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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 programme developer)

**Department of Subsoil Use and Oil and Gas Engineering**

(department realizing the PhD program)

**COURSE SYLLABUS**

**Development and operation of oil and gas fields**

(course title)

Scientific specialty:

**2.8.4. Development and operation of oil and gas fields**

(scientific speciality code and title)

The course instruction is implemented within the PhD programmes:

**Development and operation of oil and gas fields**

(PhD program title)

### 1. DISCIPLINE (MODULE) GOAL

The objective of mastering the discipline «Development and operation of oil and gas fields» is to prepare for surrender candidate exams, and same the acquisition of knowledge, skills and experience in the research field, characterizing the stages of the formation of competencies and ensuring the achievement of the planned results of the development of the educational program.

The main objectives of the discipline are:

- formation of knowledge about methods of improving hydrocarbon reserves development processes;
- formation of skills to analyze the efficiency of hydrocarbon deposits development and operation;
- formation of skills in applying various methods of improving hydrocarbon field development processes

### 2. REQUIREMENTS TO PHD-STUDENTS ON FINISHING THE COURSE

Mastering the discipline "Development and operation of oil and gas fields" is aimed at preparing for the candidate's examinations, as well as mastering the following competencies:

- ability to improve and use methods of geological, surveying and geophysical support of design and planning of mining operations, management of reserves and quality of mined minerals, taking into account their integrated use and environmental protection, tools, technologies and organization of geological exploration of producing fields, improving the efficiency of supplementary exploration (within the mining claim), operational exploration and geological and industrial evaluation of fields in the process of their development, engineer
- knowledge of the principles of analyzing the development of liquid hydrocarbon fields
- ability to offer substantiated recommendations on improving liquid hydrocarbon reservoir development
- possession of methods and means of rational choice of technical means and technologies for intensification of reserves development processes at fields of liquid hydrocarbons.

### 3. WORKLOAD OF THE DISCIPLINE AND TYPES OF ACTIVITIES

The overall workload of the discipline «Development and operation of oil and gas fields» is 3 credit units (108 academic hours).

Types of activities		Total ac. hrs.	Semesters 3
<i>Classroom activities (total), including:</i>		60	60
в том числе:			
Lectures (LC)		30	30
Laboratory activities (LA)		—	—
Practical lessons/Seminars (PC)		30	30
<i>Independent work</i>		48	48
<i>Intermediate certification (test with assessment/exam)</i>		36	36
Overall workload	ac. hrs.	108	108
	credits	3	3

### 4. CONTENT OF THE DISCIPLINE

Name of the discipline section	Contents of the section (topic)	Type of study work
Section 1: Modern methods of oil and gas reservoir development	Topic 1.1. Methods of oil and gas field development design Topic 1.2. Modern oil and gas field development technologies Topic 1.3. Actual directions of oil and gas production technologies development	LC, PC
Section 2: Monitoring of development processes.	Topic 2.1. Methods of reservoir geological research and monitoring of the development process	LC, PC

Oil and gas reservoir modeling	Theme 2.2. Modern hydrodynamic simulators capabilities. Key aspects of oil and gas reservoir modeling Theme 2.3. Problems of developing hard-to-recover reserves	
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## 5. EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Room Type	Room Equipment	Specialized educational / laboratory equipment, software and materials for mastering the discipline
Class for Seminars	Room for seminar-type classes, equipped with a set of specialized furniture, board (screen) and technical / multimedia gadgets	Not necessary
Self-Work Class	Room for self-working (can be used for lecture and seminars activities), equipped with a set of specialized furniture, board (screen) and technical / multimedia gadgets and computers with an access to EIPES	Not necessary

## 6. METHODOLOGICAL SUPPORT AND LEARNING MATERIALS

### *Main readings:*

1. Livintsev P.N. Development of oil fields: textbook / P.N. Livintsev, V.F. Sizov; Ministry of Education and Science of the Russian Federation, Federal State Autonomous Educational Institution of Higher Professional Education "North Caucasus Federal University". - Stavropol: SCFU, 2014. - 132 c. Access mode: <http://biblioclub.ru/index.php?page=book&id=45741>
2. Vasiliev V.A. Innovative technologies of oil field development: textbook / V.A. Vasiliev, L.M. Zinovieva, M.V. Krayushkina; Ministry of Education and Science of the Russian Federation, Federal State Autonomous Educational Institution of Higher Professional Education "North Caucasus Federal University". - Stavropol: SCFU, 2014. - 125 c. Access mode: <http://biblioclub.ru/index.php?page=book&id=45776>
3. Sizov V.F. Management of oil reservoir development with hard-to-recover reserves: textbook (lecture course) / V.F. Sizov; Ministry of Education and Science of the Russian Federation, Federal State Autonomous Educational Institution of Higher Professional Education "North Caucasus Federal University". - Stavropol: SCFU, 2014. - 136 c. Access mode: <http://biblioclub.ru/index.php?page=book&id=45762>

### *Additional readings:*

1. Krayushkina M.V. Design methodology in oil and gas industry and project management /: textbook / M.V. Krayushkina; Ministry of Education and Science of the Russian Federation, Federal State Autonomous Educational Institution of Higher Professional Education "North Caucasus Federal University". - Stavropol: SCFU, 2014. - 125 c. Access mode: <http://biblioclub.ru/index.php?page=book&id=45739>

### *Internet sources:*

ELS RUDN University and third party EBS, to which university students have access based signed contracts:

- RUDN Electronic Library System, <http://lib.rudn.ru/MegaPro/Web> ;
- ELS University Library Online, <http://www.biblioclub.ru> ;
- EBS Urayt, <http://www.biblio-online.ru> ;
- ELS Student Consultant, <http://www.studentlibrary.ru> ;
- EBS Lan, <http://e.lanbook.com> ;
- EBS Trinity Bridge <http://www.trmost.ru>

Databases and search engines:

- Electronic fund of legal and normative-technical documentation, <http://docs.cntd.ru> ;
- Yandex search system [https:// www .yandex.ru](https://www.yandex.ru) ;
- Google search system <https://www.google.com> ;
- Reference database Scopus , <http://www.elsevier.com/locate/scopus>

*Educational and methodological materials for students' self-work studying the discipline / module:*

A course of lectures on the discipline «Development and operation of oil and gas fields».

## **7. ASSESSMENT TOOLKIT AND GRADING SYSTEM FOR MIDTERM ATTESTATION OF STUDENTS IN THE DISCIPLINE (MODULE)**

Assessment toolkit and a grading system to evaluate the level of competences (competences in part) formation as the course results are specified on the TUIS platform.

### **DEVELOPERS:**

Professor of the  
Department of Subsoil Use  
and Oil and Gas Engineering

A.Ya. Khavkin

### **HEAD OF THE DEPARTMENT**

Associate Professor of the  
Department of Subsoil Use  
and Oil and Gas Engineering

A.E.Kotelnikov