Specialist's Degree Program

MINE SURVEYING

The program is designed to train specialists in the field of engineering support for human activities in the bowels of the Earth during operational exploration, mining and processing of solid minerals, construction and operation of underground facilities for various purposes.

The objects of professional activity of specialists are: the bowels of the Earth, including production facilities, equipment and technical systems for their development; equipment and technologies to ensure the safe and efficient implementation of geotechnologies for mining, processing of solid minerals and rational use of underground space.

Directions of scientific work:
- Development of methods for managing the stability of the slopes of benches and sides of open pits, dumps.
- Study of the processes of displacement of rocks and rock pressure to develop methods for managing the stability of mine workings and the earth's surface in the development of mineral deposits.

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:
- the ability to carry out mine surveying and geodetic works, to determine the spatio-temporal characteristics of the state of the earth's surface and subsoil, mining systems, underground and surface structures and display information in accordance with modern regulatory requirements;
- the ability to plan the development of mining operations and survey monitoring of the state of mine workings, buildings, structures and the earth's surface at all stages of development and protection of subsoil while ensuring industrial and environmental safety; the ability to draw up projects for mine surveying and geodetic works;
- the ability to substantiate and use the methods of geometrization and predicting the placement of field indicators in space;
- the ability to analyze and typify the conditions for the development of mineral deposits for their integrated use, to carry out various assessments of subsoil use;
- the ability to organize the activities of subsoil mine surveying units, including in emergency situations.

Program length: 5 years 6 months
Starting date: September, 1st
Language of instruction: Russian
Tuition fee per year: 203,768 RUB (~2,722 USD)
Program Leader: Yuriy Yunakov

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Cand. Sc, (Engineering), assistant professor, head of the Mine Surveying Department, School of Mining, Geology and Geotechnology
Specialist's Degree Program

**MINE SURVEYING**

**CURRICULUM**

- Physical and technical foundations of satellite positioning; Mine surveying for underground mining of mineral resources;
- Geomechanics;
- Mine surveying and geodetic instruments;
- Analysis of the accuracy of mine surveying; Remote sensing methods of the earth;
- Mine surveying during the construction of mines and underground structures; Mine surveying in planning the development of mining operations;
- Mine surveying for underground mining of ore deposits;
- Electronic optical and satellite systems;
- Document support in management;
- Mathematical statistics in mining and surveying business; Pit slope stability management;
- Geodesy;
- Mine surveying and topographic drawing;
- Mine surveying at open pit mines;
- Subsoil geometry;
- Mine surveying;
- Mine surveying ensuring the safety of mining operations;
- Higher geodesy;
- Rock displacement;
- Automated means of processing mine surveying measurements;
- Mathematical processing of the results of mine surveying and geodetic measurements;
- Basics of Geodesy and Topography

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