

**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
RUDN University
Academy of Engineering**

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

COURSE SYLLABUS

**Modern stream in oil and gas processing in Russia / Современные направления
нефтегазопереработки в России**

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 GOALS

The purpose of mastering the discipline "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России" is the study by students of chemistry, mechanism, kinetic and thermodynamic laws of the main reactions of organic synthesis, which underlie large-scale production of organic synthesis; study of technological design of the main processes of organic synthesis and areas of application of manufactured products.

The aims of the course are:

- study of processes of deep chemical processing of hydrocarbon raw materials, synthesis of surfactants and polymers;
- study of devices and equipment for the chemical processing of hydrocarbons;
- analysis of ways to improve and modernize technological production.

2. LEARNING OUTCOMES

Mastering the discipline "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России" is aimed at developing the following competencies in students (parts of competencies):

Table 2.1. The list of competencies formed by students in the course of mastering the discipline (the results of mastering the discipline)

Competence code	Competence descriptor	Competence formation indicators (within this course)
SPC-5	Able to draw up technical documentation for the implementation of the technological process (work schedules, instructions, plans, estimates, requests for materials, equipment, etc.), make an economic assessment of oil and gas fields in accordance with approved forms	<p>SPC-5.1 Knows the requirements and GOSTs for the preparation of technical documentation, basic methods of geological and industrial assessment of oil and gas fields; methods of geological-industrial and geological-economic assessment (GEO) of new geological exploration projects, taking into account all the uncertainties and risks of their implementation</p> <p>SPC-5.2 Can draw up and draw up technical documentation for the implementation of technological processes in the field of oil and gas field development, transportation and processing of oil and oil products: apply new methods of geological and industrial evaluation of oil and gas fields; determine the geological resources and the probability of finding a deposit, its production potential; carry out planning and evaluation of infrastructure solutions; determination of costs for the discovery and development of a field</p> <p>SPC-5.3 Has the methodology for preparing primary reporting, including work schedules, instructions, plans, estimates, applications for materials, equipment according to approved forms</p>
SPC-6	Capable of applying the basic principles of rational use of natural resources and environmental protection	<p>SPC-6.1 Knows the legal and methodological framework of the procedure for conducting environmental impact assessment EIA and environmental expert activities for use in professional activities; fundamentals of the theory and normative legal acts of the integrated development and rational use of natural resources and environmental protection; the procedure for conducting a geological examination of projects, regulatory documents for</p>

Competence code	Competence descriptor	Competence formation indicators (within this course)
		<p>compiling an environmental passport</p> <p>SPC-6.2 Can assess the state of the environment when conducting complex geological and geographical studies; use mechanisms for the rational use of natural resources and environmental protection; apply regulatory and methodological documents to assess and prevent environmental damage at production facilities</p> <p>SPC-6.3 Has the methodology of rational use of natural resources and environmental protection; a system of methods (EIA) and conducting state environmental expertise for successful research and production activities; skills and knowledge to assess environmental damage at production facilities, modern methods for eliminating the consequences and preventing environmental damage at production facilities</p>
SPC-9	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, in office processing	<p>SPC-9.1 Knows the safety rules and safety precautions when working in the field, in laboratories, during office processing</p> <p>SPC-9.2 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>SPC-9.3 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. ACADEMIC PROGRAM STRUCTURE

The discipline "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России" refers to the University Disciplines Module of block B1 of the Higher Education Program.

As part of the Higher Education Program, students also master other disciplines and / or practices that contribute to the achievement of the planned results of mastering the discipline "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России".

Table 3.1. List of Higher Education Program components / disciplines that contribute to expected learning/training outcomes

Competence code	Name of competence	Previous disciplines/modules, practices*	Subsequent disciplines/modules, practices*
SPC-5	Able to draw up technical documentation for the implementation of the technological process (work schedules, instructions, plans, estimates, requests for materials, equipment, etc.), make an economic assessment of oil and	Disciplines of the previous level of education	Innovative technologies for the development of hydrocarbon deposits / Инновационные технологии разработки месторождений углеводородов Comprehensive analysis of processing, storage and

Competence code	Name of competence	Previous disciplines/modules, practices*	Subsequent disciplines/modules, practices*
	gas fields in accordance with approved forms		marketing of hydrocarbons / Комплексный анализ переработки, хранения и сбыта углеводородов Technological practice (training) / Технологическая практика (учебная) Technological practice (production) / Технологическая практика (производственная) Pre-graduate practice / Преддипломная практика SFC
SPC- 6	Capable of applying the basic principles of rational use of natural resources and environmental protection	Disciplines of the previous level of education	Technological practice (training) / Технологическая практика (учебная) Technological practice (production) / Технологическая практика (производственная) SFC
SPC-9	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, in office processing	Disciplines of the previous level of education	Technological practice (production) / Технологическая практика (производственная) Pre-graduate practice / Преддипломная практика SFC

* - filled in in accordance with the matrix of competencies and the Higher Education Program

4. COURSE WORKLOAD and ACADEMIC/TRAINING/LEARNING ACTIVITIES

The total workload of the course "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России" is 5 credits.

Table 4.1. Types of academic activities during the period of the HE program mastering

Type of study work	TOTAL, acc.	Semester(s)
		one
Contact academic hours, acc .	54	54
including:		
Lectures	18	18
Laboratory work		
Seminars (workshops/tutorials)	36	36
Self-study (ies), academic hours	90	90
Evaluation and assessment (exam or pass/fail grading)	36	36
The course total workload	acc.hrs.	180
	credits	5

5. CONTENT OF THE DISCIPLINE

Table 5.1. The content of the discipline (module) by type of educational work

Name of the discipline section	Contents of the section (topic)	Type of academic work
Section 1. Status and development trends of the global oil and gas processing industry	Objectives and content of the course. Prospects for the production and use of commercial products of oil and gas processing	Lecture, Seminar
Section 2. Gas processing technology	Classification of types of technological fuel, physical and chemical bases for the creation of technologies for the processing of liquid hydrocarbon raw materials and gas.	Lecture, Seminar
	Methods for the preparation and purification of natural gases.	
	New directions and technologies for gas processing, commercial products from gaseous raw materials	
Section 3. Technology for preparing oil and gas condensate for processing	Methods of their preparation for processing and separation Technology of separation treatment of oil and gas condensate. Separation equipment	Lecture, Seminar
Section 4. Oil and gas condensate processing technology	Atmospheric distillation of oil and gas condensates; atmospheric-vacuum distillation of oil, technological bases for the separation and purification of distillates and residues using various reagents, deasphalting, dewaxing	Lecture, Seminar
	New trends in oil, gas and gas condensate processing technology	
Section 5. Recycling of crude oil	Thermal processes of oil raw materials processing.	Lecture, Seminar
	Catalytic processes of processing of oil raw materials.	
	Hydrocatalytic processes of oil raw materials processing.	

6. CLASSROOM EQUIPMENT and TECHNOLOGY SUPPORT REQUIREMENTS

- Table 6.1. Classroom Equipment and Technology Support Requirements

Classroom for Academic Activity Type	Classroom equipment	Specialized educational / laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	Training room for conducting lecture-type classes: room. No. 335 A set of specialized furniture; technical means: projection screen; multimedia projector SANYO PROxtraX; system block DEPO Neos 220	
Seminar	Classroom for conducting seminar-type classes: room. No. 356 A set of specialized furniture; chalk board; monitor NEC PLASMA MONITO MODEL PX-42XM1G; system block DEPO Neos 220	
For self-study	Classroom for conducting seminar-type classes: room. No. 356 A set of specialized furniture; chalk board; monitor NEC PLASMA MONITO MODEL PX-42XM1G; system block DEPO Neos 220	

7. Recommended Sources for Course Studies

Main reading(sources):

1. Solodova, N.L. Chemical The main directions of oil and gas processing in Russia: textbook / N.L. Solodova, D.A. Khalikov; Ministry of Education and Science of Russia, Kazan National Research Technological University. - Kazan: Kazan Research Technological University (KNITU), 2012. - 122 p. : tab., schemes. – Access mode: by subscription. <https://biblioclub.ru/index.php?page=book&id=258408>
2. Zarifyanova, M.Z. Chemistry and technology of secondary oil refining processes: textbook / M.Z. Zarifyanova, T.L. Puchkova, A.V. Sharifullin; Ministry of Education and Science of Russia, Kazan National Research Technological University. - Kazan: Kazan Research Technological University (KNRTU), 2015. - 156 p. : tab., schemes. – Access mode: by subscription. <https://biblioclub.ru/index.php?page=book&id=428799>

Additional(optional) reading (sources):

Ponomareva, G. A. Hydrocarbons of oil and gas: physical and chemical properties: textbook / G. A. Ponomareva. - Orenburg: OGU, 2016. - 98 p. - ISBN 978-5-7410-1411-0. — Text: electronic // Doe: electronic library system. <https://e.lanbook.com/book/98000>

Internet-(based) sources:

- 1. Electronic libraries with access for RUDN students:
RUDN Electronic Library System - RUDN EBS <http://lib.rudn.ru/MegaPro/Web>
- ELS "University Library Online" <http://www.biblioclub.ru>
- EBS Yurayt <http://www.biblio-online.ru>
- ELS "Student Consultant" www.studentlibrary.ru
- EBS "Lan" <http://e.lanbook.com/>
- EBS "Trinity Bridge"
- Electronic fund of legal and regulatory documents <https://docs.cntd.ru/document/1200124394> (quality management system)
- 2. Databases and search engines:
- electronic fund of legal and normative-technical documentation <http://docs.cntd.ru/>
- Yandex search engine <https://www.yandex.ru/>
- Google search engine <https://www.google.ru/>
- abstract database SCOPUS <http://www.elsevierscience.ru/products/scopus/>

Learning toolkits for self- studies in the RUDN LMS TUIS:

1. A course of lectures on the discipline "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России".
 2. Guidelines for independent work of students in the discipline "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России".
- * - all educational and methodological materials for independent work of students are placed in accordance with the current procedure on the page of the discipline **in TUIS!**

8. ASSESSMENT AND EVALUATION TOOLKIT

Marking criteria (MC) and a 100-point (score) scale for assessing the level of competencies (part of competencies) based on the results of mastering the discipline "Modern stream in oil and gas processing in Russia / Современные направления нефтегазопереработки в России" are presented in the Appendix to this Work Program of the discipline.

* - MC and the 100-point (score) scale are formed on the basis of the requirements of the relevant local normative act of the Peoples' Friendship University of Russia.

DEVELOPERS:

Professor of the Department of Mineral
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Position, Department

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