MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

RIVNE STATE HUMANITARIAN UNIVERSITY

EDUCATIONAL AND PROFESSIONAL PROGRAM

"Secondary Education (Mathematics)"

Second (master's) **level of higher education**

in specialty 014 Secondary Education (Mathematics)

with the additional specialty 014 Secondary Education (Informatics)

of the field of knowledge 01 Education/Pedagogy

Qualification: master of secondary education, university lecturer of mathematics and informatics, High school teacher of mathematics and informatics.

APPROVED BY THE ACADEMIC COUNCIL

The head of the Academic Council

Prof. R.M Postolovskyi

(record of proceedings № 4 dated April 24, 2018)

Educational program operates from May 22, 2018

Rector Prof. R.M. Postolovskyi

(order 86-01-01 dated May 21, 2018)

Rivne 2018

LETTER OF COORDINATION
of the Educational and Professional Program

HIGHER EDUCATION LEVEL	Second (master's)
SPECIALTY	014 Secondary Education (Mathematics)
ADDITIONAL SPECIALTY	014 Secondary education (Informatics)
FIELD OF KNOWLEDGE	01 Education/Pedagogy
QUALIFICATION	Master of Secondary education, University Teacher of Mathematics and Informatics. High School Teacher of Mathematics and Informatics

Program development team:

1. N.A. Siaska, Candidate in Pedagogy, Associated Professor
2. Ya. A. Pasichnyk, Candidate in Pedagogy, Professor
3. H.M. Kyryletska, Candidate in Pedagogy, Associated Professor

INTRODUCED
By the Department of Mathematics and Methods of Teaching
Record of proceedings № 1 dated January 23, 2018
The Head of the Department Prof. O.V. Kraichuk

COORDINATED
By the Academic Council of the Faculty of Mathematics and Informatics
Record of proceedings № 2 dated February 27, 2018
The Head of the Academic Council Ass. Prof. M.I. Shakhraichuk

APPROVED
By the Academic Council of Rivne State Humanitarian University
Record of proceedings № 4 dated April 24, 2018
The Head of the Academic Council Prof. R.M. Postolovskyi

I. Preamble

The educational and professional program of the Master degree in specialty 014 "Secondary education (Mathematics)" was developed to be introduced into operation as the Standard of Higher Education for the appropriate level of higher education by the design team of Rivne State Humanitarian University consisting of:

Project Team Leader (Educational Program Guarantor):
Nataliia Andriivna Siaska, Candidate in Pedagogy, Associated Professor.
members of the Project Team:
Yadviha Avhustivna Pasichnyk, Candidate in Pedagogy, Professor;
Halyna Mykolaivna Kyryletska, Candidate in Pedagogy, Associated Professor.

The educational and professional program was discussed and approved at the meeting of the Academic Council of Rivne State Humanitarian University.
Record of proceedings № ____ dated «___» _____ 2018

The Head of the Academic Council of RSHU Prof. R.M. Postolovskyi

Introduced into operation by the order of the rector of Rivne State Humanitarian University dated «___» _____ 2018 № ____ as a temporary document before the introduction of the Standard of Higher Education for the corresponding level of higher education in the specialty 014 "Secondary Education (Mathematics)".

II. General characteristics

1. Master's program profile in the specialty 014 "Secondary education (Mathematics)"	
Full name of the institution of higher education and of the structural subdivision	Rivne State Humanitarian University
The official name of the educational and professional program	Secondary education. Mathematics
Type of diploma and the volume of educational and professional program	Master's degree. Unitary. 90 ECTS credits / 1 year 5 months
Accreditation organization	National Agency for Quality Assurance in Higher Education
Cycle/Level	National Qualification Framework of Ukraine – 8th level, FQ-EHEA – second cycle, EQF-LLL – 8th level
Prerequisites	Second (master's) level, Educational and qualification level "specialist"
Language(s) of teaching	Ukrainian
Basic concepts and their definitions	The program uses the basic concepts and their definitions in accordance with the Law of Ukraine "On Higher Education" №1556-VII dated July 1, 2014, "Methodological recommendations on the development of higher education standards", approved by the order of the Ministry of Education and Science" dated June 1, 2016 №600.
Internet address of the permanent placement of the educational program	http://fmi-rshu.org.ua/pages/informatyka-b7faf4b1-b886-472b-97e0-8f801020ee15.
2 – The purpose of the educational program	
	To form and develop professional knowledge, skills and abilities that will provide reconstructive-variation, creative level of performance of the main production functions by future mathematics teachers and corresponding typical tasks of the teacher of mathematics at the secondary and higher schools.
3 – Characteristics of the educational program	
Description of the domain (branch of knowledge, specialty)	➢ *The object of the study is:* Educational process in institutions of higher education (mathematics); partnership pedagogy, specified by the regularities of the goals, content and technologies of teaching mathematics; interactive teaching methods aimed at individualization, intensification and computerization of the educational process, the growth of the volume of independent work of students, the implementation of new forms, methods and technologies of learning that stimulate the development of creative qualities of future professionals. ➢ *The goals of studying:* Theoretical and practical training of pedagogical staff for

	performing professional activity in educational institutions of different levels of education, who possess modern methods and technologies of organization of the educational process, special (professional) and integral competencies. ➢ *Theoretical content of the domain:* Methodological system of training of a specialist in mathematics; basic provisions of pedagogy and psychology; theory and methodology of teaching mathematics; theoretical foundations of mathematical sciences; standards of education quality. ➢ *Methods, techniques, and technologies:* Pedagogical and mathematical models; pedagogical technologies of activating the educational process; problem-searching methods of teaching; methods of forming interest; organization of problem education; distance learning system. ➢ *Tools and equipment:* Teaching and methodological manuals; visual aids; application of information and communication technologies in the educational process.
Orientation of the educational program	Professional
The main focus of the educational program and specialization	Professional education in specialty 014 "Secondary education (Mathematics)". Key words: pedagogy of secondary and high school; methodology of scientific research; methods of teaching disciplines; information and communication technologies; modern pedagogical technologies.
Features and differences	The educational program has been developed taking into account the experience of the preparation of masters of secondary education and future teachers of mathematics at leading domestic and foreign universities and training of scientific personnel in the related specialties in the system of institutes of the National Academy of Sciences of Ukraine and national research universities, as well as many years of experience in preparation of the specialists in the field of knowledge in the specialty "Mathematics".
4 – Employment of graduates of the educational program and continuation of the education	
Professional rights	Scope of employment – higher educational establishments, scientific institutions, laboratories. Professional title: Professional. Teacher. Primary posts: 2121.1 Junior researcher (mathematics) 2121.1 Researcher (mathematics) 2121.2 Mathematician 2310.2 Assistant 2310.2 Higher educational establishment lecturer 2351.1 Junior researcher (methods of teaching) 2351.1 Researcher (methods of teaching) 2351.2 Lecturer (methods of teaching) 2352 Inspector of teaching methods

	2359.2 Lecturer 2359.2 Educator-organizer
Continuation of education (academic rights)	Continuation of studies at the third level of higher education under the programs of the doctor of philosophy of mathematics and mathematics teaching methods.
5 – Teaching and evaluation	
Teaching and learning	Teaching is carried out in the form of lectures, multimedia lectures, interactive lectures, seminars, practical classes, laboratory works, self-study, individual classes, consultations, practice, and preparation of master's papers.
Evaluation	Oral and written examinations, credits, defense of the practice reports, defense of master's paper, attestation.
6 – Program competences	
Integral competence	Ability to solve complex problems and practical problems in a certain field of professional activity or in the process of study, which involves research and application of certain theories and methods of the corresponding science and is characterized by complexity and uncertainty of the conditions.
General competences (GC)	1. Ability to think, analyze and synthesize. 2. Ability to apply knowledge in practical situations. 3. Ability to organize and plan. 4. Knowledge and understanding of the subject area and understanding of professional activities. 5. Ability to communicate in the native language both verbally and in writing. 6. Skills in the use of information and communication technologies. 7. Ability to study and to be modernly trained. 8. Ability to search, process and analyze information from various sources. 9. Ability to be critical and self-critical. 10. Ability to adapt and act in a new situation. 11. Ability to generate new ideas (creativity). 12. Ability to identify, put, and solve problems. 13. Ability to make informed decisions. 14. Ability to work in a team. 15. Ability to conduct research at the appropriate level. 16. Readiness to act in non-standard situations, to bear social and ethical responsibility for the decisions made. 17. Ability to understand the significance of information in contemporary society, to carry out information processes, and to take responsibility for information security issues.
Special (professional) competences (SC)	1. Presence of the system of scientific knowledge in mathematical disciplines, methods of teaching mathematics in high school and higher education, readiness for its application in practice. 2. Possession of special mathematical terminology and the ability to transfer it. 3. Possession of teaching methods of mathematical disciplines, educational work, innovation and information and communication technologies of teaching.

	4. In the development of science and psychological and pedagogical practice, be able to reassess accumulated experience, analyze its capabilities, be able to acquire new knowledge, use the latest technology. 5. Possession of modern approaches to conducting training sessions, educational events. 6. Development and use of didactic means. 7. Ability to use verbal and non-verbal means of transferring mathematical information. 8. Readiness and ability to work with methodological and mathematical information. 9. Ability to analyze, formulate conclusions for various types of complex administrative tasks in scientific institutions. 10. Ability to carry out a literary search of sources relevant to these theories, ability to critically evaluate them, based on articles specializing in these areas. 11. Ability to create technical documentation and documents of the established reporting, to use of regulatory documents. 12. Ability to search, systematically study and analyze scientific and technical information, domestic and foreign data associated with the application of mathematical methods for the study of various processes, phenomena and systems. 13. Ability to formulate the mathematical formulation of a problem, based on the statement in the language of the subject field, and to choose the appropriate method of its solution. 14. Ability to conduct research of various processes, phenomena and systems using mathematical methods and specialized software, conduct computational experiments, process, analyze and interpret the received results. 15. Ability to participate in the compilation of scientific reports on the performed research and introduction of the results of the research and development. 16. Ability to organize the division of responsibilities of team members in the compilation of scientific reports on the performed research and introduction of the results of research and development.
7 – **Program study results**	
	1. To know the history of the development of mathematics in the system of natural sciences, the influence of theoretical knowledge on mathematics in technology of production and education system. 2. To know the principles and methods of collection, systematization, generalization and use of information, conducting scientific research and methodical work in the specialty, preparation of informational and scientific-methodical materials. 3. To analyze from a scientific point of view socio-economic, socio-pedagogical and socio-psychological problems and processes, to use the methods of these sciences in various kinds of professional activity. 4. To have computer methods of analysis and processing of information and to use these results in professional activities. 5. To know the methodological and methodological bases of carrying out of scientific researches and scientific-methodical work; be capable

	of projective activity and, based on a scientific approach, be able to build and use predictive models for describing the results of quantitative and qualitative analysis of socio-pedagogical phenomena and processes. 6. To make choices of rational algorithms, methods, methods and methods of solving mathematical problems, to use them correctly. 7. To use the means of information technologies for solving mathematical problems and in pedagogical activity. 8. To have modern technologies of software development and program implementation of numerical algorithms. 9. To possess methods of psychological and pedagogical diagnostics of development of various categories of students, methods of educational work in society, methods of organizing educational, preventive and collectible work with students in various social institutes and to use results in research and development activities.
	1. Give illustrations, examples, counterexamples, if necessary. 2. To prove theorems and to apply corresponding facts when solving concrete mathematical and applied problems. 3. To carry out methodical (didactical) processing of educational material on mathematics at higher educational establishments. 4. To master the methods and techniques of teaching mathematics in high school and university. 5. To have general methodological schemes of the formation of the right-orientation methods for solving mathematical problems. 6. To solve non-standard problems in higher mathematics. 7. To solve methodological problems. 8. To apply the principles and methods of teaching and education in the pedagogical process. 9. To plan the pedagogical activity, determine and justify pedagogical tasks. 10. To apply innovative technologies of organization of educational, cognitive and educational work. 11. To conduct pedagogical researches, creatively use advanced pedagogical experience.
Communication (Com)	1. Reporting to specialists and non-specialists of information, ideas, problems, decisions and own experience in the field of professional activity. 2. The ability to effectively formulate a communication strategy. 3. Use of foreign languages in professional activities.
Autonomy and Responsibility (A&R)	1. Management of complex actions or projects, responsibility for decision-making in unpredictable conditions. 2. Responsibility for the professional development of individuals and/or groups of persons. 3. Ability to further education with a high level of autonomy.
8 – Resource support for the implementation of the program	
Specific characteristics of staffing	Conducting lectures on educational disciplines by scientific and pedagogical workers of the corresponding specialty having a degree and/or academic rank and operating at the main place of work makes more than 50% of the number of hours determined by the curriculum; by

	those who have a Ph.D. degree or a professor's degree – more than 25%
Specific characteristics of material and technical support	Use of modern software in the chosen specialty.
Specific characteristics of information and methodological support	Use of the virtual learning environment of Rivne State Humanitarian University and original author’s developments of the teaching staff.
9 – The main components of the educational program	
The list of educational components (disciplines, practices, course and qualification papers)	The matrix of the compliance of program competences with the curriculum and the structure of the curriculum is given in the Appendices
10 – Academic mobility (regulated by the Resolution of the Cabinet of Ministers of Ukraine № 579 "On Approval of the Regulations on the Procedure for the Realization of the Right to Academic Mobility" dated August 12, 2015)	
National credit mobility	Based on bilateral agreements between Rivne State Humanitarian University and higher educational establishments and scientific institutions of Ukraine.
International credit mobility	Based on bilateral agreements between Rivne State Humanitarian University and foreign educational institutions.
Teaching foreign applicants for higher education	Possible

VII. Attestation

Student attestation is carried out by the examination commission after the completion of the education at the educational level to establish the actual compliance of the level of training with the requirements of the educational program. The student is certified according to the system of program learning outcomes, which is defined in the educational program of specialist training. The form of attestation: defense of master thesis.

The diploma thesis involves analysis and theoretical development (modeling and research of processes and objects) of actual issues, problems in the relevant field of knowledge. The list of diploma papers in a specialty is determined by the graduation department at the beginning of the academic year. Subject theses should be directly related to the general object of the activity of a specialist of the corresponding educational level. The list of themes is approved by the order of the rector before the beginning of graduation practice. Students have the right to propose their own topic for the thesis paper.

The assignment for the thesis should reflect all the production functions and typical tasks of the specialist's work and must be promptly delivered to the student (before the beginning of pre-diploma practice).

Consultants of thesis papers may be professors, associate professors, senior lecturers of the graduate department, as well as leading specialists of the industrial sphere of the relevant branch.

The certification of applicants for higher education of a bachelor's degree is carried out by an examination commission, which may include representatives of employers and their

associations, in accordance with the provisions of the examination committee, approved by the Academic Council of the RSHU.

VIII. The system of internal higher education quality assurance

The Rivne State Humanitarian University operates a system for ensuring the quality of teaching and quality of higher education (the system of internal quality assurance) by a higher educational institution, which provides for the implementation of such procedures and measures:

1) definition of principles and procedures for ensuring the quality of higher education;

2) monitoring and periodic review of educational programs;

3) the annual evaluation of higher education, scientific and pedagogical and pedagogical staff of higher education institutions and the regular publication of the results of such assessments on the official website of the higher educational institution, on information stands and in any other way;

4) ensuring the professional development of scientific and pedagogical workers;

5) ensuring the availability of the necessary resources for the organization of the educational process, including the independent work of applicants for higher education for each educational program;

6) ensuring the availability of information systems for the effective management of the educational process;

7) ensuring publicity of information about educational programs, degrees of higher education and qualifications;

8) ensuring an effective system of preventing and detecting academic plagiarism in scientific works of higher education institutions and higher education graduates;

9) other procedures and measures.

The system of providing higher education institutions with the quality of educational activities and the quality of higher education (internal quality assurance system) may, upon submission by Rivne State Humanities University, be assessed by the National Agency for the Quality Assurance of Higher Education or by independent institutions accredited by it for the assessment and quality assurance of higher education for its conformity with the requirements to the system of quality assurance in higher education, approved by the National Agency for the Quality Assurance of Higher Education, and international standards and guidelines for quality assurance.

Guarantor of the educational program,
Project Team Leader Ass. Prof. N.A. Siaska

In addition, there is a list of components of the educational program and their structural and logical scheme, as well as the explanatory note to the educational program.