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

Work Experience Internship
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

2025

1. INTERNSHIP GOAL(s)

The goal of the Internship «Work Experience Internship» 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 geology, geophysics and hydrogeology of ore deposits.

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

Competence code	**Competence descriptor**	**Competence formation indicators** (within this course)
GPC-1	Capable of using the theoretical foundations of special and new sections of geological sciences to solve professional activity problems	GPC-1.1. Knows the fundamentals of special and new sections of geological sciences; GPC-1.2. Selects a method or methodology for solving a professional problem; GPC-1.3. Knows how to select a method or methodology for solving a professional problem.
GPC-2	Able to independently formulating the research objectives and establishing a sequence for resolving professional problems	GPC-2.1. Knows the basics and methods of organizing research activities, methods of setting goals and methods of achieving them; GPC-2.2. Knows how to develop research methods; GPC-2.3. Has methods of establishing cause-effect relationships and identifying the most significant among them and skills of independent formulation of research objectives.
GPC-3	Accomplished of totally independent generalizing the results obtained while solving professional problems and developing recommendations for their practical application	GPC-3.1 Knows the theoretical foundations of the generalization of results and development of recommendations; GPC-3.2. Knows how to summarize the results obtained in the process of solving professional tasks, develop recommendations for their practical use; GPC-3.3. Has the skills to summarize the results obtained in the process of solving professional tasks and develop recommendations for their practical use.
GPC-4	Suitable of representing, protecting, and disseminating the outcomes of their professional activities	GPC-4.1 Knows the main results of his/her scientific activity, methods of their presentation, protection and dissemination; GPC-4.2. Knows how to understand and analyze the results of professional activities, use own scientific achievements. discuss and disseminate the results of their professional activities; GPC-4.3. Has the skills to analyze, discuss and disseminate the results of professional activities.

Competence code	Competence descriptor	Competence formation indicators (within this course)
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-1.2. 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-3.3 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 core 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*
GPC-1	Capable of using the theoretical foundations of	Geological and Geophysical Basics of Mineral Prospecting and Exploration	Research Work

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
	special and new sections of geological sciences to solve professional activity problems	Engineering and Geological Support of Subsoil Use Mining Geology Mining Hydrogeology	Graduate Qualification Work
GPC-2	Able to independently formulating the research objectives and establishing a sequence for resolving professional problems	Geological and Geophysical Basics of Mineral Prospecting and Exploration Modelling of Mineral Deposits Applied Groundwater Modeling	Research Work Graduate Qualification Work
GPC-3	Accomplished of totally independent generalizing the results obtained while solving professional problems and developing recommendations for their practical application	Sustainable Mining	Research Work Graduate Qualification Work
GPC-4	Suitable of representing, protecting, and disseminating the outcomes of their professional activities	Digital Technologies in Geology Sustainable Mining	Research Work Graduate Qualification Work
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	Geological and Geophysical Basics of Mineral Prospecting and Exploration Engineering and Geological Support of Subsoil Use Modelling of Mineral Deposits Academic Internship (Introductory Internship)	Research Work Pre-Graduation Practice Graduate Qualification Work
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	Geological and Geophysical Basics of Mineral Prospecting and Exploration Mining Geology Modelling of Mineral Deposits Mining Hydrogeology Academic Internship (Fundamentals of Scientific Research) Academic Internship (Introductory Internship)	Research Work Pre-Graduation Practice Graduate Qualification Work
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 Mining Hydrogeology Applied Groundwater Modeling	Research Work Pre-Graduation Practice Graduate Qualification Work
PC-4	Capable of designing, assisting with, and supervising a geologic study of a subsoil area at various stages of development	Geological and Geophysical Basics of Mineral Prospecting and Exploration Mining Geology / Modelling of Mineral Deposits Hydrogeological Module Mining Hydrogeology Academic Internship (Fundamentals of Scientific Research)	Research Work Pre-Graduation Practice Graduate Qualification Work

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

4. INTERNSHIP WORKLOAD

The total workload of the internship is 18 credits (648 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	Introduction to the work of the department/unit/ or other structural element of the enterprise dealing with the issues of mining and industrial geology	18
	Performing field work at the site of study (area/area and/or deposit at any stage of exploration and development)	568
	Collecting analytical data and/or materials in accordance with the individual assignment, analyzing and processing the data obtained	36
	Ongoing supervision of the internship by the supervisor	2
Keeping a practice diary		4
Writing an internship report		9
Preparing for defence and defending the internship report		9
	TOTAL:	**648**

* 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 internship is based in Tanzania at the University of Dar es Salaam (UDSM) and at geological sites in the country.

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.

In case of stationary or offsite internship in Dar es Salaam (Tanzania) or outside Dar es Salaam, 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.

During stationary practice at the UDSM, depending on individual assignment, any laboratories of the School of Mines and Geosciences (SoMG), the UDSM 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.

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

The bases for the students' internship are:

- a geological site with ore mineralization (deposit, ore occurrence, prospective area) located in Tanzania (for example, supported by Uranium One).
- organizations whose main professional activity is aimed at solving mining issues of mineral exploration and development;
- research, design and scientific-production institutions and organizations of mining profile;
- laboratories of the SoMG UDSM.

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 SoMG with the subsequent (in the case of a positive decision) the conclusion of the relevant contract with the proposed organization of the student.

7. INTERNSHIP LOCATION AND TIMELINE

The internship can be carried out both at the structural divisions of UDSM and at Dar es Salaam -based organisations (inside practice), and as well as those located outside Dar es Salaam (outside practice).

The period of the internship, as a rule, corresponds to the period indicated in the training calendar of the higher education programme.

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. Griffiths D.H., King R.F. Applied Geophysics for Geologists and Engineers. The Elements of Geophysical Prospecting. 2nd Ed. — Pergamon Press, 1988. — 236 p. — ISBN: 0-08-022071-1. — URL: https://www.geokniga.org/bookfiles/geokniga-applied-geophysics-geologists-and-engineers.pdf

https://www.geologyseeker.com/2022/05/geological-methods-in-mineral.html

3. 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

4. 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/

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

Additional readings:

1. J. Wasowski, Daniele Giordan, Piernicola Lollino. "Engineering Geology and Geological Engineering for Sustainable Use of the Earth's Resources". Springer, 2017 - http://dx.doi.org/10.1007/978-3-319-61648-3

2. Paola Gattinoni, Enrico Maria Pizzarotti, Laura Scesi. "Engineering Geology for Underground Works". Springer Dordrecht, 2014 - https://doi.org/10.1007/978-94-007-7850-4

3. Hustrulid W., Kuchta M., Martin R. "Open pit mine planning and design". CRC Press, 2013 - https://www.geokniga.org/books/28414

4. Charles J. Moon, Michael K. G. Whateley, Anthony M. Evans. Introduction to Mineral Exploration, 2nd Edition. — Blackwell Publishing, 2006. — 499 p. — URL: https://www.geologyseeker.com/2022/07/introduction-to-mineral-exploration-2nd.html

5. Rossi M.E., Deutsch C.V. Mineral Resource Estimation. Springer, 2014. — 337 p. — ISBN: 9781402057168. — URL: https://www.geologyseeker.com/2022/05/ore-deposit-geology-by-john-ridley.html

6. 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/

7. 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

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
- 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/
- 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.

8. 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:

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