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

CURRICULUM

admission in 2023

APPROVED
by Academic Council Igor Sikorsky Kyiv Polytechnic Institute
"___"_____ 20__ р.

meeting protocol No _____

Head of Academic Council
_____ Mykhaylo ILCHENKO

Level **Bachelor** Field of Study
12 - Information Technology

Speciality 121 "Software Engineering"

Educational and Professional Programme
"**Software Engineering of Multimedia and Information Retrieval Systems**"

Form of study *full-time*

Graduation Department
Department of Computer Systems Software

Faculty (Institute) Faculty of Applied Mathematics

Qualification Bachelor in Software Engineering

Study duration 3 years 10 months

Base level complete secondary education

Academic Groups КП-34

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
1																			С	С	К	К																			С	С	К	К	К	К	К	К	К	К	К	К
2																			С	С	К	К																			С	С	К	К	К	К	К	К	К	К	К	К
3																			С	С	К	К																			С	С	К	К	К	К	К	К	К	К	К	К
4																			С	С	К	К										С	П	П	П	П	П	Д	Д	Д	Д	А	А	-	-	-	-	-	-	-	-	-

Symbols: Learning period; С Examination; П Practice; Д Research; А Assessment; К Holiday

II. Summary table of time budget (Weeks)

YEAR	Learning period	Examination	Practice	Research	Assessment	Holiday	Total
1	36	4	0	0	0	12	52
2	36	4	0	0	0	12	52
3	36	4	0	0	0	12	52
4	27	3	5	4	2	2	43

III. Practice

Type of practice	Term (Semester)	Weeks
Pre-diploma Practice	8	5

IV. Graduates assessment

Subjects	Form of graduates assessment (exam, graduation project)	Semester
Bachelor Thesis	Graduation project pitch	8

V. Plan of Educational Process

Code	Educational components	Distribution for terms (semesters)						ECTS Credits	Number of hours						Distribution of classroom studies hours per week							
										Classroom studies					1 year		2 year		3 year		4 year	
															Terms							
		Exams	Final tests	Module test	Calculation, graphic assignments	Home test	Essay, abstract		Total	Total	Lectures	Practical	Laboratory	Self-study	1	2	3	4	5	6	7	8
															Number of weeks in each term							
															18	18	18	18	18	18	18	9
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24
1. NORMATIVE educational components																						
General training cycle																						
ZO 01	Discrete Mathematics for Computer Science	1		1	1			5.0	150	72	36	36		78	4							
ZO 02.1	Higher Mathematics. Part 1. Differential and Integral Calculus of Functions of One Variable	1		1	1			5.0	150	72	36	36		78	4							
ZO 02.2	Higher Mathematics. Part 2. Functions of Many Variables, Ordinary Differential Equations and Series	2		2	2			5.0	150	72	36	36		78		4						
ZO 03	Linear Algebra and Analytic Geometry		1	1	1			4.0	120	72	36	36		48	4							
ZO 04	Theory of Probability		3	3	3			4.0	120	54	36	18		66			3					
ZO 05	Ukrainian Language of Professional Direction		1	1				2.0	60	36	18	18		24	2							
ZO 06	History of Science and Technics		2	2				2.0	60	36	18	18		24		2						
ZO 07	Philosophical Principles of Scientific Cognition		4	4				2.0	60	36	18	18		24				2				
ZO 08	Human Rights and Freedoms		6	6				2.0	60	36	18	18		24						2		
ZO 09	Ecological Safety and Civil Protection		1	1				2.0	60	36	18	18		24	2							
ZO 10	Fundamentals of a Healthy Lifestyle		2	1,2				3	90	72	18	54		18	2	2						
ZO 11.1	Foreign Language. Part 1		2	1				3	90	72		72		18	2	2						
ZO 11.2	Foreign Language. Part 2		4	3				3	90	72		72		18			2	2				
ZO 12.1	Foreign Language for Professional Purposes. Part 1		6	5				3	90	72		72		18					2	2		
ZO 12.2	Foreign Language for Professional Purposes. Part 2	8		7				3	90	54		54		36							2	2
ZO 13	Group Dynamics and Communications		3	3				4.0	120	54	18	36		66			3					
ZO 14	Economy of the IT Industry and the Entrepreneurship		7	7				4.0	120	54	36	18		66							3	
	Together of the cycle of general training	4	13	18	5	0	0	56	1680	972	342	630	0	708	20	10	8	4	2	4	5	2
Vocational training cycle																						
PO 01.1	Algorithms and Data Structures. Part 1. Fundamentals of Algorithmization		1	1				3.5	105	72	36		36	33	4							
PO 01.2	Algorithms and Data Structures. Part 2. Data Structures		2	2				4.5	135	72	36		36	63		4						
PO 02.1	Fundamentals of Programming. Part 1. Basic Constructions	1		1				5.5	165	90	36	18	36	75	5							
PO 02.2	Fundamentals of Programming. Part 2. Programming Methodologies	2		2				5.5	165	90	36	18	36	75		5						
PO 03	Fundamentals of Programming. Course work		2					1.0	30	0				30		X						
PO 04	Fundamentals of Computer Systems and Networks	2		2				5.0	150	72	36		36	78		4						
PO 05	Databases	3		3				4.0	120	54	36		18	66			3					
PO 06	Databases. Course work		3					1.0	30	0				30			X					
PO 07.1	Components of Software Engineering. Part 1. Introduction to Software Engineering		2	2				4.0	120	54	36		18	66		3						
PO 07.2	Components of Software Engineering. Part 2. Software Modeling. Analysis of Software Requirements		3	3				4.0	120	54	36		18	66			3					
PO 07.3	Components of Software Engineering. Part 3. Software Architecture	4		4				5.0	150	54	36		18	96				3				
PO 07.4	Components of Software Engineering. Part 4. Software Quality and Testing	5		5				4.0	120	54	36		18	66					3			
PO 08	Components of Software Engineering. Course work		5					1.0	30	0				30					X			
PO 09	Software Security	7		7				4.0	120	54	36		18	66							3	
PO 10	Pre-diploma Practice		8					6.0	180	0				180								X
PO 11	Bachelor Thesis							6.0	180	0				180								X
PO 12.1	Mathematical Support of Multimedia and Information Retrieval Systems. Part 1. Multidimensional Integral Calculus	3		3	3			4.5	135	72	36	36		63			4					
PO 12.2	Mathematical Support of Multimedia and Information Retrieval Systems. Part 2. Fundamentals of Harmonic Analysis and Elements of Operational Calculus	4		4	4			4.5	135	72	36	36		63				4				
PO 13	Algorithmic Support of Multimedia and Information Retrieval Systems		4	4	4			6.0	180	90	36	36	18	90				5				
PO 14.1	Programming. Part 1. Object-oriented Programming and Design Patterns	3		3				5.0	150	72	54		18	78			4					
PO 14.2	Programming. Part 2. Fundamentals of Web Programming and Mobile Application Development		4	4				3.5	105	54	36		18	51				3				
PO 15	Programming. Course work		4					1.0	30	0				30				X				
PO 16.1	Computer Logic. Part 1. Applied Theory of Digital Automata	4		4				4.5	135	54	36	9	9	81				3				
PO 16.2	Computer Logic. Part 2. Computer Arithmetics		5	5				3.5	105	54	36	9	9	51					3			
PO 17	Physical Fundamentals of Multimedia Systems	5		5	5			4.0	120	54	36	18		66					3			
PO 18	Standardization and Technologies for Multimedia and Information Retrieval Software Products Development	6		6				5.0	150	72	36		36	78						4		
PO 19	Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work		6					1.0	30	0				30						X		
PO 20.1	Multimedia Systems Software. Part 1. Computer Graphics	6		6				4.5	135	54	36		18	81						3		
PO 20.2	Multimedia Systems Software. Part 2. XR Applications		7	7				3.5	105	54	36		18	51							3	
PO 21	Multimedia Systems Software. Course work		7					1.0	30	0				30							X	
PO 22.1	Information Retrieval Systems Software. Part 1. NoSQL Databases	7		7				4.0	120	54	36		18	66							3	
PO 22.2	Information Retrieval Systems Software. Part 2. Methods of Information Retrieval Organization	8		8				4.5	135	54	36		18	81								6
	Total number of Vocational training cycle	16	15	24	4	0	0	124	3720	1530	882	180	468	2190	9	16	14	18	9	7	9	6
	TOTAL of NORMATIVE educational components	20	28	42	9	0	0	180	5400	2502	1224	810	468	2898	29	26	22	22	11	11	14	8
2. ELECTIVE educational components																						
General training cycle (Elective educational components from University catalogue)																						
ZV 01	Optional Subject 1 from University Catalogue		3	3				2.0	60	36	18	18		24			2					
ZV 02	Optional Subject 2 from University Catalogue		4	4				2.0	60	36	18	18		24				2				
	Total number of General training cycle	0	2	2	0	0	0	4	120	72	36	36	0	48	0	0	2	2	0	0	0	0
Vocational training cycle (Elective educational components from Interfaculty/Faculty/Department catalogue)																						
PV 01	Optional Subject 1 from Faculty Catalogue		5	5				4.0	120	54	36	18		66					3			
PV 02	Optional Subject 2 from Faculty Catalogue		5	5				4.0	120	54	36	18		66					3			
PV 03	Optional Subject 3 from Faculty Catalogue		5	5				4.0	120	54	36	18		66					3			
PV 04	Optional Subject 4 from Faculty Catalogue		5	5				4.0	120	54	36	18		66					3			
PV 05	Optional Subject 5 from Faculty Catalogue		6	6				4.0	120	54	36	18		66						3		
PV 06	Optional Subject 6 from Faculty Catalogue		6	6				4.0	120	54	36	18		66						3		
PV 07	Optional Subject 7 from Faculty Catalogue		6	6				4.0	120	54	36	18		66						3		
PV 08	Optional Subject 8 from Faculty Catalogue		6	6				4.0	120	54	36	18		66						3		
PV 09	Optional Subject 9 from Faculty Catalogue		7	7				4.0	120	54	36	18		66							3	
PV 10	Optional Subject 10 from Faculty Catalogue		7	7				4.0	120	54	36	18		66							3	
PV 11	Optional Subject 11 from Faculty Catalogue		7	7				4.0	120	54	36	18		66							3	
PV 12	Optional Subject 12 from Faculty Catalogue		8	8				4.0	120	54	36	18		66								6
PV 13	Optional Subject 13 from Faculty Catalogue		8	8				4.0	120	54	36	18		66								6
PV 14	Optional Subject 14 from Faculty Catalogue		8	8				4.0	120	54	36	18		66								6
	Total number of Vocational training cycle	0	14	14	0	0	0	56	1680	756	504	252	0	924	0	0	0	0	12	12	9	18
	TOTAL of ELECTIVE educational components	0	16	16	0	0	0	60	1800	828	540	288	0	972	0	0	2	2	12	12	9	18
	TOTAL NUMBER	20	44	58	9	0	0	240	7200	3330	1764	1098	468	3870	29	26	24	24	23	23	23	26
									Exams						3	3	3	3	2	2	2	2
									Final tests						4	6	5	6	6	7	6	4
									Courseworks						0	1	1	1	1	1	1	0
									Course projects						0	0	0	0	0	0	0	0
									Module tests						9	7	8	7	8	7	8	4
									Calculation, graphic assignments						3	1	2	2	1	0	0	0
									Home tests						0	0	0	0	0	0	0	0
									Essays, abstracts						0	0	0	0	0	0	0	0

Head of the NMKU-121 _____ (sign) Yevheniia SULEMA

Dean of the Faculty/ Director of the Institute FPM _____ (sign) Ivan DYCHKA

Head of the Department PZKS _____ (sign) Yevheniia SULEMA