UNDERGROUND HARD COAL MINING
Role of hard coal in industry. Characteristics of coal seams. Exploitation of coal under natural hazards. Coal mining technologies for thin and thick seams. Longwall mining method as the basic one and the most common technology. Mechanization in a contemporary coal mine. Maintenance of underground excavations under difficult geological conditions. The most important technological problems.

OPEN CAST MINING
Recent technologies in rock preparation for industrial building and road purposes. Methods in opencast mining, material properties, principles of rock excavation, quarrying, quarry case, exploitation of hard rocks for road, building and industry building purposes, drilling and blasting, regular block production methods for dimension stone. Mechanical methods: diamond wire, punchers, chain saws, circular saws, hydraulic splitters and perforators, mechanical mining and blasting.

METAL ORE MINING

ECONOMICS IN MINING

OCCUPATIONAL RISK IN MINING
The development of occupational safety management systems in mining companies. Occupational safety as a part of occupational safety management systems, occupational risk assessments, efficiency of maintaining hazards in workplaces. Application of Quantitative Risk Assessment Methods in Mining Industry, assumptions adopted to QRA methods, general characteristics of QRA method, an example of an application of the QRA method, documentation of results of QRA in a mine.

MINING AND THE ENVIRONMENT
The following information about reclamation and redevelopment of post-mining sites will be presented:
- amount of areas transformed by mining activity,
- examples of opportunities for mining-related reclamation and redevelopment reuse,
- revitalisation of post-mining sites,
- financial aspect of reclamation, redevelopment and revitalisation activity,
- legal aspect of reclamation, redevelopment and revitalisation of post-mining areas,
- examples of flagship projects in the field of revitalisation of post-mining areas.
Utilization of waste in underground mining:
- kinds and properties of wastes, which could be use in underground mines
- legal aspect of utilization of wastes in underground mines,
- mining technologies which could use wastes,
- advantages for environment and for mining.

DESIGN OF PANEL EXTRACTION IN UNDERGROUND COAL MINE
- Description of geological situation of the coal seams and its parameters,
- Natural hazards,
- Design of entries,
VENTILATION IN UNDERGROUND HARD COAL MINE

LABORATORY OF MINING AEROLOGY
During lab classes students will get acquainted with test stands in laboratory room to investigate among other things: friction factor and friction losses in underground galleries; the loss coefficient and total head loss in underground galleries; specific air leakage coefficient in ventilation ductlines (long underground ducts); fan characteristics for two-fan operated in series and parallel connections; characteristics of fan with reversion operation in main fan stations of mine; moisture exchange between rocks and air. Hydrogen peroxide method for investigating of susceptibility of coals to spontaneous combustion will be presented as well.

APPLIED GEOMECHANICS IN MINING

NUMERICAL METHODS IN MINING ENGINEERING
Application of Finite Difference Method and Finite Element Method in solving practical problems in geomechanics - working examples.

ROCK MECHANICS LABORATORY
- Drill core analysis
- Drill core parameters (Rock Mass indexes)
- Basic geomechanics parameters for underground constructions

EXPLOSIVE AND ROCK BLASTING TESTS
Generally, the programme concerns the influence of blasting on the environment, the following topics are included:
- system of electric initiation of explosives,
- system of non – electric initiation of explosives,
- system of electronic initiation of explosives,
- a measurement of vibrations,
- a measurement of air blast,
- a measurement of acoustic wave

SALT MINING IN POLAND