



MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

CURRICULUM

(Enrolment 2020)

APPROVED
by Igor Sikorsky Kyiv Polytechnic Institute

Academic Council
" " " 2020

Meeting protocol № _

Head of Academic Council
Mikhail Ichenko

Level Bachelor

Speciality 132 Materials Science

Specialization Nanotechnologies and Computer-aided Materials Design

Graduation Department High-temperature Materials and Powder Metallurgy

Form of study full-time

Faculty (Institute) IMZ

Qualification Bachelor of Materials Science

Study duration 3 years 10 months
Base level Complete general secondary education

I. Schedule of educational process

YEAR	September				October				November				December				January				February				March				April				May				June				July				August							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
I																			E	E	H	H																														
II																			E	E	H	H																														
III																			E	E	H	H																														
IV																			E	E	H	H									E	P	P	P	P	P	P	R	R	R	R	A	A									

Symbols: Learning period, Examination, Practice, Research, Assessment, Holiday

II. Summary table of time budget (Weeks)

YEAR	Learning period	Examination	Practice	Assessment	Research	Holiday	Total
I	36	4				12	52
II	36	4				12	52
III	36	4				12	52
IV	27	3	5	5	1	2	43

III. Practice

Type of practice	YEAR	Weeks
Pre-diploma Practice	8	5

IV. Graduates assessment

Subjects	Form of graduates assessment (exam, graduation project)	YEAR
	Graduation project	8

V. Plan of Educational process

Code	Subjects	Distribution for terms (semesters)				ECTS Credits	Number of hours					
		Exams	Final tests	Course projects	Coursework		Total	Lectures/practical lessons			Self-study	
								Lectures	Practical	Laboratory		
1	2	3	4	5	6	7	8	9	10	11	12	
I. NORMATIVE Educational Components												
1.1. Series of general training												
GO I	Ukrainian Language Subjects		2			2	60	18	18		24	
GO II	History Subjects		2			2	60	18	18		24	
GO III	Physical Training		2,4			5	150		144		6	
GO IV	Foreign Language		2,4			6	180		144		36	
GO V	Economics and Organization of Production		7			4	120	36	36		48	
GO VI	Labour Safety and Civil Defence		7			4	120	36	28	8	48	
GO VII	Higher mathematics: 1. Differential Calculus and Linear Algebra 2. Integral Calculus and Differential Equations 3. Theory of Probability and Mathematical Statistics		1,2,3			19	570	162	171		237	
GO VIII	Chemistry: 1. General chemistry 2. Chemistry of Elements		1,2			10,5	315	72	18	72	153	
GO IX	Informatics, Computer Science, Programming and Numerical Methods: 1. Informatics, Computer Science and Programming 2. Numerical Methods		1	2		9,5	285	54		108	123	
GO X	Engineering and Computer Graphics 1. Descriptive Geometry, Engineering Graphics 2. Computer Graphics		1,2			5,5	108	18	90		57	
GO XI	Coursework of Engineering and Computer Graphics				2	1	30				30	
GO XII	Physics: 1. Mechanics, Thermal phenomena, Magnetism 2. Optics, Atomic and Nuclear Physics		2,3			13,5	405	126	54	45	180	
GO XIII	Physical Chemistry		3			4,5	135	36		36	63	
GO XIV	Fundamentals of Electric Engineering and Electronics		3			3	90	36	9	9	36	
GO XV	Theoretical and Applied Mechanics		3, 4			4	120	36	27	9	48	
GO XVI	Crystallography, Crystal Chemistry and Mineralogy		3			3	90	36		18	36	
GO XVII	Physical Properties and Methods of Materials Research		4			5	150	36		36	78	
GO XVIII	Metal Science		4			5	150	36		36	78	
GO XIX	Methods of Structural Analysis		5			3	90	36		18	36	
GO XX	Mechanical Properties and Structural Strength of Materials		6			5	150	44		28	78	
total number of part 1.1			12	16		1	114,5	3435	836	757	423	1419
1.2. Series of profethional training												
PO I	Introduction to Materials Science		1			2	60	36			24	
PO II	Condensed Matter and Materials Physics		4			6	180	54	27		99	
PO III	Chemistry of nanosystem and Basics of Nanotechnology		5			3	90	36		18	36	
PO IV	Physical and Chemical Bases for the Production of Powders of Materials and Alloys		5			4,5	135	36		18	81	
PO V	Materials Science of Refractory Materials		5			4	120	27		18	75	
PO VI	Theory of Heat and Mass Transfer in Materials		5			3	90	36	18		36	
PO VII	Standardization, Metrology and Products Quality Control		5			2,5	75	18		18	39	
PO VIII	Theory of consolidation's processes of powder and composite materials		6			5	150	36		36	78	

PO IX	Theory and Technology of Producing the Dispersed Nanomaterials	6			5	150	36		18	96	
PO X	Technology of Productions of Powder and Composite Materials	6			5,5	165	36		36	93	
PO XI	Methods of Modelling and Optimiztion		6		3	90	36		18	36	
PO XII	Corrosion and Metal Protection		7		3	90	36		18	36	
PO XIII	Designing Equipments		7		1	30	18			12	
PO XIV	Course projects of Designing Equipments			7	1,5	45				45	
PO XV	Basics of Materials Computer Design		8		2,5	75	18	18		39	
PO XVI	Fundamentals of Experimentation		8		2	60	18	9		33	
PO XVII	Pre-diploma Practice		8		6	180				180	
PO XVIII	Diploma Project				6	180				180	
total number of part 1.2		5	11	1		65,5	1965	477	72	198	1218
TOTAL NORMATIVE		17	27	1	1	180	5400	1313	829	621	2637
II. VOCATIONAL TRAINING											
II.1. Vocational and practical training (major courses)											
GV I	Educational Component 1 GU - Catalog		3		2	60	18	18			24
GV II	Educational Component 2 GU - Catalog		3		2	60	18	18			24
GV III	Educational Component 3 GU - Catalog		4		2	60	18	18			24
GV IV	Educational Component 4 GU - Catalog		6		2	60	18	18			24
GV V	Foreign Language for Specific Purposes	8	6		6	180		126			54
total number of part II.1		1	5	0	0	14	420	72	198	0	150
II.2. Vocational and practical training (optional courses)											
PV I	Educational Component 1 F - Catalog		4		3,5	105	36	18			51
PV II	Educational Component 2 F - Catalog		4		4	120	36		18		66
PV III	Educational Component 3 F - Catalog		5		4	120	36		18		66
PV IV	Educational Component 4 F - Catalog		5		4,5	135	36		27		72
PV V	Educational Component 5 F - Catalog		6		3	90	36		18		36
PV VI	Educational Component 6 F - Catalog	7			4,5	135	36	18			81
PV VII	Educational Component 7 F - Catalog	7			4,5	135	36		18		81
PV VIII	Educational Component 8 F - Catalog	7			6	180	36	36			108
PV IX	Educational Component 9 F - Catalog		8		4	120	27		18		75
PV X	Educational Component 10 F - Catalog		8		4	120	27		18		75
PV XI	Educational Component 11 F - Catalog		8		4	120	27	18			75
total number of part II.2		3	8	0	0	46	1380	369	90	135	786
TOTAL IN VOCATIONAL TRAINING		4	13	0	0	60	1800	441	288	135	936
TOTAL		21	40	1	1	240	7200	1754	1117	756	3573

Approved by Institute Academic Council, Meeting protocol № 3/20 from April 13, 2020

Head of the Department _____ / Yuriy BOGOMOL /

Director of the Institute _____ / Petro LOBODA /