APPLIED GEOCHEMISTRY, MINERALOGY AND GEMOLOGY

Professional activity concerns the development of the mineral resource base based on the study of the material composition of rocks, minerals and ores in regional geological and environmental studies, prospecting and exploration of solid mineral deposits, in the study of existing and creation of new technologies for the extraction, processing and use of mineral raw materials.

The field of professional activity also includes diagnostics and evaluation of precious stones and products from them.

Prerequisites:
- School leaving certificate of secondary (full) comprehensive education
- the results of the entrance examinations of Siberian Federal University
- good command of the Russian language

Qualification: Mining engineer

Skills/ objectives:
- A mining geological engineer must know and be able to use modern methods of obtaining geological information, computer technologies for their systematization (in particular, geographic information systems - GIS), processing and interpretation technologies.
- They must be able to fully and efficiently carry out geological-geochemical and geological-geophysical documentation of field observations, sampling of rocks and minerals both on the surface and in underground and open mines and wells.
- They should also be able to conduct field study of magmatic, metamorphic and sedimentary complexes, halos of metasomatic rocks, selection of material for laboratory research of rocks; perform diagnostics of minerals, rocks and ores using modern research methods; to interpret the data of isotope geochemistry to establish the age of rocks, complexes, as well as to identify the connections of rutted rocks and minerals with probable sources of ore formation.
- The graduate must be proficient in the methods of diagnostics and evaluation of precious stones and products from them.

Program length: 5 years
Starting date: September, 1st
Language of instruction: Russian
Tuition fee per year: 203,768 RUB (~2,722 USD)
Program Leader: Sergey Leontyev

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Specialist's Degree Program

APPLIED GEOCHEMISTRY, MINERALOGY AND GEMOLOGY

CURRICULUM

- Foreign language;
- History;
- Philosophy;
- Vital activity safety;
- Physics;
- Mathematics;
- Computer science;
- Inorganic chemistry;
- Physical chemistry;
- Ecology;
- Metrology and standardization;
- Economy. Fundamentals of economic doctrines;
- Jurisprudence;
- Legal framework for subsoil use;
- Physical education and sports;
- Applied physical education and sports;
- Engineering-geological graphics;
- Basics of Geodesy and Topography;
- Mechanics;
- Electrical engineering and electronics;
- Drilling rigs and well drilling;
- Mining machines and mining;
- General geology;
- Crystallography and mineralogy;
- Hydrogeology;
- Fundamentals of information technology;
- Fundamentals of paleontology and general stratigraphy;
- General geochemistry;
- Structural geology;
- Mathematical modeling methods in geology;
- Petrography;
- Historical geology;
- Fundamentals of Engineering Geology;
- Fundamentals of the doctrine of minerals;
- Geomorphology and Quaternary Geology;
- Geotectonics and Geodynamics;
- Regional geology;
- Economics and organization of geological exploration;
- Lithology;
- Applied Geophysics;
- Industrial types of mineral deposits;
- Prospecting mineralogy;
- Mineralogical thermobarometry;
- Laboratory methods for studying minerals, rocks and ores;
- Petrology;
- Computer modeling of geochemical prospecting;
- Physical geochemistry;
- Applied Geochemistry;
- Fundamentals of mineral processing technology;
- Geology of Gem Deposits;
- Gemology and methods of diagnostics of precious stones;
- Fundamentals of Appraisal of Diamonds, Gems and Jewelry;
- Isotope Geochemistry;
- etc.

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