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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

**Project management in the oil and gas industry / Управление проектами в
нефтегазовой отрасли**

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 discipline "Project management in the oil and gas industry / Управление проектами в нефтегазовой отрасли" is included in the curriculum of the master's programme "Oil and Gas Engineering / Технологии добычи и транспортировки нефти и газа" within the field of study 21.04.01 "Oil and Gas Engineering" and is studied in the 3rd semester of master 2. The discipline is delivered by the Department of Mineral Developing and Oil & Gas Engineering. It consists of 6 sections and 13 topics and is aimed at studying the methodology of project management in the oil and gas industry, principles and processes, phase approaches in managing large projects, stages of design in the development of oil and gas fields. As well as developing skills in managing large projects at all stages of the life cycle, project cost, project risks; mastering calendar-resource planning and preparation of project contract strategy, methods of increasing project value, project management within a matrix structure, analysis and application of best practices for project implementation.

The goal of the discipline is to obtain knowledge, skills, abilities and experience in the field of project management in the oil and gas industry. The acquired knowledge and skills characterize the stages of competence formation and ensure the achievement of the planned learning outcomes of the educational programme.

2. REQUIREMENTS FOR LEARNING OUTCOMES

The course "Project management in the oil and gas industry / Управление проектами в нефтегазовой отрасли" 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

Competence code	Competence descriptor	Competence formation indicators (within this course)
		<p>available resources and restrictions.</p> <p>GC-2.2. Can formulate, within the framework of the goal of the project, a set of interrelated tasks that ensure its achievement.</p> <p>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.</p>
GC-3	Able to organize and manage team the work of the team, developing a team strategy to achieve the goal	<p>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.).</p> <p>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.</p> <p>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.</p>
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	<p>PC-8.1. Knows the safety rules and safety precautions when working in the field, in laboratories, during office processing.</p> <p>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.</p> <p>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.</p>

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 a strategy	Current development of the production of unconventional hydrocarbon resources in the world / Современное развитие добычи нетрадиционных ресурсов углеводородов в мире [англ.]	State Exam / Государственный экзамен [англ.]; Graduate Qualification 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 "Project management in the oil and gas industry / Управление проектами в нефтегазовой отрасли" 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	Fundamentals of Project Management	1.1	Project stages, concept of an artifact, distribution of artifacts by project stages, main project artifacts (IT)	The stages of the project life cycle are considered: initiation, planning, implementation, monitoring and completion. The concept of a project artifact, its role in management and documentation is revealed. Classification of artifacts by project stages (project charter, business case, terms of reference, project plan, reports) is studied. Features of artifact formation in IT and oil and gas projects, including engineering and design documentation, are analyzed.	S
		1.2	Types of customers, RACI matrix	Types of customers and project stakeholders (internal, external, government, investors) are considered. Analysis of participant roles in the project is carried out. The RACI matrix as a tool for distributing responsibility and its application in project practice are studied. Typical errors in role distribution and methods for eliminating them are considered.	S

2	Manager's Iron Triangle	2.1	Manager's triangle, how to manage the sides of the triangle	The concept of the project's "iron triangle" (scope, time, cost) is studied. The interrelationships between parameters and project constraints are considered. Methods for managing the balance between time, budget and scope of work are analyzed. Examples of changing parameters depending on project priorities are provided.	S
		2.2	Priority matrix, communicating project constraints to the customer	Methods for prioritizing tasks (MoSCoW, Value vs Effort, etc.) are considered. Approaches to forming priorities under limited resources are studied. Methods of communication with the customer, including communicating project constraints and managing expectations, are analyzed. Tools for change management are considered.	S
3	Collection and Analysis of Information Before Project Start	3.1	Key questions for understanding the project	Approaches to collecting initial information before launching a project are studied. Key questions for determining project goals, constraints, requirements and success criteria are formulated. Methods of interviewing and analyzing stakeholders are considered.	S
		3.2	What is MVP and release plan	The concept of a minimum viable product (MVP), its role in reducing project risks is considered. Approaches to forming a release plan and phased implementation of solutions are studied. Differences between MVP, pilot and industrial solutions are analyzed.	S
4	Development of Project Implementation Plan	4.1	Task decomposition and its types	Methods of task decomposition, including building a work breakdown structure (WBS), are studied. Various approaches to decomposition (by stages, functions, product) are considered. The relationship between decomposition and	S

				time and resource planning is analyzed.	
		4.2	How to prioritize work and form releases, what external factors affect the project	Methods for prioritizing work and forming task sequences are studied. Approaches to release planning are considered. External factors affecting the project (economic, technological, regulatory) are analyzed.	S
5	Risk Management	5.1	Market analysis, competitor analysis	Methods of market and competitive environment analysis are considered. Tools of strategic analysis (SWOT, PESTEL) are studied. The influence of market factors on project implementation is analyzed.	S
		5.2	Target audience analysis	Approaches to identifying and segmenting the project's target audience are studied. Methods for analyzing the needs and expectations of users or customers are considered. The influence of audience characteristics on project parameters is analyzed.	S
6	Budgeting and Unit Economics	6.1	Budget elements, unit economics	The structure of the project budget, including capital and operating costs, is considered. The main elements of unit economics: revenue, costs, marginality are studied. The application of unit economics for evaluating project efficiency is analyzed.	S
		6.2	Key metrics	Key performance indicators (KPIs) of the project are studied. Financial metrics (NPV, IRR, payback period) and operational indicators are considered. Their application for evaluating project results is analyzed.	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. Project Management Body of Knowledge (PMBOK® Guide). – 7th ed. – Newtown Square: Project Management Institute, 2021. – 370 p.
2. International business in the oil and gas industry sectors: textbook / edited by Yu. N. Linnik, V. Ya. Afanasyev, A. S. Kazak. – Moscow: INFRA-M, 2016.
3. Meredith, J., Mantel, S. Jr. Project Management: A Managerial Approach. – Translated from English. – Saint Petersburg [et al.]: Piter, 2014.
4. Fundamentals of Management (Oil and Gas Industry): textbook for universities / A. F. Andreev [et al.]. – Moscow: Oil and Gas, Gubkin Russian State University of Oil and Gas Publishing House, 2007.
5. Project Management: textbook for universities / V. N. Ostrovskaya [et al.]. – Saint Petersburg [et al.]: Lan, 2018.
6. Meredith, J. R. Project Management: A Managerial Approach. – 10th ed. – Hoboken: Wiley, 2017. – 640 p.
7. Turner, J. R. Handbook of Project-Based Management. – 4th ed. – New York: McGraw-Hill, 2014. – 432 p.
8. PRINCE2: Managing Successful Projects with PRINCE2. – 6th ed. – London: AXELOS, 2017. – 328 p.

Additional(optional) reading (sources):

1. Jen, F., Cook, M., Graham, M. Hydrocarbon Exploration and Production. – Translated from English. – Moscow: Premium Engineering, Technopress, 2013.
2. Johnston, D. Economic Analysis of Exploration, Risks and Agreements in the International Oil and Gas Industry. – Translated from English. – Moscow: Olymp-Business, 2005.
3. Corporate Management: textbook for universities / I. I. Mazur [et al.]. – Moscow: Omega-L, 2008.
4. Rose, P. R. Risk Analysis and Management of Petroleum Exploration Ventures. – Translated from English. – Moscow; Izhevsk: Institute of Computer Research, 2011.

5. Voevodkin, V. L., Zubarev, E. G., Karamyan, S. Yu., Rykov, O. R. Management of large capital projects: textbook. – Moscow: ZD-Marketing LLC, 2019. – 184 p.
6. Project Management: textbook for universities / I. I. Mazur [et al.]. – Moscow: Omega-L, 2014.
7. ISO 21500:2012 Guidance on Project Management. – Geneva: ISO, 2012. – 36 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/](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 Project management in the oil and gas industry / Управление проектами в нефтегазовой отрасли.

2. Guidelines for students on the development of the course " Project management in the oil and gas industry / Управление проектами в нефтегазовой отрасли ".

*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.

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