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**Federal State Autonomous Educational Institution for 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**

**Pre-Graduate Practice**

internship title

**Industrial**

internship type

**Recommended by the Didactic Council for the Education Field of:**

**05.04.01 Geology**

field of studies / speciality code and title

**The student's internship is implemented within the Higher Education Programme of Higher Education:**

**Mining Geology**

higher education programme profile/specialisation title

## 1. INTERNSHIP GOAL(s)

The goal of the Internship «Pre-Graduate Practice» is the consolidation of theoretical knowledge gained in the learning process, the acquisition of practical skills and the formation of professional competencies in the field of geological and geophysical studies of mining geology and hydrogeology of ore deposits to prepare materials for the Graduate Qualification Work (Master's Thesis).

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The internship implementation 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	Capable of processing geological data, modeling ore bodies with modern software, resolving quality and mineral reserve management issues, and developing engineering and geological surveying measures for the territory.	PC-1.1. Knows the basics of geological structure of ore deposits, the possibility of using specialized software; PC-1.2. Knows how to apply methods of geological data processing, build ore body models, solve problems on quality and mineral reserves management, develop measures for engineering and geological study of the territory; PC-1.3. Has the skills to process geological data and construct ore body models using modern software.
PC-2	Capable of justifying the need, choosing the best methodology, planning, implementing, interpreting results, and supervising geophysical work at various stages of mineral site development.	PC-2.2 Knows how to select the best methodology, design, implement, interpret the results of geophysical works; PC-2.3 Knows how to justify and select optimal methodology, manage geophysical work at different stages of subsoil area development.
PC-3	Capable of projecting, implementing, and managing a hydrogeological study of the territory during the exploration and development of a mineral deposit.	PC-3.2 Knows how to apply methodological solutions in the design, implementation and management of hydrogeological study of the territory at the stage of exploration and development of mineral deposits; PC-3.3 Knows how to apply the knowledge and skills obtained in the design, implementation and management of the hydrogeological study of the territory at the stage of exploration and development of mineral deposits.
PC-4	Capable of designing, assisting with, and supervising a geologic study of a subsoil area at various stages of development.	PC-4.2 Knows how to apply methodological solutions in the design and implementation of the geological study of a subsoil area at various stages of its development; PC-4.3 Knows how to apply the acquired knowledge and skills in the design, support and management of the geological study of a subsoil area at various stages of its development.

## 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.*

<b>Compe tence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules, internships*</b>	<b>Subsequent courses/modules, internships*</b>
PC-1	Capable of processing geological data, modeling ore bodies with modern software, resolving quality and mineral reserve management issues, and developing engineering and geological surveying measures for the territory.	Digital Technologies in Geology Geological and Geophysical Basics of Mineral Prospecting and Exploration Engineering and Geological Support of Subsoil Use Modelling of Mineral Deposits Research Work (Mining Geology). Part 1 Research Work (Geological and Geophysical Survey). Part 1 Research Work (Mining Geology). Part 2 Research Work (Geological and Geophysical Survey). Part 2	Final State Examination
PC-2	Capable of justifying the need, choosing the best methodology, planning, implementing, interpreting results, and supervising geophysical work at various stages of mineral site development.	Regional Geology. Geology of Central and Southern Africa Geological and Geophysical Basics Of Mineral Prospecting and Exploration Mining Geology Modelling of Mineral Deposits Hydrogeology Mining Hydrogeology Introductory Practical Training Research Work (Mining Geology). Part 1 Research work (Geological and Geophysical Survey). Part 1 Research Work (Mining Geology). Part 2 Research Work (Geological and Geophysical Survey). Part 2	Final State Examination
PC-3	Capable of projecting, implementing, and managing a hydrogeological study of the territory during the exploration and development of a mineral deposit.	Mining Geology Hydrogeology Groundwater Dynamics Mining Hydrogeology Applied Groundwater Modeling Research Work (Mining geology). Part 1 Research Work (Mining geology). Part 2	Final State Examination
PC-4	Capable of designing, assisting with, and supervising a geologic study of a subsoil area at various stages of development.	Regional Geology. Geology of Central and Southern Africa Geological and Geophysical Basics of Mineral Prospecting and Exploration Mining geology Modelling of Mineral Deposits Hydrogeology Mining Hydrogeology Introductory Practical Training Research Work (Mining geology). Part 1	Final State Examination

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
		Research Work (Geological and geophysical survey). Part 1 Research Work (Mining geology). Part 2 Research Work (Geological and geophysical survey). Part 2	

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

#### 4. INTERNSHIP WORKLOAD

The total workload of the internship is 9 credits (324 academic hours).

#### 5. INTERNSHIP CONTENTS

*Table 5.1. Internship contents\**

Modules	Contents (topics, types of practical activities)	Workload, academic hours
Module 1. Organizational and preparatory	Assignment of an individual task from the supervisor	1
	Workplace safety instruction (in the laboratory and/or pro-duction site)	1
Module 2. Main	Collection of materials and data in accordance with the individual assignment, including: search for scientific literature on the topic of the graduate qualification work (visiting libraries, work with electronic library systems, work on the "Internet")	36
	Analysis and processing of the obtained materials and data, including: design of the chapter introduction for the graduate qualification work; analysis of scientific literature; compilation of bibliography on the topic in question; design of the graduate qualification work	260
	Ongoing supervision of the internship by the supervisor	6
Keeping a practice diary		2
Writing an internship report		9
Preparing for defence and defending the internship report		9
<b>TOTAL:</b>		<b>324</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: laboratories/ specially equipped classrooms/ polygons/ measuring and computing complexes/ vehicles/ industrial equipment and devices/ household premises that comply

with current sanitary and fire safety standards.

During stationary internship at the RUDN University, depending on individual assignment, any laboratories of the Department of Subsoil and Oil & Gas Engineering, the RUDN Library, that comply with current sanitary and fire safety norms as well as safety requirements at the enterprise, workplace and when working with certain production/laboratory equipment can be used.

In case of stationary or offsite internship in Moscow or outside Moscow, students are provided with rooms that comply with current sanitary and fire safety norms, as well as safety requirements at the enterprise, workplace and when working with certain production/laboratory equipment.

The student can come up with the initiative of the place of internship. The direction of professional activity of the organization proposed by the student for the practice should correspond to the profile of the educational program and types of professional activity, for which the graduate of the program is preparing. The place of internship must be agreed with the head of the department with the subsequent (in the case of a positive decision) the conclusion of the relevant contract with the proposed organization of the student.

The SAFETY REQUIREMENTS at the enterprise, workplace (including the department of RUDN University) and during the work with certain production/laboratory equipment incorporate/ include applicable labor protection rules, fire safety rules and other applicable local regulations.

## **7. INTERNSHIP LOCATION AND TIMELINE**

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

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. Roger Marjoribanks. Geological Methods in Mineral Exploration and Mining. Springer-Verlag Berlin Heidelberg, 2010 (Second Edition). - P. 233. — URL: <https://www.geokniga.org/bookfiles/geokniga-geological-methods-mineral-exploration-and-mining.pdf>

2. Haldar S.K. Mineral Exploration Principles and Applications, 2nd Edition. Elsevier, 2018. — 378 p. — URL: <https://www.geologyseeker.com/2022/06/mineral-exploration-principles-and.html>

3. Deb P.K. An Introduction to Mine Hydrogeology. Springer Cham Heidelberg New York Dordrecht London, 2014. XIV, 54 p. 12 illus., 3 illus. in color. — ISBN: 978-3-319-02987-0, ISBN: 978-3-319-02988-7 (eBook), DOI 10.1007/978-3-319-02988-7 —

(SpringerBriefs in Water Science and Technology). — URL: <https://sciarium.com/file/115505/>

4. Guidance on Execution of Final Qualification Paper: Master's Degree : [16+] / Yu.V. Bugaev, L.A. Korobova, S.N. Chernyaeva, Yu.A. Safonova ; scientific editor L.A. Korobova ; Ministry of Science and Higher Education of Russia, Voronezh State University of Engineering Technologies. - Voronezh : Voronezh State University of Engineering Technologies, 2018. - 65 p. : ill. - Access mode: by subscription. - URL: <http://biblioclub.ru/index.php?page=book&id=561757>. - Bibliography: pp. 53-54. - ISBN 978-5-00032-374-8. - Text : electronic.

The basic literature can be expanded and recommended by the head of practice individually to each student in accordance with the individual assignment.

*Additional readings:*

1. Ridley J. Ore Deposit Geology. Cambridge University Press. 2013. – 411 p. – ISBN: 978-1-107-02222-5. — URL: <https://sciarium.com/file/232589/>

2. John Milsom, Asger Eriksen. Field Geophysics, 4th edn. — John Wiley & Sons, Ltd., 2011. — ISBN: 978-0-470-74984-5. — 297 p. — URL: <https://www.geologyseeker.com/2022/06/field-geophysics-fourth-edition-by-john.html>  
[http://nozdr.ru/data/media/biblio/kolxoz/P/PGp/Milsom%20J.J.,%20Eriksen%20A.%20Field%20Geophysics%20\(4ed.,%20Wiley,%202011\)\(ISBN%200470749849\)\(O\)\(297s\)\\_PGp\\_.pdf](http://nozdr.ru/data/media/biblio/kolxoz/P/PGp/Milsom%20J.J.,%20Eriksen%20A.%20Field%20Geophysics%20(4ed.,%20Wiley,%202011)(ISBN%200470749849)(O)(297s)_PGp_.pdf)

3. Brassington R. Field Hydrogeology, 4th Edition. — John Wiley & Sons Ltd, 2017. — 304 p. — (The Geological Field Guide Series) — ISBN: 9781118397367. — URL: <https://sciarium.com/file/268418/>

4. Broder J. Merkel, Andrea Hasche-Berger. Uranium, Mining and Hydrogeology. Springer Berlin, Heidelberg, 2008. — 980 p. — ISBN: 3540877452. — URL: [https://avxhm.se/ebooks/3540877452\\_hydrogeology.html](https://avxhm.se/ebooks/3540877452_hydrogeology.html)

5. Shishikin V. G. Scientific-research and practical work of students : tutorial : [16+] / V. G. Shishikin, E. V. Nikitenko ; Novosibirsk State Technical University. - Novosibirsk : Novosibirsk State Technical University, 2019. - 111 p. : tabl. - Mode of access: by subscription. - URL: <https://biblioclub.ru/index.php?page=book&id=576523>. - Bibliography: p. 60. - ISBN 978-5-7782-3955-5. - Text : electronic.

Additional literature may be expanded and/or modified and recommended by the supervisor of practice individually to each student in accordance with the individual assignment.

*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" <http://www.trmost.ru>

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/>
- Geology Portal GeoKniga <http://www.geokniga.org>
- Geological Survey of Tanzania (GST) <https://www.gst.go.tz>
- Tanzania Geological Society (TGS) <https://www.tgs.or.tz>
- <https://www.gst-datashop.com>

*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. 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:**

**Head of the Department of  
Subsoil Use and Oil&Gas  
Engineering**

position, educational department

**A. Kotelnikov**

name and surname

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

position, educational department

**M. Romero**

name and surname

### **HEAD OF EDUCATIONAL DEPARTMENT:**

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

educational department

**A. Kotelnikov**

name and surname

**HEAD OF  
HIGHER EDUCATION PROGRAMME:**

**Head of the Department of  
Subsoil Use and Oil&Gas  
Engineering**

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position, educational department

**A. Kotelnikov**

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name and surname