



საქართველოს ტექნიკური უნივერსიტეტი  
GEORGIAN TECHNICAL UNIVERSITY

Approved by  
Resolution № 733 of the  
Academic Council of GTU  
dated July 6, 2012

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Resolution № 01-05-04/193 of  
the Academic Council of GTU  
dated December, 2022

## PhD Educational Program

### Program Title

ნავთობისა და გაზის ტექნოლოგიები

Oil and Gas Technology

### Faculty

სამთო - გეოლოგიური

Mining and Geology Faculty

### Program Head /Heads

Associated Professor Giorgi DURGLISHVILI

### Qualification to be Awarded and the Extent of the Program in terms of Credits

Doctor of Petroleum Technology

is awarded if the educational component of the educational program, which is 50 credits, is mastered and if the research component is completed. Duration of study is not less than 3 years.

### Language of Teaching

Georgian

## **Prerequisite for Admission to the Program**

A person who holds a master's degree or an equivalent academic degree in the field of engineering, manufacturing and construction is eligible to study in the doctoral educational program. The following are taken into account: the existence of scientific publications, participation in scientific conferences, other documents and materials related to educational/research activities (certificates, deeds, patents, etc.).

Persons wishing to enroll in the program must present an appropriate international certificate proving English language proficiency at least at the B2 level, or pass an examination at the examination center of the GTU. Applicants educated abroad (who have completed a foreign language program) are not required to take an exam or present a certificate.

The doctoral candidate is interviewed by the Faculty interim commission.

The procedure for admission to doctoral studies and enrollment conditions, as well as samples of exam tests in foreign languages, are available on the university's website.

It is possible to enroll in the program on a mobility basis twice a year, within the time limits established by the Ministry of Education, Science, Culture and Sports of Georgia, following the mandatory procedures and the rules established by the university.

Enrollment in the program or transfer from a recognized higher educational institution of a foreign country is carried out in accordance with the rules defined by the legislation of Georgia.

## **Program Description**

The program is compiled using the European credit transfer system ECTS. 1 credit is equal to 25 hours, including contact and independent work hours. The distribution of credits is presented in the program curriculum.

The program lasts at least 3 years (6 semesters).

The objectives of the educational component are the sectoral and methodological preparation of the doctoral candidate for the implementation of the goals of the doctoral educational program. The educational component helps the doctoral candidate in the successful preparation of the dissertation, in the future pedagogical and scientific activities. The educational component of the doctoral program is 50 credits.

Before the beginning of the semester, the rector of the university issues an order on the progress of the educational process, which will be posted on the website.

The first semester includes six compulsory study courses (30 credits) of study components. The second semester includes one study-compulsory (5 credits), one study-elective study courses (5 credits), as well as a professor's assistantship (10 credits). The second and subsequent semesters involve the completion of research components, which include a research project/prospectus, Colloquium - 1, Colloquium - 2, Colloquium - 3, pre-defense, thesis completion and defense. The research component is evaluated once, at the thesis defense stage.

At least one of three scientific articles published by a doctoral student during his study period must be published in a scientific publication that is indexed in the Web of Science and Scopus databases.

## Program Objective

The objective of the doctoral program in oil and gas extraction technologies is to train a researcher with knowledge based on the latest achievements, skills in using modern research methods and technologies, and focused on pedagogical activities:

- for exploration of oil and gas deposits;
- for drilling of searched structures;
- For the processing of discovered natural hydrocarbon deposits.

## Learning Outcomes/Competences (general and professional)

- Determines the latest achievements of scientific communication techniques, the accuracy of parameter estimation and the law of distribution of random values when drilling wells, the criteria for the prediction of oil and gas in reservoirs, indicator solutions and the conditions of their use, the processes of post-sedimentary transformation of sediments in sedimentary basins;
- Describes the possibility of using innovative methods, productive layer models, project documentation of well construction, indicator solutions and conditions of their use, features of differentiation of hydrocarbon reservoirs, regularities of distribution of hydrocarbon accumulations in geological structures of the Earth;
- Based on a systematic understanding of the field of oil and gas technologies, considers the methods of estimating the amount of hydrocarbon resources, the method of primary processing of the measurement results, the directions of the filtration flow determined by the indicator research, the features of the structure of the sedimentary cover, the processes of the post-sedimentary transformation of the sediments of the basins;
- Combines teaching and learning strategies, categorizes fracture systems of reservoirs, technological parameters of field development;
- On the basis of new, complex and contradictory ideas and approaches, critically assesses the prospects for reservoir oil and gas content, well drilling performance, and the impact of errors in industrial geological parameters on the field development process;
- Uses the innovative teaching methodology of the field, the methodology of quantitative assessment of oil and gas prospects; the techniques and special devices required for indicator injection, dispersion and regression analysis methods in drilling wells, innovative methods, means and technologies in practical activities;
- Chooses the methods of exploitation of residual oil reserves, the main industrial geological parameters and their permissible limit values for the creation of a hydrodynamic model of the field, new technical means and innovative technologies of drilling, the necessary volume of experimental investigations, the necessary well for indicator injection;
- Adhering to the principles of professional integrity, using modern technologies prepares recommendations for solving the problems of deposit processing.

## Methods of Achieving Learning Outcomes (teaching-learning)

Lecture  Seminar (group work)  Practical  Laboratory  Scientific and thematic seminar  Independent work  Practice  Consultation  Research component  
 Structure of the thesis  Thesis defense

In the learning process, depending on the specifics of a particular study course program, the following activities of the teaching-learning methods are used, which are outlined in the relevant study course programs (syllabi): oral or verbal work, discussion/debate, problem-based learning (PBL), analysis, synthesis, writing work, explanation, demonstration, case study, brain storming, induction, deduction, project development and presentation, action-oriented learning.

## Student's Knowledge Assessment System

Assessment is done on a 100-point system.

Assessment of the learning component:

Positive grades are:

- (A)-Excellent - 91-100 points;
- (B)-Very Good – 81-90 points;
- (C)-Good – 71-80 points;
- (D)-Satisfactory – 61-70 points;
- (E)-Sufficient – 51-60 points.

Negative grades are:

- (FX) - Failed to pass – 41-50 points, which means that the student needs more work to pass and is allowed to take an additional exam once with independent work;
- (F) - Failed - 40 points or less, which means that the work done by the student is insufficient and he/she will have to study the subject again.

Assessment of the scientific research component(s):

- a) with the highest praise (summa cum laude) - excellent performance;
- b) with great praise (magna cum laude) - result exceeding the requirements in all parameters;
- c) with honor (cum laude) - a result that exceeds the requirements;
- d) satisfactory (bene) - an average level work that meets the basic requirements;
- e) sufficient (rite) - a result that, despite its shortcomings, still meets the requirements;
- f) insufficient - an unsatisfactory level work that cannot meet the requirements due to significant deficiencies in the work;
- g) completely unsatisfactory (sub omni canone) - a result that completely fails to meet the requirements

(FX) - an additional exam is scheduled in at least 5 days after the announcement of the results. The mark obtained in the additional exam is not added to the mark obtained in the final assessment.

educational and research components of the doctoral educational program and their assessment rule is posted available on the website of the GTU.

**Fields of employment**

Georgian Oil and Gas Corporation, existing oil and gas companies in Georgia, "Socargas" LLC, "Tbilisi-Energy" LLC, oil and gas transportation company, state oil and gas agency, educational institutions.

**Human and material resources needed to implement the program**

The doctoral educational program is provided with appropriate human and material resources. Information is provided in the attached documentation.

**Number of attached syllabi:** 10