

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL TECHNICAL UNIVERSITY OF UKRAINE
«IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE»

APPROVED BY

Academic Council of Igor Sikorsky KPI
(Protocol No _____ of _____ 20__)

Chairperson of the Academic Council

_____ Mykhailo ILCHENKO

PHYSICAL THERAPY, ERGOTHERAPY
EDUCATIONAL-PROFESSIONAL PROGRAM

First (Bachelor) level of higher education

In specialty	227 Physical Therapy, Ergotherapy
Field of knowledge	22 Health Care
Qualification	Bachelor of Physical Therapy, Ergotherapy

Came into force by Order of the Rector
of the Igor Sikorsky KPI
of _____ No _____

Kyiv – 2021

PREAMBLE

DEVELOPED by the project team:

Project team leader:

Glynyana Oksana Oleksandrivna, Ph.D. in Physical Education and Sports, Associate Professor, Associate Professor of the Department of Biosafety and Human Health _____

Project team members:

Khudetsky Igor Yulianovych, Doctor of Medical Sciences, Professor, Professor of the Department of Biosafety and Human Health _____

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Vykhlaiyev Yuriy Mykolayovich, Doctor of Pedagogics, Professor, Professor of the Department of Biosafety and Human Health _____

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Popadyukha Yuriy Andriyovich, Doctor of Technical Sciences, Professor, Professor of the Department of Biosafety and Human Health _____

Procopovych Yegor Volodymyrovich, Ph.D. in Medicine, Head of the Department of Physical and Medical Rehabilitation at the Kyiv City Clinical Hospital No 6 _____

Kosharna Anastasia Vitaliivna, Student of the 3rd year of study, Group BR-p91 of the Department of Biosafety and Human Health _____

The Department of Biosafety and Human Health is responsible for training higher education students by the Educational program

AGREED:

Scientific and Methodical Commission of the Igor Sikorsky KPI in specialty 227 "Physical Therapy, Ergotherapy"

Chairman of the SMCU _____ Igor KHUDETSKY

(Protocol No ____ of _____ 20__)

Methodical Council of the Igor Sikorsky KPI

Chairman of the Methodical Council _____ Yuriy YAKYMENKO

(Protocol No ____ of _____ 20__)

Feedback reviews of external stakeholders:

DONETS R.V., Orthopedist-traumatologist of the Institute of Vertebrology and Rehabilitation

STRASHNY S.A., Director of the Kyiv State Experimental Prosthetic and Orthopedic Enterprise

KHUDOLEY V.Yu., Rector of the Academician Y. Bugay International Scientific-Technical University, Doctor of Economics, Professor

SAKOVSKY A.V., Orthopedist-traumatologist of the Center for Orthopedics and Rehabilitation "ZARTA"

HYTSIUK M.V., Student of the 3rd year of study, Group BR-p81 of the Department of Biosafety and Human Health of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

NEVOLKO L.I. Director of LLC "International Center for Rehabilitation Medicine"

1. PROFILE OF THE EDUCATIONAL PROGRAM
in specialty 227 "Physical Therapy, Ergotherapy"

1 – General information	
Full name of HEI and institute/faculty	National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Faculty of Biomedical Engineering
Degree of higher education and name of qualification in the original language	Degree – Bachelor Educational qualification – Bachelor of Physical Therapy, Ergotherapy
The official name of the educational program	"Physical Therapy, Ergotherapy"
Type of diploma and scope of the educational program	Diploma of Bachelor, single, 240 ECTS credits, training period 3 years and 10 months
Accreditation	Accreditation Certificate of the Ministry of Education and Science of Ukraine Series ND №1192471 dated April 26, 2013. The Certificate is valid until July 1, 2023. Order of the Ministry of Education and Science of Ukraine dated April 30, 2013, No 1480-1.
Cycle/level	NFQ of Ukraine – level 6; FQ-EHEA – the first cycle, EQF-LLL – level 6
Entrance qualification	Complete secondary education or educational-professional level of a junior specialist
Language(s) of teaching	Ukrainian, English
The validity of the educational program	Until July 3, 2023.
Permanent link to the educational program	bbzl.fbmi.kpi.ua
2 – The goal of the educational program	
Training of specialists capable of solving complex theoretical and practical problems related to dysfunction of human organs and systems: musculoskeletal system, nervous, cardiovascular, and respiratory systems have modern knowledge in the field of physical therapy, ergotherapy. To deepen and disseminate scientific knowledge in the field of physical therapy, occupational therapy through the internationalization and integration	

of education, research, and innovation.

Create conditions for comprehensive professional, intellectual, social, and creative development of the individual at the highest levels of excellence and in the educational and scientific environment.

3 – Characteristics of the educational program

<p>Subject area (field of knowledge, specialty)</p>	<p>Field of knowledge 22 Health Care Specialty 227 Physical Therapy, Ergotherapy</p> <p>The object of study and activity: motor functions and human activity, their violation, and correction to restore full life following the desires and needs of man in the environment.</p> <p>Goals of training: Training of specialists capable of solving complex specialized problems and practical problems associated with dysfunction of organs and systems, in particular, musculoskeletal, nervous, cardiovascular, and respiratory systems using the provisions, theories, and methods of medical, biological, social, psychological and pedagogical sciences.</p> <p>The theoretical content of the subject area: knowledge to restore and prevent loss of motor functions and human activity: medical-biological, psychological-pedagogical, social and training disciplines; labor protection and life safety requirements; legal framework; communications in the professional sphere; basics of business communication, basics of business foreign language (languages); professional competencies, rights, and responsibilities; basic provisions of ethics.</p> <p>Methods, techniques, and technologies: observation, survey, testing, and measurement in physical therapy and ergotherapy; information processing; planning and implementation of physical therapy and ergotherapy; verbal and nonverbal communication; providing pre-medical care.</p> <p>Tools and equipment for monitoring the main vital signs of the patient/client; testing and measurement in physical therapy and ergotherapy; conducting physical therapy and ergotherapy activities; technical aids for mobility and self-service.</p>
<p>The orientation of the educational program</p>	<p>Educational and professional</p>

The main focus of the educational program	Special education and professional training in physical therapy, ergotherapy. Keywords: physical therapy, ergotherapy, examination, prognosis, intervention.
Features of the educational program	The educational-professional program is aimed at the formation of general and special (professional) competencies defined by the standard of higher education for the first (bachelor's) level in the specialty 227 Physical therapy, Ergotherapy, approved by the order of the Ministry of Education and Science of Ukraine dated December 19, 2018, No 1419.
4 – Graduates' employability and aptitude to further training	
Employability	Graduates can hold positions whose qualification requirements include a presence of bachelor's degree in physical therapy, ergotherapy in business entities engaged in the following types of economic activity (according to CTEA SC 009: 2010): 86.10 Activities of hospitals; 87.10 Activities for the care of patients with accommodation 93.12 Activities of sports clubs; 93.13 Activities of fitness centers. Graduates can hold, in particular, the following primary positions (according to CTEA SC 003: 2010): 3226 Assistant physical therapist; 3226 Assistant ergotherapist; 3226 Masseur; 3226 Sports masseur.
Further training	Continued education at the second (master's) level of higher education and acquisition of additional qualifications in the system of postgraduate education.
5 – Teaching and assessment	
Teaching and training	The educational process is carried out based on student-centeredness, competence approach, a partnership of research and teaching staff and students, self-education, problem-oriented learning, integration of educational and scientific activities, professional orientation. Teaching is conducted in the form of lectures, workshops, training, scientific conferences, and seminars; involvement of students in project works, competitions, Olympiads, and research events. Independent work is carried out with the possibility of consultation with the teacher, the use of

	information and communication technologies (online lectures, distance learning courses, for individual educational components). Involvement of qualified practitioners in training sessions.
Assessment	<p>Current control: student's recitation; speeches at practical (seminar) classes; express control; checking the results of various individual tasks; presentations; essay; assessment of the acquisition of educational material planned for independent study by the student.</p> <p>Semester control in the form of written and oral exams, tests taking into account the number of points accumulated during the study of disciplines, defense of the practice report.</p> <p>Attestation of applicants for higher education is carried out in the form of an attestation exam or public defense of the qualification work, is assessed following specified criteria of the Rating system.</p>
6 – Program competencies	
Integral competence	Ability to solve complex specialized problems and practical problems related to physical therapy and ergotherapy, characterized by complexity and uncertainty of conditions, using the provisions, theories, and methods of medical-biological, social, psychological, and pedagogical sciences.
General Competences (GC)	
GC 1	Ability to understand the subject area and understand professional activities.
GC 2	Ability to act based on ethical considerations (motives).
GC 3	Ability to interpersonal interaction.
GC 4	Ability to work in a team.
GC 5	The ability to motivate people and move towards a common goal.
GC 6	Ability to communicate in the state language both orally and in writing.
GC 7	Ability to communicate in a foreign language
GC 8	Ability to plan and manage time.
GC 9	Ability to use information and communication technologies.
GC 10	Ability to search, process, and analyze information from various sources.
GC 11	Ability to learn and master modern knowledge.
GC 12	Ability to apply knowledge in practical situations.

GC 13	The ability to act socially responsibly and consciously.
GC 14	Ability to exercise their rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights, and freedoms in Ukraine.
GC 15	Ability to preserve and increase moral, cultural, scientific values and 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 the development of society, techniques and technologies for active recreation and a healthy lifestyle.
Professional Competencies (PC)	
PC 1	Ability to explain to patients, clients, families, members of the interdisciplinary team, other health professionals the need for physical therapy, ergotherapy, principles of their implementation, and the relationship with health care.
PC 2	Ability to analyze the structure, normal and individual development of the human body and its motor functions.
PC 3	The ability to interpret pathological processes and disorders and use suitable means of physical therapy, occupational therapy for their correction.
PC 4	Ability to take into account medical, psychological and pedagogical, social aspects in the practice of physical therapy, ergotherapy.
PC 5	Ability to conduct harmless for the patient/client and practitioner practical activities in physical therapy, ergotherapy in traumatology and orthopedics, neurology and neurosurgery, cardiology and pulmonology, as well as other fields of medicine.
PC 6	Ability to perform basic components of examination in physical therapy and/or ergotherapy: observation, survey, measurement, and testing, to document their results.
PC 7	Ability to help the patient/client understand their own needs, discuss and explain the content and need for a physical therapy and ergotherapy program.
PC 8	Ability to effectively implement a program of physical therapy and/or ergotherapy.
PC 9	Ability to ensure the conformity of physical therapy and/or ergotherapy measures with the functional capabilities and needs of the patient/client.

PC 10	Ability to carry out operational, current, and stage control of the patient's/client's condition by appropriate means and methods and to document the obtained results.
PC 11	Ability to adapt their current practice to changing conditions.
PC 12	Ability to provide pre-medical care during emergencies.
PC 13	Ability to teach the patient/caregivers self-care / care, prevention of diseases, injuries, complications, and disabilities, a healthy lifestyle.
PC 14	Ability to find ways of continuous improvement the quality of physical therapy and ergotherapy services
PC 15	Ability to actively learn the professional culture and professional deontology, to adapt to professional roles and functions, to live in new socio-professional conditions
PC 16	Ability to analyze the state of the environment based on integrated criteria for assessing the state of health of the population
PC 17	Ability to use computer diagnostic systems for work with patients of different nosological groups
PC 18	The ability to use modern technical means of ergotherapy for patient care, medical and social rehabilitation of patients with cardiovascular diseases, respiratory diseases, injuries and diseases of the musculoskeletal system, neurological diseases.
PC 19	Ability to apply knowledge of higher mental functions, functional states, to predict and optimize the management of patients' behavior, in the analysis of professional suitability, psychological characteristics, and individual differences in diagnostic, preventive, rehabilitation work with patients for prevention and correction of somatic and psychosomatic disorders.
7 – Programmatic results of studies (PRS)	
PRS 1	Demonstrate a willingness to strengthen and maintain personal and public health by use of physical activity and conducting awareness-raising activities among patients/clients, their family members, health professionals, as well as the improvement of the community environment.
PRS 2	Communicate orally and in writing in Ukrainian and foreign languages in a professional environment, possess professional terminology and professional discourse, adhere to the ethics of business communication; to draw up documents, including in a foreign language (languages).
PRS 3	Use modern computer equipment; find information from various sources; analyze domestic and foreign sources of information needed to perform professional tasks and make professional decisions.
PRS 4	Apply knowledge of biological, medical, pedagogical, and psychosocial

	aspects of physical therapy and ergotherapy in professional activities.
PRS 5	Provide pre-medical care for emergencies and pathological processes in the body; choose the best methods and means of saving lives.
PRS 6	Apply methods and tools for determining and measuring structural changes and impaired body functions, activity, and participation, interpret the information obtained.
PRS 7	Interpret the information on the patient's/client's violations according to the International Classification of Functioning, Disability, and Health, (ICF) and the International Classification of Functioning, Disability, and Health for Children and Youth (ICF-CY).
PRS 8	Act following legal requirements and norms of professional ethics.
PRS 9	Implement individual programs of physical therapy, ergotherapy
PRS 10	Take physical therapy measures to eliminate or compensate for movement disorders and activity.
PRS 11	Implement occupational therapy measures to eliminate or compensate for functional and associated limitations of activity and participation in activities.
PRS 12	Apply modern scientific evidence in professional activities.
PRS 13	Choose the best forms, methods, and techniques that would ensure respect for the patient/client, his safety/protection, comfort, and privacy.
PRS 14	Safely and effectively use the equipment for rehabilitation activities, control of the main vital signs of the patient, rehabilitation aids for movement and self-care.
PRS 15	Communicate verbally and non-verbally with individuals and groups of interlocutors, different in age, level of education, social and professional affiliation, psychological and cognitive qualities, etc., in a multidisciplinary team.
PRS 16	Conduct instruction and training for clients, their family members, colleagues, and small groups.
PRS 17	Evaluate the results of physical therapy and ergotherapy programs, using appropriate tools, and, if necessary, modify current activities.
PRS 18	Assess yourself critically, learn new professional information, deepen knowledge through self-education, evaluate and present your own experience, analyze and apply the experience of colleagues.
PRS 19	Use modern electronic, computerized, robotic technical means necessary for professional tasks and decision-making within its competence and implement individual programs of physical therapy, ergotherapy with the use of modern technical and orthopedic means of physical therapy,

	ergotherapy.
PRS 20	Safely use the equipment for rehabilitation activities, control of the main vital signs of the patient, auxiliary technical means of physical therapy for movement and self-care.
PRS 21	Awareness of the social significance of the profession, positive motivation in performing professional activities, and a certain level of responsibility for their lives and professional activities.
PRS 22	Choose methods of communication with patients for the prevention and correction of somatic and psychosomatic disorders in modern working and living conditions, taking into account psychological characteristics and individual differences in diagnostic, preventive, rehabilitation work with patients
PRS 23	Analyze the state of the environment and the impact of its factors on the health of different groups of the people
8 – Resource support for program implementation	
Staffing	Research and teaching staff who carry out the educational process to implement the program meet the Licensing Conditions for Educational Activities in the Higher Education, approved by the Resolution of the Cabinet of Ministers of Ukraine dated 30 December 2015 No 1187 (current) in force as of 23 May 2018 No 347.
Logistics	The area of classrooms for the educational process to implement the program, provision of computer workplace and multimedia equipment, social infrastructure meet the requirements for logistics of educational activities of the relevant level of higher education, approved by the Resolution of the Cabinet of Ministers of Ukraine dated 30 December 2015 No 1187 (current) in force as of 23 May 2018 No 347. The variant of remote information receiving and interaction with teachers is also envisaged. Logistics meets the license terms.
Information, educational and methodological support	Following the technological requirements for educational-methodological and informational support of educational activities of the relevant level of higher education, approved by the Resolution of the Cabinet of Ministers of Ukraine dated 30 December 2015 No 1187 (current) force as of 23 May 2018 No 347. Scientific works in the field of physical therapy, ergotherapy,

	<p>materials of specialized portals, webinars, presentations, and papers from professional publications are used for teaching.</p> <p>The University provides degree-seeking students with access to information resources and electronic repository of the G.I. Denysenko Scientific and Technical Library of the Igor Sikorsky KPI for the organization of scientific research, ensures free access to the web-based ORCID scientist's toolkit, Scopus, Web of Science, etc., author's developments of scientific and pedagogical staff of the university.</p> <p>Educational and methodological support: educational and scientific program, curricula, work programs in academic disciplines, syllabuses.</p>
9 – Academic mobility	
National credit mobility	Possibility to conclude agreements on academic mobility
International credit mobility	<p>Agreements on international academic mobility (Erasmus+K1) have been concluded with universities:</p> <ol style="list-style-type: none"> 1. ZKBC Biomedical Technology Co., Ltd (China) 2. Poznan University of Technology (Poland)
Training of foreign degree-seeking students	Opportunity to study in a foreign language.

2. LIST OF COMPONENTS OF THE EDUCATIONAL PROGRAM

Code	Components of the educational program (academic disciplines, course projects/works, practices)	Number of credits, ECTS	Form of final control
NORMATIVE educational components			
A cycle of general training			
GO 1	Principles of oral professional speech (rhetoric)	2	Test
GO 2	History of Ukrainian Culture	2	Test
GO 3	Basics of a Healthy Lifestyle	3	Test
GO 4	Foreign Language	6	Test

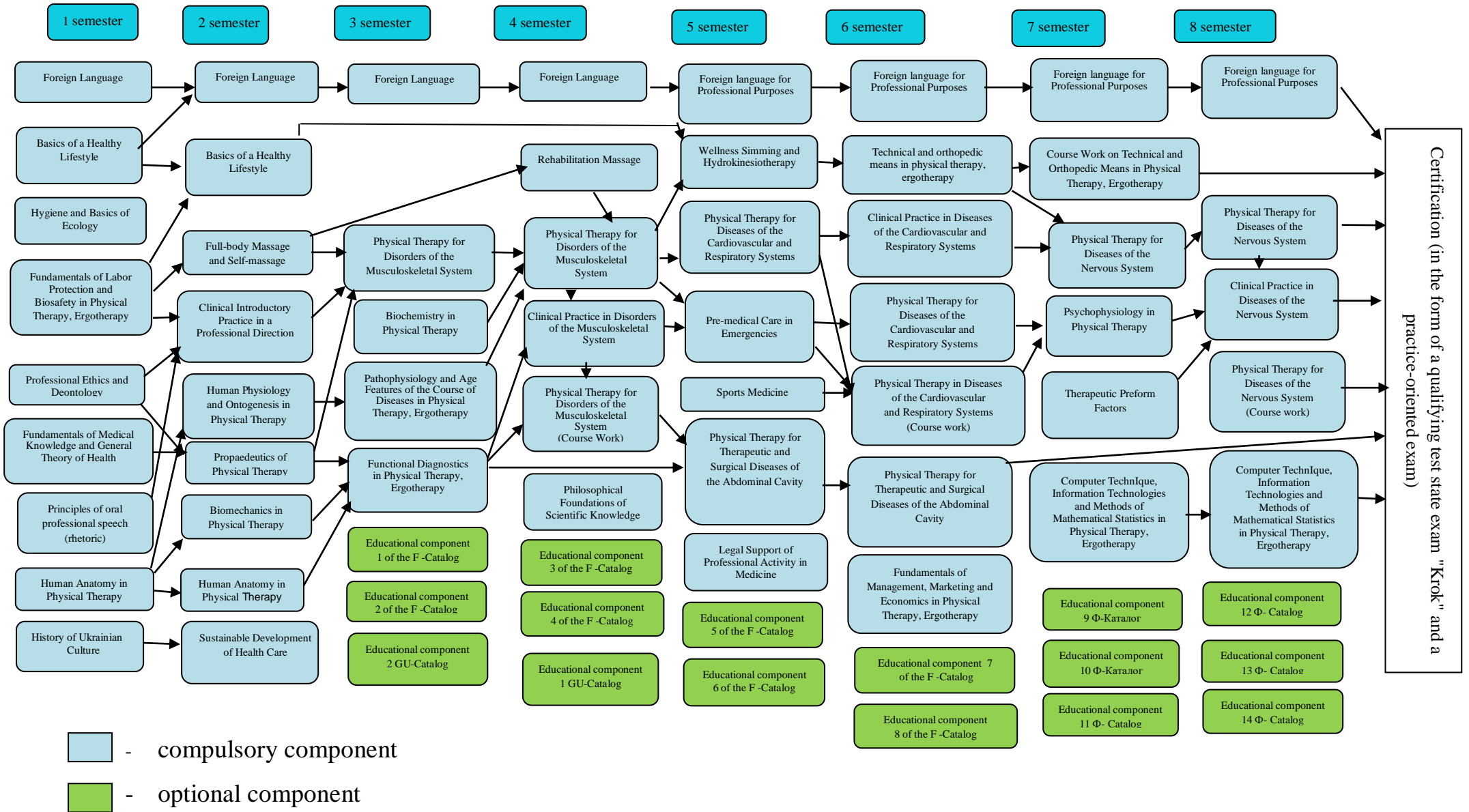
GO 5	Fundamentals of Management, Marketing, and Economics in Physical Therapy, Ergotherapy	3	Test
GO 6	Fundamentals of Labor Protection and Biosafety in Physical Therapy, Ergotherapy	4	Test
GO 7	Philosophical Foundations of Scientific Knowledge	2	Test
GO 8	Hygiene and Basics of Ecology	4	Test
GO 9	Legal Support of Professional Activity in Medicine	2	Test
GO 10	Foreign Language for Professional Purposes	6	Exam
GO 11	Sustainable Development of Health Care	2	Test
GO 12	Computer Technique, Information Technologies and Methods of Mathematical Statistics in Physical Therapy, Ergotherapy	6.5	Exam
A cycle of professional training			
PO 1	Biomechanics in Physical Therapy	3	Test
PO 2	Propaedeutics of Physical Therapy	6	Exam
PO 3	Full-body Massage and Self-massage	3	Test
PO 4	Rehabilitation Massage	4.5	Exam
PO 5	Physical Therapy for Therapeutic and Surgical Diseases of the Abdominal Cavity	7	Exam
PO 6	Physical Therapy for Disorders of the Musculoskeletal System	9	Exam
PO 7	Course Work on Physical Therapy for Disorders of the Musculoskeletal System	1	Test
PO 8	Physical Therapy for Diseases of the Nervous System	8.5	Exam

PO 9	Course Work on Physical Therapy for Diseases of the Nervous System	1	Test
PO 10	Physical Therapy for Diseases of the Cardiovascular and Respiratory Systems	8	Exam
PO 11	Course Work on Physical Therapy in Diseases of the Cardiovascular and Respiratory Systems	1	Test
PO 12	Technical and Orthopedic Means in Physical Therapy, Ergotherapy	4	Exam
PO 13	Course Work on Technical and Orthopedic Means in Physical Therapy, Ergotherapy	1	Test
PO 14	Functional Diagnostics in Physical Therapy, Ergotherapy	5	Exam
PO 15	Sports Medicine	3.5	Test
PO 16	Therapeutic Preform Factors	4.5	Exam
PO 17	Pre-medical Care in Emergencies	3.5	Exam
PO 18	Pathophysiology and Age Features of the Course of Diseases in Physical Therapy, Ergotherapy	4	Exam
PO 19	Wellness Swimming and Hydrokinesiotherapy	3	Test
PO 20	Human Anatomy in Physical Therapy	10	Exam
PO 21	Human Physiology and Ontogenesis in Physical Therapy	5	Exam
PO 22	Biochemistry in Physical Therapy	4	Test
PO 23	Fundamentals of Medical Knowledge and General Theory of Health	5	Exam
PO 24	Psychophysiology in Physical Therapy	4	Exam
PO 25	Professional Ethics and Deontology	5	Exam
PO 26	Clinical Introductory Practice in a Professional Direction	3	Test
PO 27	1. Clinical Practice in Disorders of the Musculoskeletal System	7,5	Test

PO 28	2. Clinical Practice in Diseases of the Cardiovascular and Respiratory Systems	6	Test
PO 29	3. Clinical Practice in Diseases of the Nervous System	7,5	Test
OPTIONAL EDUCATIONAL components			
A cycle of general training			
GV 1	Educational component 1 GU-Catalog	2	Test
GV 2	Educational component 2 GU-Catalog	2	Test
A cycle of professional training			
PC 1	Educational component 1 of the F - Catalog	4	Test
PC 2	Educational component 2 of the F - Catalog	4	Test
PC 3	Educational component 3 of the F - Catalog	4	Test
PC 4	Educational component 4 of the F - Catalog	4	Test
PC 5	Educational component 5 of the F- Catalog	4	Test
PC 6	Educational component 6 of the F - Catalog	4	Test
PC 7	Educational component 7 of the F - Catalog	4	Test
PC 8	Educational component 8 of the F - Catalog	4	Test
PC 9	Educational component 9 of the F - Catalog	4	Test
PC 10	Educational component 10 of the F - Catalog	4	Test
PC 11	Educational component 11 of the F - Catalog	4	Test
PC 12	Educational component 12 of the F - Catalog	4	Test
PC 13	Educational component 13 of the F - Catalog	4	Test
PC 14	Educational component 14 of the F - Catalog	4	Test

Total compulsory components:	180
Total optional components:	60
The number of educational components that ensure the acquisition of competencies specified by SVO	180
TOTAL AMOUNT OF THE EDUCATIONAL PROGRAM	240

3. STRUCTURAL-LOGICAL SCHEME OF THE EDUCATIONAL PROGRAM



4. ФОРМА АТЕСТАЦІЇ ЗДОБУВАЧІВ ВИЩОЇ ОСВІТИ

Certification of the degree-seeking students of the first level of higher education in specialty 227 "Physical Therapy, Ergotherapy" is carried out in the form of a qualifying test state exam "Krok" and a practice-oriented exam. The attestation is completed by issuing a diploma of the standard form on awarding him a bachelor's degree with the qualification: "Bachelor of Physical Therapy, Ergotherapy".

The qualifying test state exam "Step" assesses the compliance of professional competence of the student with the requirements defined by this standard, is carried out by the Testing Center at the Ministry of Health of Ukraine following the Regulations on the System of Licensed Integrated Exams.

The practice-oriented exam assesses the student's competence for the requirements defined by the standard and this educational program and is conducted by the examination commission of the higher education institution.

Certification is carried out openly and publicly.

5. MATRIX OF PROGRAM COMPETENCIES COMPLIANCE TO THE COMPONENTS OF THE EDUCATIONAL PROGRAM

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