MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

CURRICULUM

(Enrolment 2019)

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							18												E	E	H	H	H	H	H	H	H	H	H	H
II							18												E	E	H	H							18												E	E	H	H	H	H	H	H	H	H	H	H
III							18												E	E	H	H							18												E	E	H	H	H	H	H	H	H	H	H	H
IV							18												E	E	H	H							9			E	P	P	P	P	P	R	R	R	R	A	A										

Symbols: 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		2.4			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	Protection of intellectual property rights		5			2	60	18	18		24
GO VIII	Foreign Language for Specific Purposes	8	6			6	180		126		54
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	Chemistry: 1. General chemistry 2. Chemistry of Elements	1.2				10.5	315	72	18	72	153

GO XI	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 XII	Engineering and Computer Graphics 1. Descriptive Geometry, Engineering Graphics 2. Computer Graphics		**1.2**			**5.5**	**165**	**18**	**90**		**57**
GO XIII	Coursework of Engineering and Computer Graphics		**2**		**2**	**1**	**30**				**30**
GO XIV	Physics: 1. Mechanics, Molecular Physics and Thermodynamics, Electricity and Magnetism 2. Optics, Atomic and Nuclear Physics	**2.3**				**13.5**	**405**	**126**	**54**	**45**	**180**
GO XV	Physical Chemistry	**3**				**4.5**	**135**	**36**		**36**	**63**
GO XVI	Fundamentals of Electric Engineering and Electronics		**3**			**3**	**90**	**36**	**9**	**9**	**36**
GO XVII	Theoretical and Applied Mechanics		**3, 4**			**4**	**120**	**36**	**27**	**9**	**48**
GO XVIII	Crystallography, Crystal Chemistry and Mineralogy		**3**			**3**	**90**	**36**		**18**	**36**
GO XIX	Physical Properties and Methods of Research of Materials	**4**				**5**	**150**	**36**		**36**	**78**
GO XX	Metal Science	**4**				**5**	**150**	**36**		**36**	**78**
GO XXI	Methods of Structural Analysis of materials		**5**			**3**	**90**	**36**		**18**	**36**
GO XXII	Mechanical Properties and Structural Strength of Materials	**6**				**5**	**150**	**44**		**28**	**78**
	total number of part 1.1	**13**	**18**		**1**	**122.5**	**3675**	**854**	**901**	**423**	**1497**
	1.2.Vocational training cycle										
VO I	Introduction to Materials Science		**1**			**2**	**60**	**36**			**24**
VO II	Condensed Matter and Materials Physics	**4**				**6**	**180**	**54**	**27**		**99**
VO III	Physico-chemical bases of obtaining metals, alloys and compounds in powder and nanodisperse state	**5**				**5.5**	**165**	**36**		**36**	**93**
VO IV	Materials Science of Refractory Materials	**5**				**4**	**120**	**36**		**18**	**66**
VO V	Theory of Heat and Mass Transfer in Materials		**5**			**3**	**90**	**36**	**18**		**36**
VO VI	Standardization, Metrology and Products Quality Control		**5**			**2.5**	**75**	**18**	**18**		**39**
VO VII	Theory of consolidation's processes of powder and composite materials	**6**				**4.5**	**135**	**36**		**18**	**81**
VOVIII	Theory and Technology of Producing the Dispersed Nanomaterials	**6**				**4.5**	**135**	**36**		**18**	**81**
VO IX	Methods of Modelling and Optimiztion		**6**			**3**	**90**	**36**		**18**	**36**
VO X	Corrosion and Metal Protection	**7**				**4**	**120**	**36**		**18**	**66**
VO XI	Course project (interdisciplinary) Design of production of powder, composite and nanostructured materials and products		**7**	**7**		**1.5**	**45**				**45**
VO XII	Foundations of Computer Design of Materials		**8**			**2**	**60**	**18**	**18**		**24**
VO XIII	Fundamentals of Experimentation		**8**			**1.5**	**45**	**18**	**10**		**17**
VO XIV	Pre-diploma Practice		**8**			**6**	**180**				**180**
VO XV	Diploma Project					**6**	**180**				**180**
	total number of part 1.2	**6**	**8**	**1**		**56**	**1680**	**396**	**91**	**126**	**1067**
	TOTAL IN NORMATIVE educational components	**19**	**26**	**1**	**1**	**178.5**	**5355**	**1250**	**992**	**549**	**2564**
	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		3			2	60	18	18		24
GV III	Educational Component 3 GU - Catalog		4			2	60	18	18		24
	total numberof part II.1		**3**			**6**	**180**	**54**	**54**		**72**
	2.2. Vocational training cycle (Optional subjects from Faculty catalogue)										
PV I	Educational Component 1 F - Catalog		4			3.5	105	36	18		51
PV II	Educational Component 2 F - Catalog		4			4	120	45		18	57
PV III	Educational Component 3 F - Catalog		5			4	120	36		18	66
PV IV	Educational Component 4 F - Catalog		5			4	120	36		18	66
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**			**55.5**	**1665**	**489**	**118**	**154**	**904**
TOTAL IN SELECTME educational components		**0**	**17**	**0**	**0**	**61.5**	**1845**	**543**	**172**	**154**	**976**
TOTAL		**19**	**43**	**1**	**1**	**240**	**7200**	**1793**	**1164**	**703**	**3540**

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

Head of the Department _____/ Yuriy BOGOMOL /

Director of the Institute _____ / Yuriy SIDORENKO /