



## Bachelor's Educational Program

### Program Title

ფარმაცია

Pharmacy

### Faculty

ქიმიური ტექნოლოგიისა და მეტალურგიის

Chemical Technology and Metallurgy

### Program Head/ Heads

Professor Tamar TSINTSADZE

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

Bachelor of Pharmacy (BPharm)

Will be awarded by completing at least 240 credits.

### Language of Teaching

Georgian

### Prerequisite for Admission to the Program

Only the holder of a state certificate proving complete general education, or an equivalent person enrolled in accordance with the procedure established by Georgia law, shall have the right to study at the Bachelor's Educational Program.

### Program Description

The Educational Program is based on the European Credits Transfer System ECTS system . 1 credit is equal to 25 hours, which includes both contact and independent work hours. The distribution of credits is presented in the program's subject loading.

The duration of the pharmacy program is 4 academic years, i.e. 8 semesters and includes 240 credits. According to the student's individual load, the number of credits in one year can be less than or more than 60 credits, but not more than 75 credits

The qualification will be awarded by combining 227 credits of training courses of the relevant content of the main field of study and 13 credits of free components;

The curriculum of the course includes natural science, basic pharmaceutical, technological and legal multidisciplinary subjects. Practice is integrated into training courses and is focused on the practical implementation of theoretical knowledge gained in the learning process.

41 credits are given to mathematics and science subjects.

The program has free components in the amount of 13 credits, including 2 optional blocks of free components - in the II semester in the amount of 3 credits and in the VIII semester in the amount of 10 credits. from which the student chooses 2 study courses of 5 credits.

20 credits are assigned to foreign language, 3 credits to Latin language and pharmaceutical terminology, 3 credits to modern technologies of language communication.

158 credits are allocated to specialty subjects, among them there is a group of optional specialty training courses in the amount of 15 credits (13 training courses - 5 cr each. The student chooses 3 training courses) and 5 cr. Bachelor thesis.

The program is drawn up according to foreign analogues: University of Catania (Catania, Italy)

<https://www.unict.it/en/education/bachelor-degrees>

Paris-Sud University (Paris, France) unites 11 universities

<http://www.unict.it/>

<https://www.unict.it/it/node/9081>

Technical University of Cologne (Cologne, Germany)

[https://www.th-koeln.de/en/academics/pharmaceutical-chemistry-bachelors-program\\_7332.php](https://www.th-koeln.de/en/academics/pharmaceutical-chemistry-bachelors-program_7332.php)

Information on the organization of the educational process, assessment of student achievements, educational and financial agreements with students, and the accumulation of credits by the student, etc., is provided in the instructions for managing the educational process at the Georgian Technical University.

## **Program Objective**

The goal of the program is to prepare qualified, professional growth and further learning pharmacist bachelors who will be competitive in the modern labor market.

to give the student a broad knowledge of pharmacy, which includes a critical understanding of theories and principles, manufacturing and production technologies of pharmaceutical products, quality control, storage and dispensing rules and providing the population with quality, safe means;

To prepare them for active participation in the therapeutic chain: "Doctor-Pharmacist-Patient", to develop communication skills with professional circles and society.

## **Learning Outcomes/Competences (general and professional)**

Describes: pharmaceutical products, manufacturing and production technologies, their standardization and certification, quality control, storage and dispensing rules.

Explains: the organizational structure of pharmaceutical institutions, the basics of management and market economy; the main normative documents regulating the pharmaceutical business.

Discusses: the basic biochemical processes in the human body at the molecular and cellular level; the importance of following the established theories and principles in pharmacy for the production of effective, harmless and high-quality medicinal products;

Based on the knowledge of natural and pharmaceutical sciences, mathematics, he will carry out a research or practical project/work in accordance with the predetermined guidelines.

Collects: medicinal biological raw materials, pharmaceutical substance used for the preparation and/or production of a pharmaceutical product.

Evaluates: clinical and cost effectiveness of drugs. The risk of accounting and dispensing of (psychotropic, narcotic) medicinal products subject to special control.

Uses: modern biochemical research and pharmacopoeial methods, manufacturing and production technologies of pharmaceutical products, quality control, storage and dispensing rules.

Performs: classification of drug forms, first aid for victims, pharmaceutical and toxicological analysis.

identifies and formulates problems related to the mechanisms of action of different groups of drugs and interactions with other drugs;

Has communication: with customers and employees both directly and using modern information and communication technologies - in Georgian and foreign languages.

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

Lecture  Seminar (group work)  Practical  Laboratory  Practice  Course work/Project  Consultation  Independent work

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):

1. Discussion/debate;
2. Group (collaborative) work;
3. Problem-based learning (PBL);
4. Case studies;
5. Brainstorming;
6. Role-playing and situational games;
7. Demonstration;
8. Inductive;
9. Deductive;
10. Analysis;
11. Verbal or oral;
12. Written work;
13. Explanatory;
14. Project development and presentation;
15. Practical;
16. Laboratory;
17. Practice (educational and production);

## Student's Knowledge Assessment System

The student's knowledge is assessed on a 100-point scale.

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.

The maximum grade point for each course in each semester is 100. The maximum score for the midterm assessment is 60. The midterm assessment consists of 2 components: an ongoing activity and a mid-semester exam.

During the semester, the student passes one mid-semester and one final exam.

There are 15 study weeks (auditory classes), 1 - mid-semester exam, 1 - documentary material submission and 3 - sessional (final and additional exams) during one semester. Practical training, depending on its specifics, may be conducted either during academic weeks or at other times.

In case of receiving FX, an additional exam is prescribed, not less than 5 days after the announcement of the results. The grade obtained in the additional exam is not added to the grade obtained in the final assessment.

Detailed information is provided on the GTU website: Instruction for managing the educational process at the Technical University of Georgia

## Fields of employment

Bachelor of Pharmacy graduates of the program can be employed as follows:

in the public and private sector, for positions where a bachelor's degree is required:

in any type of pharmaceutical establishment of the pharmacy network (retail, wholesale, clinic, pharmaceutical base);

in the pharmaceutical industry;

in the drug quality control and toxicological laboratory;

in forensic and chemical expertise;

in analytical laboratories of drug quality control and forensic medical expertise;

Legal Entity under Public Law - in the Agency for the Regulation of Medical and Pharmaceutical Activities;

Pharmacy;

Can create and manage own pharmaceutical business.

## Opportunities for continuing education

Master's degree educational programs

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

The program is provided with adequate human and material resources. For additional information, please find the attached documentation.

Number of attached syllabi: 86

29	Pharmacology I	First aid, General pathology, General biochemistry					5		
30	Basics of toxicology chemistry	Analytical chemistry and instrumental methods of analysis in pharmacy					5		
31	Pharmacognosy II	Pharmacognosy I					5		
32	Medical and Pharmaceutical materials science	N/A					5		
33	Technology of galenic preparations	Pharmaceutical technology I					5		
34	Pharmacology II	Pharmacology I First aid					5		
35	Social pharmacy	Medical and Pharmaceutical materials science					5		
36	Pharmaceutical business arrangement and economics	Medical and Pharmaceutical materials science					5		
37	Basics of toxicology chemistry	Basics of toxicology chemistry Medical physics and biophysics Biophysics 1					5		
38	Technology of medical cosmetics and perfumes	Technology of medicinal, cosmetic and perfumery products, Basics of toxicology chemistry					5		
39	Pharmaceutical chemistry III	Pharmaceutical chemistry II						5	
40	Pharmacotherapy	Pharmacology II						5	
41	Toxicology	Pharmacology II, Toxicology chemistry						5	
42	Pharmaceutical technology II	Pharmaceutical technology I						5	
43	Chemistry and examination of biologically active substances	Toxicology chemistry, Pharmaceutical chemistry II,						5	
44	Pharmaceutical care I	Pharmacology II						5	



46.11.	Basics of phytotoxicology	Toxicology, Toxicology chemistry									
46.12	Bioethics, Basics of medical psychology	N/A									
46.13	Basics of immunology	N/A									
47	Free components (the student elects 10 credits)										
47.1	Homeopathy and technology of homeopathic medicines	Pharmacognosy II, Pharmacology II, Pharmaceutical technology I									
47.2	Applied stylistic of Georgian language	N/A									
47.3	History of religions	N/A									
47.4	Elements of critical minding	N/A									5
47.5.	New rhetoric - technologies of public debates	N/A									
47.6	Country science	N/A									
47.7	Tourism	N/A									
47.8	Numismatics and bonistics	N/A									
47.9	Basics of marketing	N/A									
47.10	Business relationships	N/A									
Per semester			30	30	30	30	30	30	30	30	30
Per year			60	60	60	60	60	60	60	60	60
Total			240								

### Curriculum of the program

№	Study course code	Study course	ECTS credits/hours	Hours								
				Lecture	Seminar (group work)	Practice	Laboratory	Practice	Course work/project	Mid-semester exam	Final exam	Independent work
1	MAS34008G1-LP	Basics of higher mathematics	5/125	15		30				1	2	77
2	PHS10304G1-LB	General chemistry	5/125	15			30			1	1	78
3	HTH10304G1-LP	Human anatomy	3/75	15		15				2	2	41
4	HTH10404G1-LPK	Botanic, morphology of plants, anatomy and physiology	5/125	15		15			15	2	2	76
5	Foreign language 1 (one of the languages to be elected)											
5.1.	LEH15012G3-P	English language – 1										

5.2.	LEH14612G3-P	German language –1											
5.3.	LEH15812G3-P	French language - 1	5/125			45					1	1	78
5.4.	LEH15412G3-P	Russian language - 1											
6.	HTH10504G1-LP	Latin language and pharmaceutical terminology	3/75	15		15					2	2	41
7.	HTH10604G1-LP	Human physiology	4/100	15		15					2	2	66
8.	Foreign language 2 (one of the languages to be elected)												
8.1.	LEH15112G3-P	English language -2	5/125			45					1	1	78
8.2.	LEH14712G3-P	German language -2											
8.3.	LEH15912G3-P	French - 2											
8.4.	LEH15512G3-P	Russian language - 2											
9.	PHS16404G1-LPB	Inorganic chemistry	6/150	15		15	30				1	1	88
10.	PHS18204G1-LB	Organic chemistry	6/150	15			45				1	1	88
11.	HTH13204G1-LP	First aid	4/100	15		15					2	2	66
12.	HTH11104G1-LP	General pathology	3/75	15		15					2	2	41
13.	LEH12012G1-LS	Modern technologies of language communication	3/75	15	15						1	1	43
14.	Free components												
14.1.	HEL20212G1-LS	a) History of Georgia;											
14.2.	SOS40312G1-LS	b) Introduction to sociology											
14.3.	HEL30212G1-LS	c) Basics of philosophy;				15							
14.4.	SOS30312G1-LS	d) Introduction to psychology	3/75	15							1	1	43
14.5.	HTH16704G1-LS	e) History of chemistry											
14.6.	HTH16804G1-LP	f) Chemistry and medicine				15							
14.7.	EET20704G1-LB	g) Environmental protection and ecology					15						
15.	HTH10904G1-LBK	General medical microbiology	5/125	15			15		15		2	2	76
16.	PHS16204G1-LPB	Analytical chemistry and instrumental methods of analysis	6/150	15		15	30				1	1	88
17.	PHS17604G1-LB	Physical and colloid chemistry	6/150	30			30				1	1	88
18.	Foreign language 3 (one of the languages to be elected)												

18.1.	LEH15212G3-P	English language - 3	5/125	15	45	15	15	1	1	78
18.2.	LEH14812G3-P	German language -3								
18.3.	LEH16012G3-P	French language - 3								
18.4.	LEH15612G3-P	Russian language - 3								
19.	PHS82004G1-LB	Coordination chemistry	3/75	15		15		1	1	43
20.	HTH10804G1-LB	Basics of hygiene in pharmacy	5/125	15		30		2	2	76
21.	Foreign language 4 (one of the languages to be elected)									
21.1	LEH15312G3-P	English language – 4	5/125		45			1	1	78
21.2	LEH14912G3-P	German language - 4	5/125	15	45	15	15	1	1	78
21.3	LEH16112G3-P	French language - 4								
21.4	LEH15712G3-P	Russian language - 4								
22.	HTH11304G1-LB	Pharmaceutical technology I								
23.	PHS17804G1-LB	Pharmaceutical chemistry I	6/150	30		30		2	2	86
24.	PHS67008G1-LP	Medical physics and biophysics Biophysics 1	4/100	15	15			1	2	67
25.	HTH11204G1-LBR	Pharmacognosy I	5/125	15		15	15	2	2	76
26.	PHS17904G1-LBK	General biochemistry	5/125	15		15	15	2	2	76
27.	PHS18004G1-LB	Pharmaceutical chemistry II	5/125	15		30		2	2	76
28.	HTH11504G1-LBK	Technology of medical cosmetics and perfumes	5/125	15		15	15	2	2	76
29.	HTH11604G1-LPK	Pharmacology I	5/125	15	15		15	2	2	76
30.	PHS18104G1-LBK	Basics of toxicology chemistry	5/125	15		15	15	2	2	76
31.	HTH11704G1-LBK	Pharmacognosy II	5/125	15		15	15	2	2	76
32.	HTH11804G1-LPR	Medical and Pharmaceutical materials science	5/125	15	15	15		2	2	76
33.	HTH11904G1-LBR	Technology of galenic preparations	5/125	15		15	15	2	2	76
34.	HTH12004G1-LPK	Pharmacology II	5/125	15	15		15	2	2	76
35.	HTH12104G1-LPR	Social pharmacy	5/125	15	15	15		2	2	76
36.	HTH12204G1-LPR	Pharmaceutical business arrangement and economics	5/125	15	15	15		2	2	76

37.	HTH12304G1-LBK	Basics of toxicology chemistry	5/125	15			15		15	2	2	76		
38.	HTH12404G1-LBK	Technology of medical cosmetics and perfumes	5/125	15			15		15	2	2	76		
39.	HTH12504G1-LBK	Pharmaceutical chemistry III	5/125	15			15		15	2	2	76		
40.	HTH12604G1-LPK	Pharmacotherapy	5/125	15		15			15		2	2		
41.	HTH12704G1-LPK	Toxicology	5/125	15		15			15	2	2	76		
42.	HTH12804G1-LBR	Pharmaceutical technology II	5/125	15			15	15		2	2	76		
43.	HTH12904G1-LBK	Chemistry and examination of biologically active substances chemistry and Exam	5/125	15			15		15	2	2	76		
44.	HTH16904G1-LP	Pharmaceutical care 1	5/125	15		30				2	2	76		
45.	HTH17504G1-K	Bachelor's thesis in Pharmacy	5/125						45	0	2	78		
46.	Elective training courses of the specialty (the student elects 15 credits)													
46.1.	HTH13404G1-LB	Phytotherapy - plant-based Inorganic chemistry and organic raw materials	5/125	15				30			2	2	76	
46.2.	HTH13604G1-LPK	Circulation of medicinal products				15				15		2	2	76
46.3.	HTH13704G1-LB	Pharmaceutical production processes and machinery						30				1	1	78
46.4.	BRS13504G1-LBK	Specific medical microbiology						15		15		2	2	76
46.5.	EET17604G1-LB	General technical technology						30				1	1	78
46.6.	MCPHI04 GA1-LP	Medical cybernetic and Pharmaceutical informatic										1	1	78
46.7.	HTH11404G1-LP	Basics of pharmacokinetics										2	2	76
46.8.	HTH17004G1-LP	Latest methods of drug analysis										1	1	78
46.9.	HTH17104G1-LP	Chemical elements in the activity of living organisms										1	1	78
46.10.	HTH17204G1-LP	Pharmaceutical care II							30			2	2	76
46.11.	HTH17304G1-LP	Basics of phytotoxicology										2	2	76
46.12.	HTH13504G1-LP	Bioethics, Basics of medical psychology										2	2	76
46.13.	HTH17404G1-LP	Basics of immunology										2	2	76
47	Free components (the student elects 10credits)													
47.1	HTH13304G1-LB	Homeopathy and technology of homeopathic medicines						30			2	2	76	

47.2	LEH11812G1-LS	Applied stylistic of Georgian language	5/125	15	30					2	2	76		
47.3	HEL10112G1-LS	History of religions										1	1	78
47.4	SOS30812G1-LS	Elements of critical minding										2	2	76
47.5	LEH15412G1-LS	New rhetoric – technologies of public debates										2	2	76
47.6	BUA44713G1-LS	Country science										2	2	76
47.7	PESI0213G1-LS	Tourism							1	1	78			
47.8	BUA22213G1-LS	Numismatics and bonistics							1	1	78			
47.9	BUA50813G1-LS	Basics of marketing							2	2	76			
47.10.	BUA42713G1-LS	Business relationships							2	2	76			

Program Head/Heads

Tamar TSINTSADZE

Head of Quality Assurance Service of the Faculty of  
Chemical technology and metallurgy

Mamuka MAISURADZE

**Approved**

at the meeting of the Council of the Faculty of  
Chemical technology and metallurgy  
May 17, 2013

Dean of the Faculty

Nugzar TSERETELI

**Agreed**

with the Quality Assurance Service of Georgian Technical University

Irma INASHVILI

**Ammended**

at the meeting of the Council of the Faculty of  
Chemical technology and metallurgy  
August 07, 2020

Chairman of the Faculty Council

Nugzar TSERETELI