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

Approved by the
Academic Council of Igor Sikorsky
Kyiv Polytechnic Institute
(protocol № 1 dated 23.01.2023)
Chairman of the Academic Council
Mykhailo ILCHENKO

Economic Analytics

Educational and Professional Program

First (Bachelor's) level of higher education

specialty	**051 Economics**
field of knowledge	**05 Social and behavioral sciences**
qualification	**Bachelor of Economics**

Adopted by Order of the Rector of
Igor Sikorsky Kyiv Polytechnic Institute
dated 17.05.2023 № НОН/165/2023

Kyiv – 2023

PREFACE

DEVELOPED by a project team:

Project team leader:
Julia Yereshko, Doctor of Economic Sciences, Associate Professor of Economic Cybernetics.

Project team members:

Kateryna Boiarynova, Doctor of Economic Sciences, Head of the Department of Economic Cybernetics, Professor;

Volodymyr Kapustian, Doctor of Physical and Mathematical Sciences, Professor of Economic Cybernetics;

Ivan Fartushnyi, Doctor of Economic Sciences, Associate Professor of Economic Cybernetics;

Nadiia Roshchyna, Ph.D. in Economics, Associate Professor of Economic Cybernetics;

Glib Mazhara, Ph.D. in Economics, Senior Lecturer of Economic Cybernetics.

Program development participants:
Andrii Drozd, Ph.D. in Economics, Head of Analytics in JatApp LLC Software Development Company;
Artem Havronskyi, Head of the OLGA-TORG Ltd.;
Vladyslav Kosmynin, student of the first (Bachelor's) level of higher education in Economic Cybernetics.

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

APPROVED

Scientific and Methodical Commission of Igor Sikorsky Kyiv Polytechnic Institute

in specialty 051 Economics

Chairman of the Scientific and Methodical Commission 051 Economics

Serhii VOITKO

(protocol № 5 dated 16.01.2023)

Methodical Council of Igor Sikorsky Kyiv Polytechnic Institute

Chairman of Methodical Council

Anatolii MELNYCHENKO

(protocol № 4 dated 19.01.2023)

TAKEN INTO ACCOUNT:

1. Approved standard of higher education in 051 Economics specialty (by Ministry of Education and Science of Ukraine order №1244 of 13.11.2018). URL: https://mon.gov.ua/storage/app/media/vishcha-osvita/zatverdzeni%20standarty/2021/07/28/051-Ekonomika-bakalavr.28.07-1.pdf
2. Regulation on the development, approval, monitoring, and revision of educational programs at Igor Sikorsky Kyiv Polytechnic Institute (entered into force by order of 07.04.2020 №7 / 70). URL: https://osvita.kpi.ua/node/137
3. Comments and suggestions of scientific and educational staff representatives, student self-government, higher education applicants, and employers' representatives shared on the Scientific and Methodical Commission (Igor Sikorsky KPI) meetings dedicated to 051 Economics specialty (№ 2 of 26 Oct 2022, № 3 of 26 Nov 2022, № 4 of 19 Dec 2022, № 5 of 16 Jan 2023).
4. Discussions about the results of reflection, offers, and suggestions from employers, academic community, and the first (Bachelor's) level of HE students during the department meetings (minutes №2 of 14 Sep 2022, №3 of 12 Oct 2022, №4 of 18 Nov 2022, №5 of 16 Dec 2022, №8 of 11 Jan 2023).
5. Reviews, results of public discussion, and feedback from employers and stakeholders.

The educational and professional program "Economic Analytics" was discussed and amended upon receiving all the wishes and suggestions from employers and students of Igor Sikorsky Kyiv Polytechnic Institute and approved at the meeting of the Department of Economic Cybernetics № 8 of 11.01.2023.

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1 EDUCATIONAL PROGRAM PROFILE

1. General information	
Full name of HEI and the faculty	National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Faculty of Management and Marketing
Higher education level and qualification	Degree – Bachelor Qualification – Bachelor of Economics
Official name of the educational program	Economic Analytics
Type of diploma and scope of EP	Bachelor's diploma, single, 240 credits Length of study – 3 years and 10 months
Accreditation availability	Accreditation certificate 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	Complete general secondary education
Language of instruction	Ukrainian
Validity period	Valid until 01.07.2025
Education program permalink	https://osvita.kpi.ua/051 http://ecocyber.fmm.kpi.ua/
2. Purpose of the educational program	
The purpose of the educational program is to establish conditions under which students will be able to grow professionally, intellectually, socially, and creatively to develop into highly qualified economic analysts that have mastered analytical and economic thinking skills, fundamental knowledge and applied skills in general as well as mathematical economics, econometric, systemic, economic, and data analytics technologies. Upon successful completion of the program, students will be able to: – solve economic problems with the help of descriptive, predictive, and prospective analysis methods, using Data Mining and DataStream technologies, computer systems, and specialized software; – undertake financial-, macro-, and micro-economic analysis of socio-economic systems and processes as well as to model and predict economic trends; – solve practical problems of economy and its entities by making optimal and analytically substantiated decisions, ensuring economic sustainability that complies with Igor Sikorsky KPI's strategy of 2020-2025 y.	
3. Educational program description	
Subject area	***Object of study:*** general principles and patterns of socio-economic systems and processes functioning and development; socio-economic modeling, forecasting, and regulation; motivation and behavior of economic entities. ***Training objectives:*** training future experts that will have modern economic thinking, theory knowledge and practical skills necessary for solving problems in the subject area. ***Subject matter:*** terminology, categories, concepts, and principles of economic sciences. ***Methodology and technologies:*** general scientific methods of cognition and research activity, mathematical and statistical methods of economic analysis, economic and mathematical modeling, information and communication technologies of research, and dissemination and presentation of research results. ***Tools and equipment:*** modern information and communication technology equipment, information systems and software used in professional activity.

Educational program orientation	Educational-professional
Main focus of EP	Professional education in 05 Social and Behavioral Sciences field of knowledge, 051 Economics specialty. The program is based on the well-known and neoteric scientific provisions of economics, economic analytics, mathematical and experimental economics, Data Mining, and information systems and technologies, all of which develops synergistic skills and abilities for professional activity. It is aimed at mastering integrated knowledge of economics, mathematical apparatus, Data Science methods, Data Mining technologies, and information-analytical computer systems. The program provides developing of systematic economic and analytical thinking that will allow students to explore and solve complex economic problems. Keywords: economic analytics, financial-, macro-, and microeconomic analysis, economic-mathematical modeling, systemic analysis, economic dynamics, forecasting, intelligent information systems, economic behavior, economic and managerial decisions optimization.
Features of the program	The uniqueness and fundamentality of the educational program are defined by: – the combination of economic, mathematical, analytical, information, and digital components in training; – obtaining integrated skills in financial-, macro-, and microeconomic analysis and experimental (Data Stream), behavioral, and mathematical economics combined with econometric, systemic, and intellectual data analysis tools, as well as Data Science and information technologies; – program formation and updates carried out in collaboration with representatives of various enterprises, organizations, and institutions; – the cooperation agreements that allow students to master practical skills right in the learning process while performing individual tasks, working on a thesis, undergoing practical training, and acquiring knowledge of economic analytics on the basis of actual economic data; – educational staffing that has practical experience and provides research services in the real and financial economy; – the possibility of involving professional practitioners in classes and workshops, which allows intensifying practical training in line with the latest trends in the field; – the cooperation with World Data Center for Geoinformatics and Sustainable Development, “YouControl” analytical system, and “M.E.Doc” that ensures information component of training economic analysts; – an opportunity for applicants to choose individual educational trajectories: there is a wide range of disciplines within optional educational components of the program that enhance professional training and provide all-round intellectual and creative growth; – students’ engagement in research activities via participation in student research groups, which improves analytical skills and nurtures creative potential; – potential availability of national academic mobility and dual education programs.

4. Suitability of graduates for employment and further study	
Employability	Graduates are able to work at enterprises of any legal organizational form in the following positions (according to the classifier of professions of Ukraine SC 003:2010, current version dated 29/12/2022): 3411 Assets management specialist, financial and economic security analyst; 3423 Administrative assistant; 3434 Assistant economist-statistician; 3435.2 Office manager (by types of economic activities); 3436.1 Assistant head of the enterprise (institution, organization); 3436.2 Assistant head of the production sector, assistant head of other front offices; 3436.3 Assistant head of small enterprises without a managerial apparatus.
Postgraduate study options	An opportunity to continue studying at the second (educational-professional or educational-scientific) level of higher education to earn Master's degree. Obtaining additional qualifications in the postgraduate education system.
5. Teaching and assessment	
Teaching and learning	Teaching and learning are based on the principles of academic honesty and freedom, student-centered, competency-based, and self-learning approaches, and the use of computer workshops. The general teaching style is task-oriented. Forms of education are as follows: lectures, practical classes, computer workshops, including the use of information and communication technologies (e-learning, online lectures, distance learning courses on the Sikorsky Distance Learning Platform (G Suite, Moodle), OCW); individual tasks (term papers, calculation works, essays); end-of-module assessments; students' individual work with the use of educational and methodological information sources; internships at enterprises, in organizations and institutions; bachelor's thesis implementation and defense. Under force majeure circumstances, online distance learning is possible. All educational process participants receive well-timed, clear, and accessible information on program objectives, content, and outcomes, including 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, available on the department's official website, in the relevant module of the Electronic Campus.
Assessment	The procedure for conducting formative and summative assessments is regulated by Regulations on current, calendar and semester control of learning outcomes at Igor Sikorsky Kyiv Polytechnic Institute and Regulations on the system of evaluation of learning outcomes at Igor Sikorsky Kyiv Polytechnic Institute. Formative and summative assessments (exams, tests, individual tasks), defense of the practice report, and bachelor's thesis defense are evaluated according to the defined criteria of the rating system of estimation (RSE). Thesis defense evaluation is undertaken at an open examination board meeting, and its results are announced on the same day.
6. Program competencies	
Integral competence	The ability to solve complex specialized tasks and practical problems in the field of economics in contexts characterized by the uncertainty of conditions which require applying economic science theories and methods combined with economic analysis, mathematical economics and Data Science tools, information-analytical technologies, and computer systems.
General competencies (GCs)	
GC 1	An ability to exercise one's rights and duties as a member of society; be mindful of the civil (democratic) society's values and the importance of its sustainable development, the supremacy of law, and human and civil rights and freedoms in Ukraine.

GC 2	An ability to preserve moral, cultural, and scientific values; multiply the achievements of society based on the understanding of history and development patterns of the subject area, its place in the general knowledge of nature, civilization, and the societal and technological development; participate in different kinds of physical activities for active recreation and healthy lifestyle.
GC 3	Abstract, analytical, and synthetic thinking skills.
GC 4	An ability to apply knowledge in practice.
GC 5	An ability to communicate in the official language orally and in writing.
GC 6	An ability to communicate in a foreign language.
GC 7	Information and communication technology skills.
GC 8	An ability to research, process, and analyze data collected from various sources.
GC 9	An ability to adapt and adjust to changing circumstances.
GC 10	Critical and reflective thinking skills.
GC 11	An ability to make sound decisions.
GC 12	Interpersonal communication skills.
GC 13	An ability to act in a socially responsible and conscious way.
Professional competencies (PCs)	
PC 1	An ability to demonstrate knowledge and understanding of problems in the subject area and basics of modern economies functioning at international, micro-, macro-, and mesoeconomic levels.
PC 2	An ability to carry out professional activities in accordance with current regulatory and legal acts.
PC 3	Understanding the features of leading scientific schools and areas of economic science.
PC 4	An ability to explain economic and social phenomena and processes based on theoretical models; analyze and meaningfully interpret the findings.
PC 5	Understanding the features of the modern world and national economy and its institutional structures; an ability to substantiate the mainstays of social, economic, and foreign-economic policies of the state.
PC 6	An ability to apply economic-mathematical methods and models in economic problem-solving.
PC 7	An ability to use computer technologies and data processing software in economic problem-solving, data analysis, and preparation of evaluation reports.
PC 8	An ability to analyze and solve economic and social-labor relationships problems.
PC 9	An ability to forecast on the basis of standard theoretical and econometric models of socio-economic processes.
PC 10	An ability to use modern sources of economic, social, managerial, and accounting information to draft official documents and evaluation reports.
PC 11	An ability to substantiate economic decisions based on the patterns of economic systems and processes using state-of-the-art methodological tools.
PC 12	An ability to identify economic problems independently when analyzing specific cases—and suggest ways to solve them.
PC 13	An ability to conduct an economic analysis of business entities' development and functioning and evaluate their competitive strength.
PC 14	An ability to analyze problems and phenomena of a single or few professional fields in depth, taking economic risks and socio-economic impacts into account.
PC 15	An ability to analyze economic systems and processes, identify causal relationships, and draw reasonable conclusions, employing analytical methods.
PC 16	An ability to analyze and predict economic performance indicators of macro- and microeconomic entities’ functioning to evaluate the development scenarios.
PC 17	An ability to use data processing systems and data mining techniques.

PC 18	An ability to apply experimental methods to solve economic tasks and identify an impact of behavior patterns on the course of economic processes and deviations from a rational choice of economic agents.
PC 19	An ability to analyze economic problems using mathematical methods, build models of socio-economic processes' dynamic, identify trends, and create scenarios of the development of events.
PC 20	Optimal managerial decision-making based on the systemic methodology and identifying and modeling structural relations of the elements of economic entities.
7. Program learning outcomes	
Upon completion of the program, students will be able to:	
PLO 1	Regard themselves as members of civil and scientific societies, recognize the supremacy of law, particularly in professional activity, understand and use their rights and freedoms, show respect for the rights and freedoms of other people—team members in particular.
PLO 2	Adhere to the moral, cultural, and scientific values, multiply the achievements of society in socioeconomics, promote a healthy lifestyle.
PLO 3	Understand and use economic terminology, explain basic concepts of micro- and macroeconomics.
PLO 4	Understand principles of economic science and characteristics of economic systems functioning.
PLO 5	Employ analytical and methodical tools for substantiation of recommendations and managerial decision-making for various economic agents (individuals, households, enterprises, and public authority).
PLO 6	Make professional arguments to convey information, ideas, problems, and ways of solving them to the experts and non-experts in economic activity.
PLO 7	Explain models of socio-economic phenomena from the standpoint of fundamental principles and knowledge based on the understanding of economic science development mainstays.
PLO 8	Apply appropriate economic-mathematical methods and models for problem-solving in economics.
PLO 9	Be aware of the modern world and national economy features, institutional structure, and mainstays of social, economic, and foreign-economic state policies.
PLO 10	Conduct the analysis of the functioning and development of business entities, identification of functional areas, and calculations of relevant indices characterizing the effectiveness of their performance.
PLO 11	Analyze the state and market regulation processes of socio-economic and employment relations.
PLO 12	Apply obtained theoretical knowledge for practical problem-solving and meaningful interpretation of findings.
PLO 13	Understand the socio-economic data analysis and collection methods, identify relevant sources, collect and analyze necessary data, and calculate economic and social indicators.
PLO 14	Identify and plan personal professional development opportunities.
PLO 15	Demonstrate basic creative and critical thinking skills in research and professional communication.
PLO 16	Work with research and analytical texts in economics: use data, make arguments, critically evaluate logic, and draw relevant conclusions.
PLO 17	Conduct interdisciplinary analysis of socio-economic phenomena and problems in a single or few professional fields with consideration of risks and potential socio-economic impacts.
PLO 18	Use normative and legal acts regulating professional activity.
PLO 19	Use information and communication technologies for socio-economic problem-solving and drafting and presentation of evaluation reports.
PLO 20	Master oral and written professional communication skills in official and foreign languages.

PLO 21	Harness abstract thinking skills, analyze and synthesize data to identify key features of multilevel economic systems and behavior of their entities.
PLO 22	Show flexibility and adaptability in new contexts and while working with new objects under uncertainty.
PLO 23	Harness independent working skills as well as critical, creative, and reflective thinking skills.
PLO 24	Act in a socially responsible and conscious way based on ethical principles, respect and value cultural diversity and people's idiosyncrasies.
PLO 25	Interpret economic data, and analyze economic phenomena and processes using econometric, intellectual analysis, information, and Data Science methods and technologies.
PLO 26	Undertake analytical research using econometric, financial-, macro-, and microeconomic analysis tools and identify macro- and microeconomic models of economic policy formation and agents' behavior.
PLO 27	Apply economic and systemic analysis, game theory, mathematical, and experimental economy methods while studying economic processes of different managerial levels for optimal decision-making.
PLO 28	Analyze and substantiate development directions of the economy and its undertakings based on objective market laws and mathematical methods of economic indices and processes modeling.
PLO 29	Employ predictive analysis methods in prognostic modeling of socio-economic systems and processes and identify patterns of their development.
PLO 30	Use computer systems, software, and intelligent information technologies to collect, process, and analyze economic data and undertake analytical research.
8. Program implementation resources	
Staffing	The main staff of professors and teachers consists of those working in the Department of Economic Cybernetics and meets the staffing requirements defined by Educational Activity Licensing Terms approved by decree of the Cabinet of Ministers of Ukraine dated 30/12/2015 №1187 (current version).
Material and technical support	Material and technical support are provided per technological requirements regarding student support regulations of educational activities for a relevant HE level approved by decree of the Cabinet of Ministers of Ukraine dated 30/12/2015 №1187 (current version). The teaching and learning processes take place in auditoriums supplied with modern multimedia equipment, computer workstations (computer facilities with a life-cycle of no more than eight years), and the appropriate software. The material and technical base of Igor Sikorsky Kyiv Polytechnic Institute is at the students' disposal, including but not limited to academic buildings, library, center of physical education and sports, medical establishments, student summer sports and health camps, cultural arts center, and dormitories. Student social services are functioning and accessible.

Information and methodical support	Information and methodical support are provided per technological requirements regarding student support regulations of educational activities for a relevant HE level (Appendix 5 to Licensing Terms) approved by decree of the Cabinet of Ministers of Ukraine dated 30/12/2015 №1187 (current version). Information support of the program is provided by the department's official website and Facebook page as well as the Telegram channels of the department and dean's office. Methodical support is accessible owing to The Scientific and Technical Library of Igor Sikorsky Kyiv Polytechnic Institute (the automated library system Aleph500 available thanks to the Web-OPAC license), Electronic Archive of Scientific and Educational Materials ELAKPI, Sikorsky Distance Learning Platform, and "Electronic Campus" system. Students have access to prepaid scientometric databases and free Internet. EP actively employs analytical systems of World Data Center for Geoinformatics and Sustainable Development, "YouControl" analytical system, "M.E.Doc", project management software, MatLab, EViews, Maple, and Minitab; IDEs and Code Editors for C++, Python, Java, and R programming languages in teaching and learning processes.
9. Academic mobility	
National credit mobility	Higher education applicants can participate in the national credit mobility programs—under the contract with Odessa Polytechnic National University in particular.
International credit mobility	Applicants have the opportunity to take advantage of the international credit mobility programs provided by the University, including the Erasmus+ K1 programs, the offers from which are published by the Department of Academic Mobility of Igor Sikorsky Kyiv Polytechnic Institute. In addition, there are educational offers of the foreign HEIs within the boundaries of partnership agreements, with the University of Economy in Bydgoszcz and Nicolaus Copernicus University in Toruń (both in Poland) in particular. Upon conclusion of the contracts with other educational institutions, the expansion of exchange program options can be anticipated.
Training of international applicants	International applicants proficient in Ukrainian can study in general groups, while others may join separate groups with English as a language of instruction and Ukrainian as a foreign language course.

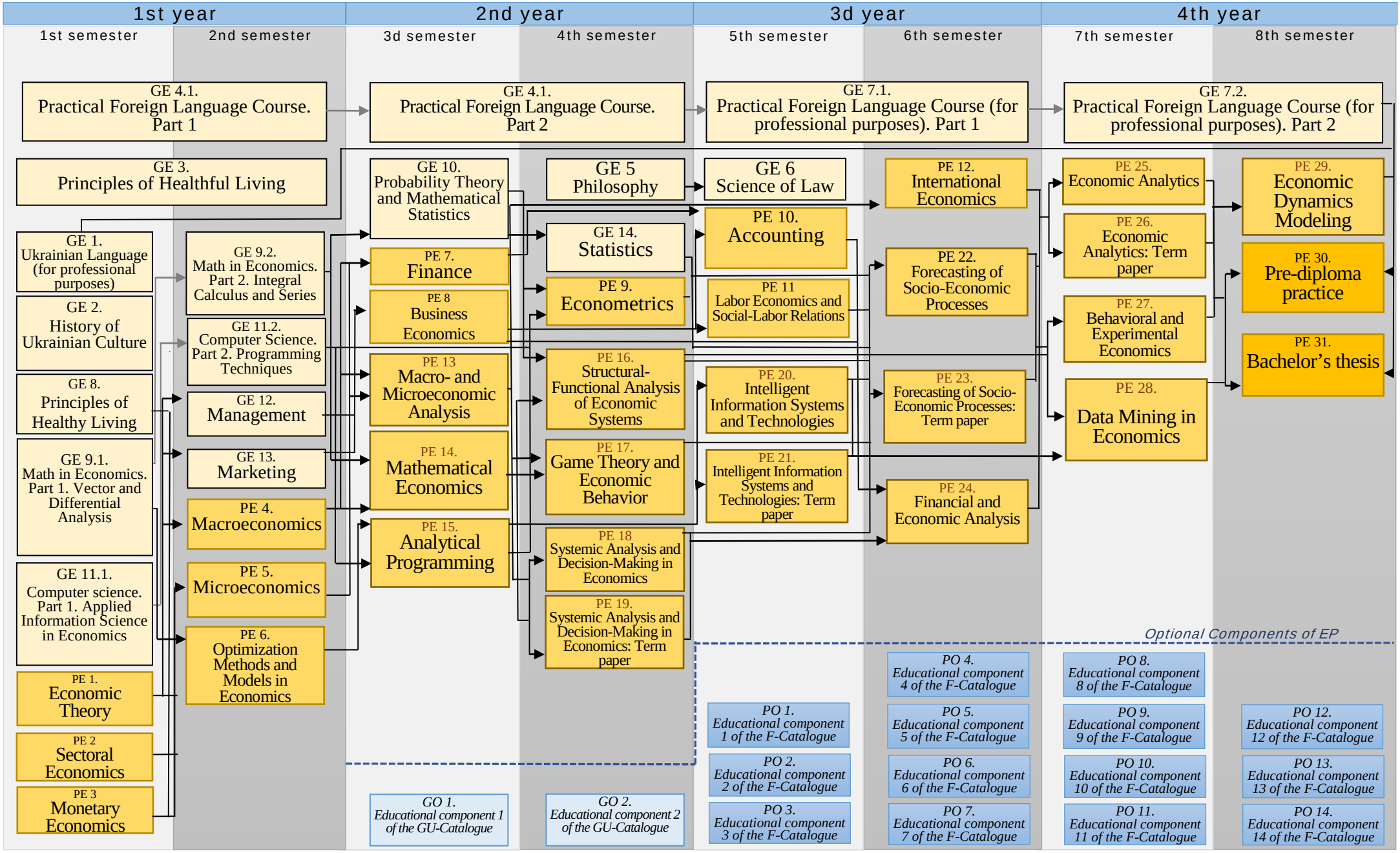
2. EDUCATIONAL PROGRAM COMPONENTS

Code н/д	Education program components (academic disciplines, term papers, practice, thesis)	Number of ECTS credits	Summative assessment type
1. Compulsory components of EP			
General training cycle			
GE 1	Ukrainian Language (for professional purposes)	2	test
GE 2	History of Ukrainian Culture	2	test
GE 3	Principles of Healthful Living	3	test
GE 4.1	Practical Foreign Language Course. Part 1	3	test
GE 4.2	Practical Foreign Language Course. Part 2	3	test
GE 5	Philosophy	2	test
GE 6	Science of Law	2	test
GE 7.1	Practical Foreign Language Course (for professional purposes) Part 1	3	test

GE 7.2	Practical Foreign Language Course (for professional purposes) Part 2	3	exam
GE 8	History of Economic Thought	4,5	exam
GE 9.1	Math in Economics. Part 1. Vector and Differential Analysis	3,5	test
GE 9.2	Math in Economics. Part 2. Integral Calculus and Series	4	exam
GE 10	Probability Theory and Mathematical Statistics	5	exam
GE 11.1	Computer Science. Part 1. Applied Information Science in Economics	3	test
GE 11.2	Computer Science. Part 2. Programming Techniques	3	test
GE 12	Management	3,5	test
GE 13	Marketing	3,5	test
GE 14	Statistics	5	exam
Professional training cycle			
PE 1	Economic Theory	4,5	exam
PE 2	Sectoral Economics	3,5	test
PE 3	Monetary Economics	4	exam
PE 4	Macroeconomics	4,5	exam
PE 5	Microeconomics	4	test
PE 6	Optimization Methods and Models in Economics	4,5	exam
PE 7	Finance	5	exam
PE 8	Business Economics	5	test
PE 9	Econometrics	4,5	test
PE 10	Accounting	4,5	exam
PE 11	Labor Economics and Social-Labor Relations	5	exam
PE 12	International Economics	4,5	exam
PE 13	Macro- and Microeconomic Analysis	4	test
PE 14	Mathematical Economics	4	exam
PE 15	Analytical Programming	3,5	test
PE 16	Structural-Functional Analysis of Economic Systems	4,5	test
PE 17	Game Theory and Economic Behavior	5	exam
PE 18	Systemic Analysis and Decision-Making in Economics	4,5	exam
PE 19	Systemic Analysis and Decision-Making in Economics: Term paper	1	test
PE 20	Intelligent Information Systems and Technologies	4	exam
PE 21	Intelligent Information Systems and Technologies: Term paper	1	test
PE 22	Forecasting of Socio-Economic Processes	4	exam
PE 23	Forecasting of Socio-Economic Processes: Term paper	1	test
PE 24	Financial and Economic Analysis	3	test
PE 25	Economic Analytics	4,5	exam
PE 26	Economic Analytics: Term paper	1	test
PE 27	Behavioral and Experimental Economics	3	test
PE 28	Data Mining in Economics	4	exam
PE 29	Models of Economic Dynamics	4,5	exam
PE 30	Pre-diploma practice	6	test

PE 31	Bachelor's thesis	6	thesis defense
Optional Components of EP			
General training cycle			
GO 1	Educational component 1 of the GU-Catalogue	2	test
GO 2	Educational component 2 of the GU-Catalogue	2	test
Professional training cycle			
PO 1	Educational component 1 of the F-Catalogue	4	test
PO 2	Educational component 2 of the F-Catalogue	4	test
PO 3	Educational component 3 of the F-Catalogue	4	test
PO 4	Educational component 4 of the F-Catalogue	4	test
PO 5	Educational component 5 of the F-Catalogue	4	test
PO 6	Educational component 6 of the F-Catalogue	4	test
PO 7	Educational component 7 of the F-Catalogue	4	test
PO 8	Educational component 8 of the F-Catalogue	4	test
PO 9	Educational component 9 of the F-Catalogue	4	test
PO 10	Educational component 10 of the F-Catalogue	4	test
PO 11	Educational component 11 of the F-Catalogue	4	test
PO 12	Educational component 12 of the F-Catalogue	4	test
PO 13	Educational component 13 of the F-Catalogue	4	test
PO 14	Educational component 14 of the F-Catalogue	4	test
Total of compulsory credits:		180	
Total of optional credits:		60	
Total of education credits ensuring the acquisition of competencies defined by Higher Education Standard:		180	
TOTAL NUMBER OF EDUCATION PROGRAM CREDITS:		**240**	

3. STRUCTURAL-LOGICAL SCHEME OF EDUCATION PROGRAM



4. STUDENT CERTIFICATION FORM

Certification form for higher education student	Higher education student certification in the Economic Analytics educational program, 051 Economics specialty, is carried out as public thesis defense followed by the issuance of a standard document confirming that a student has been awarded a Bachelor's degree in Economics.
Thesis requirements	Work on a thesis includes solving a subject-oriented task, complex practical problem, or problem in economics that require research and/or innovation and are characterized by the uncertainty of conditions and requirements. (Regulations on the examination commission and certification of applicants for higher education in Igor Sikorsky KPI) A thesis is checked for plagiarism following the Regulations on the system of prevention of academic plagiarism at the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". After the defense, it is placed in the repository of NTL University for free access. Publication of theses containing limited access information is carried out per the requirements of current legislation. In the event of the remote mode of education, certification is performed in compliance with Regulations for semester tests and defenses of research projects and qualifying examinations in the remote mode.

5. MATRIX OF CORRESPONDENCE BETWEEN PROGRAM COMPETENCIES AND EDUCATIONAL PROGRAM COMPONENTS

	GE 1	GE 2	GE 3	GE 4.1	GE 4.2	GE 5	GE 6	GE 7.1	GE 7.2	GE 8	GE 9.1	GE 9.2	GE 10	GE 11.1	GE 11.2	GE 12	GE 13	GE 14
GC 1							+											
GC 2		+	+			+				+								
GC 3						+				+	+	+		+	+			+
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GC 10										+			+			+		
GC 11											+	+				+		
GC 12	+	+		+	+			+	+							+		
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PC 17																		
PC 18																		
PC 19																		
PC 20																		

PROFESSIONAL TRAINING CYCLE

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

6. MATRIX OF CORRESPONDENCE BETWEEN LEARNING OUTCOMES AND COMPONENTS OF EDUCATIONAL PROGRAM

	GO 1	GO 2	GO 3	GO 4.1	GO 4.2	GO 5	GO 6	GO 7.1	GO 7.2	GO 8	GO 9.1	GO 9.2	GO 10	GO 11.1	GO 11.	GO 12	GO 13	GO 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																		

PROFESSIONAL TRAINING CYCLE

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