MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE RIVNE STATE UNIVERSITY OF THE HUMANITIES

EDUCATIONAL-PROFESSIONAL PROGRAM «SECONDARY EDUCATION (NATURAL SCIENCES)»

second (master) level of higher education specialty 014 «Secondary Education (Natural Sciences)» field of knowledge 01 «Education/Pedagogics» Qualification: Master in Secondary Education. Teacher of Natural Science, Physics, Chemistry, Biology

> APPROVED BY THE ACADEMIC BOARD OF RSUH

> > Head of the Academic board of RSUH

Prof. R. M. Postolovskyi

(minutes № 2 dated February 27, 2020)

Educational programme

shall take effect of September 1, 2020

Rector Prof. R. M. Postolovskyi (order № 40-01-01 dated February 27, 2020)

LETTER OF APPROVAL

of the educational-professional program «Secondary Education (Natural Sciences)»

Level of higher education	second
Degree of higher education	Master
Field of knowledge	01 Education / Pedagogics
Specialty	014 Secondary Education (Natural Sciences)
Qualification	Master in Secondary Education.
	Teacher of Natural Science, Physics,
	Chemistry, Biology

SUGGESTED BY:

Programme developer:

- 1. Siaska I.O., PhD in Pedagogics, Ass. Prof., Guarantor of the EPP
- 2. Voitovych O.P., PhD in Pedagogics, Ass. Prof.
- 3. Maksymtsev Yu.R., PhD in Physical and Mathematical Sciences, Ass. Prof.
- 4. Hrytsai N.B., Doctor in Pedagogics, Professor

Department of Biology and Human Health Minutes № 2 dated February 5, 2020

Head of the Department Prof. Martsynovskii V.P.

APPROVED BY

Educational-methodological commission of the Natural Sciences and Psychology faculty

Minutes № 1 dated February 11, 2020

Head of the EMC of the faculty Ass. Prof. Siaska I.O.

Dean of the faculty Prof. Pavelkiv V.R.

Head of the EMB of the university Prof. Voitovych I.S.

PREFACE

Educational-professional program is a normative document that regulates regulatory, competence, qualification, organizational, educational and methodological requirements in the preparation of higher education degree «Master» in the field of knowledge 01 Education / Pedagogics in the specialty 014 Secondary Education (Natural Sciences).

The educational-professional program is based on the competence, student-oriented and problem-oriented approach of preparation of higher education degree «Master» in the field of knowledge 01 Education / Pedagogics in the specialty 014 Secondary Education (Natural Sciences).

The educational-professional program is developed before implementation of the Standard of higher education of Ukraine in accordance to the level of higher education by the project group of the Rivne State University of the Humanities:

The head of the project group (guarantor of the educational program)
Siaska Inna Oleksiivna, PhD in Pedagogics, Associate Professor of the
Department of Biology and Human Health, Rivne State University of the Humanities.

Members of the project group:

Voitovych Oksana Petrivna, Doctor in Pedagogics, Professor of the Department of ecology, geography and tourism, Rivne State University of the Humanities.

Hrytsai Nataliia Bohdanivna, Doctor in Pedagogics, Professor, Head of the Department of Natural Sciences with Methodology of their teaching, Rivne State University of the Humanities.

Maksymtsev Yurii Romanovych, PhD in Physical and Mathematical Sciences, Associate Professor of the Department of Physics, Astronomy and Methodology of their teaching, Rivne State University of the Humanities.

Stakeholders:

Hutsman Sergii Volodymyrovych, PhD in Biology, Head of the Department of natural and mathematical education, Rivne In-Service Teacher Training Institute.

Danyliuk Roman Eduardovych, Physics and Chemistry teacher of the highest category, Deputy Director for Educational and Pedagogical Work, Rivne Natural Sciences and Mathematics Lyceum RCC «Elitar».

Kukharchuk Tetiana Andriivna, PhD in Pedagogics, Chemistry teacher of the highest category, teacher counsellor, Head of Rivne Ukrainian Gymnasium.

Zinchuk Ivan Anatoliiovych, Head of Siiantsi educational complex «Secondary school of I-III levels – Kindergarten».

The program shall not be totally or partially duplicated, replicated and disseminated without permission of Rivne State University of the Humanities.

	of the educational-professional program 4 Secondary Education (Natural Sciences)
The state of the s	1 – General information
Full name of the higher	Rivne State University of the Humanities, Natural
educational institution and structural subdivision	Sciences and Psychology Faculty, Department of Biology
Higher education degree and	and Human Health Master.
title of qualification in the	Master in Secondary Education.
original language	Teacher of Natural Science, Physics, Chemistry, Biology.
The official name of the educational program	«Secondary education (Natural Sciences)»
Type of diploma and scope	Master's degree. Unitary.
of educational program	90 ECTS credits / Term of study 1 yar 4 months
Availability of accreditation	-
Cycle/level	National qualifications of Ukraine – Level 8, FQ-EHEA – second cycle, EQF-LLL – Level 7.
Prerequisites	Bachelor's, Specialist's, Master's degree
Language(s) of instruction	State (Ukrainian) language
Validity of the educational- professional program	For the period of study
Internet address of the	http://www.rshu.edu.ua/navchannia/osvitni-
permanent placement of the description of the	prohramy/mahistr
educational program	

2 – The purpose of the educational program

Training of highly qualified and competitive specialists in the field of secondary education, aimed to form general and special competencies to solve complex problems and research and innovation tasks, and independent performance of professional tasks and responsibilities of a teacher of natural science, physics, chemistry, biology.

	or or natural sorones, physics, enomisary, erorogy.
3 – Chara	ecteristics of the educational program
Subject area (field of	Field of knowledge 01 Education / Pedagogics.
knowledge, specialty,	Specialty 014 Secondary education (Natural Sciences).
specialization (if available)	Object of study is a complex of psychological,
	pedagogical and natural sciences, aimed to teach and
	prepare teachers of an integrated subject «Natural
	Sciences» and Physics, Chemistry and Biology at
	secondary school.
	Learning objectives – complex preparation of Masters in
	Education able to perform educational process and apply
	developed competences in professional activity to solve
	complex problems and practical tasks considering
	modern trends in the development of natural sciences.
	Theoretical content of the subject area covers modern

	theoretical principles of natural sciences, pedagogical concepts, principles and methods aimed at competency-based teaching Physics, Chemistry and Biology and Natural Sciences at secondary school. Methods, techniques and technologies: combination of scientific (theoretical and empirical) research methods and techniques and technologies of teaching natural sciences. Tools and equipment: equipment necessary for formation of professional competencies, computer, multimedia, technical and didactic teaching tools, methodological support, use of databases of other institutions for practical (pedagogical) training.
Type of the educational program	Educational-professional programme for second (Master) level of higher education aimed at preparation of students to perform professional duties of a teacher of Natural Sciences, Physics, Chemistry, Biology at secondary school
The main focus of the educational program and specialization	General education in the field of knowledge 01 Education / Pedagogics in the specialty 014 Secondary education (Natural Sciences) aimed at integrated training of a teacher capable of pedagogical, innovative and research activities in the field of natural sciences education. <i>Key words</i> : educational process, Master, secondary education, teacher of Natural Sciences, Physics, Chemistry, Biology, Methodology of teaching Natural Sciences, Methodology of scientific and pedagogical research.
Features of the program	The educational-professional program is performed in the a professionally-oriented educational environment and provides interdisciplinary training of teachers of natural sciences, whose multidisciplinary qualification is especially in demand in rural secondary schools. The program offers a comprehensive approach to professional activities in general secondary education. Particular attention is paid to the integrated study on a parity basis of theoretical principles and methods of teaching biology, physics, chemistry, natural sciences in the process of forming professional competence of students in higher education, possession of modern pedagogical technologies to solve experimental and practical problems, practical and research training, provides for the implementation of interdisciplinary links and taking into account the latest advances in natural education and science.

4. Suitability of g	graduates for employment and further study
Suitability for employment	Graduates can hold the following positions (according to
	the National Classification of Occupations DK
	003:2010): 2320 Secondary school teacher.
Further study	Opportunity to continue education at the third
-	(educational and scientific) level of higher education.
	Acquisition of additional qualifications in the system of
	adult higher education.
5	5 – Teaching and assessment
	Teaching and learning are based on the competence-,
	activity-, and student-centred and problem-oriented
	learning approaches with elements of self-study. A set of
	traditional and innovative teaching methods and
Taashing and learning	technologies is used. Teaching is organized though
Teaching and learning	various organizational forms of learning (collective,
	group, integrative); traditional and multimedia lectures,
	practical and laboratory classes; independent and
	individual work; practical training; preparation of
	qualification paper.
	Current, modular, and final control. Tests, oral and
	written semester exams, practice reports. Certification in
Assessment	the form of defence of a qualification paper.
	Assessment is consistent, transparent and conducted in
	accordance with established procedures.
	6 – Program competencies
	Ability to solve complex tasks and problems in the field
	of secondary education or in the frames of the
	educational process involving the latest achievements of
Integral competence	natural education and science. It means conducting
	research, integration of knowledge and implementation
	of innovations and is characterized by uncertainty of
	conditions and requirements.
General competencies	1. Ability to abstract thinking, analysis and synthesis and
(GC)	generation of new ideas.
	2. Ability to act socially responsible and consciously on
	the basis of sustainable development of society and
	respect for human rights and freedoms.
	3. Knowledge and understanding of the subject area and
	understanding of professional activity.
	4. Ability to perform researches on an appropriate level.
	5. Ability to search for, processing and critical analysis
	of information from various sources.
	6. Ability to highlight, put forward and solve problems,
	apply knowledge in practice.

- 7. Ability to be responsible in performing tasks and duties, to motivate people to achieve a common goal.
- 8. Ability to use information and communication technologies.
- 9. Proficiency in the state language and at least one of the foreign languages within the professional sphere, including in the international context.
- 10. Ability to work autonomously and in team, to interact interpersonally regardless of origin and cultural features, to show respect for diversity.

Special (professional, subject) competencies (SPC)

- 1. Ability to form pupils' general and subject competencies and to implement interdisciplinary links.
- 2. Ability to set and analyse causal and hierarchical relationships in the structure and functioning of natural systems of different levels of organization and to model the dynamics of their development.
- 3. Ability to analyse natural phenomena and processes in terms of modern concepts of natural science development to form integrated knowledge about nature.
- 4. Ability to use knowledge, skills and abilities in the field of fundamental sections of biology, physics and chemistry for experimental study of natural phenomena and processes, ability to find, collect and summarize factual material, to formulate sound conclusions.
- 5. Ability to form motivation to health-prserving and environmentally friendly activity aimed to safety and healthy living.
- 6. Ability to use biological, physical and chemical terminology in professional activity properly, present natural concepts, principles and theories by oral, written and visual means.
- 7. Ability to set goals, plan and design the process of educating students taking into account their individual characteristics and special educational needs.
- 8. Ability to apply modern methods and innovative technologies, including informational, in professional activities to ensure the quality of the educational process in the course of Natural Sciences, Biology, Physics and Chemistry in secondary school.
- 9. Ability to select and compose creative tasks, to organize safe educational and research activities of students in laboratory and natural conditions.
- 10. Ability to apply modern methods of diagnosing students' achievements, to provide pedagogical support of socialization and professional self-determination of

students preparing them for a conscious choice of life path.

- 11. Ability to create a psychological microclimate in a students' group, which contributes to the education and upbringing of students, regardless of their socio-cultural and economic characteristics.
- 12. Ability to use results of scientific researches in practice.
- 13. Ability to understand the essence of the relationship between natural environment and man, the strategy of sustainable development, and the application of modern environmental technologies.
- 14. Ability to critically analyse, diagnose and correct one's own pedagogical activity, evaluate pedagogical experience to improve pedagogical skills.

7 – Program learning outcomes

- 1. To use specialized conceptual knowledge in Psychology and Pedagogics to develop general culture and socialization of a personality.
- 2. To solve to solve personally and professionally significant problems in accordance with generally accepted moral and ethical norms and on the basis of a harmonious combination of knowledge of natural sciences, methods of their teaching and culture of pedagogical communication.
- 3. To select and apply valid and reliable research tools for safe conduction of physical, chemical, and biological experiments and critically evaluate the results obtained.
- 4. To apply interdisciplinary links between the basic sciences to update and integrate knowledge in the formation of a holistic picture of the world.
- 5. To form a health-preserving educational concept in the process of studying Natural Sciences as an important component of a modern teacher professional activity.
- 6. To apply gained knowledge in the subject area, modern methods and educational, information and communication technologies for formation of students' general and subject competencies.
- 7. To effectively use modern methods of scientific cognition, digital tools and information technology to carry out research in the field of natural sciences to solve scientific and educational problems of professional activity.
- 8. To analyse and explain the patterns of functioning of natural systems using modern achievements in natural

	sciences for nature protection, sustainable use, and
	reproduction.
	9. To use modern terminology, scientific ideas, concepts
	and fundamental theories of Natural Sciences, Biology,
	Physics and Chemistry.
	10. To design and carry out educational activities in
	Natural Sciences, Biology, Physics, Chemistry to
	implement and diagnose students' educational
	achievements taking into account their individual and age
	characteristics.
	11. On the basis of reflection and analysis of the
	advanced pedagogical experience, to introduce
	innovations in the professional activity and to provide
	continuing professional development.
	12. To use modern achievements in natural sciences in
	practice during lessons and extracurricular activities. 13. To summarize research results and publish them in
	scientific journals, present at conferences on the basis of
	professional integrity and academic integrity.
	14. To communicate fluently in the state and foreign
	languages orally and in writing to discuss the results of
	professional activities, research and projects.
	15. To provide continuing professional development.
	16. To follow the rules of safe behaviour towards
	his/herself, other people and the environment.
	17. To effectively interact as a part of a team, in a
	multidisciplinary and multicultural environment
	following modern principles of tolerance, dialogue and
	cooperation.
	18. To understand the nature of the relationship between
	natural environment, man and society and explain the
	strategy of sustainable development and the principles of
	balanced use of nature.
8 – Resourc	e support for program implementation
	Research and teaching staff that provide educational
Staff	process have relevant education, experience of scientific
Stall	and pedagogical work and the level of scientific and
	professional activity that meets state requirements.
	Material and equipment support meets the state
Material and equipment	requirements for the provision of educational services in
support	the field of higher education and is sufficient to ensure
	the quality of the educational process.
Information and	Use of modern software and information educational
educational and	environment, the scientific library of Rivne State
methodological support	University of the Humanities and authors' developments
<u> </u>	, in the second

	of scientific and pedagogical workers of professional
	departments.
	9 – Academic mobility
National credit mobility	Based on bilateral agreements between Rivne State University of the Humanities and other institutions of higher education in Ukraine. (Regulations on the procedure for exercising the right to academic mobility of RSUH: https://www.rshu.edu.ua/images/navch/pol_akadem_mob_2019.pdf).
International credit mobility	Based on «Regulations on the procedure for exercising the right to academic mobility of RSUH» (https://www.rshu.edu.ua/images/navch/pol_akadem_mob_2019.pdf) and bilateral agreements between Rivne State University of the Humanities and foreign educational institutions.
Training of foreign applicants for higher education	Possible.

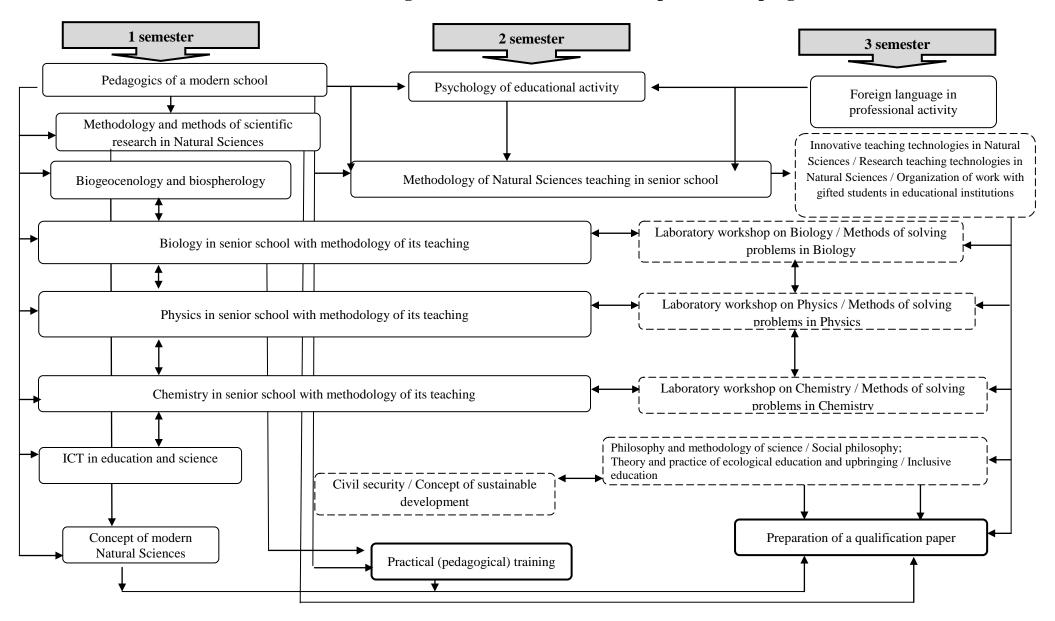
2. List of the components of the educational-professional program and their logical sequence

2.1. List of the components of the educational-professional program

Code	Components of the educational program (academic disciplines, course projects (papers), practices, qualification paper)	Number of credits	Form of final control
	Mandatory components of the program		
MC 01	Foreign language in professional activity	3	Exam
MC 02	Methodology and methods of scientific research in Natural Sciences	3	Credit
MC 03	ICT in education and science	3	Credit
MC 04	Pedagogics of a new school	3	Exam
MC 05	Psychology of educational activity	3	Credit
MC 06	Biology in senior school with methodology of its teaching	8	Exam
MC 07	Physics in senior school with methodology of its teaching	8	Exam
MC 08	Chemistry in senior school with methodology of its teaching	8	Exam
MC 09	Methodology of Natural Sciences teaching in senior school	3	Exam
MC 10	Biogeocenology and biospherology	3	Credit
MC 11	Concept of modern Natural Sciences	3	Credit
MC 12	Practical (pedagogical) training	12	Credit
MC 13	Preparation of qualification paper	6	Defence
Total am	nount of mandatory components	66	
	Selective components of the program		
	Philosophy and methodology of science / Social philosophy / Choice	3	Credit
	Civil security / Concept of sustainable development / Choice	3	Credit
SC 07 / SC 08 / SC 09	Theory and practice of ecological education and upbringing / Inclusive education / Choice	3	Credit
SC 10 / SC 11 / SC 12	Laboratory workshop on Biology / Methods of solving problems in Biology / Choice	4	Credit
SC 13 / SC 14	Laboratory workshop on Physics / Methods of solving problems in Physics / Choice	4	Credit

Total amount of the edu	cational program	90	
Total amount of selective	1	24	
SC 20 / Research teac	hing technologies in Natural Sciences ning technologies in Natural Sciences of work with gifted students in citutions	3	Exam
-	kshop on Chemistry / Methods of as in Chemistry / Choice	4	Credit

2.2. Structural and logical scheme of the educational-professional program



3. Forms of certification of applicants for higher education

Certification of graduates of the educational-professional program "Secondary Education (Natural Sciences)" in the specialty 014 Secondary Education (Natural Sciences) is carried out in the form of public defence (demonstration) of the qualification paper and ends with the issuance of a standard document on the award of a Master's degree to a graduate with the qualification "Master of Secondary Education. Teacher of Natural Sciences, Physics, Chemistry, Biology".

The certification of the Master degree is held by the examination commission in order to establish the actual compliance of the level of training with the requirements of the educational program. The examination commission may include representatives of employers and their associations in accordance with the regulations on the examination commission approved by the Academic Council of Rivne State University of the Humanities. The Chairperson of the examination commission is approved by qualified scientific and pedagogical staff in the relevant field of knowledge. The commission consists of teachers of the graduating department, representatives of employers, leading specialists in the field of education. The staff of the examination commission is approved by the rector no later than one month before its work start.

Certification is carried out openly and publicly. The work of the commission is carried out according to the curricula. The work schedule of the commission is approved by the rector.

Qualification paper is a scientific work performed by the undergraduate independently on the basis of theoretical knowledge and practical skills acquired during the entire period of study and research work. It means solving innovative theoretical and practical tasks determined by the specifics of the specialty.

Qualification thesis is a scientific and practical paper that contains scientifically sound theoretical and experimental results, conclusions and recommendations and testifies to the student's ability to independently conduct research.

The list of topics of qualification papers is determined by the graduating department at the beginning of the academic year. The subject of qualification works must be related to the generalized object of activity of the specialist of the corresponding educational level. The list of topics is approved by the order of the rector. Students can offer their own topic of the qualification paper. The qualification paper tasks must reflect all professional functions, problems and objectives. The students must be informed about the set tasks on time.

The heads of qualification works can be professors, associate professors of the graduating department, as well as leading specialists in the field of education. Qualifications papers must be tested for plagiarism and published either on the university or graduation department website, or in the university electronic repository.

4. Matrix of compliance of program competencies with mandatory components of the educational-professional programme

																																_		
	MC01	MC02	MC 03	MC 04	MC05	MC 06	MC 07	MC 08	MC 09	MC 10	MC 11	MC 12	MC 13	SC 01	SC02	SC 03	SC 04	SC 05	90 OS	SC 07	SC 08	8C 09	SC 10	SC 11	SC 12	SC 13	SC 14	SC 15	SC 16	SC 17	SC 18	SC 19	SC 20	SC 21
GC 01		•											•	•																			•	
GC 02				•	•							•			•		•	•			•													
GC 03				•	•	•	•	•	•		•	•	•							•	•											•		
GC 04		•										•	•	•																			•	
GC 05		•	•										•	•																				
GC 06						•	•	•	•			•								•			•	•		•	•		•	•				•
GC 07				•	•							•					•	•																
GC 08	•		•									•	•																			•		
GC 09	•		•										•																					
GC 10				•	•	•	•	•	•			•	•		•						•													
SPC 01				•	•	•	•	•	•			•								•												•		•
SPC 02		•								•	•																							
SPC 03						•	•	•	•	•	•							•															•	
SPC 04						•	•	•	•				•										٠			•			•				•	
SPC 05						•	•	•	•			•					•			•	•													
SPC 06						•	•	•	•		•	•	•										•			•			•					
SPC 07				•	•	•	•	•	•			•									•													•
SPC 08			•	•		•	•	•	•			•												•			•			•		•	•	•
SPC 09						•	•	•	•			•											•	•		•	•		•	•			•	•
SPC 10				•	•	•	•	•	•			•									•													
SPC 11				•	•							•			•						•													
SPC 12		•										•	•	•									•			•			•				•	
SPC 13						•	•	•	•	•	•							•		•														
SPC 14				•	•	•	•	•	•			•																				•		•

$\begin{tabular}{ll} \bullet & gaining competence; \\ MC_i-mandatory components \\ \end{tabular}$

SC_i – selective components

GC_i- general competencies

SpC_i- special competencies

5. Matrix of compliance of program competencies with selective components of the educational-professional programme

	MC01	MC 02	MC 03	MC 04	MC05	MC 06	MC 07	MC 08	MC 09	MC 10	MC 11	MC 12	MC 13	SC 01	SC 02	SC 03	SC 04	SC 05	90 DS	SC 07	SC 08	SC 09	SC 10	SC 11	SC 12	SC 13	SC 14	SC 15	SC 16	SC 17	SC 18	SC 19	SC 20	SC 21
PO01				•	•							•			•						•													
PO02				•	•	•	•	•	•			•									•											•		
PO03						•	•	•	•			•	•										•			•			•				•	
PO04		•				•	•	•	•	•	•		•					•																
PO05						•	•	•	•			•									•													
PO06			•			•	•	•	•			•	•							•				•			•			•		•	•	•
PO07		•	•										•	•									•			•			•				•	
PO08						•	•	•		•	•		•					•		•														
PO09						•	•	•		•	•		•																					
PO10						•	•	•	•			•									•											•		
PO11				•	•	•	•	•	•			•	•																			•		•
PO12				•		•	•	•	•		•	•								•				•			•			•		•	•	•
PO13	•	•											•	•																			•	
PO14	•										•																							
PO15		•		•	•	•	•	•	•		•		•	•																				•
PO16				•	•							•			•		•	•		•														
PO17				•	•	•	•	•	•			•			•						•													
PO18						•	•	•		•	•						•	•		•														

• programme outcomes;

MC_i – mandatory components

SC_i – selective components

PO_i program learning outcomes;

6. Internal assurance system of higher education quality

Rivne State University of the Humanities has a system of providing by the higher education institution the quality of educational activities and the quality of higher education (internal quality assurance system), which provides for the implementation of such procedures and measures.:

- 1) defining the principles and procedures for ensuring the quality of higher education;
 - 2) monitoring and periodic review of educational programs;
- 3) annual evaluation of applicants for higher education, research and teaching staff of the institution of higher education and regular publication of the results of such evaluations on the official website of the institution of higher education, on information stands and in any other ways;
- 4) providing advanced training of pedagogical, scientific and scientific-pedagogical workers;
- 5) ensuring the availability of the necessary resources for the organization of the educational process, including the independent work of higher education students in each educational program;
- 6) ensuring the availability of information systems for effective management of the educational process;
- 7) ensuring publicity of information about educational programs, higher education degrees and qualifications;
- 8) ensuring an effective system for the prevention and detection of academic plagiarism in the scientific works of employees of higher education institutions and applicants for higher education;
 - 9) other procedures and measures.

The system of providing by the higher education institution the quality of educational activities and the quality of higher education (internal quality assurance system) may be evaluated according to the request of Rivne State University of the Humanities by the National Agency for Quality Assurance in Higher Education or independent institutions accredited by it for evaluation and quality assurance of higher education for its compliance with the requirements for the quality assurance system of higher education approved by the National Agency for Quality Assurance in Higher Education, and international standards and recommendations for quality assurance in higher education.

Guarantor of the educational-professional program

Ass. Prof. I. O. Siaska