



Doctoral Educational Program

Program Title

Geology

Faculty

Mining and Geology

Head of the Program

Professor Mevlud Sharikadze

Qualification to be Granted

Doctor in Geology

Will be granted in case of fulfilling not less than 180 credits of the educational program

Language of study

Georgian

Preconditions of Admission

Master degree or equivalent degree with a diploma. Considering: Scientific publications; Participation in scientific conferences; Other documents and materials related to study / research activities (Certificates, diplomas, patents, etc.) Interview with faculty temporary commission.

Description of the program

The program was done based on ECTS system, 1 credit is equal to 25 hours, which involves both the contact and independent work hours. The credit distribution is presented in the program curriculum. The duration of the program is 3 years (6 semesters) and includes 180 credits.

The study component - 60 credits. Including compulsory elements of study components - 15 credits, special program related to program - 15 credits, two thematic seminars - 30 credits (15-15).

Research component - 120 credits: colloquiums (I, II and III) - total 60 (15-15-30) credits, thesis research project / prospectus - 30 (10-20) credits, completion of the thesis and defence - 30 credits.

The study process is as follows: the semester includes 20 weeks, from which the study process continues 16 weeks; XVII week is devoted to the preparation for final examination, the final exam is conducted on the XVIII-XIX week. XX week, if necessary, is devoted for an additional exam.

The first semester consists of two compulsory elements (5 and 5 credits) of study components, two special courses (5 and 5 credits) related to the program and the project of thesis research project / prospectus 1 - 10 credits.

The second semester includes one compulsory component of the study components (5 credits), a special course related to the program (5 credits) and the project of thesis research project / prospectus-2 - 20 credits.

The third semester is dedicated to the first thematic seminar - 15 credits, the compulsory element of the educational program research component: theoretical / experimental research / colloquium - 1 (15 credits).

The fourth semester is dedicated to the second thematic seminar - 15 credits, compulsory element of educational program research component: theoretical / experimental research / colloquial - 2 (15 credits).

The fifth semester comprises the compulsory element of the educational program research component: theoretical / experimental research / colloquium -3 (30 credits).

The fifth semester is a compulsory component of the educational program research component: completion and defence of the doctoral thesis (30 credits).

The doctoral student prepares two scientific thematic seminars during the period of educational program scheme.

Dean organizes the seminar for presentation of colloquium and thematic seminar. The workshop on the seminar is evaluated by a commission comprising 5-9 members, which is based on the submission of the head of the Dean Academic Department, the composition of the Commission is approved by the Faculty Order.

Based on theoretical / experimental research, PhD student is required to prepare three colloquiums in the third, fourth and fifth semester. Colloquiums reflect the findings of the doctorate study.

Completion and protection of the thesis is a major part of the research component. It reflects the scientifically justified results of the theoretical / experimental research conducted by the PhD student and / or solves the topical scientific problem. PhD student submits the dissertation work to the dissertation board consisting of 7-9 representatives of the relevant science field.

The purpose of the program

- The aim of the program is to give doctors knowledge and skills so they can conduct scientific-researches and practical works based on innovative and recent scientific discoveries independently. Specific intentions of the young specialist is to restudy and reanalyze paleontological, stratigraphical, mineralogical, petrographical, regional geological, ore deposits geological, hydrogeological and engineering-geological problems and issues; studying and making conclusions independently on structural and chemical composition of lithosphere, on evolution of organic world, on

geodynamical processes, on development of earth's crust and ore deposit genesis and on exploration;

- Predicting, studying and rating geodynamical processes that occur on the complex relief of Georgia (landslides, mudflows, avalanches, erosion of river banks) and catastrophes caused by natural disasters;
- Exploring mineral resources by innovative methods, calculating, studying and making decisions independently;
- Using new skills and knowledge in scientific-researches, taking into consideration the labor market requirements while preparing qualified staff;
- Creating specialized medium or large scale detailed maps with GIS and GPS applications, developing new methods on geological and ecological risks management;
- Standard rock mechanics laboratory testing for geological and construction projects;
- Conducting geological and ecological works independently and risks assessment on construction sites;
- Conducting geological field works with new methods for restudying and partly rerating Georgian mineral resources;
- Making research on Georgian groundwater storages for drinking and non-drinking purposes, studying thermal and mineral waters and determining possible uses;
- Participating in developing new standards and normative acts, creating database and getting involved in the international informative network;
- Determining methods for solving geological problems, realizing and preparing dissertation.

Geology is an earth science that involves studying the materials that make up the earth, the features and structures found on Earth as well as the processes that act upon them. Geology also deals with the study of the history of all life that's ever lived on or is living on the earth now. Studying how life and our planet have changed over time is an important part of geology. To sum up Geology is one of the most important earth sciences so it's role for countries development is essential.

Outcomes of the Educational Program (General and Sectoral)

Knowledge and understanding - Mastering any field of geology, ability to use theoretical knowledge, making use of the knowledge gained from practice, fully understanding the importance of research, field and laboratory works .

Ability to use knowledge in practice - planning and supervising researches independently; Using new research and analytical methods and approaches, which will be published in referenced publications.

Ability of conclusion – Establishment of substantiated conclusions and recommendations after conducting various complex geological researches on a specifically chosen geological site.

Ability of communication – The ability to convey information in a logical way, both in Georgian and in foreign language, ability to properly hold your beliefs, language requirement to participate in international conferences.

ability to learn – Ability to manage learning process independently according to the knowledge gained from the latest achievements, readiness for developing new ideas during the research and learning process.

Values – Research the ways of establishing values and developing innovative methods to establish them. Protection of norms of professional values, ethics and morals.

Methods of achieving learning outcomes (teaching and learning)

Lecture Seminar (work in group) Practical Laboratory Scientific-thematic seminar Independent work Consultation research component doctoral paper Doctoral dissertation

Due to the specifics of the specific course in the learning process, used for teaching and learning methods is in the following activities, which is reflected in the relevant training courses (syllabus):

Discussion / debate are one of the most common activities of interactive teaching. Discussion process increases the quality and activity of students' engagement. Discussion can be turned into arguments and this process is not limited to the questions asked by the teacher. It develops the ability of the student to reason and justify their opinion.

Cooperative learning is a learning strategy when each member of the group is obliged not only to examine himself but also to help his/her team-mate to study the subject better. Each member of the group works on the problem, until all of them master the issue.

Collaborative work – By using this activity, teaching implies division of the students' group and assignment of teaching tasks to them. The group members individually work on the issue and in parallel share their opinions with other members of the group. Due to the set objective, it is possible to divide the functions among the members during the group's working process. This strategy provides all students maximum engagement in the learning process.

Brain storming – this activity implies to form and promote radically different opinion, idea on concrete issue/problem. This activity contributes to the development of a creative approach to the problem. Its application is effective in case of a large number of students and consists of several main stages: Problem / issue determination in a creative perspective;– In a certain period of time, without criticism, note the ideas expressed by the– listeners (mainly on the board); Determination of assessment criteria to determine the establish the conformity of– the idea with the aim of the research; Assessment of selected ideas with predetermined criteria;– By process of elimination, distinguish those ideas that are most relevant to the– issue. Demonstration of the highest evaluation idea as the best way to solve the set– problem.

Implication. It is quite effective in terms of achieving the result. In many cases, it is better to provide the students with audio and visual materials simultaneously. The study material can be demonstrated by both the teacher and the student. This activity helps us to demonstrate different levels of learning material, to specify what students will have to do independently; at the same time, this strategy visually reflects the essence of the topic/ problem. Demonstration may be simple.

Deduction is such a form of transmitting any knowledge, which based on general knowledge represents logical process of discovering new knowledge in other words, the process is going from general to concrete.

Analysis helps us to divide the study material into constituent parts. This will simplify the detailed coverage of individual issues within a difficult problem.

The synthesis implies the composition of one whole by grouping individual issues. This activity contributes to the development of the problem to be seen as a whole.

Verbal or orally transmitted. Narration, talking and so forth belong to this activity. In this process the teacher orally transmittes and explains study material and the students actively perceive and learn it through listening, remembering and thinking.

The script implies the following activities: making extracts, records, notes, theses, abstract or essay and other.

Explanation is based on the discussion on the issue. The teacher gives a concrete example from the material, which is discussed in detail within the given topic.

Action-oriented training requires active involvement of the teacher and student in the teaching process, where the practical interpretation of theoretical material is of special significance.

Project planning and presentation. When working on the project, the student uses the acquired

knowledge and skills to solve the real problem. This increases students' motivation and responsibility. Working on the project includes planning, surveying, practical activity and the performance of the results in accordance with the selected issue. The project will be deemed implemented if its results are presented in a clear and convincing way. It can be performed individually, in couples or in groups; also within a subject or within a few subjects (integration of the subjects); after completion, the project can be presented to a big audience.

Student knowledge assessment system

Assessment by a 100 degree scale.

As the positive grades are considered:

- (A) - Excellent - the rating of 91-100 points;
- (B) – Very good - - the rating of 81-90 points
- (C) - Good - the rating of 71-80 points
- (D) - Satisfactory - the rating of 61-70 points
- (E) - Enough - the rating of 51-60 points

Negative grades:

- (FX) - Did not pass - 41-50 points of rating, which means that the student needs more work to pass and is given the right to take the exam once more with independent work;
- (F) – Failed - 40 points and less, which means that the work carried out by the student is not enough and he/she has to learn the subject from the beginning.

Scientific-Research Component / Components Assessment:

a) Excellent (summa cum laude) – Excellent thesis;

b) Very good (magna cum laude) – A result that exceeds the requirements in every way;

c) Good (cum laude) – A result that exceeds the requirements;

d) Intermediate (bene) – Result, which fully comply with the requirements;

e) Satisfactory (rite) – The result that, despite the shortcomings, still meets the requirements;

f) Unsatisfactory (insufficenter) – A result that does not meet the requirements due to significant deficiencies;

g) Completely unsatisfactory (sub omni canone) –The result that does not meet the requirements at all.

See assessment forms, methods, criteria and scales in the syllabus and the doctoral program of educational and research components estimation rule.

The Field of Employment

Mining Geology enterprises, architecture and construction companies, Ministry of Defense, Ministry of Environmental Protection and Agriculture, Ministry of Finance, Ministry of Economy and Sustainable Development, Ecology and Environmental protection organizations, Oil and Gas exploration companies, corresponding profile educational institutions, Municipal jobs, Emergency Management Agency, Georgian Railway Department and Roads Department of Georgia.

Human and Material Resources Necessary for the implementation of the Program

Bachelors educational program is provided by corresponding human and material resources. You can find additional information in the attached file.

The program is accompanied by program manager's documents.

Number of attached syllables: 5

Program Study Load

№	Educational components	Precondition of admit	ECTS credits						
			I year		II year		III year		
			semester						
			I	II	III	IV	V	VI	
1	Academic writing and scientific research methods	does not have	5						
2	Educational methods	does not have	5						
3	Professor's Assistance	does not have	5						
4	Objects and Investigation Methods of Engineering-Hydrogeological Justification of Large Engineering Buildings construction	does not have	5						
5	Localization factors and deposit types of ore mineral resources	does not have		5					
6	Geological prothesis of Minerals and Rocks	does not have		5					
7	The first thematic seminar	does not have			15				
8	The second thematic seminar	does not have				15			
research components									
1	Project of the thesis research/prospectus- 1		10						
2	Project of the thesis research/prospectus- 2			20					
3	Theoretical /Experimental research/ Colloquium - 1				15				
4	Theoretical /Experimental research/ Colloquium - 2					15			
5	Theoretical /Experimental research/ Colloquium - 3						30		
6	Completion of the thesis, defense								30
Total per year			60	60	60				
total:			180						

Map of learning outcomes

№	Educational components	Knowledge and understanding	Ability to use knowledge in practice	Making judgments	Communication skills	Learning Skills	Values
1	Academic writing and scientific research methods	X	X	X	X		
2	Educational methods	X	X	X	X		X
3	Professor's Assistance	X	X	X	X	X	X
4	Objects and Investigation Methods of Engineering-Hydrogeological Justification of Large Engineering Buildings construction	X	X		X	X	
5	Localization factors and	X	X	X			
6	Geological prosisis of Minerals and Rocks	X	X	X			
7	The first thematic seminar	X	X	X	X	X	X
8	The second thematic seminar	X	X	X	X	X	X
research component							
1	Project of the thesis research/prospectus- 1	X	X	X	X	X	X
2	Project of the thesis research/prospectus- 2	X	X	X	X	X	X
3	Theoretical /Experimental research/ Colloquium - 1	X	X	X	X	X	X
4	Theoretical /Experimental research/ Colloquium - 2	X	X	X	X	X	X
5	Theoretical /Experimental research/ Colloquium - 3	X	X	X	X	X	X
6	Completion of the thesis, defense	X	X	X	X	X	X

Program curriculum

№	Code of the Subject	Educational component	ESTS credits/hour	hour						
				Lecture	Seminar (working in group)	Practical	Laboratory	Mid-semester exam	Final exam	Independent work
1	HEL10712G1	Academic writing and scientific research methods	5/125	15	30			2	2	76
2	EDU10912G1	Educational methods	5/125	15	30			2	2	76
3	PHS72203G1	Objects and Investigation Methods of Engineering-Hydrogeological Justification of	5/125	45				1	2	77

		Large Engineering Buildings construction								
4	PHS72303G1	Localization factors and	5/125	45				1	1	78
5	PHS72103G1	Geological prothesis of Minerals and Rocks	5/125	45				1	1	78

Head of the Program

Mevlud Sharikadze

Faculty of Mining and Geology
Head of Quality Assurance Service

Shalva Keleptrishvili

Dean of the Faculty

Anzor Abshilava

Accepted at

Quality Assurance Service of GTU

Irma Inashvili

Agreed with

Faculty of Mining and Geology
At the meeting of Faculty Board
(№ 3) 30.03.2018
Chairman of the Faculty Board

Anzor Abshilava