Ministry of Education and Science of Ukraine
Dnipro University of Technology

Department of Labour Safety and Civil Security

Директор Інституту Природокористування

Бузило В.І._____

«31»серпня 2021 року

WORKING PROGRAMME OF THE ACADEMIC DISCIPLINE

«Civil Security»

Field of study…….……....	14 Electrical engineering
Specialty.....	141 Electric Power Engineering, Electrical Engineering and Electromechanics
Academic degree.....	First (bachelor's)
Academic program.....	141 Electric Power Engineering, Electrical Engineering and Electromechanics
Type of discipline.....	compulsory
Total workload……..	3 credits (90 hours)
Type of final assessment.....	Examination
Period of study.....	13th quarter 2020-21 academic year
Language of study.....	English

Lecturer: _ Yavorskyi Andrii Vasyliovych_____

Prolonged: for 20__/20__ academic year _____(_____) «__»___ 20__ .
(signature, name, date)

for 20__/20__ academic year _____(_____) «__»___ 20__ .
(signature, name, date)

Dnipro
DUT
2021

Working programme of the academic discipline “Civil Security” for bachelors of specialty 141 Electric Power Engineering, Electrical Engineering and Electromechanics NTU “Dnipro Polytechnic” - D: DUT, 2021, - 16 p.

Authors:

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Yavorskyi, Andrii Vasylyovych – Associate Professor, Candidate of Technical Sciences, Associate Professor of the Department of Mining Engineering and Education.

The working programme regulates:

– objective of the academic discipline;
– disciplinary learning outcomes generated by transforming the expected learning outcomes of the degree program;
– basic disciplines;
– content and distribution of the discipline workload according to organizational forms of training and types of classes;
– programme of the discipline (thematic plan according to different types of classes);
– algorithm for assessing the level of achievement of disciplinary learning outcomes (scales, tools, procedures, and evaluation criteria);
– tools, equipment, and software;
– recommended sources of information.

The working programme is developed to implement a competency approach while planning the education process, teaching the academic discipline, preparing students for control activities, controlling the implementation of educational activities, performing internal and external quality assurance in higher education, and accrediting the degree programmes in terms of the specialty.

Approved by the decision of the Scientific-Methodical Committee of specialty **141 Electric Power Engineering, Electrical Engineering and Electromechanics** (protocol № 21\22-01 dated 30.08.2021).

CONTENT

1 OBJECTIVE OF THE DISCIPLINE

There are following learning outcomes for the discipline 37 "Civil Security" in terms of the educational and professional programme of specialty 141 Electricity, electrical engineering and electromechanic:

ПР12	Understand the basic principles and objectives of technical and environmental safety of electrical and electromechanical objects, take them into account when making decisions.
ПР16	Know the requirements of regulations relating to engineering, protection of intellectual property, labor protection, safety and industrial sanitation, take them into account when making decisions.

Objective of the discipline is to master knowledge and skills for effective professional activities by forming competences for being initiative, responsible, and skilled in terms of safe professionally-related activity, and by developing necessary level of individual and collective safety in case of emergency incidents.

The objective implementation requires transformation of the programme learning outcomes in the disciplinary ones along with the adequate selection of the academic discipline content in terms of that criterion.

2 EXPECTED DISCIPLINARY LEARNING OUTCOMES

PLO code	Disciplinary learning outcomes (DLO)	
	DLO code	Content
ПР 12	ПР12-1-37	Using regulations and legislative acts on civil security issues in his/her activities
	ПР12-2-37	Determining harmful and dangerous factors for human activity and evaluate their effect on the staff and population
ПР 16	ПР16-1-37	Applying legislative acts to identify boundary admissible concentrations, values or levels of harmful factors as well as compliance of the environment, settlements, industrial premises, equipment and parameters of different technological processes to safety requirements in terms of certain factors
	ПР16-2-37	Assessing living and working conditions, selecting and using both collective and personal protective equipment
	ПР16-3-37	Developing means to improve both living and working conditions and safety

3 BASIC DISCIPLINES

Discipline	Acquired learning outcomes
Б1 Higher Mathematics	ПР07.2-Б1 Be able to use a mathematical apparatus for objective analysis of processes in electromechanical equipment;
Б2 General Physics	ПР08.4-Б2 Apply knowledge of the basic fundamental laws of classical and modern physics to solve electrical problems

4 WORKLOAD DISTRIBUTION ACCORDING TO THE FORMS OF EDUCATIONAL PROCESS ORGANIZATION AND TYPES OF CLASSES

Type of classes	**Workload,** *hours*	**Distribution according to the educational forms**, *hours*			
		full-time		**part-time**	
		in-class learning	independent work	in-class learning	independent work
lecture	60	24	36		
practical	30	12	18		
laboratory	-	-	-		
seminars	-	-	-		
TOTAL	90	36	54		

5 PROGRAMME OF THE DISCIPLINE ACCORDING TO THE TYPES OF CLASSES

DLO codes	**Types and topics of training sessions**	**Workload,** *hours*
	Lectures	**60**
ПР12-1-37 ПР16-1-37	**1 Concept of safety. Basic terms and definitions**	4
	Man in the living environment. General information of emergency situations, accidents, disasters.	
	Dangers of natural and anthropogenic origin. Sources of danger during emergency situations. State of civil security in Ukraine.	
	Concepts: harmful factor, dangerous factor, injury rate, occupational and disease, chronic and acute disease. Classification and harmful and dangerous factors according to their nature of action.	
ПР12-1-37 ПР12-2-37 ПР16-3-37	**2 Legislative and legal regulation of civil security**	4
	Constitutional grounds of civil security in Ukraine. Civil security legislation of Ukraine. Laws of Ukraine “Code of civil protection of Ukraine”, “On the provision of sanitary and epidemiological welfare of the population”. “On preventing and combating domestic violence”. Normative and standard acts on civil security: definitions, basic requirements, and features.	
	Main principles of state policy of Ukraine in the field of civil security. Legislative regulation of the relations concerning protection of populations, territories, environment, and property against the emergency situations. International cooperation of Ukraine in the field of civil security, programme “Partnership for the sake of peace”.	
	Organizational and legislative grounds of preventing and combating domestic violence, basic areas of the implementation of state policy in the sphere of preventing and combating domestic violence aimed at protecting rights and interests of the people having suffered from that violence	
	Amenability of the official bodies and workers for violation of civil	

DLO codes	Types and topics of training sessions	Workload, *hours*
	security legislation	
ПР12-1-37 ПР12-2-37 ПР16-1-37	**3 Management, supervision, and control of civil security state**	4
	System of state control of civil security in Ukraine	
	State committee on the problems of technogenic-environmental and emergency situations in Ukraine	
	State bodies of civil security supervision	
	Basic powers and rights of State Emergency Service of Ukraine, State Labour Service of Ukraine, State Service of Ukraine on Food Safety and Consumer Protection	
	Organization of civil security in terms of business entities. Services and formation and civil security	
	Service of labour protection at an enterprise. Status and dependence. Structure and staff number of the service. Rights and duties of the labour protection service staff	
	Civil control of the state of labour protection at an enterprise. Authorized labour protection officials, their rights and duties	
	Bodies acting in the sphere of preventing and combating domestic violence	
	Powers of the central body of executive power that provides formation of state policy in the sphere of preventing and combating domestic violence	
	Powers of the authorized subdivisions of the bodies of National Police of Ukraine, child protection services, juvenile services, services for education management, educational institutions and establishments of educational system in the sphere of preventing and combating domestic violence	
	Tasks and activities in the sphere of preventing and combating domestic violence	
ПР12-1-37 ПР12-2-37 ПР16-3-37	**4 Main functions and tasks of the safety control system**	6
	Main tasks of the Unified State System of Civil Security of Population and Territories	
	Prognosis and evaluation of social and economic consequences of emergency situations	
	Development and implementation of measures aimed at preventing emergency situations	
	Organization of the protection of population and territories in case of emergency situations	
	Main functions and tasks of the System of Labour Protection Management at an enterprise. Principles of organization and types of training in terms of labour protection issues	
	Study of the labour protection basics at the educational institutions and during occupational-related training	
	Study and test of labour protection knowledge of the employees while hiring and in the course of work	
	Special-purpose training and test of labour protection skills and knowledge of the employees involved in hazardous operations	
	Labour protection training of the officials	
	Labour protection briefings. Briefing types. Briefing procedure for employees. Labour protection briefings for pupils and students.	

DLO codes	Types and topics of training sessions	Workload, *hours*
	Employees' probation and work permit for their independent work	
ПР16-2-37 ПР16-3-37	**5 Atmospheric air. Harmful substances in the air of settlements and working zones of industrial premises**	4
	Composition of the atmosphere air in settlements and working zones of industrial premises: sources of air contamination with harmful substances (gases, vapour, dust, smoke, microorganisms)	
	Characteristics of main harmful substances	
	Boundary admissible concentrations (BAC) of harmful substances	
	Air environment control	
	Measures and means to prevent air contamination of the working zone	
	Ventilation. Ventilation types. Organization of the air change in premises, air balance, air change coefficient	
	Natural ventilation	
	Systems of artificial (mechanical) ventilation, their selection, design. Local mechanical ventilation	
ПР12-1-37 ПР16-1-37 ПР16-2-37 ПР16-3-37	**6 Microclimate of domestic and industrial premises**	4
	Thermal regulation. Notion of heat balance of a man. Heat stroke	
	Microclimate of domestic premises and working zones of industrial premises. Normalization and control of the microclimate parameters	
	Measures and means to normalize the microclimate parameters. Air conditioning	
ПР12-1-37 ПР16-1-37 ПР16-2-37 ПР16-3-37	**7 Natural and artificial lighting**	4
	Main lighting definitions	
	Classification of industrial lighting. Natural, artificial, mixed lighting	
	Main requirements for industrial lighting	
	Standardization of lighting, classes of visual performance	
	Operation of industrial lighting systems	
	Sources of artificial lighting, lamps and lighting instruments	
	General approach to the lighting system design	
ПР12-1-37 ПР16-2-37 ПР16-3-37	**8 Noise and vibration**	4
	Sound field parameters: sound pressure, intensity, frequency, oscillating speed. Sound power of a sound source	
	Classification of noise according to its origin, nature, range, and time characteristics	
	Noise standardization	
	Control of noise parameters, measuring devices	
	Methods and means of collective and personal protective devices	
	Infrasound and ultrasound. Sources and parameters of infrasound and ultrasound oscillations. Normalization and control of levels, main methods and means of infrasound and ultrasound protection	
	Sources, classification, and characteristics of vibration	
	Hygienic normalization of vibration	
	Methods to control vibration parameters	
	Typical measures and means of collective and personal vibration protective devices	
ПР12-1-37 ПР16-2-37	**9 Ionizing and non-ionizing radiation**	4
	Sources, features, and classification of electromagnetic radiation and	

DLO codes	Types and topics of training sessions	Workload, *hours*
ПР16-3-37	electric and magnetic fields	
	Characteristic of fields and radiation. Normalization of electromagnetic radiation. Devices and methods to control electromagnetic radiation. Protection against electromagnetic radiation and fields	
	Classification and sources of radiation. Peculiarities of infrared (IR), ultraviolet (UV), and laser radiation; their normalization, devices, and methods of control	
	Measures and means of protection against IR and UV radiation	
	Industrial sources of ionizing radiation; classification and features of their use	
	Typical methods and means of staff protection against ionizing radiation under working conditions	
ПР16-2-37 ПР16-3-37	**10 Electric safety**	6
	Electric current action on the human organism	
	Electric injuries. Factors influencing the effects of electric shock	
	Electric shock while touching or approaching the current-conducting parts or non-current-conducting metal elements of electric plants turned to be live	
	Step and contact voltage	
	First aid in case of electric shock	
ПР16-1-37 ПР16-2-37	**11 Fires in natural ecosystems and their adverse factors, their manifestations and aftereffects**	6
	Procedure of staff action in case of fire. Provision and control of the state of fire safety state the industrial facilities.	
	Types of natural ecosystem fires (landscape, forest, steppe, peat). Adverse factors of natural fires, character of their manifestation and aftereffects	
	Studying a problem of fire safety by employees	
ПР16-1-37 ПР16-2-37 ПР16-3-37	**12 Emergency situations and their aftereffects**	6
	Main concepts and definition of emergency situations. Classification of emergency situations and accidents. Characteristics of emergency situations of different origin. Main tasks concerning the protection population and territories against emergency situations	
	Natural emergency situations	
	Technogenic emergency situations	
	Social and political emergency situations	
	Military emergency situations	
	Environmental emergency situations	
ПР16-1-37 ПР16-2-37 ПР16-3-37	**13 Organization and main measures in the sphere of civil security**	4
	Basics of state policy in the sphere of civil security. Unified state system of civil security. Civil security forces. Emergency rescue services.	
	Functioning of the unified state system of civil security. Emergency situation	
	Organization of civil security at a business entity. Structure of civil security of a business entity	
	Main measures in the sphere of civil security: planning and	

DLO codes	Types and topics of training sessions	Workload, *hours*
	implementing measures concerning staff safety and protection against accidents, reduction of accident risks, maintaining sustainable functioning of the entity in case of emergency situations; maintaining in proper conditions forces and means for prevention and mitigation of the disaster aftereffects; formation of material reserves, provision of staff warning about accident danger or emergency conditions	
	Training of population to be ready to act under conditions of emergency situations	
	PRACTICAL CLASSES	**30**
ПР16-1-37 ПР16-2-37 ПР16-3-37	Control of a harmful substance content in the air	6
	Control of natural and artificial lighting	6
	Control of noise and vibration	6
ПР16-1-37	Dosimetric control of ionizing radiation	6
ПР16-1-37 ПР16-3-37	Control of meteorological conditions	6
	TOTAL	**90**

6 KNOWLEDGE PROGRESS TESTING

Certification of student achievement is accomplished through the transparent procedures based on objective criteria in accordance with the University Regulations "On Evaluation of Higher Education Applicants' Learning Outcomes".

The level of competencies achieved in relation to the expectations, identified during the control activities, reflects the real result of the student's study of the discipline.

6.1 Grading scales

Assessment of academic achievement of students of Dnipro University of Technology is carried out basing on a rating (100-point) and institutional grading scales. The latter is necessary (in the official absence of a national scale) to convert (transfer) grades for mobile students.

Scales of assessment of learning outcomes of the NTU "DP" students

Rating	Institutional
90 ... 100	Excellent
74 ... 89	Good
60 ... 73	Satisfactory
0 ... 59	Failed

Discipline credits are scored if the student has a final grade of at least 60 points. A lower grade is considered to be an academic debt that is subject to liquidation in

accordance with the Regulations on the Organization of the Educational Process of NTU “DP”.

6.2 Diagnostic tools and evaluation procedures

The content of diagnostic tools is aimed at controlling the level of knowledge, skills, communication, autonomy, and responsibility of the student according to the requirements of the National Qualifications Framework (NQF) up to the 6th qualification level during the demonstration of the learning outcomes regulated by the work program.

During the control activities, the student should perform tasks focused only on the demonstration of disciplinary learning outcomes (Section 2).

Diagnostic tools provided to students during the control activities in the form of tasks for the intermediate and final knowledge progress testing are formed by specifying the initial data and a way of demonstrating disciplinary learning outcomes.

Diagnostic tools (control tasks) for the intermediate and final knowledge progress testing are approved by the appropriate department.

Type of diagnostic tools and procedures for evaluating the intermediate and final knowledge progress testing are given below.

Diagnostic and assessment procedures

INTERMEDIATE CONTROL			**FINAL ASSESSMENT**	
training sessions	**diagnostic tools**	**procedures**	**diagnostic tools**	**procedures**
lectures	control tasks for each topic	task during lectures	comprehensive test (CCW)	determining the average results of intermediate controls; CCW performance during the examination at the request of the student
practical	control tasks for each topic	tasks during practical classes		

During the intermediate control, the lectures are evaluated by determining the quality of the performance of the control specific tasks. Practical classes are assessed according to the quality of the control or individual task.

If the content of a particular type of teaching activity is subordinated to several descriptors, then the integral value of the assessment may be determined by the weighting coefficients set by the lecturer.

Provided that the level of results of the intermediate controls of all types of training is at least 60 points, the final control can be carried out without the student's immediate participation by determining the weighted average value of the obtained grades.

Regardless of the results of the intermediate control, every student during the final knowledge progress testing has the right to perform the CT, which contains tasks covering the key disciplinary learning outcomes.

The number of specific tasks of the complex test should be consistent with its predetermined completion time. The number of CT options should ensure that the task is individualized.

The value of the mark for CT implementation is determined by the average evaluation of the components (specific tasks), being ultimate.

The integral value of the CT performance assessment can be determined by taking into account the weighting factors established by the department for each NLC descriptor.

6.3 Evaluation criteria

The actual student learning outcomes are identified and measured relative to the ones being expected during the control activities using criteria that describe the student's actions to demonstrate the achievement of the learning outcomes.

To evaluate the performance of the control tasks during the intermediate control of lectures and practical classes, the assimilation factor is used as a criterion, which automatically adapts the indicator to the rating scale:

$$O_i = 100\ a/m,$$

where a is the number of correct answers or significant operations performed according to the solution standard; m is the total number of questions or substantial operations of the standard.

Individual tasks and complex tests are expertly evaluated using the criteria that characterize the ratio of competency requirements and evaluation indicators to a rating scale.

The criteria content is based on the competencies identified by the NLC for the Bachelor's level of higher education (see below).

General criteria of the learning outcomes achieving for the 6th qualification level according to the NQF

NLC descriptors	Requirements for knowledge, communication, autonomy and responsibility	Evaluation indicator
Knowledge		
♦ Conceptual knowledge acquired during the training and professional activities, including some knowledge of modern achievements;	- A great - proper, reasonable, sensible. Measures the presence of: - conceptual knowledge; - a high degree of state ownership issues; - critical understanding of the main theories, principles, methods and concepts in education and careers	95-100
	A non-gross contains mistakes or errors	90-94
	The answer is correct but has some inaccuracies	85-89

NLC descriptors	Requirements for knowledge, communication, autonomy and responsibility	Evaluation indicator
♦ critical understanding of the main theories, principles, methods, and concepts in education and careers	A correct some inaccuracies but has also proved insufficient	80-84
	The answer is correct but has some inaccuracies, not reasonable and meaningful	74-79
	A fragmentary	70-73
	A student shows a fuzzy idea of the object of study	65-69
	Knowledge minimally satisfactory	60-64
	Knowledge unsatisfactory	<60
Ability		
♦ solving complex problems and unforeseen problems in specialized areas of professional and/or training, which involves the collection and interpretation of information (data), choice of methods and tools, the use of innovative approaches	- The answer describes the ability to: - identify the problem; - formulate hypotheses; - solve problems; - choose adequate methods and tools; - collect and interpret logical and understandable information; - use innovative approaches to solving the problem	95-100
	The answer describes the ability to apply knowledge in practice with no blunders	90-94
	The answer describes the ability to apply knowledge in practice but has some errors in the implementation of a requirement	85-89
	The answer describes the ability to apply knowledge in practice but has some errors in the implementation of the two requirements	80-84
	The answer describes the ability to apply knowledge in practice but has some errors in the implementation of the three requirements	74-79
	The answer describes the ability to apply knowledge in practice but has some errors in the implementation of the four requirements	70-73
	The answer describes the ability to apply knowledge in practice while performing tasks on the model	65-69
	A characterizes the ability to apply knowledge in performing tasks on the model, but with uncertainties	60-64
	The level of skills is poor	<60
Communication		
♦ report to specialists and non-specialists of information, ideas, problems, solutions and their experience in the field of professional activity; ♦ the ability to form an effective communication strategy	- Fluent problematic area. Clarity response (report). Language - correct; - - net; - - clear; - - accurate; - - logic; - - expressive; - - concise. Communication strategy: coherent and consistent development of thought; availability of own logical reasoning; relevant arguments and its compliance with the provisions	95-100

NLC descriptors	Requirements for knowledge, communication, autonomy and responsibility	Evaluation indicator
	defended; the correct structure of the response (report); correct answers to questions; appropriate equipment to answer questions; the ability to draw conclusions and formulate proposals	
	Adequate ownership industry issues with minor faults. Sufficient clarity response (report) with minor faults. Appropriate communication strategy with minor faults	90-94
	Good knowledge of the problems of the industry. Good clarity response (report) and relevant communication strategy (total three requirements are not implemented)	85-89
	Good knowledge of the problems of the industry. Good clarity response (report) and relevant communication strategy (a total of four requirements is not implemented)	80-84
	Good knowledge of the problems of the industry. Good clarity response (report) and relevant communication strategy (total not implemented the five requirements)	74-79
	Satisfactory ownership issues of the industry. Satisfactory clarity response (report) and relevant communication strategy (a total of seven requirements not implemented)	70-73
	Partial ownership issues of the industry. Satisfactory clarity response (report) and communication strategy of faults (total not implemented nine requirements)	65-69
	The fragmented ownership issues of the industry. Satisfactory clarity response (report) and communication strategy of faults (total not implemented 10 requirements)	60-64
	The level of poor communication	<60
Autonomy and responsibility		
♦ management actions or complex projects, responsible for decision-making in unpredictable conditions; ♦ responsible for the professional development of individuals and/or groups ♦ the ability to continue study with a high degree of autonomy	- Excellent individual ownership management competencies focused on: 1) management of complex projects, providing: - exploratory learning activities marked the ability to independently evaluate various life situations, events, facts, detect and defend a personal position; - the ability to work in a team; - control of their own actions; 2) responsibility for decision-making in unpredictable conditions, including: - justify their decisions the provisions of the regulatory framework of sectoral and national levels; - independence while performing tasks; - lead in discussing problems; - responsibility for the relationship; 3) responsible for the professional development of individuals and/or groups that includes: - use of vocational-oriented skills; - the use of evidence from independent and correct reasoning; - possession of all kinds of learning activities;	95-100

NLC descriptors	Requirements for knowledge, communication, autonomy and responsibility	Evaluation indicator
	4) the ability to further study with a high degree of autonomy, which provides: - degree possession of fundamental knowledge; - independent evaluation judgments; - high level of formation of general educational skills; - search and analysis of information resources	
	Confident personality possession competency management (not implemented two requirements)	90-94
	Good knowledge management competencies personality (not implemented three requirements)	85-89
	Good knowledge management competencies personality (not implemented the four requirements)	80-84
	Good knowledge management competencies personality (not implemented six requirements)	74-79
	Satisfactory ownership of individual competence management (not implemented seven requirements)	70-73
	Satisfactory ownership of individual competence management (not implemented eight claims)	65-69
	The level of autonomy and responsibility fragmented	60-64
	The level of autonomy and responsibility poor	<60

7 TOOLS, EQUIPMENT, AND SOFTWARE

Up-to-date laboratory and multimedia equipment of the Department of Labour Protection and Civil Safety are used along with the distance learning platform Moodle.

8 METHODOLOGICAL SUPPORT

1. Голінько В.І., Чеберячко С.І. Практикум з охорони праці. Навчальний посібник - Д.: Державний ВНЗ «НГУ», 2011. – 270 с.
2. Цивільна безпека. Методичні рекомендації та завдання до контрольної роботи для бакалаврів усіх спеціальностей / В.І. Голінько. – Д.: НТУ «Дніпровська політехніка», 2018. – 15 с.
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4. Ризик-менеджмент використання обладнання та технологій : навч. посібник для студентів спеціальності 263 «Цивільна безпека», освітня програма «Охорона праці»/ В. В. Березуцький. Харків : ФОП Панов А. М. 2020. 424 с

9 RECOMMENDED BIBLIOGRAPHY

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5. Безпека людини у життєвому середовищі: Навч. посібник / В.І.Голінько, Г 04 М.В.Шибка, О.В.Безщасний; За ред. В.І.Голінька. – 4-е вид., перероб. І доп. – Д.: Національний гірничий університет, 2008. – 191с.

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Допоміжні

1. Голінько В.І., Чеберячко С.І., Клочков В.Г. Аналіз умов праці на робочих місцях операторів. Навчальний посібник. - Д.: Національний гірничий університет, 2007. – 120 с.

2. Моніторинг умов праці. Навчальний посібник / Голінько В.І., Чеберячко С.І., Шибка М.В., Яворська О.О. - Д.: Державний ВНЗ «Національний гірничий університет», 2014. – 236 с.

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2. http://www.mon.gov.ua - Офіційний сайт Міністерства освіти і науки України.
3. **http://www.dsns.gov.ua** - Офіційний сайт Державної служби з надзвичайних ситуацій.

Educational edition

WORKING PROGRAMME OF THE ACADEMIC DISCIPLINE
"Civil Security" for Bachelors of specialty 141 "Electricity, electrical engineering and electromechanic"

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