



საქართველოს ტექნიკური უნივერსიტეტი  
GEORGIAN TECHNICAL UNIVERSITY

Approved by  
The Academic Council of GTU  
2012 year 6 July  
Resolution № 733

Modified by  
The Academic Council of GTU  
2018 year 2 april  
Resolution № 01-05-04/95

## Doctor's Educational Program

### Name of the program

Oil and Gas Technology

### Faculty

Mining and Geology Faculty

### Program manager

Associated Professor Giorgi Durglishvili

### Qualification and program credits

Doctor in Mining and Geoengineering  
*will be given if passing no less than 180 credits of the education program*

### The language of teaching

Georgian

### Precondition for admission to the program

Master's or it's equal Academic degree Diploma. The following will be taken into consideration: Scientific publications; participation in the science conferences; other study/research related documents and materials (certificates, deeds, patents, etc.). Interview with the temporary faculty commission.

### Description of the program

The program is developed on the basis of the ECTS system, with 1 credit equal to 25 hours, which includes both, contact and independent work hours. Credit distribution is presented in the program curriculum.

Doctor's degree course of study lasts 3 years (6 semesters) and includes 180 credits.

**Study component – 60 credits.** Mandatory part of the study component – 15 credits, special courses related to the program – 15 credits, two thematic seminars – 30 (15-15) credits.

**Research component – 120 credits.** Two prospectus – 30 (10-20) credits, three colloquiums – 60 (15-15-30) credits, finalization of the doctor's thesis, presentation – 30 credits.

The study process: 1 semester consists of 20 weeks. The study process lasts for 16 weeks, the 12<sup>th</sup> week is preparation for the final exam, and on the 13<sup>th</sup> and 14<sup>th</sup> weeks – final exams take place. If necessary, additional exams are appointed on the week 20.

**Semester One** includes two mandatory elements of the study component (5-5 credits). Research component – draft thesis project/prospectus – 1 (10 credits).

**Semester Two** – One mandatory element of the study component (5 credits), Research component – draft thesis project/prospectus – 2 (20 credits).

**Semester Three** – Study component – first thematic seminar (15 credits), Research component – theoretical/experimental research/colloquium – 1 (15 credits).

**Semester Four** – Study component – Second thematic seminar (15 credits), Research component – theoretical/experimental research/colloquium – 2 (15 credits).

**Semester Five** – includes mandatory element of the study program research component: theoretical/experimental research/colloquium – 3 (30 credits).

**Semester Six** is assigned to the mandatory element of the study program research component: finalization of the thesis and presentation (30 credits).

Within the study program period the Doctor's degree student will prepare two thematic scientific seminars.

Dean's office organizes a seminar for the thematic scientific work presentation. 5-9 member commission, staffed by the Dean on the basis of the Head of Academic Department's submission, assesses the doctoral student's work. Commission members are approved with the faculty decree.

Based on the theoretical/experimental research the doctoral student is tasked to prepare three colloquiums during the third, fourth and fifth semesters. Colloquiums reflect the results of the researches performed by the doctoral student.

Finalization of the Doctor's thesis and presentation is the main part of the research component. It reflects the new results of the theoretical/experimental research performed by the doctoral student and/or solves topical scientific problem. Doctoral student presents the thesis to the dissertation panel consisting of 7-9 representatives of the respective field.

### **The purpose of the program**

The purpose of the program is to enable the doctoral student to deepen his/her knowledge and to be capable to independently perform scientific-research and practical activities related to oil and gas exploration, drilling and production, which will be based on the hydro-geological, geo-chemical, geophysical studies and modern drilling technologies. Doctoral student must study the detailed oil-and-gas regional distribution of Georgia, identify new oil-and-gas exploration areas and evaluate reserves within the identified structures according to the established categories; in addition, perform research with the application of the modern methodologies in oil and gas field development, well production, and stimulation of the productive formation; independently take correct and effective decisions to solve the problems in specific circumstances.

Nowadays, modern geological and geophysical (2D, 3D) studies and results of their interpretation performed for oil and gas exploration in number of the regions of Georgia create perspectives of discovering large fields, such as the Samgori-Patardzeuli oilfield in the Middle Eocene formations. Therefore, it is necessary to prepare professionals in the named field, capable of performing exploration, drilling and completion operations with high degree of professionalism.

### **Outcomes/competences (general and sectoral)**

- a) **Knowledge/Understanding** – Knowledge of oil and gas technologies based on the latest achievements in the field, providing the ability of enriching current knowledge and applying innovative methodologies (at the level of standards required in the referred publication). Understanding the new limits of knowledge through the reassessment and partial re-evaluation of the existing knowledge ;
- b) **Ability to use knowledge in practice** – independent planning, implementation and supervision of innovative research; development of new research and analytical methods and approaches oriented on the creation of

new knowledge and reflected in internationally referred publications;

- c) **Making judgement** – Gathering, interpretation and drawing conclusion based on the materials obtained through oil-and-gas exploration operations. Ability to independently take correct and effective decisions to solve problems in the specific circumstances;
- d) **Communication skills** – Clearly and soundly presenting oil and gas technologies in relation with the existing knowledge, as well as engaging in the thematic polemics with the international scientific society;
- e) **Ability to learn** – readiness to develop new ideas and processes by the means of applying the knowledge based on the latest achievements in learning and operations, including during the hydrocarbon research;
- f) **Values** – Studying the methods of establishing values and developing innovative methodologies for their establishment; planning and implementation of environment protection activities during oil and gas exploration and production operations.

### Methods of achieving learning outcomes (teaching and learning)

Lecture  Seminar (team working)  Practical classes  Laboratory  Scientific-thematic seminar  Independent work  Consultation  Research component  Design of doctoral thesis  Doctoral thesis

Based on the specific course of study in the learning process, the relevant below listed activities of the teaching-learning methods are used, which are reflected in the relevant training courses (syllabus):

1. **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.
2. **Heuristic method** – is based on the step by step solving the task given to the students. This process is implemented by the means of independent recognition of the facts in the process of learning and identification of the links among those facts.
3. **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.
4. **Analysis** – helps us to divide the study material into constituent parts. This will simplify the detailed coverage of individual issues within a difficult problem;
5. **Practical methods** – combine all the forms of learning that build the student's practical skills. In such case, the student is able to independently perform different activities based on the acquired knowledge.
6. **Deduction** – is such 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.

## Student knowledge assessment system

Grading system is based on a 100-point scale.

Positive grades:

- (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.

Doctoral thesis is to assess the 100-point system:

- a) Excellent (summa cum laude) – Excellent work;
- b) Very good (magna cum laude) – Outcome largely exceeding the requirements;
- c) Good (cum laude) – Outcome exceeding the requirement;
- d) Average (bene) – Work of average quality, satisfying the requirements;
- e) Satisfactory (rite) – Outcome that still satisfies the requirements despite the errors;
- f) Insufficient (insufficient) – Unsatisfactory work, not satisfying the requirements due to significant errors;
- g) Completely unsatisfactory (sub omnicanone) – Outcome that absolutely does not satisfy the requirements.

## Field of employment

Georgian Oil and Gas Corporation, oil-and-gas production companies in Georgia, SokarGas Ltd, KazTransGas Ltd., Itera-Georgia Ltd., Oil and Gas Transportation Company, educational facilities.

## Opportunity to continue learning

### Human and material resources necessary for the implementation of the program

Program is equipped with respective human and material resources.

1. Department owns oil-and-gas physical and chemical research, drilling mud and LCM laboratories;
2. The named program is implemented by: Full Professors G. Varshalomidze, N. Khundadze, N. Jikia, T. Barabadze; Associated Professors G. Durglishvili, V. Khitarishvili, R. Managadze, N. Machavariani.
3. CV of the program teacher is attached.

## Number of attached syllabus: 5

### Program subject load

№	Subject	Precondition of admit	ECTS Credits						
			I Year		Semester				
			I	II	III	IV	V	VI	
1	Academic writing and Methods of scientific research	does not have	5						

2	Teaching methods	does not have	5					
3	Oil and gas field development modeling	does not have	5					
4	Technologies of saving resources while drilling	does not have	5					
5	Classification and evolution of sedimentary basins	does not have		5				
6	Assisting the Professor	does not have		5				
7	First thematic seminar	does not have			15			
8	Second thematic seminar	First thematic seminar				15		
<b>Research Component</b>								
1	Dissertation thesis draft/prospectus - 1	does not have	10					
2	Dissertation thesis draft/prospectus - 2	Thesis research Project / Prospectus - 1		20				
3	Theoretical/experimental research/colloquium - 1	does not have			15			
4	Theoretical/experimental research/colloquium- 2	Theoretical / experimental research / colloquium- 1				15		
5	Theoretical/experimental research/colloquium - 3	Theoretical / experimental research / colloquium- 2					30	
6	Dissertation finalization, Presentation	All the necessary training and research components						30
<b>Per semester</b>			<b>60</b>		<b>60</b>		<b>60</b>	
<b>Total</b>					<b>180</b>			

### Map of learning outcomes

Nº	Subject	Knowledge and understanding	Ability to use knowledge in practice	Making judgments	Communication skill	Ability to learn	Values
1	Academic writing and methods of scientific research	X	X	X	X		
2	Teaching methods	X	X	X	X		X
3	Assisting the Professor	X	X	X	X	X	X
4	Oil and gas field development modeling	X	X	X			

5	Technologies of saving resources while drilling	X		X		X	
6	Classification and evolution of sedimentary basins	X	X	X		X	
7	First thematic seminar	X	X	X	X	X	X
8	Second thematic seminar	X	X	X	X	X	X
<b>Research Component</b>							
1	Dissertation thesis draft/prospectus - 1	X	X	X	X	X	X
2	Dissertation thesis draft/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	Dissertation finalization, Presentation	X	X	X	X	X	X

### Program curriculum

Nº	Subject Code	Hours Subject	ECTS Credit/Hour	Lecture	Seminar (working in group)	Practice	Midterm/Final Exam	Midterm/Final Exam	Independent Work
1.	<b>HEL10712G1</b>	Academic writing and methods of scientific research	5/125	15	30			2/2	76
2.	<b>EDU10912G1</b>	Teaching methods	5/125	15	30			2/2	76
3.	<b>MAP46403G1</b>	Oil and gas field development modeling	5/125	45				1/1	78
4.	<b>MAP42503G2</b>	Technologies of saving resources while drilling	5/125	45				1/1	78
5.	<b>MAP42403G2</b>	Classification and evolution of sedimentary basins	5/125	45				1/1	78

Program Teacher

Giorgi Durglishvili

Head of the Quality Assurance Service of the Faculty of Mining and Geology

Shalva Keleptrishvili

Faculty Dean

Anzor Abshilava

**Agreed with**  
GTU Quality Assurance Service

Irma Inashvili

**Approved by:**  
Mining and Geology Faculty Council Meeting  
(Nº 3) 30.03.2018

Faculty Council Chairman

Anzor Abshilava