



CURRICULUM

of Educational Program on enrollment for 2024-2025 academic year

Educational program 7M05301 - "Applied and engineering physics"
Group of educational programs M090 - "Physics"

Form of study: full-time

Duration of study: 2 year

Academic degree: Master of Earth Sciences

Discipline code	Name of disciplines	Cycle	Total amount in credits	Total hours	Classroom amount lec/lab/pr	SIS (including TSIS) in hours	Form of control	Allocation of face-to-face training based on courses and semesters			
								1 course		2 course	
								1 semester	2 semester	3 semester	4 semester
M-1. Module of basic training (university component)											
LNG213	Foreign language (professional)	BD UC	3	90	0/0/2	60	E	3			
HUM214	Management Psychology	BD UC	3	90	1/0/1	60	E	3			
HUM212	History and philosophy of science	BD UC	3	90	1/0/1	60	E		3		
HUM213	Higher school pedagogy	BD UC	3	90	1/0/1	60	E		3		
M - 2. Module of theoretical training											
PHY292	Solid State Physics and Crystallography	BD, CCH	5	150	2/0/1	105	E	5			
PHY244	Thermodynamics				2/0/1						
MNG781	Intellectual property and the global market				2/0/1						
M - 3. Materials Science Module											
PHY291	Materials science and advanced materials technology	BD, CCH	5	150	2/0/1	105	E	5			
PHY285	Physical and chemical bases of materials				2/0/1						
MNG705	Project Management				2/0/1						
PHY270	Multiphase structures and methods for calculating phase diagrams	PD, CCH	5	150	1/0/2	105	E			5	
M-4. Nanotechnology module											
PHY295	Synthesis Methods of Nanomaterials and Nanostructures	BD, CCH	5	150	2/0/1	105	E			5	
PHY279	Information technologies in science and production				1/0/2						
MNG782	Sustainable development strategies				2/0/1						
PHY700	Production, properties, application of carbon low-dimensional materials.	PD, CCH	5	150	2/0/1	105	E			5	
PHY266	Materials for energy storage and conversion				1/0/2						
M-5. Applied Physics Module											
PHY293	Numerical methods for solving physical problems	PD, UC	5	150	2/0/1	105	E	5			
PHY294	Fundamentals of Nanotechnologies	PD, UC	5	150	2/0/1	105	E	5			
PHY296	Physics of the Atom and Atomic Nucleus	PD, UC	5	150	2/0/1	105	E		5		
PHY298	Application of quantum-size structures in micro-and nanoelectronics devices	PD, UC	5	150	2/0/1	105	E		5		
PHY297	Practical perspective of X-ray diffractometry	PD, CCH	5	150	2/0/1	105	E		5		
PHY264	The modern theory of the atomic nucleus				1/0/2						
PHY255	Semiconductor's Structures	PD, CCH	5	150	2/0/1	105	E		5		
PHY267	Materials with special technological properties				1/0/2						
M-6. R&D module											
PHY701	Electron and sonde microscopy for studying of nanomaterials	PD, CCH	5	150	2/0/1	105	E			5	
PHY299	Spectral methods for studying low-				2/0/1						
M-7. Practice-oriented module											
AAP273	Pedagogical practice	BD UC	8							8	
AAP269	Research practice	PD, CCH	8								8
M-8. Experimental research module											

AAP268	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	4					4					
AAP268	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	4						4				
AAP254	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	2								2		
AAP255	Research work of a master's student, including internship and completion of a master's thesis	RWMS UC	14										14
M-9. Module of final attestation													
ECA212	Preparation and defense of a master's thesis	FA	8										8
Total based on UNIVERSITY:													
								30	30	30		30	
								60		60		60	

Number of credits for the entire period of study					
Cycle code	Cycles of disciplines	Credits			
			university component (UC)	component of choice (CCH)	Total
BD	Cycle of basic disciplines		20	15	35
PD	Cycle of profile disciplines		28	25	53
	<i>Total for theoretical training:</i>	<i>0</i>	<i>48</i>	<i>40</i>	<i>88</i>
	RWMS				24
FA	Final attestation		8		8
	TOTAL:		8	48	40
					120

Decision of the Academic Council of Kazntu named after K.Satpayev. Protocol № 12 "22.04.2024".

Decision of the Educational and Methodological Council of Kazntu named after K.Satpayev. Protocol № 6 "19.04.2024".

Decision of the Academic Council of the Institute M&M. Protocol № 7 "29.03.2024".

Vice-Rector for Academic Affairs
 Director of M&M Institute
 Head of the MN&EP Department
 Specialty Council representative from employers



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