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**Federal State Autonomous Educational Institution of Higher Education
Peoples' Friendship University of Russia named after Patrice Lumumba
RUDN University**

Academy of Engineering

educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

**Economics and management of oil and gas production / Экономика и управление
нефтегазовым производством**

course title

Recommended by the Didactic Council for the Education Field of:

21.04.01 Oil and Gas Engineering

field of studies / speciality code and title

**The course instruction is implemented within the professional education programme of
higher education:**

Oil and Gas Engineering / Технологии добычи и транспортировки нефти и газа

higher education programme profile/specialisation title

1. COURSE GOAL(s)

The goal of the course "Economics and management of oil and gas production / Экономика и управление нефтегазовым производством" is the formation of a complex of knowledge for the effective implementation of production management processes at the enterprises of the oil and gas industry and in their structural divisions on the basis of organizational and economic knowledge.

The study of the course «Economics and management of oil and gas production / Экономика и управление нефтегазовым производством» provides for the acquisition of practical skills in the study of the global oil and gas market, the results and factors of production, methods for assessing the efficiency of resource use in oil and gas production, the formation of production costs and financial results in oil and gas production, the content and functions of enterprise management : entities and types of planning; types of organizational structures of management; motivation; control; information; management decisions.

2. REQUIREMENTS FOR LEARNING OUTCOMES

The course "Economics and management of oil and gas production / Экономика и управление нефтегазовым производством" is designed for students to acquire following competences (competences in part):

Table 2.1. List of competences that students acquire during the course

Competence code	Competence descriptor	Competence formation indicators (within this course)
GC-1	Able to search, make a critical analysis of problem situations based on a systematic approach, develop a strategy	GC-1.1. Knows the methods of critical analysis and evaluation of modern scientific achievements; methods of critical analysis; basic principles of critical analysis. GC-1.2. Can analyze the task, highlighting its basic components, decompose the task; receive new knowledge based on analysis, synthesis, etc.; carry out a critical analyze of information necessary to solve the problem; collect data on complex scientific problems related to the professional field; search for information and solutions based on actions, experiment and experience. GC-1.3. Has the ability to study the problem of professional activity using analysis; synthesis and other methods of intellectual activity; identify scientific problems and use adequate methods to solve them; the skills of value judgments in solving professional situations.
GC-2	Able to manage a project at all stages of its life cycle	GC-2.1. Knows methods for solving specific problems of the project of the declared quality and within the specified time; the basics of designing and solving a specific project problem, choosing the best way to solve it, based on current legal regulations and available resources and restrictions. GC-2.2. Can formulate, within the framework of the goal of the project, a set of interrelated tasks that ensure its achievement.

Competence code	Competence descriptor	Competence formation indicators (within this course)
		GC-2.3. Has the skills of forecasting and determining the expected results of solving selected tasks; the skills of public presentation of the results of solving a specific project problem.
GC-3	Able to organize and manage team the work of the team, developing a team strategy to achieve the goal	GC-3.1. Knows the peculiarities of the behavior of selected groups of people with whom he works / interacts, takes them into account in his activities (the choice of categories of groups of people is carried out by an educational organization depending on the goals of training - by age characteristics, by ethnicity or religion, socially unprotected segments of the population, etc.). GC-3.2. Can foresee the results (consequences) of personal actions and plans a sequence of steps to achieve a given result; anticipates the results (consequences) of personal actions and plans a sequence of steps to achieve a given result. GC-3.3. Has the skills to effectively use the cooperation strategy to achieve the set goal, determines his role in the team; effective interaction with other team members, incl. participates in the exchange of information, knowledge and experience, and the presentation of the results of the team's work.
PC-8	Able to organize the work of performers, find and make management decisions, rules for ensuring the safety of technological processes, as well as personnel when working in the field, in laboratories, during office processing	PC-8.1. Knows the safety rules and safety precautions when working in the field, in laboratories, during office processing. PC-8.2. Can justify and make management decisions in the field of organization and regulation of labor; conduct briefings on ensuring the safety of technological processes, as well as personnel when working in the field, in laboratories, during office processing. PC-8.3. Has the methodology for ensuring the safety of technological processes, as well as personnel when working in the field, in laboratories, during office processing.

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the elective component of (B1) block of the higher educational programme curriculum.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
GC-1	Able to search, make a critical analysis of problem situations based on a systematic approach, develop	Current development of the production of unconventional hydrocarbon resources in the world /	State Exam / Государственный экзамен [АНГЛ.]; Graduate Qualification

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
	a strategy	Современное развитие добычи нетрадиционных ресурсов углеводородов в мире [англ.]	Work / Выпускная квалификационная работа [англ.]
GC-2	Able to manage a project at all stages of its life cycle		State Exam / Государственный экзамен [англ.]; Graduate Qualification Work / Выпускная квалификационная работа [англ.]
GC-3	Able to organize and manage team the work of the team, developing a team strategy to achieve the goal		State Exam / Государственный экзамен [англ.]; Graduate Qualification Work / Выпускная квалификационная работа [англ.]
PC-8	Able to organize the work of performers, find and make management decisions, rules for ensuring the safety of technological processes, as well as personnel when working in the field, in laboratories, during office processing	Technological processes of pipeline transport / Технологические процессы трубопроводного транспорта [англ.]; Technologies for developing prospective hydrocarbon reserves / Технологии разработки перспективных запасов углеводородов [англ.]; Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России [англ.]; Advanced oil and gas processing equipment and product quality management / Современное оборудование для переработки нефти и газа и управление качеством производимой продукции [англ.]; Technological practice (industrial) / Технологическая практика (производственная) [англ.]	Pre-graduation Practical Training / Преддипломная практика [англ.]; State Exam / Государственный экзамен [англ.]; Graduate Qualification Work / Выпускная квалификационная работа [англ.]

* To be filled in according to the competence matrix of the higher education programme

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Economics and management of oil and gas production / Экономика и управление нефтегазовым производством" is 3 credits.

Table 4.1 Types of academic activities during the period of the HE programme

mastering

Type of study work		TOTAL, acc.hrs.	Semester(s) 3
<i>Contact academic hours, acc .</i>		36	36
including:			
Lectures			
Laboratory work			
Seminars (workshops/tutorials)		36	36
<i>Self-study (ies), academic hours</i>		72	72
<i>Evaluation and assessment (exam or pass/fail grading)</i>			
The course total workload	acc.hrs.	108	108
	Credits	3	3

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title		Course topic title		Course module contents (topics)	Academic activities types
1	Macroeconomic Foundations of Oil and Gas Production Macroeconomic Foundations of Oil and Gas Production Macroeconomic Foundations of Oil and Gas Production	1.1	Key Macroeconomic Indicators of the Oil and Gas Industry	The system of macroeconomic indicators defining the operating environment of oil and gas production: Russian GDP (nominal, real, dynamics). Inflation: the Bank of Russia methodology for converting monthly CPI growth into an annualised figure; the concept of SAAR (Seasonally Adjusted Annual Rate); the "square root of 12" method for assessing the volatility of monthly data. The Bank of Russia key rate: its influence on lending, the investment cycle and the cost of capital in the industry. The ruble exchange rate: dependence on oil prices, the fiscal rule and central bank interventions.	S
		1.2	Oil Prices and the Russian Fiscal Rule	Oil price benchmarks: Brent and Urals, formation of the Urals discount to Brent. The fiscal rule mechanism: the cutoff price, calculation of additional oil and gas budget revenues. Dependence of the ruble exchange rate on oil prices at different cutoff price levels (60, 55, 50, 45 \$/bbl). The impact of OPEC+ on production volumes and export revenues. Structure of	S

				federal budget oil and gas revenues: Mineral Extraction Tax (MET), export duties, Additional Income Tax (AIT).	
		1.3	Taxation of Oil and Gas Enterprises	Mineral Extraction Tax (MET): base, rates, calculation methodology for oil (as a function of Urals price and ruble exchange rate), incentives for new and hard-to-recover (HTR) fields. Additional Income Tax (AIT): conditions of application, distinction from MET. Export duties and the tax manoeuvre. Corporate income tax and VAT as applied to oil and gas enterprises. The industry tax burden and its impact on investment decisions.	S
2	Economics of an Oil and Gas Enterprise Economics of an Oil and Gas Enterprise Economics of an Oil and Gas Enterprise	2.1	Production Cost: Structure and Formation	Cost classification: variable and fixed, direct and indirect. Semi-fixed production costs (SFPC): composition, role in the cost structure, treatment in cost accounting. Cost calculation line items for an oil and gas enterprise. Metal consumption ratio (MCR): definition, calculation methodology for a specific production unit, influencing factors (scrap, burnout, trimmings, installation scrap). Metal charge as the key material input in pipe production. By-products and their treatment in the cost calculation.	S
		2.2	Pricing and Financial Results of an Enterprise	Basic pricing formula: price = cost + profit. Structure of the ex-works price. Delivery terms: FCA (Free Carrier), definition and practical application in the sale of pipe products, comparison with FOB and CIF. Formation of the financial result: from revenue to net profit. EBITDA: calculation and application in comparing industry enterprises. Return on sales, return on assets (ROA), return on equity (ROE).	S

		2.3	Capital, Investment and Financial Planning	Fixed assets of an oil and gas enterprise: wells, pipelines, equipment, depreciation, asset turnover. Working capital: structure, rationing, turnover. Capital expenditure in drilling and field development. Investment project evaluation: NPV, IRR, payback period. Budgeting: operating and investment budgets of an enterprise.	S
3	Market Analysis and Management of Oil and Gas Production Market Analysis and Management of Oil and Gas Production Market Analysis and Management of Oil and Gas Production Market Analysis and Management of Oil and Gas Production	3.1	The Steel Pipe Market for the Oil and Gas Industry: Structure and Segmentation	Classification of steel pipes: OCTG (casing, drill pipe, tubing, oil and gas line pipe), medium and small diameter (MSD) energy pipes, MSD structural pipes, large diameter pipes (LDP). Strength grades of casing and tubing pipes, types of OCTG threaded connections. Specifics of LDP: steel grades X70/X80, application in trunk gas pipelines, the concept of looping. Relationship between market segments and production process types: upstream (drilling, production), midstream (transportation), downstream (processing).	S
		3.2	Forecasting Demand for Pipe Products	Drivers of OCTG pipe demand: drilling volumes, well stock, oil price. Regression models for demand forecasting: dependence of OCTG consumption on macroeconomic parameters (Urals price, key rate, drilling investment). Impact of horizontal drilling and multi-stage hydraulic fracturing (MSHF) on specific pipe consumption. Large projects as discrete drivers of LDP demand: Vostok Oil, Arctic LNG-2. Market forecast for 2025-2030: base case and pessimistic scenarios.	S
		3.3	Financial Analysis of Oil and Gas and Metallurgical Sector Companies	Methodology for financial analysis using public reporting: revenue, EBITDA, EBITDA margin, net debt/EBITDA. Analysis of	S

				competitive market positioning: market shares by segment (OCTG, LDP, MSD). Comparative analysis of key financial indicators of leading pipe manufacturers. Interpretation of the Executive Summary of an industry analytical report: structure, key indicators, conclusions. Impact of the macroeconomic environment (Urals price, key rate, ruble exchange rate) on the financial performance of industry companies in 2024-2025.	
		3.4	Production Organisation and Management of an Oil and Gas Enterprise	The production cycle in oil and gas extraction: cluster drilling, integrated work scheduling. Organisational management structures in oil and gas companies: linear, matrix, project-based. KPI systems: production KPIs (output, mean time between repairs), financial KPIs (EBITDA, ROACE). Financial responsibility centres within a vertically integrated oil company (VIOC). Strategic planning under oil price volatility.	S

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Seminar	A classroom for conducting seminars, group and individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and technical means for multimedia presentations.	
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment.	

* The premises for students' self-studies are subject to **MANDATORY** mention

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

1. Linnik, Yu. N., Baykova, O. V., Linnik, V. Yu. Economics of oil and gas companies: textbook. – Moscow: INFRA-M, 2025. – 334 p. – (Higher Education). – DOI 10.12737/2172767. – ISBN 978-5-16-020417-8. – Text: electronic. – URL: <https://znanium.ru/catalog/product/2172767>
2. Krayushkina, M. V. Economics and management of oil and gas production: textbook / Ministry of Education and Science of the Russian Federation, Federal State Autonomous Educational Institution of Higher Professional Education "North Caucasus Federal University". – Stavropol: NCFU, 2014. – 156 p.
3. Eremenko, O. V. Innovative technologies of personnel management in the oil and gas complex: textbook. – Moscow; Berlin: Direct-Media, 2017. – 192 p.

Additional(optional) reading (sources):

4. Economics and organization of production: textbook / edited by Yu. I. Treshchevsky, Yu. V. Vertakova, L. P. Pidoimo; head of the author team Yu. V. Vertakova. – Moscow: INFRA-M, 2025. – 381 p. + Additional materials [Electronic resource]. – (Higher Education). – ISBN 978-5-16-020757-5. – Text: electronic. – URL: <https://znanium.ru/catalog/product/2192239>
5. Zhukov, B. M., Tkacheva, E. N. Research of control systems: textbook. – Moscow: Dashkov and Co., 2017. – 207 p.
6. Antsupov, A. Ya. Strategic management / Institute of Development Strategy. – 3rd ed., revised and expanded. – Moscow: Technosphere, 2015. – 344 p.

Internet sources

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:
 - RUDN Electronic Library System (RUDN ELS) <http://lib.rudn.ru/MegaPro/Web>
 - EL "University Library Online" <http://www.biblioclub.ru>
 - EL "Yurayt" <http://www.biblio-online.ru>
 - EL "Student Consultant" www.studentlibrary.ru
 - EL "Lan" <http://e.lanbook.com/>
2. Databases and search engines:
 - electronic foundation of legal and normative-technical documentation <http://docs.cntd.ru/>
 - Yandex search engine <https://www.yandex.ru/>
 - Google search engine <https://www.google.ru/>
 - Scopus abstract database <http://www.elsevierscience.ru/products/scopus/>

*Training toolkit for self- studies to master the course *:*

1. The set of lectures on the course Economics and management of oil and gas production / Экономика и управление нефтегазовым производством.

2. Guidelines for students on the development of the course " Economics and management of oil and gas production / Экономика и управление нефтегазовым производством ".

*The training toolkit and guidelines for the course are placed on the course page in the university telecommunication training and information system under the set procedure.

DEVELOPERS:

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position, department

name and surname

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