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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

## INTERNSHIP SYLLABUS

### **Research work / Научно-исследовательская работа**

internship title

### **Industrial**

internship type

### **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 student's internship 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. INTERNSHIP GOAL(s)

The goal of the Internship «Research work / Научно-исследовательская работа» is the preparation of the undergraduate both for independent research, the main result of which is the writing and successful defense of the master's thesis, and for conducting scientific research as part of a creative team; as well as the formation of a master's general cultural, personal and professional competencies aimed at developing the skills of planning and organizing scientific research and the ability to conduct R&D using various equipment and computer technologies.

The main objectives of the «Research work / Научно-исследовательская работа» are:

- to process the results obtained, analyze and present them in the form of completed research developments (research report, abstracts, scientific articles, term papers, master's thesis);
- to formalize the results of the work performed in accordance with the requirements;
- to be responsible for the quality of work performed;
- to develop other skills and abilities necessary for a master's student in a specific master's program.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The internship «Research work / Научно-исследовательская работа» is aimed at the development of the following competences (competences in part):

*Table 2.1. List of competences that students acquire during the internship*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Competence formation indicators (within this course)</b>
PC-1	Able to use theoretical knowledge when performing technological scientific research in the field of development, transportation and processing of oil and gas	PC-1.1 Knows fundamental concepts in the field of geology of oil and gas fields, methods of forecasting, prospecting and exploration of mineral deposits; regulatory and methodological documents in the field of hydrocarbon production and development of oil and gas fields PC-1.2 Can use theoretical knowledge and mining and geological information to carry out technological scientific research, as well as apply knowledge of regulatory and methodological documents to assess oil and gas fields PC-1.3 Has the theoretical knowledge, methods of subsurface research in the field of oil and gas field development; skills to perform production, technological and engineering research in the field of hydrocarbon production, development of oil and gas fields
PC-2	Able to develop and implement new advanced technologies in the field of geological exploration, evaluation and estimation of hydrocarbon raw materials	PC-2.1 Knows the methodological provisions, instructions and requirements for the geological study of the subsoil and geological exploration; the reserve estimation management policy; rules for compiling documentation in the field of reserves estimation and management; technologies for conducting, processing and interpreting geological and geophysical works; exploration technologies; national and global trends in the development of advanced technologies PC-2.2 Can manage the production activities of the entrusted structural unit; check the design documentation for compliance with the requirements of existing norms and rules; introduce advanced technologies in the process of prospecting and exploration of oil and gas fields; develop proposals and take prompt measures aimed at improving the quality of activities work

Competence code	Competence descriptor	Competence formation indicators (within this course)
		PC-2.3 Has the skills for studying Russian and foreign experience in matters of assessing and managing reserves; skills for preparing proposals for new methods and technologies in the field of geological exploration and reserve estimation; the skills for supervising the execution of case studies and research and development activities

### 3. INTERNSHIP IN HIGHER EDUCATION PROGRAMME STRUCTURE

The internship refers to the elective component of (B2) block of the higher educational programme curriculum.

Within the higher education programme students also master other disciplines (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the internship.

*Table 3.1. The list of the higher education programme components that contribute to the achievement of the expected learning outcomes as the internship results*

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
PC-1	Able to use theoretical knowledge when performing technological scientific research in the field of development, transportation and processing of oil and gas	Advanced oil and gas processing equipment and product quality management; Current development of the production of unconventional hydrocarbon resources in the world; Innovative technologies for the transportation and storage of hydrocarbons; Geoinformation Systems and Applications; Current Issues of Development of the Oil and Gas Sector; Research Work (Obtaining Primary Skills in Research Work)	Pre-graduation Practical Training; Final State Examination
PC-2	Able to develop and implement new advanced technologies in the field of geological exploration, evaluation and estimation of hydrocarbon raw materials	Modern aspects of geological and geophysical research in the oil and gas industry; Research Work (Obtaining Primary Skills in Research Work)	Pre-graduation Practical Training; Final State Examination

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

### 4. INTERNSHIP WORKLOAD

The total workload of the internship is 3 credits (108 academic hours).

### 5. INTERNSHIP CONTENTS

Table 5.1. Internship contents\*

Modules	Contents (topics, types of practical activities)	Workload, academic hours
Section 1. Organizational and preparatory	Receiving an individual task from the head	2
	Workplace safety instruction (in the laboratory and/or production site)	4
	Selection and approval of the research topic, study of the degree of scientific development of the problem	4
Section 2. Main	Research stage. Observation and information collection activities	20
	Stage of processing and analysis of the collected information. Processing and systematization of factual and literary material	20
	Data prediction	30
	Current control of the practice by the the supervisor	10
Preparation of practice report		9
Preparation for defense and defense of the practice report		9
<b>TOTAL:</b>		<b>108</b>

\* The contents of internship through modules and types of practical activities shall be FULLY reflected in the student's internship report.

## 6. INTERNSHIP EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

The infrastructure and technical support necessary for the internship implementation include:

Laboratory of Rational Subsoil Use

Computer with pre-installed licensed software "ARMARIS", Intel Core i5 processor; "Wellhead" — information and measurement system for monitoring and diagnostics of oil production equipment (wall thickness monitoring, corrosion monitoring, temperature, pressure, etc.); flow simulator; electronic corer; gas chromatograph; UV spectrometer; portable vibration analyzer and balancer "Proton-Balance-2"; fluid sampling station; well logging simulator for field geophysics; training ground for well workover and drilling.

Laboratory of Chemistry and Technology of Oil and Gas Refining

Specialized furniture set; technical means: Acer V193L monitor, RAMEC STORM W system unit, keyboard, computer mouse – 4 pcs.; NIKON LV100D microscope; AdventurerPro RV214 electronic laboratory balance; AdventurerPro RV313 electronic laboratory balance; Scimitar 1000 FT-IR Fourier spectrometer; "PRIZMA-ECO" energy-dispersive X-ray fluorescence analyzer; K201-512 high-pressure reactor.

Geoinformatics Laboratory

Specialized furniture set; PC, telepanel.

VR Class

Virtual reality class for managing oil and gas production processes.

## 7. INTERNSHIP LOCATION AND TIMELINE

The internship can be carried out at the structural divisions of RUDN University (at Moscow-based organisations, as well as those located outside Moscow).

The internship at an external organisation (outside RUDN University) is legally arranged on the grounds of an appropriate agreement, which specifies the terms, place and conditions for an internship implementation at the organisation.

The period of the internship, as a rule, corresponds to the period indicated in the training calendar of the higher education programme. However, the period of the internship can be rescheduled upon the agreement with the Department of Educational Policy and the Department for the Organization of Internship and Employment of RUDN students.

## 8. RESOURCES RECOMMENDED FOR INTERNSHIP

### *Main readings:*

1. Verma R., Verma S., Abhishek K. Research Methodology. – Booksclinic Publishing, 2024.
2. Kothari C. R. Research methodology: Methods and techniques. – New Age International, 2004.
3. Kapur R. Research methodology: Methods and strategies // Department of Adult Education and Continuing Extension, University of Delhi: New Delhi, India. – 2018.

### *Additional readings:*

1. Tetelmin, V. V. Oil and Gas Engineering. Complete course. Volume 1: textbook / V. V. Tetelmin. – 3rd ed. – Moscow; Vologda: Infra-Engineering, 2024. – 416 p. – ISBN 978-5-9729-2021-1. – Text: electronic. – URL: <https://znanium.ru/catalog/product/2170585>
2. Tetelmin, V. V. Oil and Gas Engineering. Complete course. Volume 2: textbook / V. V. Tetelmin. – 3rd ed. – Moscow; Vologda: Infra-Engineering, 2024. – 400 p. – ISBN 978-5-9729-2022-8. – Text: electronic. – URL: <https://znanium.ru/catalog/product/2170586>

### *1. 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](http://www.studentlibrary.ru)
- - EL "Lan" <http://e.lanbook.com/>
- - EL "Trinity Bridge"

### *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/>

*The training toolkit and guidelines for a student to do an internship, keep an internship diary and write an internship report\*:*

1. Safety regulations to do the internship (safety awareness briefing).
2. Machinery and principles of operation of technological production equipment used by students during their internship; process flow charts, regulations, etc.
3. Guidelines for keeping an internship diary and writing an internship report.

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

## **9. ASSESSMENT TOOLKIT AND GRADING SYSTEM\* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL AS INTERNSHIP RESULTS**

The assessment toolkit and the grading system\* to evaluate the level of competences (competences in part) formation as the internship results are specified in the Appendix to the internship syllabus.

\* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

### **DEVELOPERS:**

Professor of the Department of Mineral Developing and Oil&Gas Engineering

position, educational department

Tyukavkina O.V.

name and surname

#### **Head of Department:**

Head of the Department of Mineral Developing and Oil&Gas Engineering

position, educational department

Kotelnikov A.E.

name and surname

#### **Head of Educational Programme:**

Professor of the Department of Mineral Developing and Oil&Gas Engineering

position, educational department

Kapustin V.M.

name and surname