MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY NATIONAL AGRARIAN UNIVERSITY

Cybernetics and Informatics Department

«CONFIRMED»

Head of Cybernetics and Informatics Department

« _18_ » _08_ 2020 y.
_____ (S.Ahadzhanova)

CURRICULUM

Economical Informatics

Training direction: 074 "Administrative Management", 051 "Economics"

Educational program: Administrative Management

Educational program: Economics of Enterprise

Faculty: Economics and Management

2020 – 2021 academic year

Curriculum of *Economical Informatics* was worked out for the 1-st-year masters of training direction *074 "Administrative Management"* and 2-nd-year masters of training direction *051 "Econimics"*.

Author: **Associate Professor, S. Ahadzhanova**

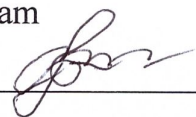Curriculum has been approbated on the Cybernetics and Informatics Department Meeting.

Protocol # 10 from 17.06.2020 year

Head of Cybernetics and Informatics Department   S. Ahadzhanova

Coordinated by:

Guarantor of educational and professional program
(project team leader) _____

Guarantor of educational and professional program
(project team leader) _____

Dean of the Faculty _____

Methodist of the Department
of Education Quality,
licensing and accreditation _____

Registered in electronic data base _____28. 08._____

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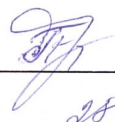Head of Cybernetics and Informatics Department   S. Ahadzhanova

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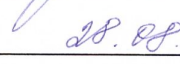
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Description of educational discipline

Indicators	Branch of knowledge, training direction, qualification level	Characteristics of course	
		daily form of studies	
Amount of credits – 3/4	Branch of knowledge 0306 "Management and Administrating", 05 Social and behavioral science	***Normative***	
Modules – 2		**Year**	
Semantic modules: 2		**2020-2021**	
	Specialty: 074 "Administrative Management", 051 "Economics"	**Course**	
		1m	2m
		Semester	
General amount of hours – 90/120		1	3
		Lectures	
		-	
A week's hours for the daily form of studies: audience – 4 independent work of student - 4	Educational level: ***master***	**Practical, seminar**	
		44	52 hours
		Laboratory	
		-	
		Independent work	
		46	68 hours
		Individual tasks:	
		-	
		Type of control:	
		credit	**credit**

Note. Correlation of amount of o'clock of audience employments makes to independent and individual work:
for the daily form of studies (%) - 49/51 (44/46)
for the daily form of studies (%) - 43/57 (52/68)

1. Purpose and task of educational discipline

Purpose: The purpose of discipline' "Economical Informatics" is to develop knowledge about the collection, storage, processing and transmission of economic information using a variety of hardware and software tools, as well as the organization of computational processes and effective use of modern information technologies and systems in professional activities.

The study of the discipline "Economical Informatics" involves the formation of students' competencies (derived from the educational and professional program):

№	Type of program competencies	Program competence	Code
	General		
1		Ability to abstract thinking, analysis and synthesis.	ЗК 1
3		Ability to apply conceptual and basic knowledge, understanding the subject area and the profession of manager.	ЗК 2
4		Skills in the use of information and communication technologies to search, process, analyze and use information from various sources.	ЗК 4
	Special (professional, subject) competencies		
7		Ability to create and organize effective communications in the management process.	ФК8

2.3 Program learning outcomes

As a result of studying the discipline "Economical Informatics" the student must be able to demonstrate the following learning outcomes (derived from the educational-professional program):

№	Program learning outcomes	Code
1	Demonstrate skills of search, collection and analysis of information, calculation of indicators to substantiate management decisions.	ПРН 6
2	Be able to use modern information technologies, blockchain technologies in the management of resources and databases to justify management decisions on the choice of innovative technologies in agricultural enterprises.	ПРН 19

<div align="center">

Program of educational discipline
(approved by academic Council of SNAU Protocol #12 from 06.04.18y.)

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Semantic module 1. Introduction to Economical Informatics.

Module 1. Basics of Economical Informatics.

Topic 1.1. Introduction. AMW, information and their role in governance.

The value of information in management. Subject, method, objectives and purpose of the course. The main objectives of IP. Essence and creation stages, principles and structure of management information systems. AMW of manager. Information technology decision support, using computer systems. AMW accounting, control and analysis. Prospects of information systems and technologies.

Topic 1.2. Business information. Basic concepts.

The concept of economic information, messages and data, measuring the quantity and quality of information. Classification of information on different grounds. 2. Economic data and its types. 3. Forms adequacy of the information measures and quality information. its properties. Systems of classification and coding of economic information

Topic 1.3. Technical means of economic information.

Purpose, structure and classification of means of economic information processing tools. Architecture PC. The principle of open architecture. The composition of the central equipment and PC peripherals. Basic computer devices, their purpose and brief description

Topic 1.4. Classification of software processing of economic information.

Definition and structure of computer software, classification software. System software. Service software. Systems and automation programming. Application Software (LAP). Key components of modern middleware. The names and characteristics of the applications. The concept of the integrated system. Examples of integrated systems.

Topic 1.5. Operating Systems.

The concept of operating system; Classification of operating systems and their characteristics; concept file directory; Names drive. General characteristics of the operating system Windows; Structure of the operating system and its capabilities.

Topic 1.6. Applications purpose, MS Office.

General characteristics of modern integrated package Microsoft Office and use it to solve office problems. The structure of the package MS Office. Types of documents used. Additional (built) program package MS Office. The interface package. Common elements of the interface. Features of the user interface. Import items from other applications, export data to other applications.

Topic 1.7. Basics in the environment spreadsheet MS Excel.

Spreadsheet editors. Key features and functionality of the Excel spreadsheet package MS Office. Working with Spreadsheets MS Excel. Data types, types of addressing in Excel. AutoComplete. Terms of calculations in MS Excel. Plotting and charting tools MS Excel. Chart Wizard. The concept of spreadsheet functions. Characteristic features MS Excel. The types of functions: mathematical, logical, statistical and financial functions. Terms of use

features. Master functions. Arrays and functions for processing. Terms of use functions for handling arrays. Databases MS Excel. Creating a database using a form. Sorting, filtering database. Means of data, AutoFilter and advanced filter. Prediction using Microsoft Excel. Graphical representation of trends in data rows. The use of integrated environment Visual BASIC programming language for application development MS Excel.

Semantic module 2. Data base system.

Module 2. Information systems

Topic 2.1. Fundamentals of database. System Database Management MS Access.

Introduction to databases: the term "database (DB)", "the concept of database", "data model". The concept of the database management system (DBMS). Architecture DBMS. Analysis functionality and comparison of different databases. Purpose, general characteristics, features and capabilities of DBMS MS Access. Objects database MS Access.

Topic 2.2. DBMS MS Access. Create, edit tables and table forms database

Tables in MS Access and how to create them. Name fields and data types. Properties fields. Alternative means of creating tables Table Wizard. Comparison of different ways to create spreadsheets. The concept of primary and foreign keys. Entering data into a spreadsheet. Relations between tables. Scheme data. Exporting tables. Forms in MS Access. The concept of form, purpose, types and creation modes: with the Masters form in design mode, modes AutoForm. Features create forms in database MS Access. Creating, editing and formatting controls in the form.

Topic 2.3. The system database MS Access. With the creation of queries, MS Access Report

Requests in MS Access. Create, edit and use requests. Defining query types and creation modes. Interface dialog box to create model query and control its objects. Creating and editing simple and complex queries on the sample. Determination of conditions of selection. Reports in MS Access. The concept of the report, purpose, types and creation modes: using reports Masters in Design view. Features reporting database MS Access. Preview mode report and technology use. Setting page report and its print.

Topic 2.4. Information systems in the management of enterprises and the economy.

Information systems and their role in the organization and management of the economy. The concept of governance. Direct feedback to management. Categories and levels of management. Characteristics of the enterprise from the perspective of the general principles of construction and operation systems. The control system (CS) now. Definition of IP-based closed-loop SU and information system concept IS different activities: national, local, industry, industrial associations and individual enterprises. Problems of implementation ARM (IS). Prospects for the development and application of IP

Topic 2.5. Fundamentals of Information Systems.

General characteristics of information systems. The main objectives of IP. Prospects for IP. Classification IP. Structure information systems. Technical support: means of computer technology, communication technology tools, means office equipment, computer networks. Information: Software IP: operating systems, programming systems

and automation programming. Application software. Technological support IP: modes of data organization processes data. Organizational support IP. Legal support of IP.

Topic 2.6.Information system.

The history of IS Modern organizational and economic IS. Six main types of IC. Characteristics of the main information technologies. Examples of ISs. Structure IP Galaxy, S / 3, BAAN IV, IC 1C Structure Characteristics of the main subsystem.1S Enterprise. Characteristics of the main structure of IS subsystems.

Topic 2.7. Fundamentals of AMW

Stages of designing the database structure. Information and logical model of relational databases. The life cycle of AIS. Development of software and information-based AIS core systems management databases. Development of software and information-based AIS core systems management databases. The organization works to create and implement systems. Documentation for ARM development

Topic 2.8. Modern and information technology. Information Technology: concept, stages of development and their types. Classifications of technology. Information technology data. Information technology management. Information Technology in the office. Information technology Decision Support. Information Technology Internet.

4. Structure of educational discipline

Titles the semantic modules and topics	Volume of hours											
	full-time education						full-time education					
	Total	including					Total	including				
		L	P	Lab	Ind	I.W.		L	P	Lab	Ind	I.W.
1	2	3	4	5	6	7	8	9	10	11	12	13

Semantic module 1. Introduction to Economical Informatics
Module 1. Basics of Economical Informatics.

Titles the semantic modules and topics	Total	L	P	Lab	Ind	I.W.	Total	L	P	Lab	Ind	I.W.
Topic 1: Introduction to discipline. Data versus information							-	-				
Topic 2: Computer, structure elements of PC, hardware	14		4		10		14		4		10	
Topic 3: Software	14		4		10		14		4		10	
Topic 4: Introduction to MS Excel	4		4		-		4		4			
Topic 5: Formatting data, entering data	4		4		-		6		6			
Topic 6: Formulas and functions. Charts, Data manipulation	4		4		-		6		6			
Total for module 2	40		20		20		**44**		**24**		**20**	

Module 2. Applications of Information technologies

Titles the semantic modules and topics	Total	L	P	Lab	Ind	I.W.	Total	L	P	Lab	Ind	I.W.
Topic 7: Solving LP Problems with Excel	16		6		10		16		6		10	
Topic 8: Simplex method	16		6		10		16		6		10	
Topic 9: Transportation, transshipment and Assignment problems.	12		6		6		18		8		10	

Topic 10: Information resources of Internet global network.	6	6			24	8	18	
Total for module 2	50	24	26	**76**	**28**	**48**		
Total hours for course	90	44	46	**120**	**52**	**68**		

6. Themes of practical employments

N	Name of theme	Amount hours	
1	*Practical work 1.* Data visualizations in Excel	4	4
2	*Practical work 2*. Report information system in Excel	4	4
3	*Practical work 3.* Database in Excel	4	4
4	*Practical work 4.* Pivot table in Excel	4	4
5	*Practical work 5.* Multi-Pivot table in Excel	4	6
6	*Practical work* 6: Prediction in Excel	4	6
7	*Practical work* 7: Solving linear programming tasks in MS Excel.	4	6
8	*Practical work*: Simplex method for solving linear programming tasks in MS Excel.	4	6
9	*Practical work* 9: Transportation problem, solution in MS Excel.	6	6
10	*Practical work* 10: Information resources of Internet	6	6
	Total	**44**	*52*

7. Independent work

N	Name of theme	Amount hours
	Theme: The Information ware. 1. Types of Data. 2. Data versus Information. 3. Requirements which behave to economic information.	0/10
	Theme: Systems Concepts. Four Model Types. Computer-Based Information system. 1. Information management 2. Interest in information management	3/5

N	Name of theme	Amount hours
	3. Who are the information users? What managers do	
	Theme: Providing subsystem. Hard and soft ware. 1. Introduction 2. Basic Computer Operations 3. Components of a Computer 4. Computer Types	0/5
	Theme: Using Information Systems for Competitive Advantage. 1. Introduction 2. How Information Systems Affect Organizations 3. The Internet and Organizations 4. What Managers Can Do	10/10
	Theme: DSS 1. DSS introduction, 2. Concept and terminology of DSS	10/10
	Theme: An intellectual analysis of data 1. Technology of Data Mining. 2. Neuron networks. Genetic algorithms.	18/28
	Total	**46/68**

8. Methods of studies

1. Methods of studies after the source of knowledge:
    1.1. *Verbal:* a story, explanation, lecture, instructing, work, is with a book (reading, summarizing, making of tables, charts).
    1.2. *Evident: demonstration, illustration.*
    1.3. *Practical: laboratory method, practical work.*

2. Methods of studies after character of logic of cognition.
    2.1. *Analytical.*
    2.2. *Methods of synthesis.*
    2.3. *Objective method.*
    2.4. *Deductive method.*

3. Methods of studies are after character and level of independent intellection of students.
    3.1. *Problem (whether problem informative)*
    3.2. *Partly searching (heuristic)*
    3.3. *Research*

3.4. *Genesial*
3.5. *Explanatory demonstrative*

4. Active methods of studies are the use of hardware's of studies, self-appraisal of knowledge, use of educational and supervisory tests, use of compendia of lectures.

5. Interactive technologies of studies are the use of multimedia technologies (kahoot! mind maps)**.**

9. Control methods

1. Rating control after a 100-ball by the scale of evaluation.
2. A lead through of intermediate control is during a semester (intermediate attestation)
3. estimation of current work of students:
- level of knowledge, shown on practical and laboratory employments;
- activity is during the job processing on employment;
- results of implementation and defense of laboratory works;
- express-control is during audience employments;
- independent working of theme on the whole or separate questions;
- registration of abstracts, reports;
- testing results.

10. Points for exam

Current testing and self-study															IW	Total for moduls	Attestation	Total
Semantic module 1 – 35 points							Semantic module 2 – 35 points											
T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	15	70 (55+15)	15	100
5	5	5	5	5	5	5	4	4	5	5	4	5	4	4				

Evaluation scale: national and ECTS

Total points	ECTS	National rating
		Exams, term paper, practice
90 – 100	A	Excellent
82-89	B	Good
75-81	C	
69-74	D	Satisfactory

60-68	**E**	
35-59	**FX**	Unsatisfactory
1-34	**F**	Poor

Methodical ware.

1. S.Ahadzhanova Economical Informatics(e-course in Moodle:Address – https://cdn.snau.edu.ua/moodle/course/view.php?id=3908

12. Recommended literature
Base

1. Agadzhanova, S., Barchenko, N., Lecture notes for English-speaking Students of Economics and Management Faculty, 1rd year study master's degree, specialty: 073 Management, EP "Administrative management". September, 2018. - 96 p.

2. Kenneth C. Laudon and Jane Price Laudon. Management Information Systems: Organization and Technology, 6th edition, by Kenneth C. Laudon and Jane Price Laudon, produced by Prentice-Hall, a division of Pearson Education.

3. Rainer, R. Kelly and Cegielski, Casey G. (2019). "Introduction to Information Systems: Enabling and Transforming Business, 3rd Edition"

Additional
1. Lindsay, John (2016). Information Systems – Fundamentals and Issues. Kingston University, School of Information Systems.
2. Dostal, J. School information systems (Skolni informacni systemy). In Infotech 2017 - modern information and communication technology in education. Olomouc, EU: Votobia, 2017. p. 540 – 546. ISBN 978-80-7220-301-7.
3. O'Leary, Timothy and Linda. Computing Essentials Introductory 2018. McGraw-Hill on Computing 2018.com.