**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

# COURSE SYLLABUS

Regional Geology. Geology of Central and Southern Africa
course title

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

**05.04.01 Geology**
field of studies / speciality code and title

**The course instruction is implemented within the professional education programme of higher education:**

**Mining Geology**
higher education programme profile/specialisation title

**2025**

## 1. COURSE GOAL(s)

The goal of the course “Regional Geology. Geology of Central and Southern Africa” is to acquire knowledge, skills and experience in the field of the geological structure of the main regions of the world, composed of different-age blocks of the Earth's crust, which have passed through different in duration and tectonic transformations formation history. Additionally, it involves characterizing the stages of competence formation and ensuring the achievement of the planned results of the educational programme.

The main objectives of the course are:

- introducing students to the locations and formation stages of platform and folded areas worldwide, focusing specifically on Africa, including understanding the distribution of large-scale and dominant structural elements in these regions.
- teaching students how to analyze overview and small-scale geological and tectonic maps, especially those depicting African territories.
- providing an overview of the stages of geodynamic evolution involved in forming the structures and superstructures of major regions in Africa.

## 2. REQUIREMENTS TO LEARNING OUTCOMES

The course implementation is aimed at the development of the following competences (competences in part):

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

| **Competence code** | **Competence descriptor** | **Competence formation indicators** (within this course) |
|---|---|---|
| GC-5. | Able to analyze and take into account the diversity of cultures in the process of intercultural interaction. | GC-5.1 Finds and uses in social and professional communication information about the cultural characteristics and traditions of different social groups;<br>GC-5.2. Gathers information on a given topic, taking into account ethnicities and religions most widely represented in the places of research;<br>GC-5.3 Adheres to the principles of non-discriminatory interaction in personal and mass communication in order to fulfill professional tasks and enhance social integration. |
| 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-2.1. Knows the theoretical basics of geophysical research;<br>PC-2.2 Knows how to select the best methodology, design, implement, interpret the results of geophysical works. |
| PC-4. | Capable of designing, assisting with, and supervising a geologic study of a subsoil area at various stages of development. | PC-4.1 Knows the theoretical basis and methods of geological study of the subsoil area at various stages of its development;<br>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. |

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core component of (B1) block of the higher educational programme curriculum.

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

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

| Competence code | Competence descriptor | Previous courses/modules | Subsequent courses/modules |
|---|---|---|---|
| GC-5. | Able to analyze and take into account the diversity of cultures in the process of intercultural interaction. | | Professional Russian (as a foreign language);<br>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. | | Research Work (Geological and Geophysical Survey). Part 1;<br>Research Work (Mining Geology). Part 1;<br>Research Work (Geological and Geophysical Survey). Part 2;<br>Research Work (Mining Geology). Part 2;<br>Introduction Practical Training;<br>Mining Hydrogeology;<br>Modelling of Mineral Deposits;<br>Geological and Geophysical Basics of Mineral Prospecting and Exploration;<br>Pre-graduation Practical Training;<br>Graduate Qualification Work |
| PC-4. | Capable of designing, assisting with, and supervising a geologic study of a subsoil area at various stages of development. | | Pre-graduation Practical Training;<br>Research Work (Geological and Geophysical Survey). Part 1;<br>Research Work (Mining Geology). Part 1;<br>Research Work (Geological and Geophysical Survey). Part 2; |

| Competence code | Competence descriptor | Previous courses/modules | Subsequent courses/modules |
|---|---|---|---|
| | | | Research Work (Mining Geology). Part 2;<br>Introduction Practical Training;<br>Mining Hydrogeology;<br>Modelling of Mineral Deposits;<br>Geological and Geophysical Basics of Mineral Prospecting and Exploration;<br>Graduate Qualification Work |

## 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Regional Geology. Geology of Central and Southern Africa" is 4 credit units.

*Table 4.1. Types of academic activities during the periods of higher education programme mastering*

| Type of academic activities | | TOTAL, ac. hrs. | Semesters/ training modules |
|---|---|---|---|
| | | | **1** |
| *Contact academic hours* | | *36* | *36* |
| Lectures (LC) | | 18 | 18 |
| Lab work (LW) | | - | - |
| Seminars (workshops/tutorials) (S) | | 18 | 18 |
| *Self-studies* | | *90* | *90* |
| *Evaluation and assessment (exam/passing/failing grade)* | | *18* | *18 Exam* |
| **Course workload** | academic hours | **144** | **144** |
| | credits | **4** | **4** |

## 5. COURSE CONTENTS

*Table 5.1. Course contents and academic activities types*

| Course module title | Course module contents (topics) | Academic activities types |
|---|---|---|
| Module 1. Introduction | 1.1. The subject and methods of regional geology, its relationship with other geological disciplines<br>1.2. The internal structure of the Earth, geotectonic hypotheses (Plate tectonics and plume tectonics) and stages of development of the Earth's crust<br>1.3. Principles of tectonic zoning. Zoning of continents. Zoning of the oceans. Types of tectonic maps | LC, S |

| Course module title | Course module contents (topics) | Academic activities types |
|---|---|---|
| Module 2. General features of the structure of continental massifs | 2.1. The largest structural elements of the continental massifs<br>2.2. Eurasian, North American, African massifs<br>2.3. South American, Australian and Antarctic massifs | LC, S |
| Module 3. Geology and tectonic structure Africa | 3.1. The foundation of the ancient platform<br>3.2. Sedimentary cover of an ancient platform<br>3.3. The main stages of the development of the African Platform | LC, S |

** LC - lectures; LW - lab work; S - seminars.*

## 6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

*Table 6.1. Classroom equipment and technology support requirements*

| Type of academic activities | Classroom equipment | Specialised educational / laboratory equipment, software, and materials for course study (if necessary) |
|---|---|---|
| Lecture | A lecture hall for lecture-type classes, equipped with a set of specialised furniture; board (screen) and technical means of multimedia presentations. | |
| Seminar | A classroom for conducting seminars, group and individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and technical means for multimedia presentations. | |
| Self-studies | A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment. | |

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

*Main reading:*

1. Roberts D.G., Bally A.W. (Eds.) Regional Geology and Tectonics: Principles of Geologic Analysis. Elsevier, 2012. — 865 p. — ISBN: 978-0-444-53042-4. URL: https://sciarium.com/file/165949/

2. Roberts D.G., Bally A.W. (eds.). Regional Geology and Tectonics: Phanerozoic Rift Systems and Sedimentary Basins. Volume 1B. Elsevier, 2012. — 549 p. — ISBN: 978-0-444-56356-9. URL: https://sciarium.com/file/460705/

3. Schluter T. Geological Atlas of Africa (with notes on stratigraphy, tectonics, economic geology, geohazards and geosites each country). New York, 2006, 255 p., ISBN:

3-540-29144-x. URL: https://www.geokniga.org/books/2719

*Additional reading:*

1. Varet J. Geology of Afar (East Africa). Springer, 2018. — 345 p. — (Regional Geology Reviews). — ISBN: 978-3-319-60863-1. URL: https://sciarium.com/file/304532/
2. Detay M., Detay A.-M. Geological Wonders of Namibia. Struik Nature, 2017. — 140 p. — ISBN: 9781775842941. URL: https://sciarium.com/file/295481/
3. Sharkov E.V. (ed.) New Frontiers in Tectonic Research - General Problems, Sedimentary Basins and Island Arcs. InTech, 2011. — 350 p. — ISBN 978-953-307-595-2 (Hard cover). URL: https://sciarium.com/file/51432/
4. Petters S.W. 1991. Regional Geology of Africa. Lecture Notes in Earth Sciences Series Vol. 40. xxi + 722 pp. Berlin, Heidelberg, New York, London, Paris, Tokyo, Hong Kong: Springer-Verlag. ISBN 3 540 54528 X.

*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/

*Training toolkit for self- studies to master the course *:*

1. The set of lectures on the course “Regional Geology. Geology of Central and Southern Africa”.
2. Guidelines for students on the development of the course “Regional Geology. Geology of Central and Southern Africa”.

* The training toolkit for self- studies to master the course is placed on the course 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 UPON COURSE COMPLETION

The assessment toolkit and the grading system* to evaluate the competences formation level (competences in part) upon the course study completion are specified in the Appendix to the course 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:**

| | |
|---|---|
| **Associate Professor, Department of Subsoil Use and Oil&Gas Engineering** | **M. Romero** |
| position, educational department | name and surname |
| **Head of the Department of Subsoil Use and Oil&Gas Engineering** | **A. Kotelnikov** |
| position, educational department | name and surname |

**HEAD OF EDUCATIONAL DEPARTMENT:**

| | |
|---|---|
| **Department of Subsoil Use and Oil&Gas Engineering** | **A. Kotelnikov** |
| educational department | name and surname |

**HEAD OF HIGHER EDUCATION PROGRAMME:**

| | |
|---|---|
| **Head of the Department of Subsoil Use and Oil&Gas Engineering** | **A. Kotelnikov** |
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