VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF MINING AND GEOLOGY

Petroleum Engineering

Generated: 6. 11. 2026

Faculty	Faculty of Mining and Geology
Type of study	Follow-up Master
Language of instruction	English
Code of the programme	N0724A290004
Title of the programme	Petroleum Engineering
Regular period of the study	2 years
Coordinating department	Department of Geological Engineering
Coordinator	doc. Ing. Martin Klempa, Ph.D.
Key words	Underground Gas Storage, Oil and Gas Exploitation, Drilling Engineering, Geology Exploration, Reservoir Engineering

About study programme

The "Petroleum Engineering" study program is a complex study program that includes a number of disciplines such as geology, chemistry, physics, mechanics, mechanical engineering, material engineering, IT technology, also including good language skills (primary English).
The aim of the study is to educate a qualified expert in the field of reservoir and exploitation engineering, respectively an expert for working on a drilling rig (for drilling of deep wells with heavy drilling rigs or workover drilling rigs, eventually for rigs for liquidation or re-liquidation wells). Thanks to complex knowledge of geology, technics and technology exploitation and storage of hydrocarbons, students will be able to solve operational problems of oil engineering.
In the area of hydrocarbon exploitation and underground gas storage, these include the issues of daily production of wells, the intensification of exploitation and the planning and execution of workover jobs, as well as the liquidation of wells. In the field of deep drilling, it is mainly about practical knowledge of operating individual drilling rig technologies (mud engineering, drilling rig machinery, drilling and casing strings, etc.).

Hard skills

- Expert knowledge in the field of power engineering
- Knowledge of the development of plans and documentation related to mining activity or activity carried out in a mining manner
- Application of computer design programmes
- Knowledge of mining technology and processing of minerals
- Reading technical documentation
- Knowledge of raw materials and their use
- Knowledge of management
- Knowledge of mining law
- Designing
- Project management

Graduate's employment

The Master's study program is based on a strong geological foundation with an overlap to hydrocarbon exploitation technology and deep drilling. The level of knowledge at the end of this study program is a senior middle engineer in the position of reservoir engineer, respectively technician in the positions of the drillmaster, shiftmaster and above in drilling operations. The graduate will be able to plan, actively prepare and independently lead projects given by the mining and drilling industry.

Study aims

The aim of the study of the master's study program is the education of a qualified professional, as well as a senior technician applicable in the field of reservoir engineering, resp. senior operating technicians on a drilling rig (drilling of deep wells with a heavy drilling rig or on lighter sets intended for workover, their liquidation or reliquidation). Thanks to comprehensive knowledge of geology and technology of exploitation and storage of hydrocarbons, respectively from the technology of well drilling, graduates will be theoretically and practically able to evaluate the deposit in terms of economic extractability and also solve operational problems of oil engineering, and independently plan and lead exploration and production projects. In the field of oil and gas exploitation and underground gas storage, it is mainly a matter of planning the daily performance of probes, EOR methods and planning and implementation of underground repairs of wells, including their liquidation. In the field of drilling, it is mainly the knowledge of operating individual technologies of drilling rigs (mud engineering, drilling rig machinery, drilling and casing column assemblies, etc.), which will enable the graduate to independently manage drilling exploration and drilling projects.

Graduate's knowledge

Oil and gas deposits are one of the world's key energy sources. Worldwide, the high demand for these minerals is maintained, and thus the complexity of geological exploration and especially the effort to optimize the method of exploitation is logically growing. At present, oil and gas exploitation is at great depths and under more difficult geological and climatological conditions. Drilling exploration and drilling is then one of the key disciplines of this industry. Hand in hand with this is the complexity of exploration and exploitation work itself.
The master's degree program "Petroleum Engineering" is a comprehensive study program that includes a number of disciplines such as geology, chemistry, physics, mechanics, mechanical engineering, materials engineering, IT technology and more, including good language skills. Graduates of this study program are in great demand worldwide and quality education in these disciplines plays a key role.

Graduate's skills

Graduates of the master study program "Petroleum Engineering" will be able to:
- independently plan, prepare and manage projects related to exploration geological works, projects to increase the yield of hydrocarbon deposits, or prepare projects for drilling and exploration work;
- as senior operational technicians manage exploitation wells and plan their exploitation regime;
- to manage shift operations on drilling rigs (heavy drilling rigs, workover drilling rigs) in the positions of drillmaster, shiftmaster, mud engineer and operators;
- create and interpret various types of static and dynamic hydrocarbon reservoir models based on theoretical knowledge of reservoir modeling;
- pass a higher level of Well Control test (organized by the International Well Control Forum) of at least level 5 (Level 5).

Graduate's general competence

Thanks to his knowledge of geology, oil and gas exploitation and drilling, the graduate will be a qualified expert in the field of hydrocarbon exploitation, underground gas storage and drilling technicians.
Thanks to their knowledge and skills, the graduate will be prepared for further professional growth in the field of oil and gas exploitation, or in the field of drilling. These are mainly highly qualified professional trainings organized, for example, by the international organization Society of Petroleum Engineers.

Study curriculum

- form Full-time (en)