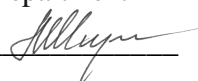


**Ministry of Education and Science of Ukraine  
Dnipro University of Technology**

**MINING FACULTY  
DEPARTMENT OF TRANSPORT SYSTEMS AND TECHNOLOGIES**

**“APPROVED”**

Head of Department

Shirin L.N. 

“ \_\_\_\_ ” \_\_\_\_ 2019

**WORK PROGRAM OF THE ACADEMIC DISCIPLINE**

***" Technology development hazovuhilnyh fields "***

Field of study.....	18 Production and Technology
Specialty.....	185 Oil and Gas Engineering and Technology
Academic degree.....	Bachelor
Academic program.....	Oil and Gas Engineering and Technology
Language of study.....	English

Prolonged: for 20 \_\_\_\_ / 20\_\_ academic year \_\_\_\_\_ (\_\_\_\_\_) " \_\_\_\_ " \_\_\_\_ 20\_\_.

(Signature, name, date)

for 20 \_\_\_\_ / 20\_\_ academic year \_\_\_\_\_ (\_\_\_\_\_) " \_\_\_\_ " \_\_\_\_ 20\_\_.

(Signature, name, date)

Dnipro  
NTU “DP”  
2018

Work program of the academic discipline “Technology development hazovuhilnyh fields” for bachelor’s specialty 185 “Oil and Gas Engineering and Technology” / L.N. Shirin, E.A. Korovyaka / NTU “Dnipro Polytechnic” Department of civil, economic and environmental laws. - DA: NTU «DP» 2018 - 13 p.

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The work program regulates:

- key goals and objectives;
- the disciplinary learning outcomes generated through the transformation of the intended learning outcomes of the degree program;
- the content of the discipline formed according to the criterion “disciplinary learning outcomes”;
- the discipline program (thematic plan by different types of classes);
- distribution of the discipline workload by different types of classes;
- an algorithm for assessing the level of achievement of disciplinary learning outcomes (scales, tools, procedures and evaluation criteria);
- criteria and procedures for evaluating the academic achievements of applicants by discipline;
- the contents of the educational and methodological support of the discipline;

The work program is designed to implement a competency approach in planning an education process, delivery of the academic discipline, preparing students for control activities, controlling the implementation of educational activities, internal and external quality assurance in higher education, accreditation of degree programs within the specialty.

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## 1 DISCIPLINE OBJECTIVES

In the educational and professional programs of the Dnipro University of Technology specialty 185 “Oil and gas engineering and technology”, the distribution of program learning outcomes (NRN) for the organizational forms of the educational process is done. In particular, the following learning outcomes are attributed to the discipline V2.6 "Technology development hazardous fields":

SR14	Evaluate methane-bearing gas-bearing deposits and build systems and technology of their development
VR2.1	Create elements of the technology transportation and storage of hydrocarbons

**The objective of discipline** - the theoretical knowledge and practical skills to determine the technology development hazardous fields.

The process of the rule of law and civil society in Ukraine, first of all, requires the formation of a new, higher level of legal awareness and legal culture. Great importance legal education and legal education, because without a profound knowledge of law and legislation, the rights, freedoms and duties of man and citizen evolutionary development of any society does not, therefore, the role of teaching "Law" for students of bachelors all directions.

Learning discipline "Law" becomes especially important given and legal reform, in which planned adoption of many new laws, the creation of an effective national legal system, which will allow integration into the European legal framework, create effective institutions and civil society to build a truly democratic social the rule of law.

The discipline "Law" implies studying basic theory of law, important institutions of constitutional, administrative, labor, civil, criminal, family, mining and other areas of law.

The program includes plans for practical training sections and topics of the course, to repeat questions, recommendations, list of recommended sources to the question of final control.

The formation of Ukraine as a legal state provides a new level of bachelors all directions. This largely contributes to the study of such subjects as "Law".

The main goal is to help full-time students and distance learning in the study of discipline "Law".

The implementation of the objective requires transforming program learning outcomes into the disciplinary ones as well as an adequate selection of the contents of the discipline according to this criterion.

## 2 INTENDED DISCIPLINARY LEARNING OUTCOMES

Code NRN	Disciplinary learning outcomes (DRN)	
	DRN code	content
SR14	SR14-V2.6-1	know the features of the geological structure of the Donbas coal deposits
	SR14-V2.6-2	analyze and choose how degassing coal mines
	SR14-V2.6-3	determine degassing technology and organization of work
VR2.1	VR2.1-V2.6-1	degassing system project for the extraction of coal mine methane

Code NRN	Disciplinary learning outcomes (DRN)	
	DRN code	content
SR14	SR14-V2.6-1	know the features of the geological structure of the Donbas coal deposits
	VR2.1-V2.6-2	justify technology development fields hazovuhilnyh
	VR2.1-V2.6-3	choose the way of CMM

### 3 BASIC DISCIPLINES

Subjects	The acquired learning outcomes
F10 "boring"	calculation and analysis of the major technical and economic indicators drilling
	Methods of designing construction of wells under the terms of the geological section
	Requirements drilling technology using the basic methods
	determine the optimal design of the drill string
	identify effective types of rock cutting tool considering the mechanical properties of rocks
V2.2 "The processes of drilling degasification wells"	analyze geological, physical and mechanical properties of rocks, acquisition of skills for the design construction of wells
	analyze geological and technical conditions for drilling drainage, calculate the parameters of drilling technology
	analyze geological and technical conditions and choose drilling technology, to select the composition of drilling assembly for drilling concrete terms, types of rock cutting tool
	provide technology requirements fixing holes
	expect rational technological modes drilling
	determine the effective technology development, testing, operation degasification wells

### 4 WORKLOAD DISTRIBUTION BY THE FORM OF EDUCATIONAL PROCESS ORGANIZATION AND TYPES OF CLASSES

Type of classes	Workload hours	Distribution by forms of education, <i>hours</i>					
		Full-time		Part-time		Distance	
		Classes (C)	Individual work (IW)	Classes (C)	Individual work (IW)	Classes (C)	Individual work (IW)
lecture	100	34	66	-	-	10	90
practical	50	17	33	-	-	4	46
laboratory	-	-	-	-	-	-	-
workshops	-	-	-	-	-	-	-
TOGETHER	150	51	99	-	-	14	136

### 5 DISCIPLINE PROGRAM BY TYPES OF CLASSES

Ciphers DRN	Types and topics of training sessions	The volume of components, <i>hours</i>
	<b>LECTURES</b>	<b>100</b>
SR14-V2.6-1	<b>1. Introduction. The resource base of hydrocarbon gases in coal-bearing deposits of Donbass</b>	20

<b>Ciphers DRN</b>	<b>Types and topics of training sessions</b>	<b>The volume of components, hours</b>
	Analysis of the geological structure of the Donbass coal deposits	
	The geological study of the region bearingness	
SR14-V2.6-2 SR14-V2.6-3	<b>2. degassing coal mines</b>	20
	State of degassing coal mines in Ukraine and the problems to be addressed.	
	Degassing wells drilled from the surface	
	Methods degassing during mining	
	Degassing coal seams developed	
	Related degassing coal seams and surrounding rocks	
	Degassing gob	
SR14-V2.6-3	Technology and Organization of decontamination work	
VR2.1-V2.6-1	Design degassing systems	
VR2.1-V2.6-2	<b>3. Technology development fields hazovuhilnyh</b>	40
	Preparation degasification wells for the extraction of methane	
	Development wells	
	Physical and technical bases degassing vuhlevmischuyuchykh fat	
	Hlybynonasosna exploitation wells	
	Operating the pump wells bezshtanhovymy	
	Collection and transportation of gas vnutrishnopromyslovyy	
	Preventing the formation of hydrates	
	Warning gas emissions	
	Maintenance wells	
VR2.1-V2.6-3	<b>4. Utilization of Coal Mine Methane</b>	20
	<b>PRACTICAL TRAINING</b>	<b>50</b>
SR14-V2.6-2 SR14-V2.6-3 VR2.1-V2.6-1	1. Definition of the required drainage coefficient longwall. Options drainage layers developed. Defining wells drilled towards the stope, the drainage layers that counterfeited. Defining wells drilled for drainage of adjacent layers of excavation supported by stope	10
	2. Defining wells drilled with sloping flank openings for drainage layer that counterfeited. Defining wells drilled with horizontal flank excavation for drainage layer that counterfeited. Determining the marginal distance from the stope where methane flow stops unloaded from adjacent layers of rock pressure and location of the maximum flow rate of gas wells	10
	3. Determination of flow rate of methane in wells drilled with development working excavation sites on the reservoir that faked	10
	4. Determination pidsmoktuvan air wells, the total flow rate mix, the number of concurrent holes and the distance between them in the hollow underground drainage layer that	10

<b>Ciphers DRN</b>	<b>Types and topics of training sessions</b>	<b>The volume of components, <i>hours</i></b>
	counterfeited. Definition pidsmoktuvan air wells, the total flow rate mix, the number of concurrent holes and the distance between them in the hollow underground drainage layer that faked	
	5. Surface degassing gob wells. Surface decontamination gob wells. Surface degassing boreholes adjacent layers	10
<b>TOTAL</b>		<b>150</b>

## **6 KNOWLEDGE PROGRESS TESTING**

Certification of student achievement is accomplished through 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 the Dnipro University of Technology is carried out based 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.

*The scales of assessment of learning outcomes of the NTUDP students*

<b>Rating</b>	<b>Institutional</b>
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 NTUDP.

### **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 7th qualification level during the demonstration of the learning outcomes regulated by the work program.

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

Diagnostic tools provided to students at 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***

<b>INTERMEDIATE CONTROL</b>			<b>FINAL ASSESSMENT</b>	
<b>training sessions</b>	<b>diagnostic tools</b>	<b>procedures</b>	<b>diagnostic tools</b>	<b>procedures</b>
lectures	control tasks for each topic	task during lectures	comprehensive reference work (CCW)	determining the average results of intermediate controls;
practical	control tasks for each topic	tasks during practical classes		CCW performance during the examination at the request of the student
	or individual task	tasks during independent work		

During the intermediate control, the lectures are evaluated by determining the quality of the performance of the control specific tasks. Practical classes are assessed by 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 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 CDF, which contains tasks covering key disciplinary learning outcomes.

The number of specific tasks of the CDF should be consistent with the allotted time for completion. The number of CDF options should ensure that the task is individualized.

The value of the mark for the implementation of the CDF is determined by the average evaluation of the components (specific tasks) and is final.

The integral value of the CDF 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 against what is 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 practicals the assimilation factor is used as a criterion, which automatically adapts the indicator to the rating scale:

$$O_i = 100 a / m,$$

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

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

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

#### **General criteria for achieving learning outcomes 7th qualification for LDCs (BA)**

**Integral competence** is the ability to solve complex problems and specialized practical problems in a particular area of professional activities or in a learning process that involves the use of certain theories and methods of the relevant scientific areas and characterized by complexity and conditions uncertainty.

descriptors NLC	Requirements for knowledge, communication, autonomy and responsibility	Indicator evaluation
<b>Knowledge</b>		
<ul style="list-style-type: none"> <li>Conceptual knowledge acquired during the training and professional activities, including some knowledge of modern achievements;</li> <li>critical understanding of the main theories, principles, methods, and concepts in education and careers</li> </ul>	- 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
	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
<b>Ability</b>		
<ul style="list-style-type: none"> <li>solving complex problems and unforeseen problems in specialized areas of</li> </ul>	<ul style="list-style-type: none"> <li>The answer describes the ability to:</li> <li>- identify the problem;</li> <li>- formulate hypotheses;</li> <li>- solve problems;</li> </ul>	95-100

descriptors NLC	Requirements for knowledge, communication, autonomy and responsibility	Indicator evaluation
professional and/or training, which involves the collection and interpretation of information (data), choice of methods and tools, the use of innovative approaches	- choose adequate methods and tools; - collect and interpret logical and understandable information; - use innovative approaches to solving the problem	
	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
<b>Communication</b>		
<ul style="list-style-type: none"> <li>♦ report to specialists and non-specialists of information, ideas, problems, solutions and their experience in the field of professional activity;</li> <li>♦ the ability to form an effective communication strategy</li> </ul>	<ul style="list-style-type: none"> <li>- Fluent problematic area. Clarity response (report). Language - correct;</li> <li>- - net;</li> <li>- - clear;</li> <li>- - accurate;</li> <li>- - logic;</li> <li>- - expressive;</li> <li>- - concise.</li> </ul> <p>Communication strategy: coherent and consistent development of thought; availability of own logical reasoning; relevant arguments and its compliance with the provisions 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</p>	95-100
	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	80-84

descriptors NLC	Requirements for knowledge, communication, autonomy and responsibility	Indicator evaluation
	strategy (a total of four requirements is not implemented)	
	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
<b>Autonomy and responsibility</b>		
<ul style="list-style-type: none"> <li>♦ management actions or complex projects, responsible for decision-making in unpredictable conditions;</li> <li>♦ responsible for the professional development of individuals and/or groups</li> <li>♦ the ability to continue study with a high degree of autonomy</li> </ul>	<ul style="list-style-type: none"> <li>- Excellent individual ownership management competencies focused on:               <ol style="list-style-type: none"> <li>1) management of complex projects, providing:                   <ul style="list-style-type: none"> <li>- exploratory learning activities marked the ability to independently evaluate various life situations, events, facts, detect and defend a personal position;</li> <li>- the ability to work in a team;</li> <li>- control of their own actions;</li> </ul> </li> <li>2) responsibility for decision-making in unpredictable conditions, including:                   <ul style="list-style-type: none"> <li>- justify their decisions the provisions of the regulatory framework of sectoral and national levels;</li> <li>- independence while performing tasks;</li> <li>- lead in discussing problems;</li> <li>- responsibility for the relationship;</li> </ul> </li> <li>3) responsible for the professional development of individuals and/or groups that includes:                   <ul style="list-style-type: none"> <li>- use of vocational-oriented skills;</li> <li>- the use of evidence from independent and correct reasoning;</li> <li>- possession of all kinds of learning activities;</li> </ul> </li> <li>4) the ability to further study with a high degree of autonomy, which provides:                   <ul style="list-style-type: none"> <li>- degree possession of fundamental knowledge;</li> <li>- independent evaluation judgments;</li> <li>- high level of formation of general educational skills;</li> <li>- search and analysis of information resources</li> </ul> </li> </ol> </li> </ul>	95-100
	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

descriptors NLC	Requirements for knowledge, communication, autonomy and responsibility	Indicator evaluation
	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

Technical training tools via multimedia software.

Distance learning platform Moodle.

## 8 RECOMMENDED SOURCES

**1. Methodical Guidelines for independent work and individual tasks on discipline "degasification" for students of all learning, specialty 090301 "Mining" / life .: MF Kremenchug, NV Windows, OA Fly, II Owl. - Dnepropetrovsk, 2003. - 30 p.**

2. Dehazatsyya uholnyh mines. Requirements for methods and scheme dehazatsyy: SOU 10.1.00174088.001-2004. - [Effective as of 01.01.2005]. - K: Myntopenerho Ukraine, 2004. - 162 p. - (Standard Myntopenerho Ukraine).

3. IA Efremov Basics and Using Integrated dehazatsyy uholnyh methane mines. Lecture "HVUZ" DNTU "2013.

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5. Morev AM, sugars, NM Dehazatsyya Using uholnyh mines and methane. - Donetsk: Donbass, 1974. - 109 p.

6. Pudak V. Dehazatsyya uhleporodnoho panels napravlenymy wells, proburennyy s surface. - M.: IAC GN, 1993. - 111 p.

7. Puchkov LA, Kaledin NO Dynamics of methane in vyrabotannyh prostranstva uholnyh mines. - M., MHHU, 1995. - 312 p.

8. Management Development at the gas release uholnyh reservoir / AA Myasnikov, AS Riabchenko, VA Sadchykov. - M.: Nedra, 1987. - 216 p.

9. Pavlov SD Ways osvoenyia pryrodnyh pro uholnyh mestorozhdeny [Text] / SD Pavlov - H.: flavor, 2005. - 325 p.

10. Baranov VA Estimated gas content of coal deposits, teach. guidances. / VA Baranov, NV Khomenko; N-of Education and Science of Ukraine, Nat. Hearne. Univ. - D., NSU, 2015. - 152 p.

11. Weather gas content uholnyh mestorozhdeny: Textbook / NA Dudley, BP Width BV sides; N-of Education and Science, Nat. horn. Univ. - D.: NSU, 2015. - 589 p.

Educational edition

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185 “Oil and gas engineering and technology”

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