

University of Miskolc

Faculty of Earth Science and Engineering

Earth Sciences Engineering masters program

- Programme title: **Earth Sciences Engineering masters program (MSc)**
- Degree awarded: **Earth Sciences Engineer**
- minor specialisations:
 - Geological Engineering module,
 - Geophysical Engineering module.
- Number of semesters:4; number of contact hours: 1380; required number of credits to be completed: 120
- Field practice: Minimum 4 weeks internship at a mining company, research institute or competent authority.

Programme overview

General courses (Basic subjects form natural sciences - NS; Economic and human subjects - EH; Basic professional subjects - PS)

| semester | course | subject group | department | Lect. | Prac. | ECTS | assignment | lecturer |
|----------|---|---------------|------------|-------|-------|------|------------|-----------------------|
| 1 | Numerical methods and optimization | NS | | 1 | 1 | 2 | P | Dr. Mészáros Józsefné |
| 1 | Engineering physics | NS | MFGFT | 2 | 1 | 4 | E | Dr. Dobróka Mihály |
| 1 | Physical geology | NS | MFFTT | 2 | 1 | 4 | E | Dr. Hartai Éva |
| 1 | Mineralogy and geochemistry | NS | MFFAT | 2 | 1 | 4 | E | Dr. Szakáll Sándor |
| 1 | Geodesy, spatial informatics | NS | MFGGT | 2 | 1 | 4 | E | Dr. Bartha Gábor |
| 1 | Computer science for engineers | NS | | 0 | 2 | 2 | P | Dr. Mészáros Józsefné |
| 1 | Applied geophysics I. | PS | MFGFT | 2 | 1 | 4 | E | Dr. Gyulai Ákos |
| 1 | Data and information processing | PS | MFGFT | 2 | 1 | 4 | P | Dr. Dobróka Mihály |
| 1 | Graduate research seminar | EH | MFFAT | 0 | 2 | 2 | P | Dr. Máday Ferenc |
| | | | | | | | | |
| 2 | Structural geology | PS | MFFTT | 1 | 2 | 4 | E | Dr. Németh Norbert |
| 2 | Mineral deposits | PS | MFFTT | 2 | 1 | 4 | E | Dr. Földessy János |
| 2 | Engineering geology and hydrogeology | PS | MFKHT | 2 | 1 | 4 | E | Dr. Szűcs Péter |
| 2 | Analytical technics in mineralogy and petrology | PS | MFFAT | 1 | 1 | 2 | P | Dr. Zajzon Norbert |
| | | | | | | | | |
| 3 | Geological interpretation and prospecting | PS | MFFTT | 2 | 2 | 4 | E | Dr. Földessy János |
| 3 | Geophysical interpretation and prospecting | PS | MFGFT | 2 | 2 | 4 | E | Dr. Ormos Tamás |
| 3 | Quality management | EH | GTVVE | 2 | 0 | 2 | P | Dr. Szintay István |
| 3 | Legal and economic studies for mining and geology | EH | MF | 2 | 0 | 2 | E | Dr. Hámor Tamás |

| semester | course | subject group | department | Lect. | Prac. | ECTS | assignment | lecturer |
|--|--|---------------|------------|-------|-------|------|------------|--------------------|
| 3 | Diploma thesis consultation 1. | | | | | 6 | | |
| 4 | Strategic Management | EH | GTVE | 2 | 0 | 2 | E | Dr. Kunos István |
| 4 | Safety techniques and labor safety | EH | MFKOT | 2 | 0 | 2 | E | Dr. Szabó Tibor |
| 4 | Diploma thesis consultation 2. | | | | | 24 | | |
| Geophysical engineering module (Specific professional subjects - SPS) | | | | | | | | |
| 2 | Geophysical measurements | SPS | MFGFT | 2 | 1 | 4 | E | Dr. Ormos Tamás |
| 2 | Engineering and environmental geophysics | SPS | MFGFT | 2 | 1 | 4 | P | Dr. Ormos Tamás |
| 2 | Geophysical inversion | SPS | MFGFT | 2 | 2 | 4 | E | Dr. Dobróka Mihály |
| 2 | Applied geophysics II. | SPS | MFGFT | 2 | 1 | 4 | E | Dr. Turai Endre |
| 3 | Geophysical data processing | SPS | MFGFT | 2 | 2 | 4 | E | Dr. Turai Endre |
| 3 | Global environmental geophysics | SPS | MFGFT | 1 | 1 | 2 | E | Dr. Gyulai Ákos |
| 3 | Elective course I. | EL | | 2 | 2 | 4 | E | |
| 3 | Elective course II. | EL | | 2 | 2 | 4 | E | |
| Geological engineering module (Specific professional subjects - SPS) | | | | | | | | |
| 2 | Historical geology | SPS | MFFTT | 2 | 1 | 4 | E | Dr. Less György |
| 2 | Hydrocarbon geology | SPS | MFFAT | 2 | 0 | 2 | E | Dr. Bérczi István |
| 2 | Geological mapping | SPS | MFFTT | 1 | 2 | 4 | P | Dr. Less György |
| 2 | Sedimentology | SPS | MFFAT | 1 | 1 | 2 | P | Dr. Bérczi István |
| 2 | Geochemical prospecting methods | SPS | MFFAT | 1 | 2 | 4 | P | Dr. Má dai Ferenc |
| 3 | Non-metallic industrial minerals | SPS | MFFTT | 2 | 2 | 4 | E | Dr. Földessy János |
| 3 | Applied environmental geology | SPS | MFFAT | 2 | 2 | 4 | E | Dr. Má dai Viktor |
| 3 | Elective course I. | EL | | 2 | 2 | 4 | E | |
| 3 | Elective course II. | EL | | 1 | 1 | 2 | P | |

Graduation requirements:

- Students must have completed all the core, specialization and elective course requirements.
- Students must have achieved a minimum of 120 credits.
- Students will have successfully completed the mandatory internship.
- Students will have submitted a Thesis Work.
- Students will have fulfilled all administrative and financial requirements towards the university.

Graduation comprises two parts: the defend of the Thesis Work and passing final exams.

The final exam is an oral exam, discussing the the following topics:

- on the Geological engineering module:
 - Geological and geophysical interpretation and prospecting (A1)
 - Geology (A2)
 - Mineral deposits (A3)
- on the Geophysical engineering module:
 - Geological and geophysical interpretation and prospecting (A1)
 - Geophysics (A2)
 - One topic from the elective subjects (A3)

The overall result of the final examination (ZV) is calculated as:

$$ZV=(A1+A2+A3+3\times D) / 6$$

where:

- D = the final grade of the Thesis work, defined by the examination board,
- A1, A2 and A3 = grades of the three exams.
- Grades are integer numbers and given on a scale from 5 (the highest grade) to 1 (the lowest grade). The lowest passing grade is 2.