

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

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

CURRICULUM

(Enrolment 2017)

by Rector of Igor Sikorsky Kyiv Polytechnic Institute	Level	Bachelor	(=,	Form of study	Full-time
Michael Zgurovsky	Speciality		4 System Analysis	Faculty (Institute)	(full-time, part-time) Institute for Applied System Analysis
	Specialization	o Sy	stem Analysis and Control	Qualification	Associate Professional in System Analysis
2017	Graduation	Department	Mathematical Methods for System Analysis	Study duration	3 years 10 months
				Base level	Full secondary education

																								I.	Sc	he	du	le (of	edı	uca	atio	ona	ıl p	roc	es	s																					
AR.		Se	epte	emb	er			Oct	ober				N	over	nbei	r		0	Dece	embe	er			Ja	nuar	у			J	anua	ry			Ma	ırch			Α	pril			ı	/lay				June					July				Auç	gust	
Ä	1	П	2	3	4	ļ	5	6	7	8	9	10	11	12	1	3 1	4	15	16	17	18	19	9 2	20	21	22	23	24	2	5 2	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	4	1 42	4	3 4	4	45	46	47	48	49	50	51	52
- 1		П				Т									Т		П					Е	. 1	E	Н	Н																			Т	E	E	ŀ	1 1	Н	Н	Н	Н	Н	Н	Н	Н	Н
Ш																						Е	: 1	E	н	Н																				Е	E E	ŀ	1 1	н	н	н	Н	н	Н	н	н	Н
Ш		T				T				П					T	Т	П					Е	:	E	н	Н					П															Е	E E	ŀ	1 1	н	н	н	Н	н	н	Н	Н	Н
I۱۷	,																T					Е	:	Е	н	Н											Е	Р	Р	Р	Р	Р	R	R	R	R	R A		١									
Sy	mbo	ols:			Le	arni	ng p	erioc	1		Е	Exa	min	atior	1		П	Р	Prac	ctice	:		П	RΙ	Rese	earc	h		F	A A:	sses	ssme	ent		Н	Hol	iday																					

	II. Summary table of time budget (Weeks)												
YEAR	Learning period	Examinatio n	Practice	Assessme nt	Research	Holiday	Total						
_	36	4				12	52						
II	36	4				12	52						
III	36	5				11	52						
IV	27	3	5	2	4	2	43						

III. Practice												
Type of practice	YEAR	Weeks										
Pre-diploma practice	IV	3										

IV. Graduates assessment												
Subjects	Form of graduates assessment (exam, graduation project)	YEAR										
	Diploma Project	IV										

	V. Plan of	Educa	tional	proces	ss									
		Dis		n for te	rms			Numb	er of h	nours				
			(seme	esters)		v		Lectures/practical						
Code	Subjects	Exams	Final tests	Course projects	Coursework	ECTS Credits	Total	Lectures	Practical		Self-study			
1	2	3	4	5	6	7	8	9	10	11	12			
	I. GEN	ERAL	TRAII	NING										
	I.1. Natura	al-scie	ntific	trainir	ng									
1/I	Algebra and Geometry: 1. Analytic Geometry	2	1			9	270	72	72		126			
.,,	2. Linear Algebra	_	ļ ·			Ů	2.0				.20			
2/I	Discrete Mathematics: 1. Statements, Sets, Relations, Graphs, Combinatorics, Groups, Rings 2. Partially Ordered Sets, Lattices, Boolean Algebra and Boolean Functions	1	2			7	210	54	72		84			
3/I	Mathematical Analysis: 1. Differential Calculus of Functions of One Real Variable 2. Differential Calculus of Functions of Several Real Variables. Integration of Functions of One Variable	1,2,3				16	480	162	144		174			
4/I	Physics: 1. Physical Grounds of Mechanics 2. Electricity and Magnetism	2	3			9	270	72	72		126			
5/I	Differential Equations	3				4	120	36	36		48			
6/I	Probability Theory	3				4	120	36	36		48			
7/I	Functional Analysis	5				4	120	36	36		48			
	total number of part I.1 9 3 53 1590 468 468 654 I.2. Basic training (major courses)													
		aining	(majo	r cou	rses)									
1/II	Programming and Algorithmic Languages: 1. Algorithms and Basics of Programming 2. Programming Course Work	1	2d		2	10.5	315	90		72	153			
2/II	Numerical Methods: 1. Solution of Equations and Systwms, Function Approximation 2. Calculation of Eigen Pairs of a Matrix. Solution of Differential Equations	4	5			6.5	195	72		36	87			
3/II	Methods of Optimization and Operations Research: 1. Analytical Methods of Optimization 2. Numerical Methods of Optimization	5	6d			6.5	195	54	18	18	105			
4/11	Control Theory: 1. Nonlinear Dynamical System Analysis 2. Control System Design	6	7		7	7	210	72		18	120			
5/II	Basic of System Analysis: 1. Main Notions of System Analysis, Theoretical Basis for Interdisciplinary Problem Solution 2. Models, Approaches, Methods and Algorithms for Solving System Analysis Problems	7.8				6.5	195	72	18		105			
6/11	Economics of Organization and Production Planning: 1. Fundamentals of Economic Theory 2. Economics and Production Organization		5.6			4	120	36	36		48			
7/11	Subjects on Life Safety		6			2	60	18	18		24			
8/II	Decision Theory: 1. Decision Making under an Influence of Random Factors and Uncertainties 2. Collective Choice Theory and Decision-Making in Counteraction Environment	8	7d			6	180	81	18		81			
	total number of part I.2		8		2	49	1470	495	108	144	723			
	I.3. Basic train	ning ((optio	nal co	urses)								
1/III	Knowledge and Databases Organization: 1. Relational Data Base Design 2. Implementation of Information Systems	6	5		6	7.5	225	54		36	135			
2/II	Algorithms and Data Structures		1		.	4	120	36		36	48			
	total number of part I.3	1	2		1	11.5	345	90		72	183			

		Dist		n for te esters)	rms		Number of hours						
						lits		Lect	ures/prac	tical			
Code	Subjects	Exams	Final tests	Course projects	Coursework	ECTS Credits	Total	Lectures	Practical	Laboratory	Self-study		
1	2	3	4	5	6	7	8	9	10	11	12		
	I.4. Humanities t	rainin	g (opt	tional	cours	es)							
1/IV	History Subjects		2			2	60	18	18		24		
2/IV	Ukrainian Language Subjects		1			2	60	18	18		24		
3/IV	Philosophy Subjects		4			2	60	18	18		24		
4/IV	Psychology Subjects		4			2	60	18	18		24		
5/IV	Subjects on Law		6			2	60	18	18		24		
6/IV	Subjects on Humanities and Social Sciences N 1		5			2	60	18	18		24		
7/IV	Subjects on Humanities and Social Sciences N 2		7			2	60	18	18		24		
8/IV	Foreign Language		2, 4d			6	180		144		36		
9/IV	Foreign Language for Professional Purposes		6, 7d			4	120		90		30		
	total number of part I.4		11			24	720	126	360		234		
	TOTAL IN GENERAL TRAINING												
	II. VOCA	TIONA	I TR	ΔΙΝΙΝΟ	3								
							- \						
	II.1. Vocational and pr	actica		iing (n	najor								
1/c	Mathematical Logics and Algorithms Theory		2d, 3d			6	180	54	36		90		
2/c	Computer Systems Architecture		3			3	90	36	18		36		
3/c	Operating Systems		4			3.5	105	36		18	51		
4/c	Mathematical Statistics		4			3.5	105	36	18		51		
5/c	Mathematical Physics Equations	5				5	150	54	18		78		
6/c	Object-Oriented Programming		3d		3	6	180	54		36	90		
7/c	Theory of Information and Coding		4			3.5	105	36	18		51		
8/c	Random Processes Theory	6				4	120	36	18		66		
9/c	Synergetic Methods of Analysis		6			3	90	36	18		36		
10/c	Computer Networks		6			3	90	36		18	36		
11/c	Time Series Analysis	7				3.5	105	36	18		51		
12/c	Stationary Random Processes		7			3	90	36	18		36		
13/c	Chaos Theory in Dynamic Systems		7			3	90	36	18		36		
14/c	Software Development and Testing		5d			3	90	36		18	36		
15/c	Artificial Intelligence Methods	7				4	120	36	18		66		
16/c	Advanced Systems Modeling and Simulation	8				3.5	105	36		9	60		
17/c	System Analysis of Stochastic Distributed Processes		8d			3	90	36	18		36		
18/c	Social and Ethic Aspects for Information Technologies		1			3	90	36	18		36		
	total numberof part II.1	5	14		1	66.5	1995	702	252	99	942		
	II.2. Vocational and pra-	ctical	trainiı	ng (op	tional	cours	es)						
1/св	Garmonic Analysis and Operational Calculus	4				6	180	54	36		90		
2/св	Stability Theory and Calculus of Variations	4				4	120	36	18		66		
3/св	Fundamentals of Financial Mathematics		5			3.5	105	36	18		51		
4/св	Conflict-Controlled Systems		6d			3.5	105	36	18		51		
5/св	Game Theory and Operations Research		7		l	3	90	36	18		36		
6/св	Text Mining		8			2.5	75	27	18		30		
7/св	Pre-Diploma Practice		8d			7.5	225				225		
8/св	Diploma Project					6	180				180		
	total number of part II.2	2	4			36	1080	225	126		729		
		7	18		1	102.5	3075	927	378	99	1671		
	TOTAL IN VOCATIONAL TRAINING												
	TOTAL	24	42		4	240.0	7200	2106	1314	315	3465		

Approved by Faculty Academic Council, Meeting	g protocol №	_ from April 25, 2017
Head of the Department Dean of the Faculty (Director of the Institute)	O.L.Tymoschuk	V.D.Romanenko