Контрольный экземпляр 36.6.1 уз.

BELARUSIAN STATE UNIVERSITY

CURRICULUM

Speciality: 1-31 80 03 Mathematics and Computer Sciences
Profiling: Web Development and Internet Technologies

Degree: Master
Period of study: 1 year 8 months
Form of study: full-time (day)

1. Schedule of the educational process

II. Summary (in weeks)

YEARS	September – August (weekly grid)	Academic Studies	Exams	Internship	Research	Master's Thesis	Vacation	Total
I		36	6				10	52
II	: : — — X X X X / / / / / / / //	18	2	4	8	1	2	35
		54	8	4	8	1	12	87

Legend: ☐ — Academic Studies   ☒ — Internship   ⫽ — Master's Thesis
⦂ — Exams   ⫽ — Research   ═ — Vacation

III. Curriculum

No	The name of the module, academic discipline, course project (course work)	Exams	End-of-term test	Academic hours						Semesters													Total credits	Competence Code
						As follows:				I year						II year								
				Total	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**			1134	252	126	108		18	396	108	12	324	72	9	414	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	DPC-2
1.2	**Module «Mathematical and Computer Modeling»**			216	72	36	36									216	72	6				6	
1.2.1	Mathematical Models in Information Technologies		3	108	36	18	18									108	36	3				3	UK -2, DPC-3
1.2.2	Applications of Computer Modeling	3		108	36	18	18									108	36	3				3	UK -2, DPC-4
1.3	**Module «Academic Research»**			486	36	18			18	180	36	6	108		3	198		6				15	
1.3.1	Methodology of Mathematical Research		1	90	36	18			18	90	36	3										3	UK-3
1.3.2	Research Seminar		1,2,3	396						90		3	108		3	198		6				12	UK-1, 4
2	**Higher Education Institution Component**			2424	890	396	388	106		648	250	18	750	284	21	1026	356	30				69	
2.1	**Module «Foreign Language»**			318	106			106		108	36	3	210	70	6							9	UK -5
2.1.1	English in Professional Activity	2	1	318	106			106		108	36	3	210	70	6							9	
2.2	**Profiling «Web Development and Internet Technologies»**			2106	784	396	388			540	214	15	540	214	15	1026	356	30				60	
2.2.1	**Module «Cloud Technologies and Internet Services Designs»**			432	162	72	90						108	54	3	324	108	9				12	SC-1
2.2.1.1	AWS and Cloud Technologies	2		108	54	18	36						108	54	3							3	
2.2.1.2	Analysis and Design of Information Systems / Design and Development of Highly Loaded Services / Storage systems / et al.	3		216	72	36	36									216	72	6				6	
2.2.1.3	Design and Prototyping of User Interfaces / Thin Client Technologies / et al.			432	162	72	90						108	54	3	324	108	9				12	SC-1
2.2.2	**Module «Data Analysis and Artificial Intelligence Methods»**			414	160	90	70			108	52	3	108	36	3	198	72	6				12	SC-2
2.2.2.1	Machine Learning		1	108	52	36	16			108	52	3										3	
2.2.2.2	Computer Vision and Graphics / Data Visualization / et al.	2		108	36	18	18						108	36	3							3	

No	The name of the module, academic discipline, course project (course work)	Exams	End-of-term test	Academic hours		Lectures	Laboratory work	Workshops	Seminar classes	1 semester, 18 weeks			2 semester, 18 weeks			3 semester, 18 weeks			4 semester			Total credits	Competence Code
				Total	Total in class					Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits		
2.2.2.3	Data Mining / Parallel and Stream Data Processing Systems / Deep Machine Learning / et al.		3	198	72	36	36									198	72	6				6	
2.2.3	**Module «Programming Technologies»**			**432**	**144**	**72**	**72**			**216**	**72**	**6**	**216**	**72**	**6**							**12**	**SC-3**
2.2.3.1	Python Language in an Industrial Environment / et al.		1	108	36	18	18			108	36	3										3	
2.2.3.2	Functional Programming and Scala Technologies / Julia Language / et al.	1		108	36	18	18			108	36	3										3	
2.2.3.3	.Net technologies / et al.		2	108	36	18	18						108	36	3							3	
2.2.3.4	Java EE Technologies / Internet of Things / et al.	2		108	36	18	18						108	36	3							3	
2.2.4	**Module «Distributed Applications and Cryptographic Technologies»**			**504**	**194**	**108**	**86**			**108**	**54**	**3**				**396**	**140**	**12**				**15**	**SC-4**
2.2.4.1	Number and Theoretic Algorithms for Information Security	1		108	54	36	18			108	54	3										3	
2.2.4.2	Cryptographic Technologies	3		198	70	36	34									198	70	6				6	
2.2.4.3	Architecture of Distributed Applications / Patterns and Algorithms of Distributed Applications / et al.	3		198	70	36	34									198	70	6				6	
2.2.5	**Module «Business Analysis in Web Application Design»**			**324**	**124**	**54**	**70**			**108**	**36**	**3**	**108**	**52**	**3**	**108**	**36**	**3**				**9**	**SC-5**
2.2.5.1	Analysis and Design of Business Processes	1		108	36	18	18			108	36	3										3	
2.2.5.2	Internet Marketing / et al.		2	108	52	18	34						108	52	3							3	
2.2.5.3	Optimization and SEO / System Management and Engineering / Economic Informatics / et al.		3	108	36	18	18									108	36	3				3	
3	*Optional Subjects*			/108	/56	/30		/26		/108	/56	/3										/3	
3.1	Creative Teaching Techniques in Higher School / Pedagogics and Psychology of Higher Education / et al.		/1	/108	/56	/30		/26		/108	/56	/3										/3	UK-6
4	*Series of Disciplines for Candidate Exams and Additional Training [1]*			/568	/316	/96	/36	/140	/44	/358	/202	/6	/210	/114	/9							/15	
4.1	Philosophy and Methodology of Science	/2		/240	/104	/60			/44	/140	/60		/100	/44	/6							/6	UK-7
4.2	Information Technologies: Basics		/1	/108	/72	/36	/36			/108	/72	/3										/3	UK-8
4.3	Foreign Language	/2	/1	/220	/140			/140		/110	/70	/3	/110	/70	/3							/6	UK-9
Number of Hours				3558	1142	522	496	106	18	1044	358	30	1074	356	30	1440	428	42				102	
Number of Hours per Week											20			20			24						
Number of Exams				13/2							4			5/2			4						
Number of End-of-term tests				13/3							5/3			3			5						
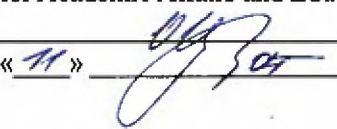
IV. Internship				V. Research			VI. Final Certification
Internship Title	Semester	Weeks	Credits	Semester	Weeks	Credits	Master's Thesis
Research	4	4	6	4	8	12	

VII. Competence Matrix
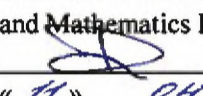
Competence Code	Competence Name	Module Code, Discipline Code
UC-1	To be able to apply scientific cognition (analysis, comparison, systematization, abstraction, modelling, data authenticity checking, decision-making etc.) in independent research activity, to generate and realize innovative ideas.	1.3.2
UC-2	To be able to create and research new mathematical models in the natural sciences and information technologies, to improve and develop concepts, theories and methods.	1.2.1, 1.2.2

Competence Code	Competence Name	Module Code, Discipline Code
UC-3	To be able to apply the mathematical apparatus and methods of scientific cognition to the research of mathematical structures and properties of mathematical objects.	1.3.1
UC-4	To be able to find, formulate and solve actual and significant problems of theoretical and applied mathematics.	1.3.2
UC-5	To be able to understand and analyze professional texts in English, to proficient in English for oral and written communication in the educational, scientific, professional fields of activity in the field of mathematics and computer sciences.	2.1
UC-6	To be able to carry out pedagogical activities in educational institutions, to master and implement effective educational and information and communication technologies, pedagogical innovations.	3.1
UC-7	To master the methodology of scientific cognition, to be able to analyse and evaluate the content and level of philosophic and methodological issue while solving the tasks related to scientific research and innovative activity.	4.1
UC-8	To have skills of using the contemporary information technologies for solving scientific research and innovative tasks.	4.2
UC-9	To use a foreign language for communication in interdisciplinary and scientific environment, in various formats of international cooperation, scientific research and innovative activity.	4.3
DPC-1	To be able to analyze the basic patterns of random processes, to develop probabilistic and statistical models for theoretical and applied problems.	1.1.1
DPC-2	To possess the basic 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 be able to effectively use mathematical models in design and development of the innovation software.	1.2.1
DPC-4	To be able to use the possibilities of modern software applications and mathematical packages to implement technology of mathematical modeling for solving various applied problems.	1.2.2
SC-1	To know the basic approaches to designing and implementing scalable Internet services.	2.2.1
SC-2	To be able to effectively use analysis tools and data processing algorithms.	2.2.2
SC-3	To be able to apply modern technologies for software development.	2.2.3
SC-4	To be able to apply key methods of designing and protecting information systems to implement sustainable distributed and cryptographic applications.	2.2.4
SC-5	To be able 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.	2.2.5

[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.

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for Academic Affairs and Education Innovations
_____ Olga I. Chupris
« 11 » ___ 04 _____ 2019

AGREED
Academic Affairs Department,
Head
_____ Alena A. Dastanka
« 11 » ___ 04 _____ 2019

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Dean of the Mechanics
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_____ Dmitry G. Medvedev
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