

INFORMATION ON GEOTECHNOLOGY STUDY PROGRAMME

Basic information

Name of the programme	Geotechnology
Programme properties	
Type of study	Master's degree study programme
Degree	Postgraduate study programme
KLASIUS-SRV	Master's education (second Bologna level) (17003)
ISCED	Production technologies (54)
KLASIUS-P	Mining and other extraction of minerals (unspecified) (5440)
KLASIUS-P-16	Mining and other extraction of minerals (0724)
Frascati	Natural and mathematical sciences (1) Technical sciences (2)
Level SOK	Level SOK 8
Level EOK	Level EOK 7
Level EOVK	Second-level postgraduate study programme
Areas/modules/fields of study	No breakdown (study programme)
Member of the University of Ljubljana	Faculty of Natural Sciences and Engineering, Aškerčeva cesta 12, 1000 Ljubljana, Slovenia
Duration (years)	2
ECTS credit points per year	60
Mode of study	Full-time

Basic goals of the programme

The fundamental goal of the master's degree study programme Geotechnology is to train an expert and equip them with in-depth and targeted knowledge and skills from core areas in geotechnology and mining. The electives, meanwhile, offer detailed knowledge from individual fields of geotechnology and its associated areas.

In the framework of their studies, students discover traditional principles that are upgraded with the latest discoveries; all this in a modern educational environment, using modern technology. Students also learn all about the particularities of Slovenia and Europe that stem from special historical, socio-economical and geographic characteristics. By working in groups, undertaking project work and solving problems, students learn to work in teams, give public talks and do business with customers, and actively participate in research. Students have the chance to test all the acquired theoretical knowledge through practical exercises and solving demanding theoretical and vocationally-oriented problems and projects. This makes practical work after their finished studies much easier, while at the same time providing a better understanding of problems from the narrower fields of geotechnology and mining. Students acquire the necessary

thorough and oriented knowledge and skills from fundamental courses in the natural sciences and information technologies. They also follow fundamental courses in geotechnology and mining, while obtaining additional knowledge from professional courses. In the context of the offered courses and electives, students also have the possibility of specialising in a particular field and continuing their studies at third-level programmes. The goal of the programme is to ensure international comparability, mobility and transferability, enabling students to continue their studies in Europe and find employment within the EU.

General competences (learning outcomes)

- General knowledge and understanding of academic fields and scientific work methods.
- Developed ability to set, research, understand and creatively solve problems, principles and theories.
- Critical reading and understanding of texts, independent acquisition of knowledge and searching for sources.
- Developed ability to think critically, analytically and synthetically.
- Ability to transfer and use theoretical knowledge in practice as well as to solve professional and work problems, together with being capable of interdisciplinary integration.
- Developed professional and ethical responsibility towards supervisors and subordinates in the context of work processes.
- Developed scientific and research literacy, public speaking capabilities and successful client communication, together with the ability to share, present and interpret knowledge and results.
- Ability to use a foreign professional language in written and spoken communication, communicating in international and national scientific circles, in professional circles and in everyday life in general.
- Ability to use information and communication technology as well as transfer information while taking into account professional ethical principles and values.
- Ability to take into account safety, functional, economic, environmental and ecological aspects when conducting work and when participating in research and work teams.
- Developed moral and ethical criteria with the emphasis on proper collaboration with clients, giving impartial advice, taking into account professional arguments, independence and professionalism as well as on working in accordance with valid legislation.
- Created objective outlook on the environment and society.

Subject-specific competences (learning outcomes)

- Fundamental and specific expert knowledge and skills from the field of geotechnology, especially in the area of designing projects, organising, managing, leading and performing geotechnological and mining operations as well as in manufacturing, information technologies and ecology.

- Independent integrated design and management of complex geotechnological and mining facilities.
- Independent project management in the field of geotechnology and mining.
- Understanding the interactions between technical and environmental problems and the ability to design and construct environmentally-friendly geotechnological and mining facilities.
- Performing demanding tasks in the field of geotechnology and mining both individually and within a working group.
- Organisation, management and implementation of developmental activities in the area of geotechnology and mining.
- Possessing fundamental knowledge from the fields of geotechnology and mining, including the natural sciences, as well as the ability to link knowledge from various areas and apply knowledge obtained during studies in order to solve complex professional tasks.
- Using the acquired knowledge and skills in specialised areas of geotechnology, e.g. in engineering in rocky areas, geotechnical construction and extracting mineral resources from the earth's surface and under it.
- Understanding the general structure of the fundamental discipline and the connection to its sub-disciplines.
- Using the information technologies and communication technologies and systems that are most often employed in the field of geotechnology and mining.
- Managing mining companies and similar organisations.

Enrolment conditions

The second-level master's degree study programme Geotechnology can be entered by anyone who has completed:

- a) a study programme of at least first level, evaluated with at least 180 ECTS credit points in the field of geotechnology and mining or an equivalent study programme obtained according to the current regulations in the Republic of Slovenia or abroad;
- b) a study programme of at least first level, evaluated with at least 180 ECTS credit points from other technical professional fields or an equivalent study programme obtained according to the current regulations in the Republic of Slovenia or abroad if the candidate has completed the study obligations essential for continuing their studies before the enrolment. These obligations are determined by the Study Committee of the Department of Geotechnology, Mining and the Environment in the amount of up to 30 ECTS credit points based on the exams taken during the undergraduate studies.

Criteria for selection in case of limited enrolment

In the event of limited enrolment, the candidates will be short-listed based on their first-level study programme average grades of exams and practical work.

Criteria for recognition of knowledge and skills acquired before enrolment in the programme

A student can be recognised for knowledge that in terms of content and scope corresponds to the learning content of the courses in the Geotechnology study programme. The Study Committee of the Department of Geotechnology, Mining and the Environment of the Faculty of Natural Sciences and Engineering of the University of Ljubljana decides on the recognition of knowledge and skills acquired before the enrolment on the basis of student's written application, attached certificates and other documents that prove the successfully acquired knowledge and the content of this knowledge, and in accordance with the Rules on Procedures and Criteria for Recognition of Informally Acquired Knowledge and Skills of the 15th session of the Senate of the University of Ljubljana of 29 May 2007.

When recognising knowledge and skills:

- certificates and other documents on completed courses and other forms of education will be taken into account,
- products, services, publications and other authored works of students will be evaluated,
- knowledge that the student has acquired through self-education or through experiential learning (possibility of fulfilling study obligations without attending lectures, exercises, seminars) will be evaluated,
- relevant work experience will be considered.

In the event that the department Study Committee determines that the acquired knowledge can be recognised, this is allocated the same number of ECTS credit points as the number of ECTS credit points in the course.

Assessment methods

The assessment methods are in accordance with the Statute of the University of Ljubljana and are specified in the curricula.

Requirements for progression through the programme

Students may enrol in the next year if they have completed all the requirements demanded by the department by the end of the academic year, encompassing at least 48 ECTS credit points. A student may exceptionally be allowed to continue to the next year even if not all requirements necessary to progress to the next year are completed if there are justified reasons. Justified reasons are listed in the Statute of the University of Ljubljana (maternity, prolonged illness, exceptional family and social circumstances, an official special-needs status, active participation at high-level academic, cultural and sports events and active participation in university bodies).

Under conditions set out in the previous paragraph, a student may enrol in the next year if they have achieved a minimum of 40 ECTS credit points. The enrolment from the previous paragraph

is the purview of the Study Committee at the Department of Geotechnology, Mining and the Environment of the Faculty of Natural Sciences and Engineering of the University of Ljubljana.

Students who during their studies display above-average study results may progress faster. The decision is made by the Senate of the Faculty of Natural Sciences and Engineering based on an application submitted by the candidate and an opinion given by the Study Committee of the Faculty of Natural Sciences and Engineering. The decision also sets out the method of faster academic progression.

A student who has not completed all the obligations specified in the study programme for enrolment in a higher year can repeat the year once during their studies if they have achieved at least 30 ECTS credit points.

Transfer between programmes

Transfer is possible between two study programmes:

- which ensure the acquisition of comparable competences or learning outcomes at the end of the studies;
- among which, according to the criteria for the recognition of knowledge and skills acquired before the enrolment in the second-level master's degree study programme Geotechnology, at least half of the obligations under the European Transferable Credit System (ECTS) from the previous study programme, relating to the mandatory courses of the second-level master's degree study programme Geotechnology, can be recognised.

An individual exam passed in the original study programme is recognised as having been passed in the second-level master's degree study programme Geotechnology if the contents of the two courses are at least 75% compatible. The recognised exam is evaluated with the number of ECTS credit points in the previous study programme; however, not with more credit points than it is evaluated in the second-level master's degree study programme Geotechnology.

Candidates can enrol in the second year of the second-level master's degree study programme Geotechnology by transfer if:

- they meet the requirements for enrolment in the study programme,
- vacant places are available.

Applications for transfer between study programmes are considered by the Study Committee of the Department of Geotechnology, Mining and the Environment of the Faculty of Natural Sciences and Engineering, which can also recognise part of the exams taken in the previous study programme that are not provided for in the second-level master's degree study programme Geotechnology, considering them as part of elective courses.

Requirements for completing studies

Students complete their studies when all obligations from the study programme in the range of 120 ECTS credit points are completed.

Conditions for completing individual parts of the study programme, if the programme contains them

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Professional or scientific or artistic title (abbreviation)

Master of Science (M.Sc.)

Study programme curriculum

Geotechnology

2024/2025

Name of study programme	Geotechnology
Programme characteristics	
Type	master's
Cycle	master
University of Ljubljana members	• Faculty of Natural Sciences and Engineering, Aškerčeva cesta 12, 1000 Ljubljana, Slovenija

Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0067878	Data processing in geosciences	Damjan Hann, Goran Vižintin	45	0	45	0	0	90	180	6	1st semester	no
2.	0067881	Mineral Resource Processing	Jože Kortnik	45	0	45	0	0	90	180	6	1st semester	no
3.	0067882	Machines and Equipment in Geotechnology	Željko Vukelić	45	0	45	0	0	90	180	6	1st semester	no
4.	0067883	Extraction of Mineral Resources	Damjan Hann, Janez Rošer, Željko Vukelić	45	15	30	0	0	90	180	6	1st semester	no
5.	0069217	Special Blasting and Drilling Works	Jože Kortnik	30	15	30	0	15	90	180	6	1st semester	no
6.	0067876	Geothermal Energy	Željko Vukelić	45	0	45	0	0	90	180	6	2nd semester	no
7.	0067877	Tunnel Construction and Risk Assessment	Janez Rošer, Vojkan Jovičić, Željko Vukelić	45	15	45	0	15	120	240	8	2nd semester	no
8.	0067879	Environmental Engineering	Jože Kortnik	60	15	30	0	15	120	240	8	2nd semester	no
9.	0067880	Practical Work	Jože Kortnik	0	0	0	0	60	60	120	4	2nd semester	no

10.	0086882	Optional Courses		30	0	30	0	0	60	120	4	2nd semester	yes
		Total		390	60	345	0	105	900	1800	60		

Year 2

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0067885	Engineering Geophysics	Goran Vižintin	30	0	30	0	0	60	120	4	1st semester	no
2.	0067887	Model Analysis	Goran Vižintin	30	0	30	0	0	60	120	4	1st semester	no
3.	0069221	Risk assessment in geotechnology	Goran Vižintin, Željko Vukelić	45	0	45	0	0	90	180	6	1st semester	no
4.	0067889	Planning, Organization and Management of Geotechnological Companies	Janez Rošer, Jurij Šporin, Željko Vukelić	30	0	30	0	0	60	120	4	1st semester	no
5.	0067890	Waste Treatment	Jože Kortnik	30	15	0	0	15	60	120	4	1st semester	no
6.	0086883	Optional courses		60	0	60	0	0	120	240	8	1st semester	yes
7.	0067886	Master Thesis		0	0	0	0	450	450	900	30	2nd semester	no
		Total		225	15	195	0	465	900	1800	60		

Optional courses

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					

1.	0069207	Clean Technologies	Jože Kortnik	30	15	15	0	0	60	120	4		yes
2.	0069208	Selected Chapters from Engineering Geophysics	Goran Vižintin	30	0	30	0	0	60	120	4		yes
3.	0075676	Reinforced Concrete Constructions	Vojkan Jovičić	30	15	15	0	0	60	120	4		yes
4.	0075680	Security and Management of Underground Structures	Janez Rošer, Vojkan Jovičić, Željko Vukelić	30	0	30	0	0	60	120	4		yes
5.	0075682	Landfill Areas	Jože Kortnik	30	0	30	0	0	60	120	4		yes
6.	0075685	Energy Politics	Željko Vukelić	30	15	15	0	0	60	120	4		yes
7.	0075693	Deformational Monitoring Networks	Goran Vižintin	30	0	15	0	15	60	120	4		yes
8.	0075695	Geostatistics	Goran Vižintin	30	0	30	0	0	60	120	4		yes
9.	0075713	Geothermal Research and Underground Fluid Modelling	Goran Vižintin	30	0	30	0	0	60	120	4		yes
10.	0075716	Least-Squares Method	Goran Vižintin	30	0	30	0	0	60	120	4		yes
11.	0075720	Geomodelling and GIS	Goran Vižintin	30	0	30	0	0	60	120	4		yes
12.	0075721	Geophysical Methods of Potential Fields	Goran Vižintin	30	0	30	0	0	60	120	4		yes
13.	0075724	Mineral Resources and Law	Senko Pličanič	30	0	30	0	0	60	120	4		yes
Total				390	45	330	0	15	780	1560	52		