



## Curriculum

<b>Program title</b>	<b>PhD program PHARMACY</b>
<b>Degree awarded</b>	Doctor of Pharmacy
<b>Faculty</b>	Faculty of Medicine
<b>Program coordinator/coordinators</b>	Nino Abuladze - Doctor of Pharmacy, Associate Professor
<b>Length of the program (semester, ECTS)</b>	Program duration not less than 3 years, teaching component 60 credit
<b>Language of the Program</b>	Georgian
<b>Program development and renewal date of issue</b>	Minutes of the Faculty's Academic Council Meeting No. 18. 01.10.2019 Minutes of the Academic Council Meeting No 20(19/20). 01.11. 2019 <b>Decision of the Accreditation Board №862046. 04.09.2020</b>
<b>Program prerequisites</b>	
<ul style="list-style-type: none"> <li>- Master's degree or the equivalent academic degree in Pharmacy.</li> <li>- Knowledge of a Foreign language (English or German or French) at B2 level (it is necessary to pass exam at ATSU or submit appropriate certificate).</li> <li>- Passing the University's specialty exam.</li> </ul>	
<b>Aim of the Program</b>	
<p>Doctoral program "Pharmacy" is aimed at:</p> <ul style="list-style-type: none"> <li>- training of highly-qualified and competitive pharmacist-researcher, who therefore is expected to have in-depth, thorough knowledge, skills and competencies relevant to the sub-fields of pharmaceutical industry, such as pharmaceutical technology, pharmaceutical and toxicological analysis, pharmacognosy, social and clinical pharmacy;</li> <li>- developing skills of making the effective and understandable presentation of knowledge and research findings.</li> </ul>	
<b>Learning outcomes (the map of competences - see attached document 2)</b>	
<b>Knowledge and understanding</b>	<p><b>The program graduate is expected to be able:</b></p> <ul style="list-style-type: none"> <li>- To demonstrate in-depth and systematic knowledge, based on the appropriate modern achievements, about processes occurring at the current stage in the pharmaceutical field, which allows for enhancing the existing knowledge or using the innovative methods in the multidisciplinary or interdisciplinary context;</li> <li>- To use modern specific methods of scientific research and teaching associated with pharmacy; to analyze systematically and critically the field of teaching activities, describe the updated framework of knowledge, expand range of own knowledge and adapt it to the new challenges and trends.</li> </ul>
<b>Skill</b>	<p><b>The program graduate is expected to be able:</b></p> <ul style="list-style-type: none"> <li>- To plan, design and conduct independently innovative pharmaceutical research and experiments, by respecting the principles of academic honesty; to develop new approaches aimed at creating a new knowledge;</li> <li>- To take independently sound and responsible decisions to address the complex problems in the research and innovation;</li> <li>- To demonstrate soundly new knowledge in relationship with the existing knowledge, take part in thematic discussions held at the local and international levels and to prepare publications for high-rated journals.</li> </ul>
<b>Responsibility and self-sustainment</b>	<p><b>The program graduate is expected to be able:</b></p> <ul style="list-style-type: none"> <li>- To provide leadership in research projects and in the development-oriented activities, and simultaneously, to be a full-fledged member of team, as well as to recognize all fundamental principles of the scientific community; to respect norms of professional integrity and bio-ethics, as well as to assess the findings of others' research and protect the own one;</li> <li>- As a researcher and teacher, to explain the importance of education in State-building and understand clearly his/her own role in this process; to plan and manage the process of others teaching.</li> </ul>

## Teaching methods

The program is designed on the principles of interactive teaching and, depending on the content of the course, uses student-oriented teaching methods such as:

1. Verbal or oral method;
2. Demonstration method;
3. Explanatory method;
4. Bookwork method;
5. Paperwork;
6. Practical method brings together all those teaching methods, which develop students' practical skills, and based on acquired knowledge, students perform their activities (for example teaching practice, etc.)
7. Laboratory method;
8. Discussion-debates;
9. Induction and deduction;
10. Analysis and synthesis;
11. Aquarium;
12. Venn diagram, etc.

### **The program involves the following methods:**

Interactive lecture, practical studies, laboratory work, practice, seminars, individual consultations, independent work; Study courses are taught both through lectures and through independent student work (based on recommended basic textbooks, additional literature, and online resources).

The purpose of lectures is to discuss the main topics of the curriculum in a historical-theoretical context and to provide students with relevant information. The lectures are focused on theoretical research in the field and basic facts accumulated in the field. The focus of the lectures is on highlighting and analyzing the key provisions of the issue under consideration.

The purpose of practical and seminar work is to enhance and strengthen theoretical knowledge acquired by student. Strengthening the acquired knowledge and development of skills required for professional activity is greatly facilitated by the analysis of various practical or problematic situations, as well as by a detailed discussion of the exercises (examples) chosen for the subject, preparation and presentation of a seminar report, practical exercises or targeted written assignments, etc.

The most common form of interactive teaching is: discussion/debate. The discussion greatly enhances the degree of students involvement and activity in the teaching process, develops the student's arguing and reasoning skills. The purpose of the discussions is to deepen the knowledge acquired during the lectures and to develop practical skills, to conduct discussion-dialogue around the familiar topics, to discuss the problems given in the text.

**The doctoral seminar** is a course component of the program. It envisages a thorough elaboration of the matter under consideration and preparation of presentation. For the seminar presentations, there are selected problematic issues, elaboration of which requires conceptualizing of acquired knowledge during lectures, review and analysis of the indicated literature and other sources of information, and identifying own position with regard to the matter. During seminar classes, it is necessary to assess the adequacy of perception of the selected topic and/or independently prepared material by Doctoral student. Participants in the seminar include the leading teachers engaged in the educational programs, scientific advisors of the dissertation papers, and Doctoral students. The seminar paper of Doctoral student cannot be a part of Doctoral thesis. Other conditions are established in compliance with the regulations of the Faculty's Academic Council.

**Colloquium** is a research component of the program; student is a direct performer of research. During the colloquiums, the execution of Doctoral thesis is monitored. The colloquium is a part of Doctoral thesis.

Student submits to the program head (scientific advisor of the thesis) printed and electronic versions of the paper to be presented at the colloquium. The paper may be submitted for review to the person/persons holding relevant academic degree and qualifications or the recognized field specialists.

**Practice.** Doctoral program envisages the completion of educational practice (assistance to Professor) with direct participation of scientific advisor and representative of the faculty of Pedagogics and/or recognized industry expert. This aims to give Doctoral student as much support as possible to become a future teacher and to develop relevant skills.

## Structure of the Program

Course component - 60 credits, which are distributed as follows:

Compulsory core courses - 50 credits: elective courses - 10 credits)

See Attachment 1- Curriculum

## Assessment System and Criteria

### **Course component**

Students' achievements are assessed according to orders No. 102/N of the Minister of Education and Science of January 2007 and No. 3 of 18 August 2016, the Resolution of the Academic Council of Akaki Tsereteli State University No. 5 (17/19) of 15 September 2017 "On the Approval of the Student Assessment System at the Akaki Tsereteli State University".

### **Student assessment system existing at Akaki Tsereteli State University is divided into the following components:**

The share of mid-term assessment in maximum evaluation score (100 points) of Doctoral program course component is 60 points, which in turn involves the following assessment forms:

**Student's activity during the semester (includes different assessment components) – no more than 30 points;**

**Mid-term exam - no less than 30 points;**

**Final exam – 40 points.**

Student has the right to take the final exam, if his/her minimum assessment score at mid-term exam is **at least 18 points.**

**The assessment system envisages:**

a) **five types of positive assessment:**

a.a) **(A) Excellent** – 91-100 points.

a.b) **(B) Very good** – 81-90 points.

a.c) **(C) Good** – 71-80 points.

a.d) **(D) Satisfactory** – 61-70 points.

a.e) **(E) Acceptable** – 51-60 points.

**b) two types of negative assessment**

**b.a) (FX)** Student could not pass exam – 41-50 points that means that Doctoral student is required to work more for passing this exam, and that she/he is given the right to retake exam only once after individual work;

**b.b) (F)** failed to pass –40 points and lower that means that the work done by Doctoral student is not sufficient and she/he has to redo the course.

Within the course component of the educational program, in case of FX assessment, a makeup exam is appointed **no later than 5 days since the announcement** of the final exam results.

The minimum assessment score at final exam is **at least 20 points**

The number of points received by student at final exam is not added to the make-up exam assessment score.

The number of points received in a makeup exam is a final assessment score and is reflected in final assessment of the course component of educational program.

With account for the assessment received in the course component, in case of final assessment score 0-50 points, student is assessed at F-0 points.

Evaluation criteria vary depending on the specific disciplines that are indicated in the syllabuses of the respective disciplines.

**Teaching practice is assessed** in accordance with the template of teaching practice approved by a Resolution of the Academic Council No. 76 (10/11) of 28 April 2011.

Seminar classes are assessed in accordance with a special mid-term exam and seminal record list adopted by the University.

**The colloquiums are assessed** on a one-time basis, according to the procedure set out in paragraph 17 of article 4 of Order of the Minister of Education and Science of Georgia, dated January 5, 2007. During the assessment of the colloquium, a relevant protocol shall be drawn up indicating the student's achievements. The assessment focuses on the level of performance of presentation, the quality of the presentation and the answers to the questions, etc. The one-time assessment of the colloquium is regulated by a resolution approved by the Academic Council of Akaki Tsereteli State University.

**Final assessment of Doctoral thesis** is made in accordance with paragraph 17 of article 4 of Order No 3 of 5 January 2007 of the Minister of Education and Science of Georgia, Resolution No 17 (09/10) of 6 November 2009 of the Academic Council of Akaki Tsereteli State University, Resolution of 5 September 2007 of the Academic Council of Akaki Tsereteli State University “On Amendments to Regulation of Basic Principles of Conducting Doctoral Studies at Akaki Tsereteli State University”.

**The Dissertation Assessment System** and Criteria are determined in accordance with Order No 785 of the Minister of Education and Science of Georgia dated September 21, 2009. Final assessment of doctoral thesis is made by the following system:

- a) Excellent (summa cum laude) –with highest honor;
- b) Very good (magna cum laude) – with great honor;
- c) Good (cum laude) – with outstanding honor;
- d) Mean (bene) – meets all requirements;
- e) Satisfactory (rite) – meets requirements, despite some shortcomings;
- f) Unsatisfactory (insufficienter) – does not meet requirements because of substantial shortcomings;
- g) Far from satisfactory (sub omni canone) – failed outright

Prerequisites for presentation of Doctoral thesis to the public discussions before the Dissertation Commission are as follows:

Submission of a spreadsheet confirming earning 60 credits envisaged for educational component to the Faculty’s Dissertation Council. This spreadsheet is issued by the Department Doctoral Studies and it is signed by Rector and Head of this Department; Submission of a protocol of the completion of at least three colloquiums envisaged for educational component of the Doctoral program to the Faculty’s Dissertation Council. The completion of colloquiums is confirmed by the certificate issued by Office of Doctoral Studies, which certifies the completion of at least three colloquiums and the assessments of colloquiums. This certificate is signed by rector of University and Head of Office of Doctoral Studies. Methodology for assessing these colloquiums is determined by the Order No 3 of 5 January 2017 of the Minister of Education and Science of Georgia (Article 4, paragraph 17. The assessment of the colloquium is considered positive, if he/she receives a), b), c), d) and e) assessments envisaged by this Article. In case of f) assessment, Doctoral student has the right to pass the revised version of the same colloquium in the next semester, but in case of g) assessment. Doctoral student has to redo the colloquium;

The number of publications determined by the Faculty’s Dissertaton Council, in the editions approved by the Faculty’s Dissertaton Council, which are confirmed by submitting the article; the author of dissertation can also to submit a monograph. This monograph is a printed publication of the obtained results of research relating to the topic of dissertation paper, ISBN, ISSN, at least 100 copies, the certificate from the print shop and receipt of payment;

Participation in the conferences, the number of which is determined by the Faculty’s Dissertaton Council and making presentation relating relating to the topic of dissertation paper, which is confirmed by publishing relevant papers in the

conference proceedings and its submitting;  
 Assessment of articles carried out by experts anonymously, the number of which is determined by the Faculty's Dissertation Council;  
 Review of the completed dissertation paper at a special meeting of the Department;  
 Provision of official experts by the Faculty's Dissertation Council, who are to be presented to Rector for approval; the number of official experts and content of their work are determined in accordance with Regulation No 1 (Article 19) of 5 September, 2007 of the Academic Council of Akaki Tsereteli State University;  
 In case of positive assessment from official experts, 2 or 3 reviewers are provided by the Faculty's Dissertation Council, who are to be presented to Rector for approval; decision on whom to appoint as official reviewers is made in accordance with Regulation No 1 (Article 20) of 5 September 2007 of the Academic Council of Akaki Tsereteli State University, and Resolution No 40(14/15) of 22 December 2014 of the Academic Council of Akaki Tsereteli State University; if more than half the reviewers assess dissertation negatively, Doctoral student is not permitted to defend his/her dissertation; if one of two reviewers makes negative conclusion on dissertation paper, the Dissertation Council is to provide the third reviewer within a period of 10 days;  
 In case of positive assessment from official reviewers, Doctoral student is permitted to present publicly dissertation to the Dissertation Commission provided by the Faculty's Dissertation Council. The Dissertation Commission provided by the Faculty's Dissertation Council is presented to Rector for approval; the composition of the Dissertation Commission is determined in accordance with Regulation No 1 (Article 21) of 5 September 2007 of the Academic Council of Akaki Tsereteli State University, Resolution No 17 (09/10) of 6 November 2009 of the Academic Council of Akaki Tsereteli State University and Resolution No 61 (14/15) of 7 May 2015 of the Academic Council of Akaki Tsereteli State University;  
 Rules for the assessment of dissertation paper are specified in paragraph 17 of article 4 of Order No 3 of 5 January 2007 of the Minister of Education and Science of Georgia, and in Resolution No 17 (09/10) of 6 November 2009 of the Academic Council of Akaki Tsereteli State University;  
 Prior to the dissertation defense procedure, the dissertation must undergo a check on plagiarism no more than three times; must be considered that the thesis does not contain plagiarism, if the plagiarism level in the thesis does not exceed 15%. After checking the thesis by the plagiarism test program, the certificate of the absence of plagiarism in the thesis is submitted to the Faculty's Dissertation Council with the signatures of PhD student and Chair of the Faculty's Dissertation Council. (Resolution No. 48 (18/19) of May 31, 2019 of the ATSU's Academic Council);  
 In case of the successful completion of dissertation paper, the Faculty's Dissertation Council is to present to Rector for approval the project on awarding the Doctor's academic degree to Doctoral student.  
 Credits of the component **earned in the other accredited higher educational institution** is recognized by a special resolution of the Academic Council of ATSU.

### **Employment opportunities**

Doctor of Pharmacy would be qualified for employment in:

- A higher education system;
- Research institutions;
- Governmental and non-governmental organizations in accordance with the competences obtained;
- Pharmaceutical institutions, such as pharmacy chains, pharmaceutical companies, pharmaceutical enterprises, drug quality control laboratories, wholesale markets.

### **Supportive conditions/resources**

The implementation of the program involves academic staff from different fields:

Affiliated Professor s- 3;

Doctor of Pharmacy, Affiliated Associate Professors - 4;

Doctor of Pharmacy, Invited Professors-3;

Doctor of Pharmacy, Invited Associate Professor - 1.

Students are provided with necessary conditions for learning and research. The institution has an intellectual environment and infrastructure needed to carry out educational and research activities (computer hardware, material and information resources, electronic management systems, library). For searching pharmaceutical information, there will be used: the electronic databases of Clarivate Analytics (Web of Science), EBSCO host, Science Direct, SCOPUS, BioOne, The New England Journal of Medicine, DOAJ.

#### **Laboratories, material and technical base:**

**Various laboratory equipment and instruments** are placed in Building XI of Akaki Tsereteli State University, in the pharmaceutical research laboratories (of pharmaceutical chemistry, pharmaceutical technology, as well as of pharmacognosy).

#### **Equipment/Laboratory engineering:**

- magnetic mixer,
- refractometers,
- water baths;
- chemical and pharmaceutical glassware;
- apothecary frontal/Mohr and manual balance,
- pounding mortars,
- infundirs,
- stoppered glassware for medicinal agents,

- alcohol meters,
- pycnometer,
- areometers,
- laboratory electrical furnaces, etc.

**instruments:**

- spectrophotometer,
- drought cupboard,
- digital analytical scales,
- viscosimeter,
- centrifuge,
- rotary vacuum pump,
- vacuum pump,
- Soxhlet apparatus,
- microscope,
- pH meter.

The memorandums of cooperation and agreements were signed with different research institutions, research centers, pharmaceutical and other companies acting in Georgia and abroad, which cooperate with ATSU and they are ready to collaborate in the process of fulfilment the doctoral program's research component.



საქართველოს სახელმწიფო უნივერსიტეტი

**Curriculum 2020-2023**  
**Program title: Doctoral program “Pharmacy”**  
**Degree awarded: Doctor of Pharmacy**

№	Course title	cr	Workload, hr				lec/pr/lab/gr	Semester						Prerequisites
			Total	Contact hours		Ind.		I	II	III	IV	V	VI	
				Auditorium	Mid-term and final exams									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
I	<b>Learning component</b>													
1.	<b>Compulsory Core Courses (50 credits)</b>													
1.1	Modern methods of scientific research in pharmacy	5	125	30	3	92	15/15/0/0	5						
1.2	Pedagogical practice	5	125	30	3	92	15/15/0/0		5					1.4
1.3	Mathematical provision of the pharmaceutical experiment	5	125	30	3	92	15/15/0/0		5					
1.4	Modern Methods and Technologies of Teaching	5	125	30	3	92	15/15/0/0	5						
1.5	Modern Pharmaceutical Technologies	5	125	30	3	92	15/15/0/0	5						
1.6	Chemical-pharmaceutical, pharmacognostic and toxicological analysis of medicinal substances	5	125	30	3	92	15/11/4/0	5						

№	Course title	cr	Workload, hr				lec/pr/lab/gr	Semester						Prerequisites
			Total	Contact hours		Ind.		I	II	III	IV	V	VI	
				Auditorium	Mid-term and final exams									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.7	Social and Clinical Pharmacy	5	125	30	3	92	15/15/0/0	5						
1.8	1 <sup>st</sup> Seminar	5	125	30	3	92	15/15/0/0	5						
1.9	2 <sup>nd</sup> Seminar	5	125	30	3	92	15/15/0/0		5					
1.10	3 <sup>rd</sup> Seminar	5	125	30	3	92	15/15/0/0			5				
2.	<b>Elective courses (10 credits)</b>													
2.1	Pharmaceutical manufacturing processes and apparatus	5	125	30	3	92	15/15/0/0		5					2.1.1
2.2	Medicinal plants and methods for analyzing them	5	125	30	3	92	15/8/6/1		5					2.1.2
2.3	Pharmaceutical analysis	5	125	30	3	92	15/3/10/2		5					2.1.2
2.4	Chemical-toxicological analysis	5	125	30	3	92	15/11/4/0		5					2.1.2
2.5	Biopharmacy on the basis of pharmacokinetics	5	125	30	3	92	15/15/0/0		5					2.1.1
2.6	Pharmaceutical and Medical Cosmetology	5	125	30	3	92	15/15/0/0		5					2.1.1
2.7	Pharmaceutical products circulation: organization-regulation, standardization and pharmacoconomics	5	125	30	3	92	15/15/0/0		5					2.1.3
2.8	Pharmacology, Clinical Pharmacology	5	125	30	3	92	15/15/0/0		5					2.1.3
	<b>Total</b>	<b>60</b>	<b>1500</b>											

