

Educational Establishment

«The Grodno State Agrarian University»

APPROVED BY

Rector of the Educational Establishment

“The Grodno State Agrarian University”

_____ V.K.Pestis

“ ”

Registration № УД-_____

Resource Economy and Resource Effectiveness Evaluation in AIC

The curriculum of higher education institutions

discipline for the specialty:

1-25 80 01 Economics

The curriculum is compiled on the basis of the educational standard of the second stage of higher education OSVO 1-25 80 01 - 2019 in the specialty 1-25 80 01 Economics

Composed by:

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It is considered and approved for the publishing in the meeting the department of economics in the AIC, the report № _____ from _____.2019 .

It is approved and recommended for the approval by methodical council of Educational Establishment "The Grodno state agrarian university" _____.2019, the report № ____

1.EXPLANATORY NOTE

1.1 Goals and objectives of the discipline

Today, economic conditions require adequate adaptation of the functioning of enterprises as business entities, which necessitates the acquisition of knowledge and skills from persons making economic decisions to create and develop an enterprise development strategy. The peculiarity of the program “Resource Economy and Resource Effectiveness Evaluation in AIC” consists in teaching this discipline in relation to changing economic conditions, which is reflected in its structure, introduction, new topics, questions and approaches in the presentation of the material.

The basis for the development of the curriculum for the subject discipline “Resource Economy and Resource Effectiveness Evaluation in AIC” is the educational standard of higher education in the specialty 1-25 80 01 Economics.

The aim of the discipline is the formation of knowledge on the rationale for making effective management decisions in the field of implementation of resource-saving problems at various levels of economic management; to develop systemic economic thinking; teach to solve complex economic problems; to master and apply modern methods of economic analysis; to develop skills for conducting economic calculations and use them to justify a resource-saving strategy and increase resource efficiency.

Tasks of the discipline:

- development and consolidation of skills for conducting economic calculations;
- development of skills to determine and justify the choice of economically feasible resource-saving strategies and tactics of economic activity of the enterprise;
- systematic study of economic tools for level assessment economic efficiency of the use of material and raw materials and fuel and energy resources;
- the development of methods for predicting the development of economic processes and developing a development strategy for the enterprise, taking into account the implementation of regulatory materials governing resource-saving activities of the Republic of Belarus.

1.2 Place of discipline in the system of training a specialist with higher education

The discipline refers to the disciplines of the component of the institution of higher education, module "Business Management".

The knowledge in this discipline is based on the principles of the materialistic methodology, on the knowledge of the methodology for substantiating the adoption of effective management decisions that ensure the growth of competitiveness of products and enterprises based on a resource-saving strategy; features of the development of strategies and tactics for the behavior of an agricultural enterprise in conditions of limited resources.

Mastering the discipline is based on competencies acquired earlier in the study of the disciplines of "Marketing", "Economics of organizations (enterprises)", "Economics of environmental management".

The knowledge and skills generated by this academic discipline are necessary for studying the following disciplines of the master's program - innovative development of an enterprise (organization), data mining technology, and are also the basis for effective research practice and preparation for final certification.

1.3 The requirements for the development of academic discipline

As a result of studying the discipline, the undergraduate must consolidate and develop the following universal (CC), in-depth professional (CPC) special (SC) competencies provided for in the educational standard.

CC-3. To take the initiative, including in risk situations, to solve problem situations on the basis of an innovative approach/

SC-8. Be able to apply modern methodologies for modeling business processes of an organization as the basis for their optimization.

As a result of studying the discipline, the undergraduate must

know:

- methods and methods of conducting complex economic calculations;
- a methodology for substantiating the adoption of effective management decisions that ensure the growth of competitiveness of products and enterprises based on a resource-saving strategy;
- features of the development of strategies and tactics of enterprise behavior in conditions of limited resources;
- mechanism for the effective implementation of resource-saving strategy of the enterprise.

be able to:

- carry out a comprehensive economic assessment of the enterprise, including and the level of use of material resources;
- monitor the dynamics of the use of material resources;
- to form and optimize the production program of the enterprise in conditions of limitation of material and raw materials and fuel and energy resources;

- develop and justify plans for the strategic development of the enterprise (business plans), ensuring its efficient resource-saving activities;
- choose effective investment options for the enterprise;
- develop and implement innovative programs, ensure the effectiveness of innovative activities and create economic conditions for building up the scientific, technical and innovative potential of the enterprise;
- substantiate the directions of increasing the efficiency of using the resource potential, rationalizing the level of production costs and product sales, increasing profitability, competitiveness and the level of economic security of the enterprise;
- justify the ways of effectively conducting environmental activities of the enterprise, ensuring the environmental safety of production.

Own to:

- methods of conducting systematic economic calculations;
- methods of analysis of situational changes;
- methods of making and justifying managerial decisions to achieve the effective functioning of complex socio-economic structures.

1.4 The total number of hours and the number of class hours devoted to the study of academic discipline in accordance with the curriculum of higher education institutions in the specialty

In accordance with the curriculum of the educational institution “Grodno State Agrarian University”, only 102 hours are allocated for the study of the subject “Resource Economy and Resource Effectiveness Evaluation in AIC”, of which 42 classroom hours.

1.5 Form of higher education

The study of the subject “Economics of Resource Saving and Assessment of Resource Efficiency in the AIC” is provided for full-time and part-time undergraduates.

1.6 Distribution of class time by occupation, course and semester

In accordance with the curriculum and schedules of the educational institution’s educational process “Grodno State Agrarian University”, the study of the course “Resource Economy and Resource Effectiveness Evaluation in AIC” is provided for:

- full-time undergraduates in 1 semester in the amount of: classroom instruction 42 hours, of which 16 hours of lectures and 26 hours of seminars.

The form of the current certification in the discipline " Resource Economy and Resource Effectiveness Evaluation in AIC " is a credit.

2. CONTENTS OF THE EDUCATIONAL MATERIAL

SECTION 1. THEORETICAL FOUNDATIONS FORMING RESOURCE SAVING STRATEGIES AND INCREASING RESOURCE EFFICIENCY

Theme 1.1 Introduction. Resource potential of the world economy

The subject, purpose and objectives of the discipline.

The concept of natural and economic resources and their role in the global economy. Absolute and relative limited resources. Classification of natural resources. Economic assessment of the world's natural resources and their distribution between countries.

Theme 1.2 Assessment of the resource potential of the Republic of Belarus

Mineral and raw materials complex of the Republic of Belarus and the effectiveness of its use. Land, water and forest resources of the Republic of Belarus and the effectiveness of their use. Problems and tasks of further development of the resource potential of the Republic of Belarus

Theme 1.3 Economic resources in economic systems

The role, composition, classification of economic resources. The main categories of the economy of resource conservation. The optimal ratio of resources in the enterprise. Methods for determining the efficiency of resource use in an agricultural enterprise.

Theme 1.4 Material resources as a factor of production and a component of the resource potential of the national economy

Role, composition of material resources.

Classification of raw materials, materials, fuel and energy resources. The structure of material costs and factors affecting it. The system of indicators for assessing the level and efficiency of use of material costs. The main directions of the rational use of material resources.

Theme 1.5 Resource conservation as a priority and a factor in sustainable socio-economic development

Actual problems of resource conservation in modern business conditions. Forms of resource conservation and their essence, content. Resource-saving factors

and their characteristics. Features and directions of resource conservation in the Republic of Belarus.

SECTION 2. ENHANCEMENT OF ENERGY EFFICIENCY AS A PRIORITY DIRECTION OF RESOURCE-SAVING ACTIVITIES

Theme 2.1 World energy: assessment of the state, problems and development prospects

The role of energy in the life and development of society. Types of energy and methods for its production. The concept of energy and energy system. Basic concepts, terms used in energy and energy conservation. The essence and classification of fuel and energy resources. The world's energy resources and their efficiency

Theme 2.2 Fuel and energy complex (FEC) of the Republic of Belarus

The concept, role of the fuel and energy complex (FEC) in the country's economy. Composition and structure of the fuel and energy complex of the Republic of Belarus. Directions of traditional energy in Belarus. The effectiveness of the use of fuel and energy resources (FER) in the sectors of the national economy. The main directions of the energy policy for the development of the fuel and energy complex (FEC) of the Republic of Belarus.

Theme 2.3. Energy-saving activities in the Republic of Belarus.

Energy security is the basis of the state's energy policy. The concept, role, significance and content of energy-saving activities. State policy and management of energy conservation in the Republic of Belarus. Key policy documents for energy conservation. The Law on Energy Saving.

Theme 2.4. Renewable (alternative) energy sources in the energy supply system of the Republic of Belarus

The concept, the role of alternative energy sources. Solar energy: potential, world experience, economic and environmental assessment of use. Wind energy: world experience, potential, economic and environmental assessment. Bioenergy: world experience, prospects for use. Local fuels. Vegetable oil based fuels: world experience, prospects for use, economic and environmental assessment. World Ocean Resources. Hydrotechnical resources of the Republic of Belarus. Geothermal energy: world experience, problems and prospects of use.

Theme 2.5. Nuclear energy. Secondary energy resources.

Nuclear power: world experience, features of nuclear power. Prospects for the development of nuclear energy in the world and the Republic of Belarus. Types of nuclear power plants. Secondary energy resources (VER): classification, assessment and prospects of application in the national economy and agribusiness.

SECTION 3. MECHANISM FOR MANAGING RESOURCE-SAVING ACTIVITIES IN THE AGRICULTURAL INDUSTRIES

Theme 3.1. The main areas of resource conservation in the agricultural sector

The basic principles of energy-saving policies in the agricultural sector. Intensification is the main way to reduce energy consumption. Experience and prospects of using renewable and secondary energy sources in agriculture. Nanotechnology, biotechnology, "precision farming" as promising areas of resource conservation.

Theme 3.2. Economic and energy assessment of the effectiveness of organizational and agricultural solutions in crop production

The essence and features of energy analysis in agriculture. Terms and concepts used in energy analysis. Energy equivalents and their types. The ratio of energy units. Types of energy costs. Methodology for calculating the effectiveness of technological processes (operations) in crop production. Energy assessment of agricultural technologies in crop production.

Theme 3.3. Ways to reduce the energy intensity of technological processes in crop production

Optimization of land use, the use of fertilizers and plant protection products. The main directions of resource conservation in soil cultivation. Energy-saving techniques for sowing, fertilizing, protecting agricultural plants. Ways to reduce energy costs during harvesting, refinement and storage of crops.

Theme 3.4. Methodology of economic and energy technology assessment in animal husbandry

The main methodological provisions for determining the energy intensity of production in livestock. The structure of energy assessment of production technologies. Determination of the constituent elements of energy intensity in animal husbandry.

Theme 3.5. Resource conservation in the production and use of feed

Energy-saving methods of cleaning, storage, distribution of feed. Energy-saving techniques for preparing feed for feeding. Mechanisms and devices that reduce energy consumption in feed production.

Theme 3.6. Resource conservation in livestock, pig and poultry farming

Analysis of energy intensity and labor intensity of livestock, pig, poultry production and the main directions for their reduction. Energy-saving technologies in the production of milk, beef, pork, poultry. Energy-saving methods of keeping, feeding animals and poultry. Resource-saving techniques for the removal of manure, water supply for animals and poultry.

Theme 3.7. Economics of resource-saving technologies for creating the optimal microclimate of livestock buildings

Selection of optimal internal planning solutions. Ways to keep animals and birds. The main directions of energy saving when creating a microclimate of livestock buildings. Ways to reduce energy costs when using lighting systems

MAP OF THE COURSE

Number of section, theme, lessons	The name of section, employment theme; the list of studied questions	The quantity of classroom hours					Material provision of employment (evident, methodical benefits, etc.)	Literature	The form of the control of knowledge
		Hours in total	Lectures	Practical (seminar) lessons	laboratorial	Controllable-independent work of the student			
1	2	3	4	5	6	8	9	10	11
1	THEORETICAL FOUNDATIONS FORMING RESOURCE SAVING STRATEGIES AND INCREASING RESOURCE EFFICIENCY	27,5	5	5		17,5			
1.1.	Introduction. Resource potential of the world economy	5,5	1	1		3,5	The computer presentation № 1	[1] [3] [4]	Oral poll, preparation of papers on a subject
1.1.1.	The subject, purpose and objectives of the discipline.								
1.1.2.	The concept of natural and economic resources and their role in the global economy								
1.1.3.	Economic assessment of the world's natural resources and their distribution between								

	countries								
1.2.	Assessment of the resource potential of the Republic of Belarus	5,5	1	1		3,5	The computer presentation № 2	[4]	Oral poll, preparation of papers on a subject
1.2.1	Mineral and raw materials complex of the Republic of Belarus and the effectiveness of its use								
1.2.2	Land, water and forest resources of the Republic of Belarus and the effectiveness of their use								
1.2.3	Problems and tasks of further development of the resource potential of the Republic of Belarus								
1.2.4	Assessment of the level of resource self-sufficiency and import dependence of the Republic of Belarus.								
1.3	Economic resources in economic systems	5,5	1	1		3,5	The computer presentation №3	[1] [3]	Oral poll Solution of tasks.
1.3.1	The concept of economic resources, their composition and classification. Interchangeability of economic resources.								
1.3.2	The essence of the categories “costs”, “reserves”, “losses” and their classification								
1.3.3.	Methods for determining the efficiency of resource use in the organization (at the enterprise)								
1.3.4	The concept of Pareto-efficiency and Pareto-optimality of the use of resources.								
1.4	Material resources as a factor of production and a component of the resource potential of the national economy	5,5	1	1		3,5	The computer presentation №4	[1]	Oral poll on a subject, preparation of papers on

								[3]	a subject
1.4.1	The role and importance of material resources in the national economy, the composition of material resources								
1.4.2	The concept, composition and structure of material costs. Factors affecting the structure of material costs								
1.4.3.	Systematization of indicators, material consumption of products and methods of their calculation.								
1.4.4.	The main directions of rational and economical use of material resources in the agricultural sector								
1.5.	Resource conservation as a priority and a factor in sustainable socio-economic development	5,5	1	1		3,5	The computer presentation № 5	[4] [5]	Testing on a subject, performance and check of a practical task. Preparation of papers
1.5.1	Actual problems of resource conservation in modern business conditions								
1.5.2	Methodological aspects of the category “resource saving”, resource saving as a process, as an indicator, as a system of measures.								
1.5.3.	The concept of resource saving optimization. Loss of resources, their sources.								
1.5.4.	Features and directions of resource conservation in the Republic of Belarus. The purpose, objectives, indicators and principles of the formation of the State Scientific and Technical								

	Program "Resource Saving - 2016-2020".								
2.	ENHANCEMENT OF ENERGY EFFICIENCY AS A PRIORITY DIRECTION OF RESOURCE-SAVING ACTIVITIES	28,5	6	5		17,5			
2.1.	World energy: assessment of the state, problems and development prospects	5,5	1	1		3,5	The computer presentation № 6	[1] [3] [4]	Written poll, performance of a practical task, preparation of rferat on a subject
2.1.1	The role of energy in the life and development of society. Types of energy and methods for its production.								
2.1.2	The concept of energy and energy system.								
2.1.3	The world's energy resources and their efficiency								
2.2.	Fuel and energy complex (FEC) of the Republic of Belarus	5,5	1	1		3,5	The computer presentation №7	[1] [5]	
2.2.1	The concept, role of the fuel and energy complex (FEC) in the country's economy. Composition and structure of the fuel and energy complex of the Republic of Belarus.						Methodical indications of chair. Annual reports	[1] [7] [8]	Oral poll, papers on a subject, performance and protection of a practical task
2.2.2	Directions of traditional energy in Belarus. The effectiveness of the use of fuel and energy resources (FER) in the sectors of the national							[1]	Written poll, papers on a subject, performance

	economy.							[3] [4]	and protection of a practical task
2.2.3.	The main directions of the energy policy for the development of the fuel and energy complex (FEC) of the Republic of Belarus.								
2.3.	Energy-saving activities in the Republic of Belarus	5,5	1	1		3,5	The computer presentation №8	[1] [3] [4]	Oral poll, papers on a subject, performance and protection of a practical task
2.3.1	Energy security is the basis of the state's energy policy.						Methodical indications of chair. Annual reports	[5] [6] [8]	Oral poll on a subject, preparation of papers
2.3.2	Energy intensity of the national product, products of various sectors of the national economic complex as an economic category and economic indicator								
2.3.3.	The state policy of the Republic of Belarus in the sphere of energy conservation: content, and priorities, legislative framework.								
2.3.4	Forecast indicators of energy conservation in the Republic of Belarus.								
2.4.	Renewable (alternative) energy sources in the energy supply system of the Republic of Belarus	6,5	2	1		3,5	The computer presentation №9	[6]	Oral poll on a subject, preparation of papers
2.4.1	The concept, the role of alternative energy								

	sources. Solar energy: potential, world experience, economic and environmental assessment of use.								
2.4.2	Wind energy: world experience, potential, economic and environmental assessment. Bioenergy: world experience, prospects for use. Local fuels.						Methodical indications of chair. Annual reports		
2.4.3	Geothermal energy: world experience, problems and prospects of use								
2.5.	Nuclear energy. Secondary energy resources	5,5	1	1		3,5	The computer presentation № 10	[1] [3] [4]	Oral poll, preparation of papers on a subject
2.5.1.	Resources for the development of nuclear energy. NPP: the concept and types of nuclear power plants. Features of nuclear power.								
2.5.2	Methodology for assessing the economic feasibility and effectiveness of the construction of nuclear power plants. Assessment of economic efficiency and feasibility of developing nuclear energy in the Republic of Belarus.								
3.	MECHANISM FOR MANAGING RESOURCE-SAVING ACTIVITIES IN THE AGRICULTURAL INDUSTRIES	46	9	12		25			

3.1.	The main areas of resource conservation in the agricultural sector	6,5	2	1		3,5	The computer presentation № 11	[1] [3] [4]	Oral poll, preparation of papers on a subject
3.1.1.	The basic principles of energy-saving policies in the agricultural sector. Intensification is the main way to reduce energy consumption								
3.1.2.	Nanotechnology, biotechnology, "precision farming" as promising areas of resource conservation								
3.2.	Economic and energy assessment of the effectiveness of organizational and agricultural solutions in crop production	6,5	2	1		3,5	The computer presentation №12	[1] [3] [4]	Oral poll. Discussion of problematic issues. Solution of tasks
3.2.1.	The essence and features of energy analysis in agriculture. Terms and concepts used in energy analysis								
3.2.2.	Methodology for calculating the effectiveness of technological processes (operations) in crop production. Energy assessment of agricultural technologies in crop production								
3.3	Ways to reduce the energy intensity of technological processes in crop production	6,5	1	2		3,5	The computer presentation № 13	[1] [3]	Oral poll Solution of tasks.

								[4]	
3.3.1.	Optimization of land use, the use of fertilizers and plant protection products. The main directions of resource conservation in soil cultivation								Oral poll on a subject, Total examination on the module 2
3.3.2.	Ways to reduce energy costs during harvesting, refinement and storage of crops.								
3.4.	Methodology of economic and energy technology assessment in animal husbandry	6,5	1	2		3,5	The computer presentation № 14	[4] [6] [8]	
3.4.1.	The main methodological provisions for determining the energy intensity of production in livestock						Methodical indications of chair. Annual reports		Oral poll on a subject, performance of a practical task
3.4.2.	The structure of energy assessment of production technologies. Determination of the constituent elements of energy intensity in animal husbandry.								
3.5.	Resource conservation in the production and use of feed	6,5	1	2		3,5	The computer presentation № 15	[1] [2] [6]	Written poll on a subject, performance and check of a practical task.

3.5.1.	Energy-saving methods of cleaning, storage, distribution of feed. Energy-saving techniques for preparing feed for feeding.								
3.5.2.	Mechanisms and devices that reduce energy consumption in feed production						Methodical indications of chair. Annual reports		
3.6.	Resource conservation in livestock, pig and poultry farming	6,5	1	2		3,5	The computer presentation № 16	[4] [11] [12]	Testing on a subject, performance and check of a practical task. Preparation of papers
3.6.1.	Analysis of the energy intensity and the complexity of the production of livestock, pig, poultry and the main directions of their reduction.								
3.6.2.	Energy-saving technologies in the production of milk, beef, pork, poultry.								
3.7.	Economics of resource-saving technologies for creating the optimal microclimate of livestock buildings	7	1	2		4	The computer presentation № 17	[4] [11] [12]	Written poll, performance of a practical task, preparation of referat on a subject
3.7.1.	Selection of optimal internal planning solutions.						Methodical indications of		

	Ways to keep animals and birds						chair. Annual reports		
3.7.2.	Ways to reduce energy costs when using lighting systems								
	All hours	102	20	22		60			credit

4. INFORMATION AND METHODOLOGICAL PART

Guidelines for the organization of independent work of students in the discipline " Resource Economy and Resource Effectiveness Evaluation in AIC »

The main areas of independent work are:

- initially detailed familiarization with the curriculum;
- familiarization with the list of recommended literature on discipline in the whole and its sections, its presence in the library and other available sources, the study of the necessary literature on the topic, the selection of additional literature;
- study and expansion of the lecture material of the teacher due to special literature, consultations;
- preparation for seminar (practical) classes according to specially developed plans with the study of basic and additional literature;
- preparation for the implementation of diagnostic forms of control (tests, colloquiums, tests, etc.);
- preparation for a credit.

Normative and legislative acts

- 1.. The Law of the Republic of Belarus “On Energy Saving” (dated 08.01.2015 No. 239_3).
2. The Law of the Republic of Belarus “On Renewable Energy Sources” (dated December 27, 2010 No. 204).
3. The state program "Energy Saving" for 2016 - 2020
4. National program for the development of local and renewable energy sources for 2011 - 2015.
5. A comprehensive program for the design, construction and reconstruction of energy-efficient residential buildings in the Republic of Belarus for 2009-2010 and the prospect until 2020.
6. The Republican program of energy conservation for 2016-2020 (approved by the decree of the Council of Ministers of the Republic of Belarus of December 24 2010 No. 1882).
7. The state program for the construction of energy sources on local fuels in 2010 - 2015 (approved by Decree of the Council of Ministers of the Republic of Belarus of July 19, 2010 No. 1076).
8. The program for the construction of energy sources operating on biogas for 2010 - 2012 (approved by the Resolution of the Council of Ministers of the Republic of Belarus of June 9, 2010 No. 885).

Literature

Primary:

1. Buts, V.I. Theoretical aspects of resource management in agricultural production / V.I. Buts. - Slides: BSAA, 2017 - 170 p.

2. Zhudro, M.K. Resource Saving Economics in the Agro-Industrial Complex: Textbook allowance / M.K. Zhudro, V.M. Badina, M.M. It is wise, - Minsk: ITC of the Ministry of Finance, 2014.-334 p.

Additional:

3. Badina, V. M. The use of nanotechnology in the agricultural sector / V. M. Badina, M.Yu. Badina // Economic growth of the Republic of Belarus: globalization, innovativeness, sustainability: materials of the VIII International Scientific and Practical Conference, Minsk, May 21-22, 2015 at 2 vol. / [Editor: V.N. Shimov (ed.) And other]; Number of education Resp. Belarus, UO "Belarusian state. econ. un-t. " - Minsk: Belarusian State Economic University, 2015 .-- V. 2. - P. 54-55.

4. Bezverkhova, E.V. Resource-saving technologies as the basis for innovative development of the crop industry / E.V. Bezverkhova, V. G. Russkiy // Economics of agricultural and processing enterprises. 2013. - No. 9. - S. 45-47.

5. Buts, V. I. The mechanism of resource-saving management in agrarian enterprise: recommendations / V. I. Buts. - Slides: BSAA, 2016 .-- 28 p.

Internet

6 .[http://www. bioenergy.by](http://www.bioenergy.by).

7.<http://www. energttika.by>.

8.<http://www. reenergy.by>.

5. PROTOCOL FOR THE COORDINATION OF THE CURRICULUM OF THE UVO

Training Name disciplines with which approval required	Title departments	Suggestions about changes in the curriculum content institutions of higher discipline education	The decision made by the department that developed the curriculum (indicating the date and protocol numbers)
Environmental economics	Department of Economics of Agriculture	no	

**ADDITIONS AND CHANGES TO THE EDUCATIONAL PROGRAM
ON STUDIED EDUCATIONAL DISCIPLINE**

for ____ / ____ academic year

№	ADDITIONS AND CHANGES	The base

The curriculum is reviewed and approved at a meeting of the department
_____ (protocol No. ____ from ____ 20__ .)

Head of Department

A.A.Kazlou

APPROVED BY

Dean of the faculty

A.V. Gribov