

No	The name of the module, academic discipline, course project (course work)	Exams	End-of-term test	Academic hours						Semesters												Total credits	Competence Code
				Total	As follows:				I year						II year								
					Total in class	Lectures	Laboratory work	Workshops	Seminar classes	1 semester, 18 weeks			2 semester, 18 weeks			3 semester, 18 weeks			4 semester				
										Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits		
1	State Component			1098	252	126	108		18	396	108	12	324	72	9	378	72	12				33	
1.1	Module «Statistical Analysis and Operations Research»			432	144	72	72			216	72	6	216	72	6							12	
1.1.1	Mathematical and Applied Statistics	1		216	72	36	36			216	72	6										6	DPC-1
1.1.2	Decision theory	2		216	72	36	36						216	72	6							6	UK-6, DPC-2
1.2	Module «Mathematical and Computer Modeling»			180	72	36	36									180	72	6				6	
1.2.1	Mathematical Models in Information Technologies	3		90	36	18	18									90	36	3				3	UK-5, DPC-3,4
1.2.2	Applications of Computer Modeling	3		90	36	18	18									90	36	3				3	UK-4, DPC-4,5
1.3	Module «Academic Research»			486	36	18			18	180	36	6	108		3	198		6				15	UK-1,2
1.3.1	Methodology of Mathematical Research	1		90	36	18			18	90	36	3										3	DPC-6
1.3.2	Research Seminar	1,2,3		396						90		3	108		3	198		6				12	
2	Higher Education Institution Component			2030	870	396	368	106		648	250	18	750	284	21	632	336	18				57	
2.1	English in Professional Activity		1,2	318	106			106		108	36	3	210	70	6							9	UK-3
2.2	Module «Cloud Technologies and Internet Services Designs»			324	162	72	90						108	54	3	218	108	6				9	SC-1
2.2.1	AWS and Cloud Technologies / et al.	2		108	54	18	36						108	54	3							3	
2.2.2	Analysis and Design of Information Systems / et al.	3		126	72	36	36									126	72	3				3	
2.2.3	Design and Prototyping of User Interfaces / et al.	3		90	36	18	18									90	36	3				3	
2.3	Module «Data Analysis and Artificial Intelligence Methods»			342	160	90	70			108	52	3	108	36	3	126	72	3				9	SC-2
2.3.1	Mathematics of Machine Learning / et al.	1		108	52	36	16			108	52	3										3	
2.3.2	Computer Vision and Graphics / et al.	2		108	36	18	18						108	36	3							3	
2.3.3	Data Mining / et al.		3	126	72	36	36									126	72	3				3	
2.4	Module «Programming Technologies»			432	144	72	72			216	72	6	216	72	6							12	SC-3
2.4.1	Python Language in an Industrial Environment / et al.	1		108	36	18	18			108	36	3										3	
2.4.2	Functional Programming and Scala Technologies / et al.	1		108	36	18	18			108	36	3										3	

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						Lectures	Laboratory work	Workshops	Seminar classes	1 semester, 18 weeks			2 semester, 18 weeks			3 semester, 18 weeks			4 semester				
										Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits		
2.4.3	Android development / et al.		2	108	36	18	18						108	36	3							3	SC-4
2.4.4	Java EE Technologies / Internet of Things / et al.	2		108	36	18	18						108	36	3							3	
2.5	Module «Distributed Applications and Cryptographic Technologies»			308	174	108	66			108	54	3				200	120	6				9	
2.5.1	Number and Theoretic Algorithms for Information Security	1		108	54	36	18			108	54	3										3	
2.5.2	Cryptographic Technologies	3		100	60	36	24									100	60	6				3	
2.5.3	Architecture of Distributed Applications / Patterns and Algorithms of Distributed Applications / et al.	3		100	60	36	24									100	60	6				3	
2.6	Module «Business Analysis in Web Application Design»			306	124	54	70			108	36	3	108	52	3	90	36	3				9	SC-5
2.6.1	Analysis and Design of Business Processes / et al.	1		108	36	18	18			108	36	3										3	
2.6.2	Internet Marketing / et al.		2	108	52	18	34						108	52	3							3	
2.6.3	Optimization and SEO / et al.		3	90	36	18	18									90	36	3				3	
2.7	Optional Subjects		/1	/90	/34	/20		/14		/90	/34	/3										/3	
2.7.1	Russian as a Foreign Language		/1	/90	/34	/20		/14		/90	/34	/3										/3	UK-7
2.8	Series of Disciplines for Candidate Exams and Additional Training ¹	/2,2	/1 ²	/338	/218	/66	/24	/96	/32	/206	/138	/2	/132	/80	/7							/9	
2.8.1	Philosophy and Methodology of Science	/2		/124	/72	/40			/32	/62	/40		/62	/32	/3							/3	UK-1
2.8.2	Information Technologies: Basics		/1 ²	/72	/50	/26	/24			/72	/50	/2										/2	UK-2
2.8.3	Foreign Language	/2		/142	/96			/96		/72	/48		/70	/48	/4							/4	UK-3
Number of Hours				3128	1122	522	496	106	18	1044	358	30	1074	356	30	1010	408	30				90	
Number of Hours per Week										20			20			23							
Number of Exams				12/2						4			4/2			4							
Number of End-of-term tests				14/3						5/2			4			5							

IV. Internship				V. Research			VI. Final Certification	
Internship Title	Semester	Weeks	Credits	Semester	Weeks	Credits	Master's Thesis	
Research	4	8	12	4	12	18		

VII. Competence Matrix

Competence Code	Competence Name	Module Code, Discipline Code
UC-1	To apply methods of scientific knowledge in research activities, generate and realize innovative ideas.	1.3, 2.8.1
UC-2	To solve research and innovation problems based on the use of information and communication technologies.	1.3, 2.8.2
UC-3	To carry out communications in a foreign language in the academic, scientific and professional environment for the implementation of research and innovation activities	2.1, 2.8.3
UC-4	To provide communication, demonstrate leadership skills; be capable of team building and development of strategic goals and objectives.	1.2.2
UC-5	To develop innovative receptivity and ability to innovate.	1.2.1
UC-6	To be able to predict the conditions for the implementation of professional activities and solve professional problems in conditions of uncertainty.	1.1.2
UC-7	To apply psychological and pedagogical methods and information and communication technologies in education and management.	2.7.1
DPC-1	To analyze the main patterns of random processes, develop probabilistic and statistical models for theoretical and applied problems.	1.1.1
DPC-2	To apply methods of mathematical formalization of conflict situations in the economic and social spheres and the principles of their resolution.	1.1.2
DPC-3	To use mathematical models in the design and development of innovative software.	1.2.1
DPC-4	To create and research new mathematical models in natural sciences and information technologies, improve and develop concepts, theories and methods.	1.2.1, 1.2.2
DPC-5	To use the capabilities of modern software applications and mathematical packages to implement the technology of mathematical modeling in solving various applied problems/	1.2.2
DPC-6	Apply the mathematical apparatus and methods of scientific knowledge to the study of mathematical structures and properties of mathematical objects.	1.3.1
SC-1	To apply the basic approaches to designing and implementing scalable Internet services. Apply basic techniques for designing and implementing scalable Internet services.	2.2
SC-2	To use analysis tools and data processing algorithms.	2.3
SC-3	To apply modern technologies for software development.	2.4

Continuation of the curriculum in the specialty 7-06-0533-04 "Mathematics and Computer Science" (profiling "Web Development and Internet Technologies"), registration number 0152a-5.4-113/yr.

Competence Code	Competence Name	Module Code, Discipline Code
SC-4	To apply key methods of designing and protecting information systems to implement sustainable distributed and cryptographic applications.	2.5
SC-5	To analyze and evaluate the business and technical context, formulate and agree on requirements, develop and implement business strategies to achieve project and program purposes.	2.6

Developed on the basis of the Model curriculum for specialty 7-06-0533-04 "Mathematics and Computer Science", approved on 18 January, 2023, registration No. 7-06-05-015/pr.

¹ Series of Disciplines for Candidate Exams and Additional Training «Philosophy and Methodology of Science», «Foreign Language», «Information Technologies: Basics» are studied according to the choice of a student.
² Differentiated End-of-term test.

AGREED

Vice-Rector
for Academic Affairs and Education Innovations

 Alesya G. Prakharenka
« 11 » 04. 2023

Dean of the Mechanics
and Mathematics Faculty

 Sergei M. Bosyakov
« 11 » 04. 2023

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Head of the Academic Affairs Department

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« 11 » 04. 2023

Expert-normocontroller

 Angelica V. Kostenevich
« 11 » 04. 2023

Recommended for approval by the Scientific and Methodological Council of the Belarusian State University.
Record dated 15 February 2023, No. 5.