	30	2
28	Advanced mathematics 1	SD_WG01, SD_WG02, SD_WG03, SD_WK01, SD_KK03	EXAM	2	15	1 or 2
29	Advanced mathematics 2	SD_WG01, SD_WG02, SD_WG03, SD_WK01, SD_KK03	EXAM	2	15	1 or 2

30	Selected issues in modern mathematics 1	SD_WG01, SD_WG02, SD_WG03, SD_KK01	EXAM	2	15	3 or 4
31	Selected issues in modern mathematics 2	SD_WG01, SD_WG02, SD_WG03, SD_KK01	EXAM	2	15	3 or 4
32	Specialized seminar 1 (mathematics)	SD_WG02, SD_WG03, SD_WK01, SD_UW04, SD_KK03	PASSING GRADE	1	10	1-2
33	Specialized seminar 2 (mathematics)	SD_WG02, SD_WG03, SD_WK01, SD_UW04, SD_KK03	PASSING GRADE	1	10	3-4
34	Specialized seminar 3 (mathematics)	SD_WG02, SD_WG03, SD_WK01, SD_UW04, SD_KK03	PASSING GRADE	2	10	5-6
MODULE #3M PHYSICAL SCIENCES						
35	Journal Club (Specialized English)	SD_UK01, SD_UK04, SD_KK01	PASSING GRADE/ EXAM	6	45	2-4
36	Statistics in physical sciences	SD_WG04, SD_UW02, SD_UW03, SD_UW04, SD_UK03, SD_KK01	PASSING GRADE	4	30	2
37	Advanced physics 1	SD_WG01, SD_WG02, SD_WG03, SD_WK01, SD_KK03	EXAM	2	15	1 or 2
38	Advanced physics 2	SD_WG01, SD_WG02, SD_WG03, SD_WK01, SD_KK03	EXAM	2	15	1 or 2
39	Selected issues in modern physics 1	SD_WG01, SD_WG02, SD_WG03, SD_KK01	EXAM	2	15	3 or 4
39	Selected issues in modern physics 2	SD_WG01, SD_WG02, SD_WG03, SD_KK01	EXAM	2	15	3 or 4
40	Specialized seminar 1 (physics)	SD_WG02, SD_WG03, SD_WK01, SD_UW04,	PASSING GRADE	1	10	1-2
41	Specialized seminar 2 (physics)	SD_WG02, SD_WG03, SD_WK01, SD_UW04,	PASSING GRADE	1	10	3-4
42	Specialized seminar 3 (physics)	SD_WG02, SD_WG03, SD_WK01, SD_UW04,	PASSING GRADE	2	10	5-6
Module 4. Preparation of doctoral dissertation						
43	Doctoral seminar and own work	SD_WG04, SD_UW01, SD_UW02, SD_UW03, SD_UK01, SD_UK02, SD_UK03, SD_UO01, SD_UO02, SD_KK01, SD_KK02, SD_KK03, SD_KO01, SD_KO02	passing grade	16	120	1-8
Module 5. Professional apprenticeship						
44	Professional apprenticeship (teaching)	SD_WG01, SD_UW02, SD_UK03, SD_UU01, SD_UU02, SD_UU03 SD_KK02	passing/not passing	6	45	3-8

IV. REQUIREMENTS FOR THE COMPLETION OF THE DOCTORAL SCHOOL

The condition for completing the Doctoral School is passing the courses included in the school program, fulfilling all activities specified in the Individual Research Plan, and submitting a complete doctoral dissertation along with a positive opinion from the supervisor or supervisors.

SCHEDULE OF IMPLEMENTATION OF THE EDUCATION PROGRAM
Doctoral School at University of Bialystok – exact and natural sciences, disciplines: mathematics, physical sciences

Modules/Courses	Form of course passing*	ECTS	Hours				
			Total, including:	1st year	2nd year	3rd year	4th year
Module 1. General education		**6**	**35**	**10**	**10**	**0**	**15**
Course outside the discipline	Z	2	15				15
Soft skills 1	Z	1	5	5			
Soft skills 2	Z	1	5		5		
Copyright and protection of intellectual property	Z	1	5	5			
Commercialization of research	Z	1	5		5		
Module 2. Education in the field of science		**6**	**50**	**40**	**10**	**0**	**0**
Academic didactics 1	ZO	1	10	10			
Academic didactics 2	ZO	1	10		10		
Forms of financing of exact and natural sciences	ZO	2	15	15			
Publications and presentations in exact and natural sciences	ZO	2	15	15			
Module 3L. Mathematics		22	165	**85**	**70**	10	0
Journal Club (Specialized English)	ZO+E	6	45	15	30		
Spectral theory and functional calculus	ZO	4	30	30			
Advanced mathematics 1	E	2	15	15			
Advanced mathematics 2	E	2	15	15			
Selected issues in modern mathematics 1	E	2	15		15		
Selected issues in modern mathematics 2	E	2	15		15		
Specialized seminar 1 (mathematics)	ZO	1	10	10			
Specialized seminar 2 (mathematics)	ZO	1	10		10		
Specialized seminar 3 (mathematics)	ZO	2	10			10	
Module 3M. Physical sciences		22	165	85	**70**	10	0
Journal Club (Specialized English)	ZO+E	6	45	15	30		
Statistics in physical sciences	ZO	4	30	30			
Advanced physics 1	E	2	15	15			
Advanced physics 2	E	2	15	15			
Selected issues in modern physics 1	E	2	15		15		
Selected issues in modern physics 2	E	2	15		15		
Specialized seminar 1 (physics)	ZO	1	10	10			
Specialized seminar 2 (physics)	ZO	1	10		10		
Specialized seminar 3 (physics)	ZO	2	10			10	
Module 4. Preparation of doctoral dissertation		**16**	**120**	**30**	**30**	**30**	**30**
Doctoral seminar and own work	ZO	16	120	30	30	30	30
Module 5. Professional apprenticeship		**6**	**45**	**0**	**15**	**15**	**15**
Professional apprenticeship (teaching)	Z	6	45	0	15	15	15
TOTAL in disciplines:							
Mathematics		56	415	165	135	55	60
Physical sciences		56	415	165	135	55	60

*abbreviations: Z- passing without grade, ZO – passing grade, E – exam