

**Federal State Autonomous Educational Institution for Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
NAMED AFTER PATRICE LUMUMBA
(RUDN University)**

Academy of Engineering

(name of the educational division - developer of the HEP HE)

INTERNSHIP SYLLABUS

Pre-Graduate Practice

(internship title)

Industrial

(internship type)

Recommended by the Didactic Council for the Education Field of:

05.04.01 Geology

(code and name of the Higher Education Field)

The student's internship is implemented within the Higher Education Programme of Higher Education (HEP HE):

Mining Geology

(name (profile/specialization) of the Higher Education Program)

1. INTERNSHIP AIM

The aim 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 « Pre-Graduate Practice» is aimed at the formation of the following competencies (parts of competencies) of students:

Table 2.1. List of competencies formed by students during the practice (learning outcomes based on the results of the practice)

Code	Competence	Competence achievement indicators (within this practice)
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. Knowledge of the basics of geological structure of ore deposits, the possibility of using specialized software; PC-1.2. Is able 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. Have the skills to process geological data and build models of ore bodies 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 Know how to select the best methodology, design, implement, interpret the results of geophysical works; PC-2.3 Know 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 Be able 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 Be able 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 Be able 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 Be able 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

«Pre-Graduate Practice» refers to the part formed by participants in educational relations.

As part of the HEP HE, students also master disciplines and/or other practices that contribute to the achievement of the planned learning outcomes of the practice «Pre-Graduate Practice».

Table 3.1. The list of the HEP HE's components that contribute to the achievement of the planned learning outcomes of the practice

Code	Name of competence	Previous disciplines/modules, practices*	Subsequent disciplines/modules, practices*
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

Code	Name of competence	Previous disciplines/modules, practices*	Subsequent disciplines/modules, practices*
		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 accordance with the matrix of competencies and Sustainable Educational Plan HEP HE

4. SCOPE OF PRACTICE

Course workload «Pre-Graduate Practice» is 9 credit units (324 academic hours).

5. CONTENT OF PRACTICE

*Table 5.1. Content of practice **

Name of practice section	Contents of the section (topics, types of practical activities)	Workload, ac. hrs.
Section 1. Organizational and preparatory	Assignment of an individual task from the supervisor	1
	Workplace safety instruction (in the laboratory and/or production site)	1
Section 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
Preparation of practice report		9
Preparation for defense and defense of the practice report		9
TOTAL:		324

* - the content of practice by sections and types of practical training is FULLY reflected in the student's practice report.

6. MATERIAL AND TECHNICAL SUPPORT FOR PRACTICE

During stationary practice 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 practice. 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 practice 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.

7. PRACTICE METHOD

«Pre-Graduate Practice» can be carried out both in the structural divisions of RUDN University or in the organizations of Moscow (inside practice), and at bases located outside of Moscow (outside practice).

The practice on the basis of an external organization (outside RUDN University) is carried out on the basis of an appropriate agreement, which specifies the terms, place and conditions for conducting an internship in the host organization.

The timing of the practice corresponds to the period specified in the academic schedule of the HEP HE. The timing of the internship can be adjusted upon agreement with the Department of Educational Policy and the Department for the organization of practices and student employment at RUDN University.

8. EDUCATIONAL AND METHODOLOGICAL AND INFORMATION SUPPORT FOR PRACTICE

Main literature:

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 c. : 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 literature:

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

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 c. : 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-(based) sources:

1. Electronic libraries with access for RUDN students:

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

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/>
- Геологический портал 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>

Educational and methodological materials for the practice, filling out a dairy/journal and preparing a practice report *:

1. Rules for safe working conditions and fire safety during the practice «Pre-Graduate Practice» (initial briefing).
2. Guidelines for filling in a dairy/journal by students and preparing a practice report.

* - all educational and methodological materials for independent work of students are placed in accordance with the current procedure on the page of the subject in LMS TUIS!

8. ASSESSMENT AND EVALUATION TOOLKIT AND GRADING CRITERIA

Assessment and Evaluation Toolkit (AET), Grading System (GS)* for assessing the level of competence (part of competence) for the Internship «Pre-Graduate Practice» are presented in the Appendix to the Internship Syllabus of the subject.

* - AET and GS are formed on the basis of the requirements of the relevant local normative act of the RUDN University.

DEVELOPERS:

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

Position, Department



Signature

A. Kotelnikov

Full name

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

Position, Department



Signature

M. Romero

Full name

HEAD of Department:

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

Name of Department



Signature

A. Kotelnikov

Full name

HEAD OF HEP HE:

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

Position, Department



Signature

A. Kotelnikov

Full name