**ONLINE SHORT-TERM PROGRAMS**

Despite the COVID-19 coronavirus pandemic and related restrictions, in 2022 the International Competence Centre for Mining-Engineering Education under the auspices of UNESCO organizes a number of **international short-term programs** on the base of **Saint Petersburg Mining University**.

**The Mining University** is one of the top and most dynamically developing technical universities and R&D centers in Russia. Not only we provide a superb education for mining engineers, civil engineers, economists, mechanic engineers, oil and gas engineers, geologists, we are also proud of our extracurricular activities, infrastructure, and location.

All short-term courses will take place in a distanced format using **Cisco WebEx**. The platform allows participants to attend the training from anywhere in the world.

Online schools include lectures and practical classes, master classes and trainings.

The key principle of online courses will be **interactivity**. Teachers will be able to stream real-time videos and presentations online, listeners will be able to ask questions live or send text messages.

To participate, you will just need a computer (laptop) with a camera and a microphone, access to the Internet. All participants will be provided with the necessary technical support and links to connect.

At the end of the training program, our participants will receive **certificates of completion**.


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**SHORT-TERM EDUCATIONAL PROGRAM**

**GEOMECHANICS OF MINERAL DEPOSITS DEVELOPMENT**

**Purpose of the program:**

- To provide students with a set of ideas and knowledge in the field of mechanical processes acting in a rock mass, to form a modern scientific outlook, to develop creative natural-science thinking.

**Main objectives of the program:**

- To get a general idea of the content and methods of solving geomechanics problems;
- To study of the basic methods of obtaining initial data for solving geomechanics problems;
- To study of modern approaches to the mathematical description of geomechanical processes occurring in a rock mass:
- To form practical skills to perform calculations in the field of geomechanics;

**Category of students:**

- Persons receiving higher education (undergraduate, graduate, postgraduate) in educational institutions of the mineral sector, specializing in geomechanics, construction of mining enterprises and underground structures, mining engineering, mine surveying.

**Expected learning outcomes:**

1. To gain knowledge of the issues:
- methods of predicting the stress-strain state of rock massifs;
- geomechanical models used to solve problems in substantiating the technical feasibility of field development projects;
- basic methods of structural design, analysis and selection of the best option of design, engineering and technological solutions.

2. To develop skills:
- selection of parameters of geomechanical models of rocks;
- calculating the parameters of the stress-strain state of underground structures;
- implementation of the choice of universal and specialized software-computer systems, computer-aided design systems for modeling and designing structures.

3. To acquire skills:
- justifying the parameters of methods and means of controlling the properties of rocks and the state of the massif in the processes of mining and processing of solid minerals, as well as in the construction and operation of underground structures;
- development of an approach to solving complex problems of implementation of underground construction projects;
- creating numerical models of geomechanical processes and evaluating the results of numerical calculations.

**Topic modules:**

1. Mechanical properties and states of rocks around the excavation;
2. Geomechanical models of rock massifs and determination of their parameters;
3. Geomechanical problems in the development of ore deposits;
4. Determination of the zone of limiting state around mine workings.

**Total workload: 50 hours (incl. homework assignments)**