Ministry of Education and Science of Ukraine
Dnipro University of Technology

FACULTY OF SURVEY DEPARTMENT

DEPARTMENT OF GEOLOGY AND MINERAL PROSPECTING

"APPROVED"
Head of Department

Savchuk V.S. _____

"____" _____ 2018

WORK PROGRAM OF THE ACADEMIC DISCIPLINE

" Fundamentals of geology of oil and gas "

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 “Fundamentals of geology of oil and gas” for bachelor’s specialty 185 “Oil and Gas Engineering and Technology” / V.V. Lukin / NTU “Dnipro Polytechnic” Department of Geology and Mining. - DA: NTU «DP» 2018 - 13 p.

Autors:

Lukin VV, doctor of geological-mineralogical sciences, Professor, Department of Geology and Mineral Prospecting.

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.

CONTENTS

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 F3 discipline "Fundamentals of geology of oil and gas" are classified as learning outcomes::

SR1	To characterize geological processes and the basic laws of formation of rocks, including oil and gas deposits

The objective of discipline - forming competence to analyze the origin, the conditions of occurrence, the geological history of the deposits of liquid and gaseous hydrocarbons, structure, composition and characteristics and geological processes and phenomena that they are formed at different spatial and temporal scale levels, with the aim of using the detected patterns in practice activities of prospecting, exploration and development of oil and gas fields.

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**
SR1	SR1-F3-1	know the methodological foundations of economic and geological prospecting and exploration of oil and gas;
	SR1-F3-2	know the basic fundamentals of classification of oil and gas;
	SR1-F3-3	take into account the current state of energy reserves and the role of oil and gas in the energy balance of Ukraine in the present and the future;
	SR1-F3-4	choose methods and evaluate the results of the calculation of reserves of oil and gas;
	SR1-F3-5	determine the possibility of the formation of oil and gas within the individual areas.

3 BASIC DISCIPLINES

Disciplines of general training

Subjects	**The acquired learning outcomes**
Introduction to F1	Preserve and increase moral, cultural, scientific achievements and values of society by understanding the history and patterns of developmentoil and GasIts place in the overall system knowledge about nature and society and in social development, engineering and technology;
	know the overall structure, relationships and functionality of individual elements of the system of Ukraine hydrocarbons.
B5, B6 Geology	To characterize geological processes and basic laws of formation of rocks in including oil and gas deposits.

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

Type of classes	**Workload** hours	**Distribution by forms of education**, *hours*					
		Full-time		**Part-time**		**Distance**	
		Classes (C)	Individual work (IW)	Classes (C)	Individual work (IW)	Classes (C)	Individual work (IW)
lecture	45	18	27	-	-	-	-
practical	45	9	36	-	-	-	-
laboratory	-	-	-	-	-	-	-
workshops	-	-	-	-	-	-	-
TOGETHER	90	27	63	-	-	-	-

5 DISCIPLINE PROGRAM BY TYPES OF CLASSES

Ciphers DRN	**Types and topics of training sessions**	**The volume of components,** *hours*
	LECTURES	**45**
SR1- F3	**1. General information about the geology of oil and gas.**	9
	1.1. The role of oil and gas in the world economy and the Ukraine.	2
	1.2. The chemical composition and physical properties of oil and gas.	2
	1.3. Collection rock properties and methods of their study.	2
	1.4. Individual work. The main provisions of the hypothesis of organic origin of oil. Stage convert organic matter into hydrocarbon formation under the hypothesis of organic oil. (Abstract).	3
	1.1. The role of oil and gas in the world economy and the Ukraine.	
SR1- F3	**2. Local and regional** Classification accumulations of oil and gas.	9
	2.1. Classification of accumulations of oil and gas. Classification of natural reservoirs, traps, reservoirs and oil and gas.	2
	2.2. Classification of regional oil and gas areas.	
	2.3. Individual work. Geological studies of oil and gas mineral resources during the search and exploration of oil and gas. . (Abstract).	2 5
SR1- F3	**3. The resources of oil and gas in the depths of Ukraine**	9
	3.1. Oil and gas field and the province of Ukraine.	2
	3.2. Individual work. Geochemical and hydrogeological methods of oil and gas mineral resources during the search and exploration of oil and gas. (. Summary).	7
SR1- F3	**4. The gas dynamic characteristics and properties of rocks that define the gas-bearing subsoil.**	9

Ciphers DRN	Types and topics of training sessions	The volume of components, *hours*
	4.1. Methods for calculating oil and gas reserves.	2
	4.2. Individual work. Geophysical methods of oil and gas mineral resources during the search and exploration of oil and gas. (Abstract).	7
SR1- F3	**5. Basic processes of formation of oil and gas fields.**	9
	5.1. The main geological factors necessary for the accumulation and preservation of accumulations of oil and gas.	2
	5.2. Individual work. Features of drilling for oil, gas and condensate fields.	7
	PRACTICAL TRAINING	**45**
SR1- F3	1. Defining elements and parameters traps and oil and gas. 2. The study of the main types of oil traps and their graphic representation. 3. Graphical simulation of oil and gas. 4. Construction of structural maps and evaluation of oil and gas resources. 5. Study key features Mr.aftohazonosnyh provinces of Ukraine.	45
	TOTAL	**90**

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

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 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

<table>
<tr><th colspan="3">INTERMEDIATE CONTROL</th><th colspan="2">FINAL ASSESSMENT</th></tr>
<tr><th>training sessions</th><th>diagnostic tools</th><th>procedures</th><th>diagnostic tools</th><th>procedures</th></tr>
<tr><td>lectures</td><td>control tasks for each topic</td><td>task during lectures</td><td rowspan="3">comprehensive reference work (CCW)</td><td rowspan="3">determining the average results of intermediate controls;

CCW performance during the examination at the request of the student</td></tr>
<tr><td rowspan="2">practical</td><td>control tasks for each topic</td><td>tasks during practical classes</td></tr>
<tr><td>or individual task</td><td>tasks during independent work</td></tr>
</table>

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
Knowledge		
♦ Conceptual knowledge acquired during the training and professional activities, including some knowledge of modern achievements; ♦ critical	- 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

descriptors NLC	Requirements for knowledge, communication, autonomy and responsibility	Indicator evaluation
understanding of the main theories, principles, methods, and concepts in education and careers	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 defended; the correct structure of the response (report);	95-100

descriptors NLC	Requirements for knowledge, communication, autonomy and responsibility	Indicator evaluation
	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; 4) the ability to further study with a high degree of autonomy, which provides: - degree possession of fundamental knowledge;	95-100

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

Technical training tools via multimedia software.
Distance learning platform Moodle.

8 RECOMMENDED SOURCES

1. Majewski BI, Lozinski EE, Gladun VV Chepil PM Prediction, prospecting and exploration of oil and gas fields. - K .: Naukova Dumka, 2004. - 464 p.
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4. Majewski BI, Kurovets SS, Lozinski EE, Khomyn VR, Zderka TV, Manyuk MI Actual problems of petroleum geology. - Ivano-Frankivsk: Scientific opinion 2014. - 240 p.
5. Akulshyn OI Akulshyn AA, VM Kucherovskyy Glossary of Petroleum. Ivano-Frankivsk: IFNTUOG, 1998. -218 p.
6. Atlas of oil and gas Ukraine: In 6 t. / Ukrainian oil and gas akademiya. Lviv, 1998.- T. I: Eastern oil and gas region - 494 p.

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