

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

APPROVED by the
Academic Council of the Igor Sikorsky
Kyiv Polytechnic Institute
(minutes № 10 from December 13, 2021)
Chairman of the Academic Council
Mykhailo ILCHENKO

EDUCATIONAL PROFESSIONAL PROGRAM

“Economic cybernetics”

Bachelor's level (First cycle)

OF HIGHER EDUCATION

BRANCH OF KNOWLEDGE	05 Social and behavioral sciences
SPECIALTY	051 Economy
SPECIALIZATION	Economic cybernetics
QUALIFICATION	Bachelor of Economics

Considered and approved
by the Rector's Order
of the Igor Sikorsky Kyiv Polytechnic
Institute
from February 15, 2022 № HOH/75/2022

PREFACE

DEVELOPED by the project team:

Project team leader

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Project team members:

Kapustyan Volodymyr Omelyanovych, Professor of the Department of Economic Cybernetics, Doctor of Physical and Mathematical Sciences, Professor

Shevchuk Olena Anatoliivna, Associate Professor of the Department of Economic Cybernetics, Doctor of Economics, Associate Professor

Roshchyna Nadiya Vasylivna, Associate Professor of the Department of Economic Cybernetics, Candidate of Economic Sciences, Associate Professor

Mazhara Glib Anatoliyovych, Senior Lecturer of the Department of Economics Cybernetics, Doctor of Philosophy in Economics

The following people took part in the development of the program:

Drozd Andriy Oleksandrovysh, Candidate of Economic Sciences, Head of Marketing Analytics, Whaleapp.

Tkachenko Ivanna Oleksiivna, Candidate of the first (bachelor's) level of higher education.

The Department of Economic Cybernetics is responsible for the training of higher education students in the educational program.

AGREED:

Scientific and methodical commission of Igor Sikorsky Kyiv Polytechnic Institute in specialty 051 Economics

Chairman of the NMCU 051 Sergey VOYTKO
(Minutes № 4 of December 2, 2021)

Methodical Council of Igor Sikorsky Kyiv Polytechnic Institute
Chairman of the Methodical Council Yuriy YAKYMENKO
(Minutes № 2 of December 9, 2021)

TAKEN INTO ACCOUNT:

1. Approved standard of higher education in specialty 051 Economics (order by the Ministry of Education and Science №1244 from 13.11.2018).
2. Regulations on the development, approval, monitoring and review of educational programs at Igor Sikorsky Kyiv Polytechnic Institute (put into effect by order of 07.04.2020 №7 / 70).
4. Comments and suggestions of stakeholders based on the results of the discussion:
 - *scientific and pedagogical workers;*
 - *applicants for higher education;*
 - *representatives of student government;*
 - *representatives of employers;*

Podols of Roman Zdislavovich, Ph.D. Head of the Sector for Forecasting the Development of the Fuel and Energy Complex of the Department of Sectoral Forecasts and Market Conditions of the Institute of Economics and Forecasting of the National Academy of Sciences of Ukraine;

Brydun Yevhen Volodymyrovych, Candidate of Economic Sciences, Chairman of the Board of PJSC Insurance Company "Prestige".

Reviews and feedback from stakeholders are attached.

The educational and professional program "Economic Cybernetics" was discussed and changed after receiving all the wishes and suggestions from employers and graduates of Igor Sikorsky Kyiv Polytechnic Institute and approved at the meeting of the Department of Economic Cybernetics № 4 from 24.11.2021.

CONTENT

1. Profile of the educational program	5
2. List of components of the educational program	11
3. Structural and logical scheme of the educational program	14
4. Form of certification of applicants for higher education	15
5. Matrix of correspondence of program competencies to the components of the educational program	Error! Bookmark not defined.
6. Matrix for providing software learning outcomes components of the educational program	20

1. PROFILE OF THE EDUCATIONAL PROGRAM

specialty 051 Economics

1 – general information	
Full name of the University and faculty	National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute” Faculty of Management and Marketing
Degree of higher education and title of qualification in the original language	Degree - bachelor Educational qualification - bachelor of economics
The official name of the educational program	Economic cybernetics
Type of diploma and scope of Study Program	Bachelor's degree, single, 240 credits. Term of study 3 years 10 months
Availability of accreditation	Certificate of accreditation of the specialty ND 1192609, valid until 01.07.2025
Program cycle / level	NQF of Ukraine - level 6 QF-EHEA – the first cycle EQF-LLL – level 6
Prerequisites	Availability of complete general secondary education
Language of instruction	Ukrainian
Validity	Until 01.07.2025
Internet address of the permanent location of the educational program	https://osvita.kpi.ua/051 http://ecocyber.fmm.kpi.ua/
2 – The purpose of the educational program	
The purpose of the program is to train, in the conditions of comprehensive professional, intellectual, social, creative development of personality, highly qualified specialists in economic cybernetics in specialty 051 "Economics", who have modern economic thinking, integrated theoretical knowledge and practical skills in economics, mathematics, data analysis, information technology and systems, able to model economic systems and processes, solve specialized problems for their analysis, forecasting and optimal management, justify and make decisions on using economic-mathematical and computer modeling, ensuring sustainable, innovative and digital development, which in the complex corresponds to the strategy of Igor Sikorsky Kyiv Polytechnic Institute for 2020-2025.	
3 – Characteristics of the educational program	
Subject area	Object of study and / or activity: patterns of functioning and development of socio-economic systems, socio-economic processes, their modeling, forecasting and regulation, motivation and behavior of economic entities. Objectives of training: training of specialists who have modern economic thinking, theoretical knowledge and practical skills needed to solve problems of the subject area. Theoretical content of the subject area: concepts, categories, concepts, principles of economic sciences. Methods, techniques and technologies: general scientific methods of cognition and research, mathematical and statistical methods of economic analysis, economic and mathematical modeling, information and communication technologies of research, dissemination and presentation of research results. Tools and equipment: modern information and communication equipment, information systems and software products used in professional activities.

Orientation of the educational program	Educational and professional. The program is focused on acquiring knowledge and skills in economic and mathematical modeling, programming, information technology, economic data analysis, forecasting, management of economic systems and processes.
The main focus of the educational program	Special education in the field of 05 "Social and Behavioral Sciences", specialty 051 "Economics". It is based on well-known and latest scientific principles in economics, economic cybernetics, economic and mathematical methods and models, information systems and technologies, which forms synergistic skills and abilities for professional activity. The program is focused on an integrated combination of economic training, mastering the mathematical apparatus and the latest information technologies, the development of systematic economic and analytical thinking, which allows you to explore and solve complex specialized economic problems. Keywords: economic cybernetics, economic-mathematical model, information systems, object-oriented programming, decision making, optimization methods, data analysis, forecasting, efficiency of economic system.
Features of the program	The peculiarity of the program is its focus on mastering the general and professional competencies of specialty 051 "Economics", as well as acquiring skills of economic and mathematical modeling, forecasting, statistical and intellectual data analysis, management of socio-economic systems and processes, making optimal economic decisions using mathematical methods of analytical economics, object-oriented programming, information technology and computer systems. The uniqueness and fundamentality of the educational program is determined by the synergistic effect in the formation of a specialist in economic cybernetics, which provides integration of knowledge of economics, mathematics, data analysis, information and computer technology and qualitatively distinguishes his professionalism and competence as an economist -economic systems, analyze economic dynamics, apply methods of data mining, programming, optimal control to solve practical problems of managing economic systems and processes of the real sector of the economy. Applicants are free to choose an individual educational trajectory, a wide range of disciplines is provided within the selective educational components of the component program, which enhances training and comprehensive development. The program provides an opportunity to involve professionals and employers in classroom and optional classes. The internship is carried out at enterprises, institutions, as well as in the World Data Center for Geoinformatics and Sustainable Development. International academic credit mobility programs are provided. Applicants participate in student research groups.
4 – Suitability of graduates for employment and further study	
Suitability for employment	Graduates can work at enterprises of any organizational and legal form in positions (according to the classifier of professions of Ukraine SC 003: 2010): 2412.2 Labor market analysis specialist; 2419.2 Commodity market research analyst; 3121 Information technology specialist, development specialist computer programs; 3423 Administrative assistant; 3434 Assistant economist-statistician; 3435.2 Organizer of office work (by types of economic activity); 3436.1 Assistant head of the enterprise (institution, organization); 3436.2 Assistant head of the production unit, assistant head of another main unit.
Further training	Opportunity to continue studying at the second (educational-professional or educational-scientific) level of higher education for a master's degree. Acquisition of additional qualifications in the system of postgraduate education

5 – Teaching and assessment	
Teaching and learning	Forms of study: full-time, part-time, mixed. Application of problem-oriented learning, self-learning, learning through computer workshops. General learning style - task-oriented. Teaching and learning is based on the principles of student-centered learning and the application of a competency-based approach. Teaching is carried out in the form of: lectures, practical classes, computer workshops, including the use of information and communication technologies (e-learning, online lectures, distance learning courses on the Distance Learning Platform "Sikorsky" (G Suite, Moodle), OCW); individual tasks (term papers, calculation works, abstracts), performance of modular tests, independent work of students with the use of educational and methodological information sources, internships at enterprises, organizations and institutions, bachelor's thesis. All participants in the educational process are provided with timely and understandable information on the goals, content and program learning outcomes, the procedure and evaluation criteria within the individual educational components. A detailed description of teaching and learning methods is contained in the syllabuses of educational components, which are posted on the official website of the department, in the relevant module of the system "Electronic Campus".
Evaluation	The procedure for conducting control activities is regulated by: "Regulations on current, calendar and semester control of learning outcomes at Igor Sikorsky Kyiv Polytechnic Institute", "Regulations on the system of evaluation of learning outcomes at Igor Sikorsky Kyiv Polytechnic Institute". Control measures of current and semester control (exams, tests, individual tasks), protection of the report on practice, protection of qualification work of the bachelor are estimated according to the defined criteria of a rating system of estimation (RSE).
6 – Program competencies	
Integral competence	Ability to solve complex specialized problems and practical problems in the economic sphere, which are characterized by complexity and uncertainty of conditions, which involves the use of theories and methods of economics.
General competences (GC)	
GC 1	Ability to exercise one's rights and responsibilities as a member of society, to realize the values of civil (democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine.
GC 2	Ability to preserve moral, cultural, scientific values and increase the achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology, use different types and forms of physical activity rest and lead a healthy lifestyle.
GC 3	Ability to abstract thinking, analysis and synthesis.
GC 4	Ability to apply knowledge in practical situations.
GC 5	Ability to communicate in the state language both orally and in writing.
GC 6	Ability to communicate in a foreign language.
GC 7	Skills in the use of information and communication technologies.
GC 8	Ability to search, process and analyze information from various sources.
GC 9	Ability to adapt and act in a new situation.
GC 10	Ability to be critical and self-critical.
GC 11	Ability to make informed decisions.
GC 12	Interpersonal skills.
GC 13	Ability to act socially responsibly and consciously.
GC 14	Ability to use different types, forms and means of physical education, sports and physical activity for professional activities, recreation and healthy living.

GC 15	The ability to understand philosophy as a worldview of man, or a set of views on the world as a whole and man's attitude to this world in understanding the ontological, epistemological, axiological and social problems of life.
Professional competencies (PC)	
PC 1	Ability to show knowledge and understanding of the problems of the subject area, the basics of the modern economy at the micro, meso, macro and international levels.
PC 2	Ability to carry out professional activities in accordance with applicable regulations and legal acts
PC 3	Understanding the features of leading scientific schools and areas of economics.
PC4	Ability to explain economic and social processes and phenomena on the basis of theoretical models, analyze and interpret the results.
PC 5	Understanding of the peculiarities of the modern world and national economy, their institutional structure, substantiation of the directions of social, economic and foreign economic policy of the state.
PC 6	Ability to apply economic and mathematical methods and models to solve economic problems.
PC 7	Ability to use computer technology and data processing software to solve economic problems, analyze information and prepare analytical reports.
PC 8	Ability to analyze and solve problems in the field of economic and social relations.
PC 9	Ability to predict socio-economic processes based on standard theoretical and econometric models.
PC 10	Ability to use modern sources of economic, social, managerial, accounting information for the preparation of official documents and analytical reports.
PC11	Ability to justify economic decisions based on understanding the laws of economic systems and processes and using modern methodological tools.
PC 12	Ability to independently identify problems of an economic nature in the analysis of specific situations, to suggest ways to solve them.
PC 13	Ability to conduct economic analysis of the functioning and development of economic entities, assessment of their competitiveness.
PC 14	Ability to analyze in depth the problems and phenomena in one or more professional areas, taking into account economic risks and possible socio-economic consequences.
PC 15	Ability to conduct quantitative and qualitative analysis of the functioning of socio-economic systems using mathematical methods of analytical economics.
PC 16	Ability to solve problems in the economic sphere by methods of algorithmization and object-oriented programming.
PC 17	Ability to form rational decisions of economic systems management
PC 18	Ability to study the dynamics of socio-economic processes, identify trends and create scenarios for the evolution of events.
7 – Program learning outcomes (PLO)	
PLO 1	Associate yourself as a member of civil society, the scientific community, recognize the rule of law, in particular in professional activities, understand and be able to exercise their rights and freedoms, show respect for the rights and freedoms of others, including members of the team.
PLO 2	To reproduce moral, cultural, scientific values, to increase the achievements of society in the socio-economic sphere, to promote a healthy lifestyle.
PLO 3	Know and use economic terminology, explain the basic concepts of micro- and macroeconomics.
PLO 4	Understand the principles of economic science, features of economic systems.
PLO 5	Apply analytical and methodological tools to substantiate proposals and make management decisions by various economic agents (individuals, households, enterprises and public authorities).

PLO 6	Use professional arguments to convey information, ideas, problems and ways to solve them to specialists and non-specialists in the field of economic activity.
PLO 7	Explain the models of socio-economic phenomena in terms of fundamental principles and knowledge based on an understanding of the main directions of economic science.
PLO 8	Apply appropriate economic and mathematical methods and models to solve economic problems.
PLO 9	Understand the main features of the modern world and national economy, institutional structure, directions of social, economic and foreign economic policy of the state.
PLO 10	To analyze the functioning and development of economic entities, to determine the functional areas, to calculate the relevant indicators that characterize the effectiveness of their activities.
PLO 11	Be able to analyze the processes of state and market regulation of socio-economic and labor relations.
PLO 12	Apply the acquired theoretical knowledge to solve practical problems and interpret the results meaningfully.
PLO 13	Identify sources and understand the methodology for determining and methods of obtaining socio-economic data, collect and analyze the necessary information, calculate economic and social indicators.
PLO 14	Identify and plan opportunities for personal professional development.
PLO 15	Demonstrate basic skills of creative and critical thinking in research and professional communication.
PLO 16	Be able to use data, provide arguments, critically evaluate logic and draw conclusions from scientific and analytical texts on economics.
PLO 17	Perform interdisciplinary analysis of socio-economic phenomena and problems in one or more professional areas, taking into account the risks and possible socio-economic consequences.
PLO 18	Use regulations and legal acts governing professional activities.
PLO 19	Use information and communication technologies to solve socio-economic problems, prepare and present analytical reports.
PLO 20	Master the skills of oral and written professional communication in state and foreign languages.
PLO 21	Be able to think abstractly, apply analysis and synthesis to identify key characteristics of economic systems at different levels, as well as the behavior of their subjects.
PLO 22	Demonstrate flexibility and adaptability in new situations, in working with new objects, and in uncertain conditions.
PLO 23	Show skills of independent work, demonstrate critical, creative, self-critical thinking.
PLO 24	Demonstrate the ability to act socially responsibly and consciously on the basis of ethical principles, to value and respect cultural diversity, individual differences.
PLO 25	Develop and study dynamic models of socio-economic systems by mathematical methods.
PLO 26	Apply data processing technologies, computer and information systems in professional activities.

PLO 27	Apply methods of optimal control and game theory in solving practical problems of economic systems management.
PLO 28	Use algorithmization methods and object-oriented technologies for programming tasks in the economic environment.
PLO 29	Justify the choice of a specific type of model and method of data mining in solving economic problems.
PLO 30	Use continuous models to analyze the behavior of dynamic trajectories of economic development.
8 – Resource support for program implementation	
Staffing	The main staff of teachers consists of the Department of Economic Cybernetics, which meet the staffing requirements set by the License Terms approved by the Cabinet of Ministers of Ukraine from 30.12.2015 № 1187 as amended in accordance with the Resolution of the Cabinet of Ministers of Ukraine №365 from 24.03.2021.
Logistics	In accordance with the technological requirements for material and technical support of educational activities of the relevant level of HE, approved by the Resolution of the Cabinet of Ministers of Ukraine of 30.12.2015 № 1187 as amended in accordance with the Resolution of the Cabinet of Ministers of Ukraine №365 of 24.03.2021 y. The learning process takes place, including in classrooms with multimedia equipment, computer workstations (computer equipment with a service life of not more than eight years) and related software. Applicants use the material and technical base of Igor Sikorsky Kyiv Polytechnic Institute, in particular, educational buildings, library, center of physical education and sports, medical center, recreation centers, center of culture and arts, dormitories. There is a student social service.
Information and educational and methodological support	In accordance with the technological requirements for educational and methodological and informational support of educational activities of the relevant level of HE (Annex 5 to the License Terms), approved by the Cabinet of Ministers of Ukraine from 30.12.2015 № 1187 as amended in accordance with the Cabinet of Ministers of Ukraine №365 from 24.03.2021 y. Information support is provided through the website of the Department of Economic Cybernetics, telegram channels of the Department and the Dean's Office, Facebook pages of the Department and the Faculty of Management and Marketing. Educational program, curricula, catalogs of elective subjects, syllabi are posted on the website of the department. Educational and methodological support - in the Scientific and Technical Library of Igor Sikorsky Kyiv Polytechnic Institute (Aleph Automated Library System (License Web-OPAC (user), access to scientometric databases), Electronic Archive of Scientific and Educational Materials "ELAKPI", Distance Learning Platform "Sikorsky", system "Electronic Campus". Applicants have free access to the Internet.
9 – Academic mobility	
National credit mobility	Possibility of concluding agreements on academic mobility and double diplomacy.

International credit mobility	Applicants have the opportunity to take advantage of international credit mobility programs provided by the University, the proposals of which are published by the Department of Academic Mobility of Igor Sikorsky Kyiv Polytechnic Institute, in particular the Erasmus + K1 program. There is an opportunity to take advantage of educational offers of foreign free economic zones within the framework of cooperation agreements with the Higher School of Economics in Bydgoszcz (Poland), State University. Nicolaus Copernicus in Torun (Poland). It is envisaged to expand the opportunities for academic exchange when concluding agreements with other educational institutions.
Training of foreign applicants for higher education	Subject to proficiency in the Ukrainian language - study in general groups, or in separate groups with teaching in English with the provision of learning Ukrainian as a foreign language.

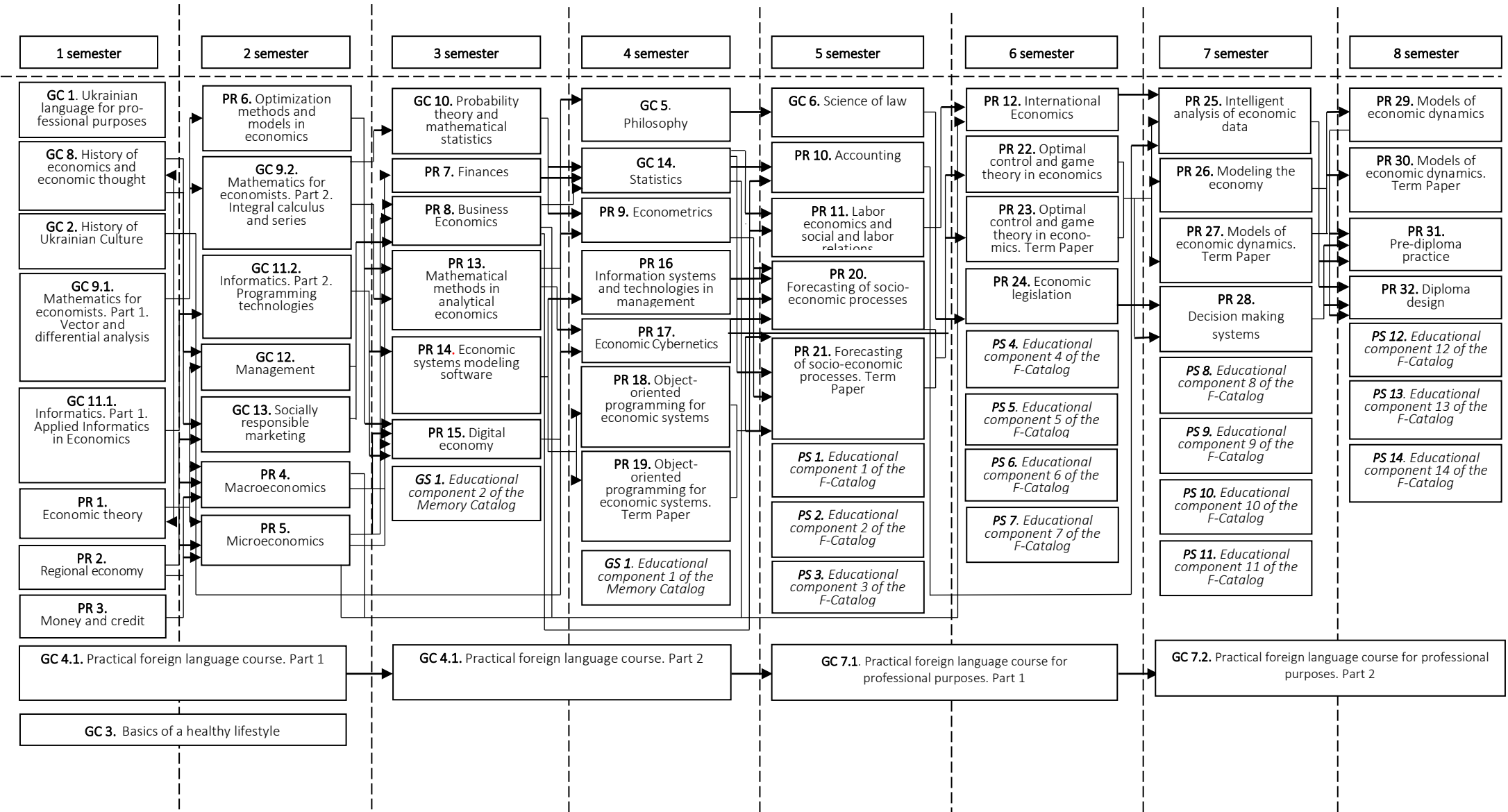
2. LIST OF COMPONENTS OF THE EDUCATIONAL PROGRAM

Code n/a	Components of the educational program (academic disciplines, term papers, practices, qualification work)	Number of loans ECTS	Form of final control
Mandatory (regulatory) components of the educational program			
General training cycle			
GC 1	Ukrainian language for professional purposes	2	test
GC 2	History of Ukrainian Culture	2	test
GC 3	Basics of a healthy lifestyle	3	test
GC 4.1	Practical foreign language course. Part 1	3	test
GC 4.2	Practical foreign language course. Part 2	3	test
GC 5	Philosophy	2	test
GC 6	Science of law	2	test
GC 7.1	Practical foreign language course for professional purposes. Part 1	3	test
GC 7.2	Practical foreign language course for professional purposes. Part 2	3	exam
GC 8	History of economics and economic thought	4,5	exam
GC 9.1	Mathematics for economists. Part 1. Vector and differential analysis	3,5	test
GC 9.2	Mathematics for economists. Part 2. Integral calculus and series	4	exam
GC 10	Probability theory and mathematical statistics	5	exam
GC 11.1	Informatics. Part 1. Applied Informatics in Economics	3	test
GC 11.2	Informatics. Part 2. Programming technologies	3	test
GC 12	Management	3,5	test
GC 13	Socially responsible marketing	3,5	test
GC 14	Statistics	5	exam
Cycle of professional training			
PR 1	Economic theory	4,5	exam

PR 2	Regional economy	3,5	test
PR 3	Money and credit	4	exam
PR 4	Macroeconomics	4,5	exam
PR 5	Microeconomics	4	test
PR 6	Optimization methods and models in economics	4,5	exam
PR 7	Finances	5	exam
PR 8	Business Economics	5	test
PR 9	Econometrics	4,5	test
PR 10	Accounting	4,5	exam
PR 11	Labor economics and social and labor relations	5	exam
PR 12	International Economics	4,5	exam
PR 13	Mathematical methods in analytical economics	4	test
PR 14	Economic systems modeling software	4,5	exam
PR 15	Digital economy	3	test
PR 16	Information systems and technologies in management	4,5	test
PR 17	Economic Cybernetics	5	exam
PR 18	Object-oriented programming for economic systems	4,5	exam
PR 19	Object-oriented programming for economic systems. Term Paper	1	test
PR 20	Forecasting of socio-economic processes	4,5	exam
PR 21	Forecasting of socio-economic processes. Term Paper	1	test
PR 22	Optimal control and game theory in economics	4	exam
PR 23	Optimal control and game theory in economics. Term Paper	1	test
PR 24	Economic legislation	2,5	test
PR 25	Intelligent analysis of economic data	3	test
PR 26	Modeling the economy	4,5	exam
PR 27	Modeling the economy. Term Paper	1	test
PR 28	Decision making systems	4	exam
PR 29	Models of economic dynamics	3,5	exam
PR 30	Models of economic dynamics. Term Paper	1	test
PR 31	Pre-diploma practice	6	test
PR 32	Diploma design	6	protection
Selective components of the EP			
General training cycle			
GS 1	Educational component 1 of the Memory Catalog	2	test
GS 2	Educational component 2 of the Memory Catalog	2	test
Cycle of professional training			
PS 1	Educational component 1 of the F-Catalog	4	test
PS 2	Educational component 2 of the F-Catalog	4	test
PS 3	Educational component 3 of the F-Catalog	4	test
PS 4	Educational component 4 of the F-Catalog	4	test

PS 5	Educational component 5 of the F-Catalog	4	test
PS 6	Educational component 6 of the F-Catalog	4	test
PS 7	Educational component 7 of the F-Catalog	4	test
PS 8	Educational component 8 of the F-Catalog	4	test
PS 9	Educational component 9 of the F-Catalog	4	test
PS 10	Educational component 10 of the F-Catalog	4	test
PS 11	Educational component 11 of the F-Catalog	4	test
PS 12	Educational component 12 of the F-Catalog	4	test
PS 13	Educational component 13 of the F-Catalog	4	test
PS 14	Educational component 14 of the F-Catalog	4	test
Total required components:		180	
Total amount of sample components:		60	
The amount of educational components that provide the acquisition of competencies of certain SVO:		180	
TOTAL VOLUME OF THE EDUCATIONAL PROGRAM		240	

3. STRUCTURAL AND LOGICAL SCHEME OF THE EDUCATIONAL PROGRAM



4. FORM OF CERTIFICATION OF HIGHER EDUCATION ACCESSORIES

Forms of certification of applicants for higher education	Certification of the applicant for higher education in the educational program "Economic Cybernetics" specialty 051 "Economics" is carried out in the form of open and public defense of the thesis and ends with the issuance of a standard document on awarding him a bachelor's degree with a bachelor's degree: Bachelor of Economics.
Requirements for qualification work	Qualification work should involve solving a complex specialized task or practical problem in the economic field using theories and methods of economics. Qualification work is checked for plagiarism and after the defense is placed in the repository of NTL University for free access. There should be no academic plagiarism, falsification or writing off in the qualification work. Qualification work is tested for plagiarism in accordance with the Regulations on the system of prevention of academic plagiarism at the the Igor Sikorsky Kyiv Polytechnic Institute and after protection is placed in the repository of NTL University for free access. Publication of qualification works containing information with limited access is carried out in accordance with the requirements of current legislation.

**5. MATRIX OF CONFORMITY OF PROGRAM COMPETENCES TO THE COMPONENTS OF THE EDUCATIONAL
PROGRAM
CYCLE OF GENERAL TRAINING**

	GC 1	GC 2	GC 3	GC 4.1	GC 4.2	GC 5	GC 6	GC 7.1	GC 7.2	GC 8	GC 9.1	GC 9.2	GC 10	GC 11.1	GC 11.2	GC 12	GC 13	GC 14
GC 1							+											
GC 2		+	+			+				+								
GC 3						+					+	+	+					+
GC 4							+				+	+						+
GC 5	+																	
GC 6				+	+			+	+									
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GC 11											+	+	+					
GC 12	+	+	+	+	+			+	+								+	
GC 13			+				+									+	+	
GC 14						+												
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PC 18																		

CYCLE OF PROFESSIONAL TRAINING

	PR 1	PR 2	PR 3	PR 4	PR 5	PR 6	PR 7	PR 8	PR 9	PR 10	PR 11	PR 12	PR 13	PR 14	PR 15	PR 16	PR 17	PR 18	PR 19	PR 20	PR 21	PR 22	PR 23	PR 24	PR 25	PR 26	PR 27	PR 28	PR 29	PR 30	PR 31	PR 32
GC 1											+													+								
GC 2	+																															
GC 3	+		+	+	+	+			+	+			+				+	+	+							+	+		+	+		+
GC 4		+					+	+		+	+								+		+		+				+			+	+	+
GC 5																															+	+
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GC 7									+					+	+	+	+	+	+						+						+	+
GC 8	+			+	+				+	+			+												+						+	+
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GC 10																				+	+											+
GC 11			+				+	+												+	+	+	+					+				+
GC 12											+																				+	
GC 13		+						+			+	+																			+	+
GC 14																																
PC 1		+	+	+	+		+				+				+																+	+
PC 2											+													+								
PC 3	+																															+
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PC 5		+		+								+			+																	+
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PC 9						+			+											+	+									+	+	+
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PC 12			+																			+	+			+	+	+			+	+
PC 13				+			+	+																	+	+	+				+	+
PC 14									+											+	+											+
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PC 16														+				+	+													+
PC 17						+																+	+								+	+
PC 18																				+	+								+	+		+

**6. MATRIX FOR PROVIDING SOFTWARE LEARNING RESULTS
COMPONENTS OF THE EDUCATIONAL PROGRAM
CYCLE OF GENERAL TRAINING**

	GC 1	GC 2	GC 3	GC 4.1	GC 4.2	GC 5	GC 6	GC 7.1	GC 7.2	GC 8	GC 9.1	GC 9.2	GC 10	GC 11.1	GC 11.	GC 12	GC 13	GC 14
PLO 1		+					+											
PLO 2	+	+	+			+				+								
PLO 3										+								
PLO 4										+						+		
PLO 5																+	+	+
PLO 6													+					+
PLO 7										+						+	+	
PLO 8											+	+						
PLO 9																		
PLO 10																	+	
PLO 11																		
PLO 12											+	+	+					+
PLO 13																	+	+
PLO 14																+		
PLO 15	+					+											+	
PLO 16						+				+			+					+
PLO 17																+	+	+
PLO 18							+											
PLO 19								+	+					+	+		+	+
PLO 20	+			+	+			+	+									
PLO 21						+				+	+	+	+				+	+
PLO 22																+	+	
PLO 23													+	+	+			
PLO 24	+	+		+	+			+	+	+						+	+	+
PLO 25																		
PLO 26																		
PLO 27																		
PLO 28																		
PLO 29																		
PLO 30																		

CYCLE OF PROFESSIONAL TRAINING

	PR 1	PR 2	PR 3	PR 4	PR 5	PR 6	PR 7	PR 8	PR 9	PR 10	PR 11	PR 12	PR 13	PR 14	PR 15	PR 16	PR 17	PR 18	PR 19	PR 20	PR 21	PR 22	PR 23	PR 24	PR 25	PR 26	PR 27	PR 28	PR 29	PR 30	PR 31	PR 32	
PLO 1	+										+													+							+		
PLO 2											+																					+	
PLO 3	+		+	+	+							+																				+	
PLO 4	+	+	+	+	+		+	+				+										+	+									+	
PLO 5		+	+					+		+	+	+				+					+	+	+	+		+	+	+	+		+	+	
PLO 6	+		+	+	+		+	+		+	+	+			+	+		+	+					+		+	+	+	+	+	+	+	
PLO 7	+		+	+	+		+	+							+							+	+			+	+		+	+		+	
PLO 8						+			+				+	+			+				+	+	+	+			+	+	+	+	+	+	
PLO 9		+	+	+	+							+			+																	+	
PLO 10			+		+		+	+		+		+										+	+								+	+	
PLO 11		+		+						+	+													+							+	+	
PLO 12	+							+		+							+		+		+		+				+			+	+	+	
PLO 13		+		+	+		+	+	+	+	+						+								+					+	+		
PLO 14																															+		
PLO 15											+		+																+	+	+	+	+
PLO 16	+				+			+		+															+						+	+	
PLO 17	+	+		+	+		+	+			+										+	+	+	+							+	+	
PLO 18											+														+								
PLO 19								+	+					+	+	+	+	+	+	+	+	+			+				+	+	+	+	
PLO 20																																+	
PLO 21	+	+		+	+	+		+	+		+	+	+		+		+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	
PLO 22			+			+	+														+	+				+	+	+	+	+	+	+	
PLO 23																			+		+		+					+			+	+	+
PLO 24		+						+			+	+																				+	+
PLO 25													+														+	+		+	+		+
PLO 26									+					+		+		+	+													+	+
PLO 27																						+	+									+	
PLO 28																+		+															
PLO 29																									+								+
PLO 30									+												+	+				+				+	+		+