



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

CURRICULUM

(Enrolment 2020)

APPROVED

by Head of Academic Council
Igor Sikorsky Kyiv Polytechnic Institute

Mykhaylo ILCHENKO

" " 2021

Level Bachelor

Form of study full-time

(full-time, part-time)

Speciality 132 Materials Science

Faculty (Institute) IMZ

Specialization Nanotechnologies and Computer-aided Materials Design

Qualification Bachelor of Materials Science

Graduation Department High-temperature Materials and Powder Metallurgy

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							18												E	E	H	H																																		
II							18												E	E	H	H																																		
III							18												E	E	H	H																																		
IV							18												E	E	H	H																																		

Symbols: L Learning period E Examination P Practice R Research A Assessment H 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	4	2	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	
1. Compulsory educational components												
1.1. General training cycle												
GO I	Ukrainian language for Specific Purposes		2			2	60	18	18			24
GO II	History of science and technology		1			2	60	18	18			24
GO III	Physical Training		2			2.5	75		72			3
GO IV	Foreign Language		2.4			6	180		144			36
GO V	Foreign Language for Specific Purposes	8	6			6	180		126			54
GO VI	Philosophical Principles of Scientific Cognition		3			2	60	18	18			24
GO VII	Environmental safety of engineering activities		4			2	60	18	18			24
GO VIII	Protection of intellectual property rights		5			2	60	18	18			24
GO IX	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 X	Informatics, Computer Science, Programming and Numerical Methods: 1. Informatics, Computer Science and Programming 2. Numerical Methods		1	2		9.5	285	54		108		123
total number of part 1.1			5	10		53	1590	306	603	108		573
1.2. Vocational training cycle												

VO I	Chemistry: 1. General chemistry 2. Chemistry of Elements	1.2				10.5	315	72	18	72	153
VO II	Engineering and Computer Graphics 1. Descriptive Geometry, Engineering Graphics 2. Computer Graphics		1.2			5.5	165	18	90		57
VO III	Coursework of Engineering and Computer Graphics		2		2	1	30				30
VO IV	Physics: 1. Mechanics, Molecular Physics and Thermodynamics, Electricity and Magnetism 2. Optics, Atomic and Nuclear Physics	2.3				14	420	126	54	46	194
VO V	Physical Chemistry	3				4.5	135	36		36	63
VO VI	Fundamentals of Electric Engineering and Electronics		3			3	90	36	10	8	36
VO VII	Theoretical and Applied Mechanics		3, 4			4	120	36	28	8	48
VO VIII	Crystallography, Crystal Chemistry and Mineralogy		3			4	120	36		28	56
VO IX	Economics and Organization of Production		7			4	120	36	36		48
VO X	Labour Safety and Civil Defence		7			4	120	36	28	8	48
VO XI	Introduction to Materials Science		1			2	60	36			24
VO XII	Methods of Research of Physical Properties of Materials	4				5	150	36		36	78
VO XIII	Fundamentals of Metal Science	4				5	150	36		36	78
VO XIV	Crystal Chemistry of Refractory Compounds		4			3.5	105	28		18	59
VO XV	Theory of Heat and Mass Transfer in Materials		4			3	90	36	18		36
VO XVI	Condensed Matter and Materials Physics	4				6	180	54	28		98
VO XVII	Methods of Structural Analysis of materials		5			3	90	36		18	36
VO XVIII	Physico-chemical bases of obtaining metals, alloys and compounds in powder and nanodisperse state	5				5	150	36		28	86
VO XIX	Materials Science of Refractory Materials	5				4	120	28		18	74
VO XX	Standardization, Metrology and Products Quality Control		5			2.5	75	18	18		39
VO XXI	Mechanical Properties of Materials	6				5	150	44		28	78
VO XXII	Fundamentals of theory of processes of powder and nanostructured materials consolidation	6				4.5	135	36		18	81
VO XXIII	Methods of Modelling and Optimization		6			3	90	36		18	36
VO XXIV	Corrosion and Metal Protection	7				4	120	36		18	66
VO XXV	Course project (interdisciplinary) Design of production of powder, composite and nanostructured materials and products		7	7		1.5	45				45
VO XXVI	Foundations of Computer Design of Materials		8			2	60	18	18		24
VO XXVII	Fundamentals of Experimentation		8			1.5	45	18	10		17
VO XXVIII	Pre-diploma Practice		8			6	180				180
VO XXIX	Diploma Project					6	180				180
total number of part 1.2		13	19	1	1	127	3810	964	356	442	2048
TOTAL IN NORMATIVE educational components		18	29	1	1	180	5400	1270	959	550	2621

2. Optional educational components

2.1. General training cycle (Optional subjects from University catalogue)

GV I	Educational Component 1 GU - Catalog		3			2	60	18	18		24
GV II	Educational Component 2 GU - Catalog		4			2	60	18	18		24
total number of part II.1			2			4	120	36	36		48

2.2. Vocational training cycle (Optional subjects from Faculty catalogue)

PV I	Educational Component 1 F - Catalog		5			4	120	36	18		66
PV II	Educational Component 2 F - Catalog		5			4	120	44		18	58
PV III	Educational Component 3 F - Catalog		5			4	120	36		18	66
PV IV	Educational Component 4 F - Catalog		6			4	120	36		28	56
PV V	Educational Component 5 F - Catalog		6			4	120	36		28	56
PV VI	Educational Component 6 F - Catalog		6			4	120	36	28		56
PV VII	Educational Component 7 F - Catalog		6			4	120	36		18	66
PV VIII	Educational Component 8 F - Catalog		7			4	120	36	18		66
PV IX	Educational Component 9 F - Catalog		7			4	120	36		18	66

PV X	Educational Component 10 F - Catalog		7			4	120	36		18	66
PV XI	Educational Component 11 F - Catalog		7			4	120	36	18		66
PV XII	Educational Component 12 F - Catalog		8			4	120	28	18		74
PV XIII	Educational Component 13 F - Catalog		8			4	120	28		18	74
PV XIV	Educational Component 13 F - Catalog		8			4	120	28	18		74
total number of part II.2			14			56	1680	488	118	164	910
TOTAL IN SELECTME educational components		0	16	0	0	60	1800	524	154	164	958
TOTAL		18	45	1	1	240	7200	1794	1113	714	3579

Approved by University Academic Council, Meeting protocol № 3 from 15.03.2021

Head of the Department _____ / Yuriy BOGOMOL /

Director of the Institute _____ / Yuriy SIDORENKO /