

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

RIVNE STATE UNIVERSITY OF THE HUMANITIES

EDUCATIONAL-PROFESSIONAL PROGRAM

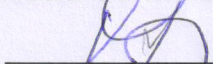
«SECONDARY EDUCATION (NATURAL SCIENCES)»

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 № 5 dated May 27, 2021)

Educational professional programme
shall take effect on September 1, 2021

Acting Rector  Prof. R. V. Pavelkiv

(order № 96-01-01 dated June 9, 2021)

Rivne, 2021

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 of Natural Sciences with teaching methods

Minutes № 10 dated May 21, 2021

Head of the Department Prof. Hrytsai N.B.

APPROVED BY

Educational-methodological commission of the Natural Sciences and Psychology faculty

Minutes № 3 dated May 24, 2021

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:

Shagieva Raisa Radysivna, Methodist of the Cabinet of Natural Subjects of Rivne Regional Institute of Postgraduate Pedagogical Education, Regional Coordinator of the All-Ukrainian Experiment on «Development and Implementation of Educational and Methodological Support for the Integrated Course «Natural Sciences» for Grades 10-11 of General Secondary Education Institutions».

Shama Serhiy Andriyovych, Physics teacher of the highest category, teacher counsellor, Head of Rivne Secondary School № 22 of Rivne City Council.

Yezerka Lyudmyla Leonidivna, Chemistry teacher of the highest category, teacher counsellor of Rivne gymnasium «Harmony».

Kyrychuk Volodymyr Vasyliovych, Biology and Chemistry teacher of the highest category, Head of Malyatyn NEC (Secondary school of I-III levels).

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

**1. Profile of the educational-professional program
in specialty 014 Secondary Education (Natural Sciences)**

1 – General information

Full name of the higher educational institution and structural subdivision	Rivne State University of the Humanities, Natural Sciences and Psychology Faculty, Department of Biology and Human Health
Higher education degree and title of qualification in the original language	Master. Master in Secondary Education. Teacher of Natural Science, Physics, Chemistry, Biology.
The official name of the educational program	«Secondary education (Natural Sciences)»
Type of diploma and scope of educational program	Master's degree. Unitary. 90 ECTS credits / Term of study 1 year 4 months
Availability of accreditation	-
Cycle/level	National qualifications of Ukraine – Level 7, 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 permanent placement of the description of the educational program	http://www.rshu.edu.ua/navchannia/osvitni-prohramy/mahistr

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.

3 – Characteristics of the educational program

Subject area (field of knowledge, specialty, specialization (if available))	Field of knowledge 01 Education / Pedagogics. Specialty 014 Secondary education (Natural Sciences). <i>Object</i> 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. <i>Learning objectives</i> – 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. <i>Theoretical content of the subject area</i> covers modern
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	<p>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.</p> <p><i>Methods, techniques and technologies:</i> combination of scientific (theoretical and empirical) research methods and techniques and technologies of teaching natural sciences.</p> <p><i>Tools and equipment:</i> 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.</p>
Type of the educational program	<p>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</p>
The main focus of the educational program and specialization	<p>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.</p> <p><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.</p>
Features of the program	<p>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.</p> <p>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.</p>

4. Suitability of 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 – Teaching and assessment	
Teaching and learning	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 technologies is used. Teaching is organized through 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.
Assessment	Current, modular, and final control. Tests, oral and written semester exams, practice reports. Certification in the form of defence of a qualification paper. Assessment is consistent, transparent and conducted in accordance with established procedures.
6 – Program competencies	
Integral competence	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 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 (GC)	<ol style="list-style-type: none"> 1. Ability to abstract thinking, analysis and synthesis and 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.

	<p>7. Ability to be responsible in performing tasks and duties, to motivate people to achieve a common goal.</p> <p>8. Ability to use information and communication technologies.</p> <p>9. Proficiency in the state language and at least one of the foreign languages within the professional sphere, including in the international context.</p> <p>10. Ability to work autonomously and in team, to interact interpersonally regardless of origin and cultural features, to show respect for diversity.</p>
<p>Special (professional, subject) competencies (SPC)</p>	<p>1. Ability to form pupils' general and subject competencies and to implement interdisciplinary links.</p> <p>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.</p> <p>3. Ability to analyse natural phenomena and processes in terms of modern concepts of natural science development to form integrated knowledge about nature.</p> <p>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.</p> <p>5. Ability to form motivation to health-preserving and environmentally friendly activity aimed to safety and healthy living.</p> <p>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.</p> <p>7. Ability to set goals, plan and design the process of educating students taking into account their individual characteristics and special educational needs.</p> <p>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.</p> <p>9. Ability to select and compose creative tasks, to organize safe educational and research activities of students in laboratory and natural conditions.</p> <p>10. Ability to apply modern methods of diagnosing students' achievements, to provide pedagogical support of socialization and professional self-determination of</p>

	<p>students preparing them for a conscious choice of life path.</p> <p>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.</p> <p>12. Ability to use results of scientific researches in practice.</p> <p>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.</p> <p>14. Ability to critically analyse, diagnose and correct one's own pedagogical activity, evaluate pedagogical experience to improve pedagogical skills.</p>
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7 – Program learning outcomes

	<ol style="list-style-type: none"> 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
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	<p>sciences for nature protection, sustainable use, and reproduction.</p> <p>9. To use modern terminology, scientific ideas, concepts and fundamental theories of Natural Sciences, Biology, Physics and Chemistry.</p> <p>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.</p> <p>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.</p> <p>12. To use modern achievements in natural sciences in practice during lessons and extracurricular activities.</p> <p>13. To summarize research results and publish them in scientific journals, present at conferences on the basis of professional integrity and academic integrity.</p> <p>14. To communicate fluently in the state and foreign languages orally and in writing to discuss the results of professional activities, research and projects.</p> <p>15. To provide continuing professional development.</p> <p>16. To follow the rules of safe behaviour towards his/herself, other people and the environment.</p> <p>17. To effectively interact as a part of a team, in a multidisciplinary and multicultural environment following modern principles of tolerance, dialogue and cooperation.</p> <p>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.</p>
8 – Resource support for program implementation	
Staff	Research and teaching staff that provide educational process have relevant education, experience of scientific and pedagogical work and the level of scientific and professional activity that meets state requirements.
Material and equipment support	Material and equipment support meets the state requirements for the provision of educational services in the field of higher education and is sufficient to ensure the quality of the educational process.
Information and educational and methodological support	Use of modern software and information educational environment, the scientific library of Rivne State University of the Humanities and authors' developments

	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.

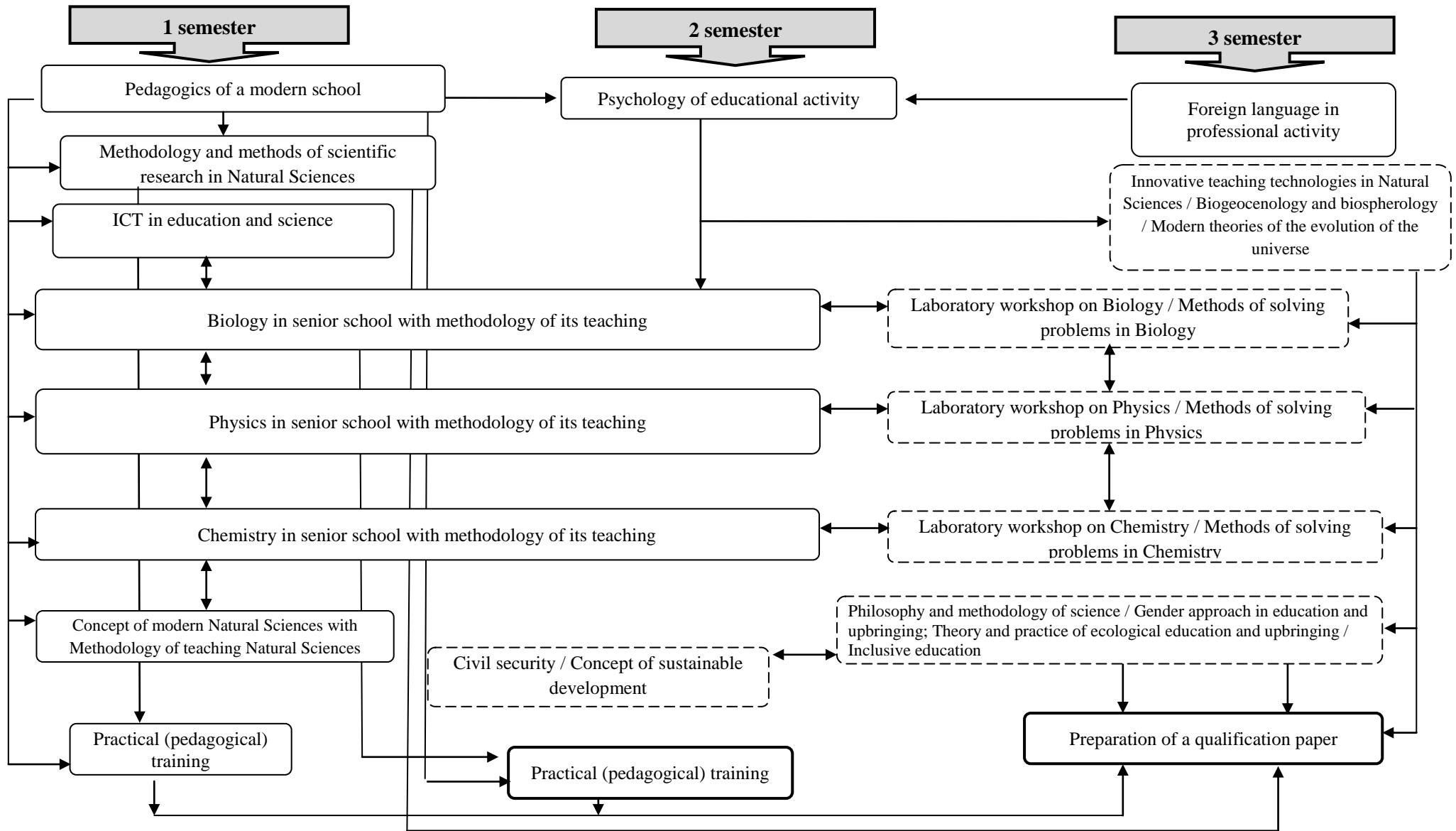
2. List of the components of the educational-professional program and their logical sequence

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	6	Exam
MC 07	Physics in senior school with methodology of its teaching	6	Exam
MC 08	Chemistry in senior school with methodology of its teaching	6	Exam
MC 9	Concept of modern Natural Sciences with Methodology of teaching Natural Sciences	3	Credit
MC 10	Practical (pedagogical) training	24	Credit
MC 11	Preparation of qualification paper	6	Defence
Total amount of mandatory components		66	
Selective components of the program			
SC 01 / SC 02 / SC 03	Philosophy and methodology of science / Gender approach in education and upbringing / Choice	3	Credit
SC 04 / SC 05 / SC 06	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 /SC 15	Laboratory workshop on Physics / Methods of solving problems in Physics / Choice	4	Credit
SC 16 /	Laboratory workshop on Chemistry / Methods of	4	Credit

SC 17 / SC 18	solving problems in Chemistry / Choice		
SC 19 / SC 20 / SC 21 / SC 22	Innovative teaching technologies in Natural Sciences / Biogeocenology and biospherology / Modern theories of the evolution of the universe / Choice	3	Exam
Total amount of selective components		24	
Total amount of the educational program		90	

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» on the basis of the Professional standard for the profession «Teacher of institution of secondary education».

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 the Academic Council of Rivne State University of the Humanities on the proposal of the Dean of the Faculty from among highly 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	MC 02	MC 03	MC 04	MC 05	MC 06	MC 07	MC 08	MC 09	MC 10	MC 11	SC 01	SC 02	SC 03	SC 04	SC 05	SC 06	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	SC 22			
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						•	•	•	•	•	•				•				•	•			•		•			•								
SPC 05						•	•	•	•	•	•								•	•																
SPC 06						•	•	•	•	•	•											•														
SPC 07				•	•	•	•	•	•	•	•		•							•																
SPC 08			•	•		•	•	•	•	•	•												•			•					•					
SPC 09						•	•	•	•	•	•											•	•		•	•										
SPC 10				•	•	•	•	•	•	•	•								•																	
SPC 11				•	•					•	•		•						•																	
SPC 12		•								•	•	•										•			•				•							
SPC 13						•	•	•	•	•	•					•																	•			
SPC 14				•	•	•	•	•	•	•	•																				•					

- gaining competence;
- MC_i – mandatory components
- 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	MC 05	MC 06	MC 07	MC 08	MC 09	MC 10	MC 11	SC 01	SC 02	SC 03	SC 04	SC 05	SC 06	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	SC 22	
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