

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
K.I. SATBAYEV KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY



APPROVED

Director of KazNRTU

I.K. Beisembetov

06 2017

MODULAR EDUCATIONAL PROGRAM

Specialty: 6M071000 – Materials Science and technology of new materials

Study mode: Full-time Term of study: 2 years Academic degree: *Master of Materials Science and Technology*

Cycl e of discipl.	Code Of discipl.	Name of disciplines	Semester	Amount of credits		L e ct	L ab s	Pr act .	IW		Type of contr.	Competence	Dep art.
				R	EC				SIW	SIW			
				K	TS				T	W			
The module of social sciences													
Mandatory Component													
BD 1.2.1	1Ya 5201	English language (professional)	1	3	3			3	2	2	O	MC 1, PC1	EL
BD 1.2.2	IFN 5202	History and philosophy of science	1	2	5	2		3	3	0		MC 2, PC 2	
BD 1.2.3	PedPsi 5203	Pedagogics, psychology and pedagogical practice	3	3	5	1		2	3	3	O	MC 2, PC 3	PD
The module modern problems of materials science													
Mandatory Component													
PD 1.3.1	MTPM 5301	Materials science and technology of new materials	2	3	5	2		1	2	2	O	MC 9, PC 9	GTP
Elective Component													
PD 1.3.2	TK 5302	Vibration theory	2	3	5	2		1	3	3	O	MC 5, PC 6	GTP
PD 1.3.2.1	FKV 5302.1	The physics of vibrations and waves	2	3	5	2		1	3	3	O	MC 6, PC 6	GTP
PD 1.2.4	SPNT 5204	Modern Problems of Science and Technology	1	4	6	2		2	4	4	O	MC 5, PC 5	GTP
PD 1.2.4.1	SPNM 5204.1	Modern problems of the sciences of materials and processes	1	4	6	2		2	4	4	O	MC 5, PC 5	GTP
PD	MM	Modern materials	1	4	6	2		2	4	4	O	MC22	GTP

2.3.1	6301	science										PC21	
PD	FTF	Physics of thin films	1	4	6	2		2	4	4	O	MC	GTP
2.3.1	6301.1											23 PC	
												21	
Module of Materials Science of Nanomaterials and Electronic Components													
Elective Component													
PD	FHNN	Physics and chemistry of nanoparticles and nanomaterials	1	2	3	1		1	3	2	O	MC	GTP
1.2.5	5205											10. PC	
												10	
PD	PPRF	Processes at the phase interface	1	2	3	1		1	2	2	O	MC	GTP
1.2.5	5205.1											11. PC	
												11	
PD	PhEE	Physical electronics and electronic devices	2	3	5	2		1	3	3	O	MC	GTP
1.3.3	P											12. PC	
	5303											12	
PD	MPIM	Metrological problems in the studies of micro- and nanoobjects	2	3	5	2		1	3	3	O	MC	GTP
1.3.3	N											13. PC	
	5303.1											13	
PD	FM	Functional materials	2	3	5	2		1	3	3	O	MC	GTP
1.2.6	5206											14. PC	
												14	
PD	NN	Nanotechnology and nanomaterials	2	3	5	2		1	3	3	O	MC	GTP
1.2.6	5206.1											15. PC	
												15	
Module of Modeling in Materials Science													
Elective Component													
BD	KITNP	Computer and Information Technologies in Science and Production	2	3	5	2		1	3	3	O	MC17	GTP
1.2.7	5207											PC17	
BD	MMB	Mathematical modeling and databases in materials science	2	3	5	2		1	3	3	O	MC	GTP
1.2.7	DM											18. PC	
	5207.1											18	
PD	TPOP	Technological processes in the near-Earth space	2	3	5	2		1	3	3	O	MC	GTP
2.3.2	6302											26. PC	
												26	
PD	KKE	Components of space energetics	2	3	5	2		1	3	3	O	MC	GTP
2.3.2	6302.1											27. PC	
												27	
Module of aspects of modern physics													
Elective Component													
BD	SMNI	Modern methods of scientific research	1	2	6	2			4	4	O	MC	GTP
2.3.3	6303											24. PC	
												23	
BD	YaTIP	Nuclear technologies and their application in materials science	1	2	6	2			4	4	O	MC	GTP
2.3.3	6303.1											24. PC	
												23. MC	

BD 2.3.4	PND 6304	Applied nonlinear dynamics	3	3	5	2		1	3	3	0	25 MC 24, PC 23, MC 25,	GTP
BD 2.3.4 .1	NKYa FB 6304.1	Nonequilibrium cooperative phenomena in physics and biology	3	3	5	2		1	3	3	0	MC 24, PC 23, MC25	GTP
BD 2.3.5	TPRK M 6305	Technologies for producing powder and composite materials	3	4	6	2		2	4	4	0	PC 23, MC25	GTP
BD 2.3.5 .1	PND 6305.1	Properties of porous and nanostructured materials	3	4	6	2		2	4	4	0	PC 23, MC25	GTP
Scientific and Research Module													
Mandatory Component													
ATT	NIR M	Scientific research work of undergraduates	1	1	4							MC 8, PC 8	GTP
ATT	NIR M	Scientific research work of undergraduates	2	1	4							MC 20, PC 20	GTP
ATT	NIR M	Scientific research work of undergraduates	3	1	4							MC 28, PC 25	GTP
ATT	NIR M	Scientific research work of undergraduates	4	4	16							MC 27, MC 30, PC 27	GTP
Practice-Oriented Module													
Mandatory Component													
ATT	IP	Research practice	2	5	20							MC 10-25, MC 21, PC 20	GTP
Module of Final Certification													
Mandatory Component													
	KE	Complex examination	4	1	4							MC 10-25, PC 10-25	GTP
	OZM D	Writing and defense the diploma work	4	3	11							MC 32, PC 28	GTP

Vice Rector for Academic Work



R.M. Iskakov

Director of the Department
of postgraduate education



D.K. Sabitova

Director of the Engineering School
of High Technologies



S.E. Kumekov

Head of the Department of General
and Theoretical Physics

H.R. Mailina