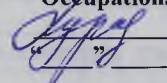


MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY NATIONAL AGRARIAN UNIVERSITY

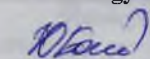
Department of Occupational Safety and Physics
Department of Feed Technology and Animal Feeding

“CONFIRMED”

Head of Department of
Occupational Safety and Physics

 (SM. Khursenko)
“17” 2020

Head of the Department of Feed
Technology and Animal Feeding

 (Ju.V. Bondarenko)

“03” 2020

CURRICULUM (SYLLABUS)

Occupational Health and Safety in industry and Civil Defense

Specialty: 205 Forestry

Educational program: Forestry

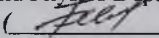
Faculty: Agrotechnology and Nature Management

2020 – 2021 training year

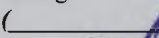
The work program on Safety in industry and civil protection 205 Forestry

Author:

Phd, Associate Professor of Occupational Safety and Physics Department
Khvorost T. V.


Signature

S.t. Department of Feed Technology and Animal Feeding
Mykhalko O. H.


Signature

“03”  2020, 20 p.

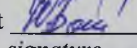
Curriculum has been approved on the Department of Occupational Safety and Physics Meeting.

Minutes of 09 June 2020, № 8

Head of Department  (Phd, Associate Professor S.M. Khursenko)

The Curriculum has been approved on the Department of Feed Technology and Animal Feeding Meeting.

Protocol of 05 June 2020 № 12

Head of the Department  (Associate Professor Yu.V. Bondarenko)

Coordinated by:

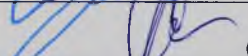
Guarantor of the educational program
Forestry


(A.V. Melnik)


Dean of the Faculty


(I.M. Kovalenko)

Dean of the Faculty


(M.Y. Dovzhyk)

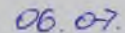
Dean of the Faculty


(V.O. Opara)

Methodist of the Department
of Education Quality, Licensing
and Accreditation

Registered in electronic data base

 06.07. 2020

1. Curriculum description

Name of indicators	Industry knowledge and direction of training, education level	Characteristics of discipline	
		full-time education	external form of education
Credits - 3.5	Branch of knowledge: 20 Agrarian Sciences and Food	Regulatory	
Modules - 2	Specialty: 205 Forestry	Year of training: 2020-2021	
Content module:		Course	
		2m	
		Semester	
		3	
		Lectures	
		12 hours.	
		Practical	
		26 hours.	
		-	
		Independent work	
		67 hours.	
		Type of control: <i>exam</i>	
Total hours - 105			
	Educational degree: master		

Correlation of numbers of classes to independent and individual work is: (%)
for full-time - 36/64 (38/67)

2. The purpose and objectives of discipline

Purpose:

Formation of future professionals (and masters) skills and competencies to provide effective safety management and improve working conditions on the basis of scientific and technological progress and international experience, as well as awareness of the indissoluble unity of successful professional activity with mandatory compliance with all requirements safety in the particular industry.

Formation of students' ability to think creatively, solve complex problems innovative character and make productive decisions in civil protection allowing for the future careers of graduates and scientific and technological progress.

Objectives:

To guarantee the preservation of health and performance of workers in production conditions specific areas of management through effective management of labor and responsibility in the formation of officials and specialists for collective and own safety.

Involves mastering of new theories, methods and techniques of forecasting emergencies, building models of their development, determining the level of risk and justification of complex measures to prevent emergencies, protection of personnel, population, material and cultural values in emergency situations, localization and liquidation their consequences.

As a result of academic discipline's study of a student should:

know:

- Regulatory framework in the field of health and safety; responsibilities, rights and responsibilities of managers to establish and ensure healthy and safe working conditions in entrusted industries; the role of labor services, labor and trade unions in the OSH management system; functions and tasks of safety management; types of plans and funding laws to improve conditions and safety. Methods and indicators of health and safety, occupational injuries, diseases, etc; class working conditions on indicators of hazards and dangers, severity and intensity of the work process category and class industrial facilities, organizational and technical means safety. State and legal framework of civil protection, its objectives and principles of construction; their obligations under the direction of professional activity based tasks in civil protection. monitoring methods and tools in emergencies, building models (scenario) their development and assessment of their socio-economic consequences; decisions on civil protection within their powers.

be able:

- Possess logic simulation methods dangers production processes in industry; analysis methods have undesirable consequences; conduct instruction and training of the industry on safety; develop and implement the production rational mode of work and rest, work process organization and jobs, mechanization and automation of manufacturing processes. Identify in production potential and real dangers, sources, factors and conditions for their possible effects on man; identify means and measures of collective and personal protection; make long-term, current and operational plans for the

protection of labor, identify sources of funding; perform calculations of economic loss from adverse effects and have comprehensive assessment methods of determining cost-effectiveness of measures to improve conditions and safety; develop and implement risk management systems (safety) at the workplace. Carry identification, research and development conditions of emergencies and to provide coordinated action to prevent them at the sites according to their professional duties; apply the method of prediction and assessment of the situation in the area of emergency situations (count source options damaging factors of emergencies controlled and used for forecasting, determination of capabilities and resources to overcome the consequences of emergencies); implement preventive and operational (emergency) measures of civil protection; interpret the latest advances in theory and practice of security management in emergency situations; provide quality staff training facility for civil protection, to provide assistance and advice to employees of the company (unit) with the practical issues of protection in emergency situations; assess the state of preparedness department to work under threats and emergencies according to established criteria and indicators.

3. The program of the course

" Occupational Health and Safety in Industry and Civil Defense "for training Masters degree field 181 Food Technology - approved educational methodical council of 16.1.17 pr.#5

Module 1. Occupational Health and Safety in industry

Topic 1 Safety management. Safety and health in risk management Introduction. Risk management, loss control and acceptable risk. Techniques used in risk management. Major areas of risk. Function of a loss control programme. Formal and informal safety meetings. Nature, occurrence and industrial relations implications of OHS issues

Topic 2 Hazard and risk management. Risk concepts. Role of hazards in injury causation. Planned hazard identification, formal and informal systems. Risk assessment. Principles behind risk assessment, and importance and limitations of scientific assessment

Topic 3 Accident prevention. Accident causation factors. *Accident causes.* Elements of the work system influencing OHS. Basic human behavioral aspects of accident and injury occurrence. Principles behind the concept of non-culpable error. Accident investigation. Steps in preparing and conducting an accident investigation. Listing relevant accident causation factors

Topic 4 Risk engineering. Risk and reliability. Systems engineering. Errors and reasons for errors. Electrical safety. Fixed machinery hazards

Topic 5 Health and safety training. Health and safety training programmes Education and training needs. Designing an OHS training programme. OHS competencies and performance criteria for key workplace parties

Topic 6. Fundamental concepts and terms. Why safety. Accidents, injuries, and losses Accidents Defined Incidents and Accidents Types of Losses. Incident and accident theories Domino Theory Multiple Factor Theories Energy Theory Errors in

Management Systems. Single-Factor Theories. Unsafe acts and unsafe conditions. Incident–injury relationships. Incident–cost relationships. Preventive strategies Severity Cost Combinations The Three Es of Safety. How safe is safe enough

Module 2. Civil Defense

Topic 1. Fundamentals of Civil defense.

Definition of civil defense. Fundamentals of Civil defense in Ukraine. Structure of Unified State Civil Protection System. Operating modes of Unified State Civil Protection System. Early warning and emergency response. Fundamentals of Civil defense in China. International Civil Defence Organisation (ISDO). Main activities and protection of population and territories. The evacuation population during emergencies.

Topic 2. Classification of emergencies.

Definition of disaster. Definition of emergencies. Classification of emergencies in Ukraine. Classification of emergencies by origin. Classification of emergencies by levels. Types of Disaster. Impact of Disaster.

Topic 3. Fundamentals of emergency planning

Fundamentals of Emergency Planning. Protective Actions for Life Safety. Risk Assessment. Critical steps to crisis management. Planning civil defense facility. Protective actions for life safety. Evacuation. Sheltering. Lockdown. Incident stabilization. Hazards.

Topic 4. Emergency Response Plan

Fundamentals of Emergency Planning. Protective Actions for Life Safety. Risk Assessment. Critical steps to crisis management. Developing the Emergency Plan. Performance Objectives. Resource Management. Roles and Responsibilities for Building Owners and Facility Managers. Site and Facility Plans and Information. Steps for Developing the Emergency Response Plan. Public Emergency Services. Logistics considerations.

Topic 5. The process of planning civil protection measures

The process of planning civil protection measures. Plan of civil protection in peacetime. Plan of civil protection for a special period. Evacuation planning. Content of Plan of civil protection. Application of Plan of civil protection.

Topic 6. Actions during industrial disasters.

Actions during Chemical Accidents. Actions during Radiological Accidents. Actions during Explosions. Actions during Fire. Preventive and protective measures during industrial disasters. Intervention and rescue measures during industrial disasters. Instructions for the population during industrial disasters.

Topic 7. Actions during natural disasters

Actions during avalanches. Actions during earthquakes. Actions during floods. Actions during storms. Actions during landslides. Preventive and protective measures during natural disasters. Intervention and rescue measures during natural disasters. Instructions for the population during natural disasters.

Topic 8. Monitoring of potentially dangerous objects

Identification of potentially dangerous object. Identification of high-risk objects. PDO passport. Declaration of safety of high risk objects. Expertise of safety declaration HRO. Expertise of PLES. Development of plan of localization and liquidation of

emergency situations (PLES). Conformity assessment. Certification. Certification of conformity with ISO 9001. Assessment of conformity with technical regulations. Development and coordination of documents in the field of industrial safety. Method of determining the class of high danger.

Topic 9. Prevention of fires and explosions

Fires and explosions. Occupational safety and health management. Identification of fire and explosion risks. Preventive measures regarding explosions. Measures in case of an accident. Estimation of impact of a shock wave in the explosion of gas-air mixture. Risks and preventive measures regarding fire. Measures for explosion protection. Classification of explosive zones.

Topic 10. Organization of emergency rescue works in the destruction of buildings

The nature of the demolition of houses. Organization of APP initially. Degree of destruction of the settlement. The causes of destruction. Classification of blockages. Destruction premises. Classification of degrees of destruction. Height of destruction. Spread of destruction. The area of destruction.

Topic 11. Protection of population in case of a nuclear accident

The shelter of the population in protected buildings. Determination of radiation protection. Personal protection. Protection of population in case of a nuclear accident. Requirements defenses. Population shelter in protective structure. Repository. Radiation shelter. Layer half-radiation weakening of different materials. Radiation accident. Criteria for decision-making on the middle phase of the accident.

Topic 12. Assessment of socio-economic consequences of emergencies

Classification of losses as a result of an emergency. Assessment of the question of damages from emergencies. Calculate the question of damages from loss of life and health. Classification of economic losses. Classification of environmental damage. Classification of social damages.

Topic 13. Explosions and Blast Injuries

Key Concepts about explosions. Classification of Explosives. Blast Injuries. Selected Blast Injuries. Emergency Management Options. High-order explosives. Low-order explosives. Mechanisms of Blast Injury. Explosive-related Injuries. The impact of the shock on living organisms. The impact of the shock on buildings.

Topic 14. The European union civil protection mechanism

Current status in civil protection area. New European legislation in civil defense. Types of disasters covered by the EU Civil Protection Mechanism. Participating states in the Union Civil Protection Mechanism. Rationale of cooperation. Union Civil Protection Mechanism Tools. Civil Protection modules. The EU Civil Protection Team of experts (EUCP Team). Training, exercises and exchange of experts program. The roles of ERCC. Added value of the ERCC.

Topic 15. Macroeconomic effects from emergencies

Classification of effects from emergencies. Loss of the contribution of housing leases to the economy. Increase in construction activity. Effects on the external sector. Effects on the public sector. Effects on prices and inflation. Effects on employment and income.

4. Structure of the course

Titles the semantic modules and topics	Number of hours											
	Full-time						correspondence course					
	Total	including					Total	including				
		l	n	lab	in d	SR		l	n	lab	in d	SR
1	2	3	4	5	6	7	8	9	10	11	12	13
Module 1. Occupational Health and Safety in industry												
Topic 1 Safety management	9		2			7						
Topic 2 Hazard and risk management	10		4			6						
Topic 3 Accident prevention	10	2	2			6						
Topic 4 Risk engineering	10	2	2			6						
Topic 5 Health and safety training	8		2			6						
Topic 6 Fundamental concepts and terms	10	2	2			6						
Module 1. Total:	57	6	14			37						
Module 2. Civil Defense												
Topic 1. Fundamentals of Civil defense	8	4				4						
Topic 2. Classification of emergencies	2	2										
Topic 3. Fundamentals of emergency planning	2					2						
Topic 4. Emergency Response Plan	2					2						
Topic 5. The process of planning civil protection measures	2					2						
Topic 6. Actions during industrial disasters	2					2						
Topic 7. Actions during natural disasters	4					4						
Topic 8. Monitoring of potentially dangerous objects	8		6			2						

Topic 9. Prevention of fires and explosions	4		2			2						
Topic 10. Organization of emergency rescue works in the destruction of buildings	2		2									
Topic 11. Protection of population in case of a nuclear accident	2					2						
Topic 12. Assessment of socio-economic consequences of emergencies	4		2			2						
Topic 13. Explosions and Blast Injuries	2					2						
Topic 14. The European union civil protection mechanism	2					2						
Topic 15. Macroeconomic effects from emergencies	2					2						
Module 2. Total:	48	6	12			30						
Total hours	105	12	26			67						

5. Topics and plan lectures

№	Topic and plan	Volume of hours
1	Topic 3 Accident prevention 1. Accident causation factors 2. Accident causes 3. Elements of the work system influencing OHS	2
2	Topic 4 Risk engineering 1. Risk and reliability 2. Systems engineering 3. Errors and reasons for errors	2
3	Topic 6. Fundamental concepts and terms 1. Why safety. 2. Accidents, injuries, and losses 3. Incident and accident theories	2

4	Topic 1: Fundamentals of Civil defense 1. Introduction 2. Definition of civil defense. 3. Fundamentals of Civil defense in Ukraine.	2
5	Topic 1: Fundamentals of Civil defense 1. Structure of Unified State Civil Protection System. 2. Operating modes of Unified State Civil Protection System. 3. Fundamentals of Civil defense in China.	2
6	Topic 2: Classification of emergencies 1. Definition of disaster and emergencies. 2. Classification of emergencies in Ukraine. 3. Types of Disaster. 4. Impact of Disaster.	2
	Total	12

6. Topics of practical Lessons

N ^o	Topic	Volume of hours
1	Topic 1 Safety management	2
2	Topic 2. Hazard and risk management	2
3	Topic 2. Hazard and risk management (Budget planning, control of safety expenditure and supervision)	2
4	Topic 3 Communication and meeting skills	2
5	Topic 4. Assessing a risk in the work environment	2
6	Topic 5. Selecting and using personal protective equipment	2
7	Topic 6. Fundamental concepts and terms	2
8	Topic 8: Monitoring of potentially dangerous objects	2
9	Topic 8: Monitoring of potentially dangerous objects	2
10	Topic 8: Monitoring of potentially dangerous objects	2
11	Topic 9: Prevention of fires and explosions	2
12	Topic 10: Organization of emergency rescue works in the destruction of buildings	2
13	Topic 12: Assessment of socio-economic consequences of emergencies	2
	Total	26

7. Independent work

N ^o	Topic and list of questions	Volume of hours
1	Topic 1: Safety management 1. Safety and health in risk management Introduction. 2. Risk management, loss control and acceptable risk. 3. Techniques used in risk management. 4. Major areas of risk. 5. Function of a loss control programme. 6. Formal and informal safety meetings. Nature, occurrence and industrial relations implications of OHS issues	7
2	Topic 2: Hazard and risk management 1. Risk concepts. Role of hazards in injury causation. 2. Planned hazard identification, formal and informal systems. 3. Risk assessment. 4. Principles behind risk assessment, and importance and limitations of scientific assessment	6
3	Topic 3: Accident prevention 1. Basic human behavioral aspects of accident and injury occurrence. 2. Principles behind the concept of non-culpable error. 3. Accident investigation. 4. Steps in preparing and conducting an accident investigation. 5. Listing relevant accident causation factors	6
4	Topic 4: Risk engineering 1. Electrical safety. 2. Fixed machinery hazards	6
5	Topic 5: Health and safety training 1. Health and safety training programmes Education and training needs. 2. Designing an OHS training programme. 3. OHS competencies and performance criteria for key workplace parties	6
6	Topic 6: Fundamental concepts and terms 1. Single-Factor Theories. Unsafe acts and unsafe conditions. 2. Incident–injury relationships. 3. Incident–cost relationships. 4. Preventive strategies Severity Cost Combinations The Three of Safety. How safe is safe enough	6
7	Topic 1: Fundamentals of Civil defense 1. International Civil Defence Organisation (ISDO). 2. Main activities and protection of population and territories.	4

8	Topic 3: Fundamentals of emergency planning 1. Fundamentals of Emergency Planning. 2. Protective Actions for Life Safety. 3. Risk Assessment. 4. Critical steps to crisis management.	2
9	Topic 4: Emergency Response Plan 1. Developing the Emergency Plan. 2. Performance Objectives 3. Resource Management.	2
10	Topic 5: The process of planning civil protection measures 1 . The process of planning civil protection measures. 2 . Plan of civil protection in peacetime. 3 . Plan of civil protection for a special period.	2
11	Topic 6: Actions during industrial disasters 1. Actions during Chemical Accidents. 2. Actions during Radiological Accidents. 3. Actions during Explosions. 4. Actions during Fire.	2
12	Topic 7: Actions during natural disasters 1. Actions after avalanches. 2. Actions after earthquakes. 3. Actions after floods. 4. Actions after storms 5. Actions after g landslides.	4
13	Topic 8: Monitoring of potentially dangerous objects 1. Development of plan of localization and liquidation of emergency situations (PLES) 2. Conformity assessment. Certification 3. Certification of conformity with ISO 9001 4. Development and coordination of documents in the field of industrial safety	2
14	Topic 9: Prevention of fires and explosions 1. Importance 2. Fires and explosions 3. Occupational safety and health management 4. Identification of fire and explosion risks 5. Preventive measures regarding explosions	2
15	Topic 11: Protection of population in case of a nuclear accident 1 The shelter of the population in protected buildings. 2 Determination of radiation protection. 3 Personal protection. 4 Protection of population in case of a nuclear accident.	2

16	Topic 12: Assessment of socio-economic consequences of emergencies 1. Classification of losses as a result of an emergency. 2. Assessment of the question of damages from emergencies. 3. Calculate the question of damages from loss of life and health.	2
17	Topic 13: Explosions and Blast Injuries 1. Key Concepts about explosions. 2. Classification of Explosives. 3. Blast Injuries. 4. Selected Blast Injuries. 5. Emergency Management Options.	2
19	Topic 14: The European union civil protection mechanism 1. Current status in civil protection area 2. New European legislation in civil defense 3. Types of disasters covered by the EU Civil Protection Mechanism	2
20	Topic 14: The European union civil protection mechanism 1. Participating states in the Union Civil Protection Mechanism 2. Rationale of cooperation 3. Union Civil Protection Mechanism Tools	2
21	Topic 14: The European union civil protection mechanism 1. Civil Protection modules 2. The EU Civil Protection Team of experts (EUCP Team)	2
22	Topic 14: The European union civil protection mechanism 1. Training, exercises and exchange of experts program. 2. The roles of ERCC 3. Added value of the ERCC	2
23	Topic 15: Macroeconomic effects from emergencies 1. Classification of effects from emergencies 2. Loss of the contribution of housing leases to the economy 3. Increase in construction activity 4. Effects on the external sector 5. Effects on the public sector 6. Effects on prices and inflation 7. Effects on employment and income.	2
Total		67

9. Teaching Methods

1. Teaching Methods for Knowledge:

1.1. Verbal: narrative, explanation, discussion (heuristic and reproductive), lecture, instruct, work with the book (read, transfer, discharge, scheduling, reviewing, summarizing, making tables, charts, reference compendia etc.).

1.2. Visual: demonstration, illustration.

1.3. Practical: Practical work, exercise, production practices.

2. Methods for studying the nature of the logic of knowledge.

- 2.1. Analytical
- 2.2. Synthesis
- 2.3. Inductive method
- 2.4. Deductive method
- 2.5. Traduktive method

3. Methods for studying the nature and level of independent mental activity of students.

- 3.1. Problem (problem-information)
- 3.2. Partly-search (heuristic)
- 3.3. Exploratory
- 3.4. Reproductive
- 3.5. Explanatory demonstration

4. Active learning methods - use of technical training, brainstorming, debates, roundtables, business and role-playing games, training, use of problem situations, self-knowledge, the use of educational tests and controlling the use of basic lectures)

5. Interactive learning technology - the use of multimedia technology.

10. Methods of control

1. Rating control of a 100-point scale assessment ECTS
2. An intermediate control during the semester (interim certification)
3. Criteria assess of the current work of students:
 - The level of knowledge demonstrated in practical classes;
 - Active in the discussion of issues brought to the class;
 - Quick control during classes;
 - Self study topics in general or specific issues;
 - Perform analytical calculation tasks;
 - Writing essays;
 - Test results;
 - Writing assignments during the tests;
 - Production situations, cases and more.

11. The distribution of points that students get

Current testing and self-study											Total	Attestation	Exam	Total
Module 1. Occupational Health and Safety in industry 0 - 20						Module 2. Civil Defense 0-20				IW				
T1	T2	T3	T4	T5	T6	T1-4	T5-8	T9-11	T12-15					
4	4	3	3	3	3	5	5	5	5	15	55 (40+15)	15	30	100

12. Grading scale: national and ECTS

Total points for all the educational activities	Mark ECTS	Ukrainian mark	
		For the exam, course project (work) practices	For the test
90 – 100	A	Excellent	Passed
82-89	B	Good	
75-81	C	Satisfactory	
69-74	D		
60-68	E	Bad	No passed
35-59	FX		Repeated study of the course
1-34	F		

13. Reference list

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14. NFPA 101: Life Safety Code® – National Fire Protection Association
15. Employee Alarm Systems – OSHA 29 CFR 1910.165
16. Evacuation Planning Matrix – OSHA
17. Evacuation Plans and Procedures eTool - OSHA
18. Design Guidance for Shelters and Safe Rooms – Federal Emergency Management Agency (FEMA 453)
19. Natural Disasters and Weather Emergencies - U.S. Environmental Protection Agency
20. National Hurricane Center, Publications, Tropical Cyclone Advisory Mailing Lists, Hurricane Preparedness, The Saffir-Simpson Hurricane Wind Scale (Experimental) - National Weather Service (NWS)
21. "Tornadoes...Tornadoes...Lightning... Nature's Most Violent Storms" A Preparedness Guide - NOAA, National Weather Service
22. Tornado Protection: Selecting Refuge Area in Buildings - FEMA 431
23. Thunderstorm Basics, Damaging Winds Basics - Winds from thunderstorms, Hail Basics, Lightning Basics - NOAA National Severe Storms Laboratory
24. Lightning Safety - NWS
25. Plan and Prepare - Federal Emergency Management Agency (FEMA)
26. References & Resources for Emergency Management and Business Continuity Planning - Preparedness, LLC
27. Fire Service Features of Buildings and Fire Protection Systems - U.S. Occupational Safety & Health Administration (OSHA) Publication 3256-07N
28. Standard on Pre-Incident Planning - National Fire Protection Association (NFPA) 1620
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31. Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care - American Heart Association
32. Automated External Defibrillators (AEDs) – OSHA
33. Bloodborne pathogens – OSHA 29 CFR 1910.1030
34. Model Plans and Programs for the OSHA Bloodborne Pathogens and Hazard Communications Standards – OSHA Publication 3186
35. Fire Protection – OSHA 29 CFR 1910 Subpart L
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37. Standard on Industrial Fire Brigades - NFPA 600
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4. State Service of Ukraine for Emergencies <https://www.dsns.gov.ua>
5. Council of National Security and Defense of Ukraine <http://www.rainbow.gov.ua/>.
6. Permanent Mission of Ukraine to the United Nations <http://www.uamission.org/>.
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ADDITION I

Learning outcomes of the educational component "Occupational safety and civil defense" and their relationship with the program learning outcomes for the specialty
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Learning outcomes: after studying the educational component "Occupational safety and civil defense" the student will be able to:	Program learning outcomes to which the educational component is aimed (indicate the number according to the numbering given in the educational program)					
	PLO1	PLO2	PLO3	PLO5	PL08	PLO14
Disciplinary learning outcomes. Occupational safety						
DLO 1. Use the legal framework of labor protection, sectoral programs to improve safety, occupational health and the working environment, international standards in the field of labor protection to ensure the construction and operation of labor protection management systems in agricultural enterprises.	+					+
DLO 2 Evaluate, analyze and conduct logical modeling of potential hazards and risks of production processes in the field of crop production. Use statistical reporting and acts of investigation of accidents and occupational diseases in analytical work for injury prevention and comprehensive assessment of measures to improve working conditions.	+	+		+	+	+
DLO 3. . Introduce into production rational modes of work and rest, rational organization of labor process and workplaces, mechanization and automation of production processes.	+	+			+	+
Disciplinary learning outcomes. Civil defens						
DLO 1. Use legal documents, scientific and other literature in the design and creation of instructional, organizational, administrative, planning documentation on civil protection and in determining the structure of civil protection of the adaptive farming system for farms of different forms of ownership or administrative-territorial unit.	+		+		+	
DLO 2. Assess the actual and predict the hypothetical situation in the event and threat of emergencies, plan and organize measures to respond, eliminate, rescue, prevent, prevent, mitigate, restore, increase the sustainability of management and operation of the adaptive farming system for farms of various forms or administrative-territorial unit.	+				+	+
DLO 3. To know the general tendencies of development of the newest technologies of civil protection in the advanced countries, to estimate their efficiency, to introduce the most effective methods of protection and receptions in practical industrial activity.	+	+				

DRO - disciplinary learning outcomes

EP - educational program

PLO - program learning outcomes