NJSC SHAKARIM UNIVERSITY OF SEMEY

EDUCATIONAL PROGRAM

7M01 - Pedagogical sciences
(Code and classification of the field of education)

7M015 - Teacher training in natural science subjects
(Code and classification of the direction of training)

0114
(Code in the International Standard Classification of Education)

M015 - Training teachers of geography
(Code and classification of the educational program group)

7M01506 - Geography
(Code and name of the educational program)

Master
(Level of preparation)

Semey

Educational program

7M01 - Pedagogical sciences
(Code and classification of the field of education)

7M015 - Teacher training in natural science subjects
(Code and classification of the direction of training)

0114
(Code in the International Standard Classification of Education)

M012 - Training of computer science teachers (kazakh, russian, english languages)
(Code and classification of the educational program group)

7M01503 - Informatics
(Code and name of the educational program)

Master
(Level of preparation)

Semey 2023

PREFACE

Developed

The educational program 7M01503 - Informatics in the direction of preparation 7M015 - Teacher training in natural science subjects on the basis of the State Compulsory Standards of Higher and Postgraduate Education approved by the Order of the Ministry of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No 2 (as amended by the order) was developed by the Academic Committee dated 20.02.2023 No 66).

Members of the Academic Committee	Full name	Academic degree, academic title, position	Signature
Head of the Academic Committee	Mukayev Zhandos	Dean of the Faculty of Natural Sciences and Mathematics	
Educational program manager	Ryszhanova Aizhan	senior lecturer of the Department of physical and Mathematical Sciences and informatics	
Member of the AC	Kydyralina Lazat	I.o. associate professor of the Department of Physical and Mathematical Sciences and Informatics, PhD	
Member of the AC	Sembayev Talgat	senior lecturer of the Department of physical and Mathematical Sciences and informatics	
Member of the AC	Mynbayeva Maigul	Teacher of computer science «Nazarbayev Intellectual school of Physics and Mathematics in Semey»	
Member of the AC	Aliyeva Toleugaisha	Head of the «Department for monitoring the content of education and the quality of education» of the «Regional Innovation and Methodological Center» of the «Department of Education of the Abai district», methodologist on the subject of informatics	
Member of the AC	Berikkankyzy Diana	Master student of the MIP-201 group in the EP 7M01503-Informatics	
Member of the AC	Umbetova Aruzhan	Master student of the MIP-201 group in the EP 7M01503-Informatics	

Reviewing

Full name of the reviewer	Position, place of work	Signature
Tayapbergenova Anar	Teacher of computer science «Nazarbayev Intellectual school of Physics and Mathematics in Semey»	

Reviewed

At the meeting of the Quality Assurance Commission
Natural and Mathematical of the faculty
Recommended to be for approved
by the Academic Council of the University
Record No 4.1 "04" April 2023 y.
Chairman of the Commission Zheldybayeva B.

Approved at the meeting of the Academic Council of the University Protocol No. 8 "25" April 2023.

Approved

at the meeting of the Academic Council of the University
Protocol № 1 "01" of September 2023
Chairman of the Academic Council of the University Orynbekov D.R.

Content

1.Introduction

1.1.General data

The educational program "7M01503-Informatics" implemented by the Department of Physical and Mathematical Sciences and Informatics of the NAO "Shakarim Semey University", developed taking into account the needs of the regional labor market, the requirements of regulatory documents of the Ministry of Education and Science of the Republic of Kazakhstan and is a system of documents for the organization of the educational process of teacher training in the direction of OP "7M01503-Informatics".

The program is aimed at training masters who are ready for educational activities in secondary specialized and higher educational institutions as a computer science teacher, who possess a methodological base and a complex of systematized knowledge in the field of computer science, who possess modern technologies of pedagogical activity, who use modern information and communication technologies to create and apply electronic educational resources in scientific, methodological and managerial activities, capable of planning and implementing educational and scientific activities in the field of theory and methods of teaching computer science.

The educational program is focused primarily on teachers who have the first higher education as computer science teachers, mathematics teachers, physics teachers and currently teach computer science in schools, colleges, etc.

1.2.Completion criteria

The main criterion for the completion of the educational process for the preparation of masters of the scientific and pedagogical direction is the development of at least 88 credits of theoretical training, including 6 credits of pedagogical practice, 13 credits of research practice, as well as at least 24 credits of research work of a master`s student, including internships and the completion of a master s thesis, at least 8 credits of the final attestations . A total of 120 credits.

1.3.Typical study duration: 2

2.PASSPORT OF THE EDUCATIONAL PROGRAM

2.1.EP purpose	training of competent personnel who possess modern pedagogical technologies and teaching methods, capable of conducting scientific research, application and implementation of promising research results in the field of informatization of education.
2.2.Map of the training profile within the educational program	
Code and classification of the field of education	7M01 - Pedagogical sciences
Code and classification of the direction of training	7M015 - Teacher training in natural science subjects
Code in the International Standard Classification of Education	0114
Code and classification of the educational program group	M012 - Training of computer science teachers (kazakh, russian, english languages)
Code and name of the educational program	7M01503 - Informatics
2.3.Qualification characteristics of the graduate	
Degree awarded / qualification	Master of Pedagogical Sciences under the educational programme 7M01503 – Informatics
Name of the profession / list of positions of a specialist	Teacher. University teacher Teacher moderator Social pedagogue Teacher-psychologist Curator Teacher-assistant Head of the organization Head of the structural division Deputy Head of the structural division
OQF qualification level (industry qualification framework)	7 (sublevels 7.1; 7.2)
Area of professional activity	it includes research, design, organizational and managerial and pedagogical work related to the use of information and communication tools and technologies
Object of professional activity	educational institutions of state and non-state funding, pre-school educational organizations, schools, lyceums, gymnasiums, colleges, educational institutions of technical and vocational education; scientific organizations: scientific, research institutions and centers in the field of applied informatics, informatization of education, pedagogy, psychology and teaching methods; management organizations: state management bodies, education departments;
Types of professional activity	1. Education and development of children and young students in general education organizations, educational institutions and centers: □ computer science teacher and club, etc. □ University teacher; ИКТ Manager of ICT projects in the field of education; head of informatization processes in educational institutions. 2. Science: □ Junior researcher; лаб Laboratory assistant. 3. Organizations, institutions and enterprises related

	to the use of information and communication tools and technologies: ▯ Administrative employee.
Graduate Model	Competent personnel who have mastered modern pedagogical technologies and teaching methods, are able to conduct scientific research, apply and implement prospective results of scientific research in the field of educational information.

3.Modules and content of the educational program

Sociolinguistic and scientific-pedagogical activity

Foreign language (professional)

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	29738 (3011719)
Course	1
Term	1
Credits count	3
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

Mastery of general cultural, professional and special competencies for the implementation of professional activities, involving teaching free reading of original literature of the relevant branch of knowledge in a foreign language; development of oral communication skills in monological and dialogical form in the specialty; development of written scientific communication skills on topics related to the scientific work of a graduate student, as well as familiarization with the forms and types of international cooperation in the scientific field.

Purpose of studying of the discipline

The purpose of studying the discipline "Foreign language (professional)" in the master`s degree program is the systematic deepening of communicative competence within the framework of international standards of foreign language education on the basis of further development of skills and abilities of active language proficiency in the professional activity of the future master.

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Final examination

History and philosophy of science

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	29740 (3011718)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the culture of scientific thinking, forms analytical capabilities and research skills, provides theoretical and practical knowledge necessary for a future scientist. Explores the historical evolution of the sciences and the philosophical perspectives they form. The origins of modern science, its social and institutional connections are described. General philosophical issues related to thought experiments, confirmation and refutation of theories, the origin and application of quantitative and high-quality research methods are considered.

Purpose of studying of the discipline

the formation of an interdisciplinary worldview among undergraduates, based on a deep understanding of the history and philosophy (theory) of scientific thinking, as part of a universal culture.

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Final examination

Tertiary education

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	29735 (3011722)

Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying the main directions, principles and patterns of higher education. During the course of the course, the basic concepts of modern pedagogy, concepts and theories of teaching and upbringing, didactics of higher education will be considered. The master`s student will master the skills of designing the organization of the educational process, techniques of individual and group reflection, will be able to correctly formulate pedagogical goals, apply educational technologies in the educational process. in the process, to design work programs of disciplines.

Purpose of studying of the discipline

The purpose of mastering the discipline is to master the system of knowledge about higher education, its content, structure, principles of educational process management and mastering modern technologies in the field of management and organization of the educational process

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Pedagogical practice

Psychology of management

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	29737 (3011720)
Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The content of the course is aimed at mastering the approaches and directions of management psychology, psychological laws of management, features of planning and solving management problems. Students will get acquainted with the psychological methods of resolving conflict situations, master the ways of motivating work, the methods of using effective management styles. Skills will be formed to analyze the psychological causes underlying the decline in the effectiveness of the management process.

Purpose of studying of the discipline

The purpose of the discipline "Psychology of Management" is the formation of scientifically based ideas about the system of mental phenomena, psychological variables of behavior and conscious human activity in modern conditions and allows undergraduates to form skills of applying the acquired psychological knowledge in educational activities

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Pedagogical practice

Pedagogical practice

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	29903 (3011723)
Course	2
Term	1
Credits count	6
Pedagogical practics	180hours
Total	180hours
Knowledge control form	Total mark on practice

Short description of discipline
Pedagogical practice performs a general professional preparatory function in terms of preparing undergraduates for teaching at a university. Pedagogical practice of undergraduates acquisition of practical skills of conducting training sessions in higher educational institutions. The practice of undergraduates is carried out within the framework of the general concept of master`s training and during the practice it is planned to conduct experimental work in accordance with the topic of the dissertation. They will also learn how to teach students educational and scientific work.
Purpose of studying of the discipline
The purpose of the practice is to deepen, improve and consolidate the acquired theoretical knowledge, the ability to apply them in pedagogical activity
Learning Outcomes
ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.
Prerequisites
Methodological training of Informatics teacher at the University
Postrequisites
Competence-based learning in higher education System of electronic evaluation of the level of competence

Professional and methodical preparation

Methods of teaching informatics in high school

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29761 (3011717)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
the ability to produce a selection of the content, forms and methods of training to computer science in high school, to develop educational and training material for the implementation of the educational process; experience in determining the content, forms and methods of training to computer science in high school.
Purpose of studying of the discipline
formation of ideas about the features of the goals, content, form and methods of teaching computer science at the stage of higher professional education and training in the ability to select the content, form and methods of teaching computer science at Higher school.
Learning Outcomes
ON3 Apply knowledge of the theoretical foundations and technologies of teaching informatics and ICT.
ON4 Provide methodological support for the educational process.
ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.
Prerequisites
Basic and profile disciplines of the EP
Postrequisites
Informatization of education and learning problems

Using of ICT at assessment of results of training

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29725 (3011692)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
Teaching test as an objective method of evaluation. The main stages of the construction of pedagogical test. Common approaches to the evaluation of the achievements of the requirements for the training of graduates of educational institutions. Using software tools automate the implementation and processing of test results
Purpose of studying of the discipline

Purpose of studying of the discipline:
establish a system of competences Master of Education in the field of information and communication technologies in the learning outcomes for the solution of pedagogical, research, design and methodological problems of professional activity.

Learning Outcomes

ON3 Apply knowledge of the theoretical foundations and technologies of teaching informatics and ICT.
ON4 Provide methodological support for the educational process.
ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Informatization of education and learning problems Modern methods of control and evaluation

Methods of using ICT in the educational process

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29724 (3011689)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This course is aimed at teaching students majoring in pedagogical direction to instill skills in the field of modern information, communication and educational technologies. The course consists of modules. The modules have an independent structure.

Purpose of studying of the discipline

The purpose of the course is to prepare the basic knowledge and skills formed by undergraduates in the field of information and communication technologies for use in their professional activities.

Learning Outcomes

ON3 Apply knowledge of the theoretical foundations and technologies of teaching informatics and ICT.
ON4 Provide methodological support for the educational process.
ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Informatization of education and learning problems

Methodological training of Informatics teacher at the University

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29294 (3011688)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The main conditions of scientific work, classification of pedagogical research, selection of the subject of research, subject and subject of research, as well as contradictions and problems of scientific research, goals and objectives and scientific research, methodological foundations and methods of research. Considers the analysis of scientific research in the field of theory and methods of teaching and informatization of computer science at the University, the experience of pedagogical research and the results of pedagogical research practice, methods of their processing.

Purpose of studying of the discipline

The purpose of studying the discipline is to form a body of knowledge about the possibilities of the future, about the principles of functioning of computer networks, common in various formats and distributed data on the organization of human access to data with the possibility of providing active influence on them.

Learning Outcomes

ON3 Apply knowledge of the theoretical foundations and technologies of teaching informatics and ICT.
ON4 Provide methodological support for the educational process.
ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Informatization of education and learning problems

Informatization methods of control and assessment of training results

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29729 (3011693)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

Methods and evaluation of reliability and accuracy of pedagogical tests. Historical aspects of test control. Algorithms and stages of creation of control and measuring materials. Methods scale of test results. Analysis of information systems of knowledge control

Purpose of studying of the discipline

Purpose of studying of the discipline:
Theory and methods of teaching Informatics, pedagogy, psychology, Informatics, Informatization and learning problems.

Learning Outcomes

ON3 Apply knowledge of the theoretical foundations and technologies of teaching informatics and ICT.
ON4 Provide methodological support for the educational process.
ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.

Prerequisites

Basic and profile disciplines of the EP Methodological training of Informatics teacher at the University

Postrequisites

Competence-based learning in higher education

Modern methods of control and evaluation

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29289 (3011691)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

IIn the course of studying the discipline, an overview of the issues of knowledge control, the classification of pedagogical testing and familiarization with the role of pedagogical testing as control in the education system is given. The testing process, the technological matrix as a model of pedagogical testing, as well as the composition and description of test tasks are studied. The issues of preparation of test tasks with the help of ICT, types and types of test tasks and their analysis are considered.

Purpose of studying of the discipline

Purpose of studying of the discipline: establish a system of education master`s competencies in the use of modern methods in the assessment of learning outcomes to address the educational, scientific and research tasks of professional activity .

Learning Outcomes

ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Competence-based learning in higher education

Informatization of education and learning problems

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	29768 (3011690)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

Formation and development of competences: scientific and scientific-practical thinking; deepening of theoretical and practical training of undergraduates in the chosen direction of Informatics and pedagogical activity; ensuring the choice of individual scientific direction and development of the ability to solve modern scientific and practical problems of Informatics and education; providing fundamental knowledge at the intersection of Informatics and other Sciences, guaranteeing them professional mobility in the real developing world.

Purpose of studying of the discipline

The purpose of studying the discipline is aimed at the formation and development of competencies: scientific and scientific-practical thinking; deepening the theoretical and practical training of undergraduates in the chosen direction of informatics and pedagogical activity; ensuring the choice of an individual scientific direction and the development of the ability to solve modern scientific and practical problems of informatics and education; providing fundamental knowledge at the intersection of computer science and other sciences, guaranteeing them professional mobility in the real developing world.

Learning Outcomes

ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.
ON6 Possess in-depth scientific knowledge in the field of software.
ON7 Recognize the essence and significance of information in the development of modern society.

Prerequisites

Modern methods of control and evaluation

Postrequisites

Innovative interactive teaching methods

Research activities of students in computer science

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	29773 (3011721)
Course	1
Term	2
Credits count	5
Practical and seminar classes	15hours
Laboratory works	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

When teaching the discipline, it is about the basics of organizing students ` project activities on the subject of Computer Science and teaching them how to choose a topic for the project and create it. It considers individual-oriented technologies, methods of organizing students ` own activities that combine problem-based approaches, group, reflexive, Presentation, Research, search, and other methods aimed at solving the project`s goals and objectives. Develops the skills of a future specialist in using didactic means of development, training and education.

Purpose of studying of the discipline

The purpose of the discipline is to create conditions for the formation of professional competence of undergraduates in the development of educational and research projects in the process of teaching computer science and the formation of experience in solving educational and research problems in a new educational environment.

Learning Outcomes

ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.
ON6 Possess in-depth scientific knowledge in the field of software.
ON7 Recognize the essence and significance of information in the development of modern society.

Prerequisites
Methodological training of Informatics teacher at the University Modern methods of control and evaluation Using of ICT at assessment of results of training
Postrequisites
Pedagogical practice

The research work of a student, including an internship and the implementation of a master s thesis I

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	29776 (3011703)
Course	1
Term	2
Credits count	11
The research work	330hours
Total	330hours
Knowledge control form	Total mark on practice

Short description of discipline
In the research work of a master`s student, which includes the completion of an internship and the execution of a master`s thesis, familiarization with the topics of research work, the choice of the research topic, determination of the methodology and methods of research, training in the review and analysis of scientific literature, conducting research work, as well as creating a report on the research work and publishing on the topic, developing the skills of public defense of the completed work.
Purpose of studying of the discipline
Professional development and collection of materials for the preparation of a dissertation
Learning Outcomes
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.
Prerequisites
Planning and organization of scientific and pedagogical research
Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II Practice research

Planning and organization of scientific and pedagogical research

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29777 (3011701)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This discipline examines the concepts of science, science and art, analysis of science, ethics of science, scientific criteria and organization of science of the Republic of Kazakhstan, Academic and university science, Science and research, stages of scientific and pedagogical research work. The algorithm of scientific and pedagogical research, the choice of the topic of scientific and pedagogical research, the significance of the topic, the concept and methodology of scientific research, the main research methods, the directions of the choice of research methods, the structure of scientific and educational work are also considered.
Purpose of studying of the discipline
The training plan for University Masters provides for training in the skills of writing a master`s thesis. During the training period, various educational and research works of undergraduates (preparation of abstracts, reports, scientific articles, research in research practice) are introduced into the educational process.
Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.
Prerequisites
Automation of scientific research
Postrequisites
Practice research The research work of a student, including an internship and the implementation of a master s thesis III

Applied methods of analysis and processing of information in research

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29780 (3011714)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The teaching of the discipline provides for the study of modern methods of applied statistics for processing and analyzing data found in sociological research and presented in various types of measurement scales, and the formation of undergraduates` skills in meaningful interpretation of results. At the same time, the use of one or another method together with the purpose of cognitive or practical activity is to learn to identify situations in which the subject of research or activity and activity is carried out.

Purpose of studying of the discipline

The objectives of the discipline are: the study of modern methods of applied statistics processing and analysis of data found in sociological studies and presented in various types of measurement scales; Formation of abilities meaningfully interpret the results.

Learning Outcomes

ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Automation of scientific research

Postrequisites

Practice research The research work of a student, including an internship and the implementation of a master s thesis III

Automation of scientific research

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29779 (3011702)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This discipline develops methodological and cultural skills for effective work in science and teaches those who are engaged in solving certain scientific problems in theory and practice, the skills necessary for scientific research and the maximum reduction of unproductive searches and mistakes. The defining element of this culture is the formation of dialectical- materialistic concepts. Therefore, this discipline helps a master`s student write the theoretical and practical sections of their dissertation competently, in accordance with the requirements.

Purpose of studying of the discipline

The purpose of this course is to inform the student of a known stock of information (definitions, formulas, theorems, relationships between them and methods for solving problems) to develop his logical thinking and achieve the mathematical culture that is necessary for studying other disciplines and subsequent work in the specialty, and also the formation of systematized knowledge in the field of propositional and predicate algebra, Boolean algebra, graph theory, summation theory, recurrent sequences, automata theory and coding.

Learning Outcomes

ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Automation of scientific research

Postrequisites
Practice research The research work of a student, including an internship and the implementation of a master s thesis III

Administrative information and education networks

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29921 (3011698)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This subject forms the special knowledge of undergraduates in the field of modern systems management, installation and configuration of modern software equipment to perform tasks on network administration and the use of modern information tools, generalization of theoretical knowledge on specific examples of system tools and services, the formation of knowledge that allows the use of modern technologies in information systems at the stages from design to operation.

Purpose of studying of the discipline
The objectives of mastering the discipline are: to ensure the security and reliability of computers integrated into local networks, to acquire practical skills in the administration of servers and workstations, to acquire knowledge and application: about the capabilities of modern information systems, the functions and tests they solve; about the basics of organizing network interaction of high- level applications; about services and services involved in the process of managing information systems, their configuration and management.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Methodological training of Informatics teacher at the University

Postrequisites
Pedagogical practice

Knowledge Engineering

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29920 (3011697)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
A logical model for displaying knowledge. Network model: semantic network, functional network, frame representations. A productive model. Demonstration of unrealistic knowledge. The concept of linguistic variables. Unreal polynomials and relations. Using fuzzy logic of knowledge-based systems. Visual demonstration of knowledge. Introduction to expert systems, comment system, knowledge base creation. Methods of obtaining knowledge the course being studied is about technologies for processing expert systems.

Purpose of studying of the discipline
The purpose of discipline is to develop an integrated approach undergraduates in the formation of knowledge and skills in the use of integrated information systems in solving the problems of economics and management, including understanding of basic business processes of industrial enterprises, the role, challenges and opportunities of information technology and systems in modern infrastructure companies, especially implementation and use of integrated information systems.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information

necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Methodological training of Informatics teacher at the University

Postrequisites

Pedagogical practice

Innovative interactive teaching methods

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29917 (3011696)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

To acquaint students with innovative interactive teaching methods, with the possibilities of their use in the educational process, with the role of innovative interactive methods in the development of creative thinking; form students` understanding of the main trends in educational methods; to teach undergraduates to apply the acquired knowledge in the process of practical work; to promote the formation of global thinking among undergraduates in the conditions of work in the educational networks of the Internet and the culture of communication in the distance learning process.

Purpose of studying of the discipline

To acquaint students with innovative interactive teaching methods, with the possibilities of their use in the educational process, with the role of innovative interactive methods in the development of creative thinking; to form students` understanding of the main trends in educational methods; to teach students to apply their knowledge in the process of practical work; to contribute to the formation of students` global thinking in the conditions of work in educational networks of the Internet and the culture of communication in the distance learning process.

Innovative interactive teaching methods are a special form of organizing cognitive activity. She has in mind quite specific and predictable goals:

improving the efficiency of the educational process, achieving high results;
strengthening motivation to study the discipline;
formation and development of professional skills of students;
formation of communication skills;
development of analytical skills and reflexive manifestations;
development of skills of possession of modern technical means and technologies of perception and processing of information;
formation and development of the ability to independently find information and determine its reliability;

Learning Outcomes

ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.
ON6 Possess in-depth scientific knowledge in the field of software.
ON7 Recognize the essence and significance of information in the development of modern society.

Prerequisites

Methodological training of Informatics teacher at the University

Postrequisites

Pedagogical practice

Information technology

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29932 (3011709)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

Basic concepts in teaching the discipline: classification, stages of development, life cycle and consideration of information technologies as a system. Information technology software tools and database technology, knowledge base technology, features, importance, and

convenience of using network technologies are explained. Fast application processing tools. Automated system design. Develops knowledge, skills and abilities in the use of information technologies in various subject areas.

Purpose of studying of the discipline

formation of knowledge on the theoretical foundations of information technologies and their application in the design and optimization of the functioning of modern information systems.

Learning Outcomes

ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Means media, scientific visualization and virtual realities

Postrequisites

Social Media for Flexible Online Learning

Competence-based learning in higher education

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29924 (3011699)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

Formation of educational content and assessment of teaching quality. Object of assessment and its criteria. Integrative model of competence assessment and the level of formation of IT competencies of undergraduates. Innovative assessment tools. Project method. Procedure for development and examination of assessment tools. Descriptors of the level of competence. Methods of assessing the competence of students in e-learning. Criteria-based assessment system in the classroom. The course forms a special knowledge of undergraduates on these topics.

Purpose of studying of the discipline

The purpose of this subject is to form the content of education and assess the quality of training. Competencies. The object of evaluation and its criteria. Certifications. Integrative model of competence assessment. Assessment of competencies, the level of formation of IT competencies of undergraduates. Innovative evaluation tools. Portfolio. Method of developing cooperation. project method. The procedure for the development and examination of evaluation tools. Descriptors of the level of mastering the competence. Methods for assessing students` competencies in e-learning systems.

Learning Outcomes

ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.
ON6 Possess in-depth scientific knowledge in the field of software.
ON7 Recognize the essence and significance of information in the development of modern society.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Methodological training of Informatics teacher at the University

Postrequisites

Practice research

Mobile learning and virtual reality

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	26017 (3011715)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours

Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline deals with working with the main virtual reality applications, mobile devices, classification, new applications and trends for smartphones, operating systems, GPS. Teaches the introduction of mobile devices into the educational process, as well as the system of multidimensional representation of the subject area in education and the safety of using "virtual reality", adaptation of a set of technical devices, content creation and coordination of educational and research projects with licensed or free software equipment.

Purpose of studying of the discipline
to form a system of competencies of the Master of Education in the field of modern learning technologies for solving pedagogical tasks of professional activity

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Means media, scientific visualization and virtual realities

Postrequisites
Social Media for Flexible Online Learning

The research work of a student, including an internship and the implementation of a master s thesis II

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	29928 (3011704)
Course	2
Term	1
Credits count	4
The research work	120hours
Total	120hours
Knowledge control form	Total mark on practice

Short description of discipline
In the research work of a master`s student, which includes the completion of an internship and the execution of a master`s thesis, familiarization with the topics of research work, the choice of the research topic, determination of the methodology and methods of research, training in the review and analysis of scientific literature, conducting research work, as well as creating a report on the research work and publishing on the topic, developing the skills of public defense of the completed work.

Purpose of studying of the discipline
The purpose of the master`s research work is the formation of general cultural and professional competencies necessary for conducting both independent research work, the result of which is the writing and successful defense of a master`s thesis (project), and research work as part of a research team.

Learning Outcomes
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Planning and organization of scientific and pedagogical research

Postrequisites
Practice research

Assessment of competency-based learning outcomes

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29927 (3011700)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

In the study of the discipline, the question of methods and means of assessing the quality of educational results of students in the implementation of a competence-based approach in accordance with the requirements of state educational standards is considered. The forms and methods of assessment are proposed, allowing to correlate competence and approaches to assessment. Knowledge, skills, and skills based on the need to apply innovative assessment methods and techniques are supplemented.

Purpose of studying of the discipline

the main goal of the master`s degree program is to obtain theoretical knowledge and practical skills in the field of electronic assessment of the level of competence and develop other competencies, such as creative, creative, critical, social, special, and communication. As well as the theory, technology and practice of didactic systems for electronic assessment of the level of competence.

Learning Outcomes

ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.
ON6 Possess in-depth scientific knowledge in the field of software.
ON7 Recognize the essence and significance of information in the development of modern society.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Methodological training of Informatics teacher at the University

Postrequisites

Practice research

Legal issues of Informatization

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29915 (3011695)
Course	2
Term	1
Credits count	3
Lections	12hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	21hours
Independent work of the student	42hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The discipline instills in undergraduates the skills of searching, processing, receiving, storing, distributing and systematizing legal information in the field of using new computer information technologies to gain knowledge. Teaches familiarity and expertise of regulatory legal acts of state authorities and local self-government bodies related to the field of education, organization and effective use of information resources when writing master`s theses. Teaches the rules of compliance with rights when using information.

Purpose of studying of the discipline

The purpose of studying the discipline is the formation of general cultural and professional competencies among undergraduates, necessary and sufficient for the use of modern information technologies in the implementation of standard-setting, law enforcement and law enforcement professional activities.

Learning Outcomes

ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Means media, scientific visualization and virtual realities

Postrequisites

Pedagogical practice

System of electronic evaluation of the level of competence

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29936 (3011713)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours

Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This course is aimed at developing the ability of undergraduates to use different types of assessment of learning outcomes, using the capabilities of electronic educational resources in the application of modern educational technologies. The proposed course acquaints undergraduates with general methods of assessing the results of educational activities and individual types of assessment. Different ways of evaluating the results of educational activities are considered.

Purpose of studying of the discipline
The aim is to provide undergraduates with theoretical knowledge and practical skills in the field of electronic assessment of the level of competence and the development of other competencies: as creative, creative, critical, social, special, communication. As well as the theory, technology and practice of didactic systems of electronic assessment of the level of competence.

Learning Outcomes
ON5 Possession of the ability to generalize and critically evaluate the results obtained by domestic and foreign researchers, identify promising areas, draw up a research program.
ON6 Possess in-depth scientific knowledge in the field of software.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Methodological training of Informatics teacher at the University

Postrequisites
Practice research

Creation of multimedia educational tools

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29931 (3011708)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
Formation of knowledge system in the field of multimedia technologies; study of methods and special techniques for creating virtual interactive research, reference, teaching and advertising and artistic applications with the help of multimedia technologies;

Purpose of studying of the discipline
The purpose of this course is the formation of a system of knowledge in the field of multimedia technologies; the formation of skills of professional work in programs for creating virtual multimedia applications; the study of methods and special techniques for creating virtual interactive research, reference, educational and methodological, advertising and artistic applications (products) using multimedia technologies; organization of activities aimed at mastering the methods of computer development of multimedia virtual products dedicated to the theory, history and promotion of works of fine, decorative and applied arts and architecture.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Means media, scientific visualization and virtual realities

Postrequisites
Social Media for Flexible Online Learning

Social and humanitarian aspects of Informatization

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29913 (3011694)
Course	2
Term	1
Credits count	5

Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
Development of undergraduates ` understanding of innovative processes taking place in the field of education in the study of the discipline and disclosure of the importance of basic concepts of innovative methods used in the field of education, training strategies for its implementation, their classification, familiarization with various innovations and innovative practices introduced in schools, improving the skills and qualifications of their application in the field of Education.

Purpose of studying of the discipline
The purpose of studying the discipline is to form students` understanding of the features of the development of the social and humanitarian sphere of the information society, the skills to analyze and predict trends in modern society and informatization processes.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Means media, scientific visualization and virtual realities

Postrequisites
Pedagogical practice

Social Media for Flexible Online Learning

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29944 (3011716)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
In the study of the discipline, social media, socio-cultural trends and socialization, emotional development and opportunities, limitations, threats of social media are considered. Social media - as a basis for creating a community of students and teachers, teaches how to work with the sociogram of social network communities. Social media as a means of self-knowledge and self-presentation, involves the use of social media in the process of group interaction and learning.

Purpose of studying of the discipline
The process of studying the discipline is aimed at the formation and development of competencies for the use of social media in education through social interaction between students and teachers. to enhance the exchange of experience between teachers; to use social media in the organization and conduct of dissertation pedagogical research; knowledge of the theory, technology and practice of didactic social media systems for flexible online learning

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Means media, scientific visualization and virtual realities

Postrequisites
Pedagogical practice

Practice research

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	29947 (3011724)
Course	2
Term	2

Credits count	13
Working practice	390hours
Total	390hours
Knowledge control form	Total mark on practice

Short description of discipline
Research practice is aimed at the development and formation of special competencies: knowledge of modern and basic methods, means and methods of obtaining, processing and storing information, as well as understanding the principles of organizing scientific research, ways to achieve and build scientific knowledge, as well as to design, implement, organize and evaluate the results of scientific research in the field of education with using new methods of science.

Purpose of studying of the discipline
The main purpose of the master`s research practice is to study theoretical, methodological and technological achievements of domestic and foreign science, as well as to consolidate practical skills in applying modern methods of scientific research, processing and interpretation of experimental data in dissertation research.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.

Prerequisites
Applied methods of analysis and processing of information in research

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis III

Modern methods of programming in education

Methods and tools for network programming

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29747 (3011706)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This discipline teaches you how to work with protocols and Network Exchange, email, and TCP/IP protocols according to the levels of OSI models. At the same time, they get acquainted with the equipment for creating network applications and programs for network management. Programming languages and systems for network applications, works with the user`s instrumental environment.

Purpose of studying of the discipline
The purpose of the course is to form a body of knowledge and ideas about the possibilities and principles of programming Internet applications, organizing heterogeneous information presented in various formats into a single whole and the ability to provide active human impact on this data in real time, as well as organizing access to distributed data.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Basic and profile disciplines of the EP

Postrequisites
Informatization of education and learning problems Competence-based learning in higher education Mobile learning and virtual reality

Development and use of educational electronic publications and Internet resources

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29730 (3011705)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours

Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
This discipline examines the work with electronic educational publications and Internet resources and the application in education of didactic foundations for the creation of educational publications and Internet resources. At the same time, an electronic educational resource teaches to develop electronic materials for use in the implementation of educational programs and the development of ideas for preparing and transmitting information to a student using information and computer technologies.

Purpose of studying of the discipline
preparation of undergraduates for the creation and effective use of educational electronic publications and Internet resources in the educational process of the University.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Basic and profile disciplines of the EP Informatization of education and learning problems

Postrequisites
Informatization of education and learning problems Competence-based learning in higher education Mobile learning and virtual reality

Development and use of programs in multimedia environments

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	29755 (3011707)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The study of theoretical, methodological and practical problems of multimedia technology, planar and 3-D computer graphics, animation, audio, video, and their use in all fields of activity of specialists in applied informatics. Study of the principles of strategic and operational planning in the field of applied informatics and information technologies.

Purpose of studying of the discipline
Purpose of studying of the discipline: The purpose of studying the discipline is to get master students theoretical knowledge and practical skills in the field of multimedia technology, interactive computer graphics, software and hardware organization of multimedia computers, the fundamentals of programming algorithms and methods of two-dimensional and three-dimensional computer graphics, and the development of methods for creating animated graphics files, including number of educational character, flash-animated videos and computer video editing.

Learning Outcomes
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites
Basic and profile disciplines of the EP

Postrequisites
Informatization of education and learning problems

Methods of creating electronic textbooks

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29782 (3011711)
Course	1
Term	2
Credits count	5
Lections	15hours

Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
In the study of the discipline, the methodology of using information and communication technologies in the educational field and the development of computer learning tools is considered. At the same time, the problems of preparing electronic textbooks, their effectiveness, requirements for electronic textbooks, the structure of an electronic textbook and the features of using electronic textbooks in the classroom are studied. As well as reviews of programs for creating electronic textbooks, they will learn how to determine their effectiveness.

Purpose of studying of the discipline
The purpose of studying the discipline is to prepare undergraduates for the use in their professional activities of basic data and skills formed in the field of information technology. Formation of methodological skills and abilities of future teachers through new information and communication technologies. To deepen the professional and pedagogical training of future teachers of computer science, to expand the range of theoretical and practical knowledge gained.

Learning Outcomes
ON7 Recognize the essence and significance of information in the development of modern society.
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.

Prerequisites
Means media, scientific visualization and virtual realities

Postrequisites
Mobile learning and virtual reality

Cloud computing

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29788 (3011712)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
When studying the discipline, "cloud" computing, scaling, prerequisites for the "cloud" transition, an overview of the "cloud" architecture, virtualization models are considered. In addition, the advantages and scope of IaaS related, as well as solutions, advantages and scope of Software-as-a-Service (SaaS) are considered. Main platforms: Amazon EC2, Google Apps, Windows Azure. Other platforms: SAP Cloud Computing, IBM Cloud Computing get acquainted with the scope and network models of "cloud" services.

Purpose of studying of the discipline
Provide undergraduates with the opportunity to gain knowledge and practical experience in the field of current cloud computing technologies

Learning Outcomes
ON7 Recognize the essence and significance of information in the development of modern society.
ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.

Prerequisites
Development and use of educational electronic publications and Internet resources

Postrequisites
Means media, scientific visualization and virtual realities

Means media, scientific visualization and virtual realities

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	29785 (3011710)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours

Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

This discipline studies the technology of digital video and video cameras, the resolution and image quality of video cameras, video cameras for automatic adjustment. It provides methods of recovery and machine learning on three-dimensional image and segmentation in the image, object recognition in the image, filtering and video quality improvement. He gets acquainted with the three-dimensional user interface, with the possibility of lossless and lossless video data compression, with video codec processing, with video codec matching, with photorealistic image synthesis.

Purpose of studying of the discipline

Purpose of studying of the discipline:The purpose of discipline is to develop understanding of the various means of scientific research.

Learning Outcomes

ON8 Own the main methods, methods and means of obtaining, storing, processing information.
ON9 Solve the tasks of their professional activity at the modern level, demonstrate the ability to present information; scientifically argue and defend your scientific point of view.
ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

Development and use of educational electronic publications and Internet resources

Postrequisites

Means media, scientific visualization and virtual realities

The research work of a student, including an internship and the implementation of a master s thesis III

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	29950 (3011725)
Course	2
Term	2
Credits count	9
The research work	270hours
Total	270hours
Knowledge control form	Total mark on practice

Short description of discipline

Research practice is aimed at the development and formation of special competencies: knowledge of modern and basic methods, means and methods of obtaining, processing and storing information, as well as understanding the principles of organizing scientific research, ways to achieve and build scientific knowledge, as well as to design, implement, organize and evaluate the results of scientific research in the field of education with using new methods of science.

Purpose of studying of the discipline

The main goal of the undergraduate research practice is to study the theoretical, methodological and technological achievements of domestic and foreign science, as well as to consolidate practical skills in applying modern methods of scientific research, processing and interpreting experimental data in a dissertation research

Learning Outcomes

ON10 Organizes educational and research activities using mobile technologies.Carries out search, analysis and evaluation of information necessary for setting and solving professional problems in the field of education; owns planning technologies in professional activities in the field of scientific research.

Prerequisites

The research work of a student, including an internship and the implementation of a master s thesis I The research work of a student, including an internship and the implementation of a master s thesis II

Postrequisites

Practice research

Master`s dissertation

Credits count	8

4.Summary table on the scope of the educational program

«7M01503 - Informatics»

Name of discipline	Cycle/ Component	Term	Number of credits	Total hours	Lec	SPL	LC	IWST	IWS	Knowledge control form
Sociolinguistic and scientific-pedagogical activity										
Foreign language (professional)	BS/US	1	3	90		30		20	40	Examination
History and philosophy of science	BS/US	1	5	150	15	30		35	70	Examination
Tertiary education	BS/US	1	3	90	15	15		20	40	Examination
Psychology of management	BS/US	1	3	90	15	15		20	40	Examination
Pedagogical practice	BS/US	3	6	180						Total mark on practice
Professional and methodical preparation										
Methods of teaching informatics in high school	BS/CCh	1	5	150	15	30		35	70	Examination
Using of ICT at assessment of results of training	BS/CCh	1	5	150	15	30		35	70	Examination
Methods of using ICT in the educational process	BS/CCh	1	5	150	15	30		35	70	Examination
Methodological training of Informatics teacher at the University	BS/CCh	1	5	150	15	30		35	70	Examination
Informatization methods of control and assessment of training results	BS/CCh	1	5	150	15	30		35	70	Examination
Modern methods of control and evaluation	BS/CCh	1	5	150	15	30		35	70	Examination
Informatization of education and learning problems	AS/US	2	5	150	15	30		35	70	Examination
Research activities of students in computer science	AS/US	2	5	150		15	30	35	70	Examination
The research work of a student, including an internship and the implementation of a master s thesis I	AS/US	2	11	330						Total mark on practice
Planning and organization of scientific and pedagogical research	AS/CCh	2	5	150	15	30		35	70	Examination
Applied methods of analysis and processing of information in research	AS/CCh	2	5	150	15	30		35	70	Examination
Automation of scientific research	AS/CCh	2	5	150	15	30		35	70	Examination
Administrative information and education networks	AS/CCh	3	5	150	15	30		35	70	Examination
Knowledge Engineering	AS/CCh	3	5	150	15	30		35	70	Examination
Innovative interactive teaching methods	AS/CCh	3	5	150	15	30		35	70	Examination
Information technology	AS/CCh	3	5	150	15	30		35	70	Examination
Competence-based learning in higher education	AS/CCh	3	5	150	15	30		35	70	Examination
Mobile learning and virtual reality	AS/CCh	3	5	150	15	30		35	70	Examination
The research work of a student, including an internship and the implementation of a master s thesis II	AS/US	3	4	120						Total mark on practice
Assessment of competency-based learning outcomes	AS/CCh	3	5	150	15	30		35	70	Examination

Legal issues of Informatization	AS/CCh	3	3	90	12	15		21	42	Examination
System of electronic evaluation of the level of competence	AS/CCh	3	5	150	15	30		35	70	Examination
Creation of multimedia educational tools	AS/CCh	3	5	150	15	30		35	70	Examination
Social and humanitarian aspects of Informatization	AS/CCh	3	5	150	15	30		35	70	Examination
Social Media for Flexible Online Learning	AS/CCh	3	5	150	15	30		35	70	Examination
Practice research	AS/US	4	13	390						Total mark on practice
Modern methods of programming in education										
Methods and tools for network programming	BS/CCh	1	5	150	15	30		35	70	Examination
Development and use of educational electronic publications and Internet resources	BS/CCh	1	5	150	15	30		35	70	Examination
Development and use of programs in multimedia environments	BS/CCh	1	5	150	15	30		35	70	Examination
Methods of creating electronic textbooks	AS/CCh	2	5	150	15	30		35	70	Examination
Cloud computing	AS/CCh	2	5	150	15	30		35	70	Examination
Means media, scientific visualization and virtual realities	AS/CCh	2	5	150	15	30		35	70	Examination
The research work of a student, including an internship and the implementation of a master s thesis III	AS/US	4	9	270						Total mark on practice
Master`s dissertation		4	8	240						