



Akaki Tsereteli State University

Faculty of Medicine

Bachelor Educational Program

Pharmacy

(in English)

Kutaisi

2016



Curriculum

Program	Bachelor educational program - PHARMACY
Degree awarded	Bachelor of Pharmacy
Faculty	Faculty of Medicine
Program coordinator/coordinators	Nato Alavidze – PhD in Pharmacy, assoc.professor nato.alavidze@atsu.edu.ge 5 99 516022; 5 91 228770;
Length of the program (semester, ECTS)	4 year / 8 semester / 240 credits Basic courses – 95 cr. Branches – 97 cr. Clinical courses – 19 cr. The subject of choices – 7 cr. Practice – 22 cr.
Language of the Program	English
Program development and renewal date of issue	Faculty Board protocol №19; 28.01.2016 Academic Board protocol №6; The decision #30; 24.02.2016;
Program prerequisites	
<ul style="list-style-type: none">- Certificate of general education;- For citizens of Georgia – certificate of confirmation of passing the unified national exams;- Preconditions for taking the program include results of unified national exams, considering the priority subjects and their corresponding coefficients set by the university. <p>Note: At the national exam, English minimal level will be $85 \geq$ points</p> <ul style="list-style-type: none">- English Level B2- Without passing unified national exams the right of studying is regulated by “The Law of Higher Education”. Article 52, paragraph 3, in particular:<ul style="list-style-type: none">a) for foreign citizens and stateless persons who have received secondary or equivalent education in a foreign country;b) for Georgian citizens, who received the general (during the last two years) or equivalent education abroad;c) for individuals who are studying / studied and have credits from an accredited educational institution corresponding to the laws of this country. <p>- At the end of one academic year of study mobility shall be allowed to students to enroll to the program -Bachelor of Pharmacy. Mobility is possible twice a year, within the limits prescribed by the Ministry of Education and</p>	

Science, approved by the Director of the National Center for Educational Quality Enhancement mandatory procedures and rules set by the university. Enrollment into the program or enrollment via transfer from a foreign accredited educational institution is implemented by the decision / agreement of the Ministry of Education and Science of Georgia.

Note: If the applicant does not have an English language certificate FCE (First Certificate in English) English language competence is set by the university exams, the minimum threshold - 60%.

Aim of the Program

- Prepare competitive and highly qualified specialists, who have raised awareness in public health care politics and whose main skills and knowledge are based on thorough knowledge of pharmaceutical disciplines and harmonizing practical work;
- Equip students with knowledge appropriate for international medical-pharmaceutical standards and provide them with essential skills;
- Provide students with deep and thorough knowledge of fundamental and profiled subjects and help them acquire the practical skills how to implement their theoretical knowledge;
- Prepare bachelors in pharmacy with appropriate competences in liberal values, with ability to upgrade professionally and continue their studies to the next stage of learning and with the ability to be focused on practical activities. They will be able to provide qualified pharmaceutical assistance, to perform pharmaceutical analyses, to lead structural units in pharmaceutical institutions and to continue their studies at the higher level of education.
- **The educational program aims to provide students with the following knowledge:**
- To be able to connect processes and events happening in animate and inanimate nature; to organize and manage pharmaceutical assistance within society;
- To use modern methods of cognition -determining general and specific features of human psychics and, if necessary, affecting on it;
- To use foreign and Latin medical pharmaceutical technologies during professional relationship;
- To use mathematical methods while making professional decisions;
- To use knowledge while having normal and pathological cases according to basic physical, chemical, biological and physiological regularities;
- To use hardware-machines crucial for forming and analyzing substances and treating materials;
- While developing medical products, students will be able to identify the reaction between the structure of the compound and pharmacological action. They will also be able to identify reaction between the substance and the method of analyses.
- To use marketing methods for providing society with medicines;
- To obey moral and ethical principles of profession and legal obligations;
- To generate communication skills with patients, colleagues and society in order to achieve mutual understanding;
- To gain positive attitude towards learning;

- To accept the mechanisms guarantying the equality in accessibility of medical health care;
- To use the knowledge on medical products, on their forms, classification, pharmacokinetics and pharmacodynamics; on the indication, administration and contraindication of the medicine and on how to write a prescription;
- To study and analyze the results of laboratory and instrumental testing;
- To carry out sanitary-educational activities for the population; to lead pharmaceutical personnel;
- To deliver organizational -methodological meetings and seminars and work out methodological instructions;
- To have adequate reaction to pharmaceutical products and certifying them as major criteria of high-quality, cost-effective and safe provision of pharmaceutical products;
- To have management and administration skills for pharmaceutical organization and also to become a competitive candidate to obtain a job in a network of pharmacy, pharmaceutical factory, analytical laboratory or in a public service and to have an access to further career growth;
- To learn the registration of pharmaceutical products, turnover, quality control and promotion of regulatory and legal documents;

After completion of the educational program the graduates will gain the knowledge on pharmaceutical raw materials, production, processing, drugs, technology, analysis, standardization, rational pharmacotherapy and pharmaceutical activity. S/he will develop practical skills to implement the core activities of a pharmacist (pharmaceutical care, pharmaceutical and pharmacognostic analysis and use of pharmaceutical technology). At a later stage s/he will be able to continue learning and will be equipped with the proper values.

Analogues of the program:

TSU - http://tsmu.edu/tsmu12/tsmuadmin/media/fakul/farm_bakalavriatis_programa.pdf;

CU - https://online.ug.edu.ge/programs/programs_full.php?programID%5b%5d=224&lang=geo&level=1;

CIU - <http://www.ciu.edu.ge/menu/medprogramebi>

Learning outcomes (the map of competences - see attached document 2)

Knowledge and understanding

After the completion of the program, a graduate:

General/transferable competences

- has wide knowledge of field including critical attitude to theories and principles. Acknowledges complex issues of this sphere.

Branch competences:

- knows the structure of human organism, organ forms and organ systems. Cell integration and tissue formation, different tissue structural and functional organization, their origin. Basic biological processes going in human organism on molecular and cell level;
- knows regulations of molecular mechanisms of living processes, heritage and changeability during normal live-growing processes and their violation;
- knows the composition of basic classes of compounds in living organism, change of carbohydrate, proteins, lipids and other compounds, pathological processes;
- knows all chemical and pharmacology groups, mechanisms of their activity, pharmacology effects, ways of their introduction in the organism, biotransformation and elimination; basis of rational pharmacotherapy.

	<ul style="list-style-type: none"> - knows morphological, physiological, biochemical facilities of micro-world (bacteria, fungus, viruses) and their interaction on human being, concretely on immune system; - knows bases of creating safe surrounding for the health of human being; - knows principles of pharmaceutical establishment and enterprise organization, bases of management of marketing economics; - knows bases of biological, chemical, mechanical and physical analysis, processing and preparation of pharmaceutical production and materials; - is able to work on principles of instruments and apparatus-machines applied during analysis and preparation of pharmaceutical products. - knows the basic questions of mathematics; - acknowledges physical, biochemical and pathological processes going in the organism and the importance and the role of biologically active substances; - acknowledges the importance of keeping methods of standardization, analysis, keeping rules, processing, drying and preparation of pharmaceutical materials while making safe and effective pharmaceutical production of high quality under conditions of chemistry and enterprise; - acknowledges the importance of fulfilling the demands defined by international standards in pharmaceutical practice, organizational structure of pharmaceutical institutions and the basis of marketing economics; - acknowledges the general structure of pharmacy and the connection between its sub-branches; - acknowledges the professional responsibility and the necessity to observe appropriate ethical norms.
<p>Applying knowledge</p>	<p>After the completion of the program, a graduate:</p> <p><u>General/transferable competences</u></p> <ul style="list-style-type: none"> - is able to use several selected methods characteristic to this sphere in order to solve problems, carry out the projects of research or practical character in accordance with already defined instructions. <p><u>Branch competences:</u></p> <ul style="list-style-type: none"> - is able to make substances by standard methods and establishment of chemical analysis in practice; - is able to make natural (vegetative, animal and mineral) and synthetical material, processing and keeping; - is able to make biological and toxicological analysis of pharmaceutical production; - is able to produce extemporal curing means (in accordance with receipt) and serial production of pharmaceutical products (in accordance with regulations); - is able to define pharmaceutical production stability and state the terms of its validity; - is able to make control on the quality of material, substance and pharmaceutical production. - is able to make safe exploitation of instruments and apparatus-machines; - is able to find rational pharmacotherapy; - is able to lead structural units of pharmaceutical institutions; - is able to make mathematical model; - in case of urgent medical accidents is able to make the first medical help; - has ability to use state standard and normative-technical documentation;

	<ul style="list-style-type: none"> - is able to read, write, listen and speak in Georgian and foreign languages; - knows pharmaceutical and medical terminology; - is equipped with appropriate knowledge and practical skills; - can use abstract data to solve the problem under other's supervision; - can interpret the data.
Making judgement	<p>After the completion of the program, a graduate:</p> <p><u>General/transferable competences</u></p> <ul style="list-style-type: none"> - is able to collect and explain data characterized for this sphere, also analysis of abstract data and/or situations by using standard and several selected methods, making well-grounded decision. <p><u>Branch competences:</u></p> <ul style="list-style-type: none"> - is able to think about factual data in the process of pharmaceutical activity and make decision, collecting the factual data causing existing problems, making decision on the base of logistic discussion and their stepping out in trained manner; - is able to conduct analyses independently using new and abstract data and situations with the help of standard or some new methods; - is able to make decision on reality and good quality of curing vegetative material by using the method of analyses. - has ability to collect, process and analyze the material characteristic for professional activity.
Communication skills	<p>After the completion of the program, a graduate:</p> <p><u>General/transferable competences</u></p> <ul style="list-style-type: none"> - is able to make detailed written report about ideas, existing problems and the ways of their settlement and make oral report in Georgian and foreign languages for specialists and non-specialists; is able to use modern informational and communication technologies. <p><u>Branch competences:</u></p> <ul style="list-style-type: none"> - is able to have discussion and debates on professional issues with colleagues; - is able to give necessary information to the customer; - can use digital technology to support and enhance the effectiveness of professional activities. - is able to get new professional material and make presentation for colleagues and customers in Georgian and foreign languages as well; - has ability to work individually and in a team as well;
Learning skills	<p>After the completion of the program, a graduate:</p> <p><u>General/transferable competences</u></p> <ul style="list-style-type: none"> - is able to assess his/her own process of studying successively and in many respect, setting necessities of further studying. <p><u>Branch competences:</u></p> <ul style="list-style-type: none"> - has ability to study aiming at professional and career growth; - has ability to study on the further stage; - is able to manage their own learning process using a wide range of resources - has ability to study planning and selection of educational components independently.

<p>Values</p>	<p>After the completion of the program, a graduate:</p> <p><u>General/transferable competences</u></p> <ul style="list-style-type: none"> - participates in the process of value formation and aspires their introduction. <p><u>Branch competences:</u></p> <ul style="list-style-type: none"> - contributes to the professional community with practically active involvement, sharing ideas and outcomes; - shows attitude of respect for others' opinions and characteristics; - acknowledges educational problems in multicultural context; - respects history, culture and traditions of his/her native country; - has ability of using and protecting legal principles and ethics in pharmaceutical practice; - develops values of professional honesty, responsibility of carrying out activities in high quality; - protects the interests of customers; - has consciousness of safe liabilities and environment protection.
<p>Teaching methods</p>	
<p>Discussion/debates – one of the widely spread method of interactive studying. The process of discussion raises the quality of participation and activity of students. This process isn't limited only to questions asked by professor. This method develops the ability of conformation ones' own idea and discussion.</p> <p>Collaborative work – studying by this method means dividing groups and giving tasks to them, the members of the group individually think about issue and share information with other members. Due to the goal set there is possibility to share functions among the members during the process of study that provides maximum attendance of all students in the process of study.</p> <p>Demonstrative method – this method means visual presentation of information. From the standpoint of reaching result, it is quite effective, demonstration of material to be studied is possible by teacher and student as well. This method helps us to make the perception of different stage of educational material more significant. Say concretely, what student should do all alone. Demonstration may carry simple image or take such difficult face as carrying out multistep experiment.</p> <p>Method of explaining – is based on discussion around the given issue, while reporting the material, professor is giving a concrete example that is discussed in detail in the frame of given theme.</p> <p>Activity oriented studying – demands active attraction of student and professor in the process of study, where practical interpretation of theoretical material takes special loadings.</p> <p>Verbal or oral method – presentation of new material orally by using multimedia or without it, by animation showing of apparatus-machines and technology processes. During the process of study there are used: interactive technologies, method of analysis and synthesis, method of explanation, problematic lection – introduction of material in the regime “menology - dialogues” and others.</p> <p>Writing method – During the process of study and especially during laboratory lessons students are able to make writings about the ways of solving objectives of concrete situation in the forms of made records.</p> <p>Practical methods – During the process of study and especially during laboratory lessons student is making technology processes independently by using appropriate apparatus-machines.</p> <ul style="list-style-type: none"> ✓ Interactive Lectures ✓ Visual Lectures / Laboratory ✓ Workbook methods ✓ Explanatory method Literature Overview ✓ Relevant material search out from various electronic and paper-based resources ✓ Written work methods 	

✓ Problem Based Learning

...and other different methods according specifics of the course

Structure of the Program

see attached document 1

Assessment System

At AkakiTsereteli State University student academic success is measured according to indicators declared by the law issued by the Minister of Education and Research (№785 (05.01.2007) and №3 (21.09.2009)) and the regulations made by the academic board of the University (№12; 30.10.2009; №35; 10.11.2010)

A student's final grade is obtained as a result of summing the midterm evaluation earned per semester and final exam evaluation results.

A) Midterm evaluation, which, includes lectures and student's attendance component, his/her daily academic activities, practical skills assessment and the current rating assessment. Mid-term assessment may include other components, as well.

B) Final exam.

Maximum score of training course / module equals 100 points. The maximum of a final examination is 40 points.

A student is approved for taking the final exam unless his/her cumulative grade accounts for 51 points considering his/her midterm evaluation and final exam maximum points.

A student is assessed with FX (could not pass – if the total score is at least 41 and F (failed– if the total score is not more than 40), if s/he gets less than 15 points at the final exam despite his/her achievements in other components of evaluation.

There are five positive and two negative assessments. Positive assessments are:

- a) (A) excellent – 91% of maximum assessment and more;
- b) (B) very good –81-90% of maximum assessment;
- c) (C) good – 71-80% of maximum assessment;
- d) (D) satisfactory –61-70% of maximum assessment;
- e) (E) enough – 51-60% of maximum assessment;

Negative assessments are:

- a) (FX) couldn't pass- 41-50% of maximum assessment, that means that student needs to work hard and is given the right to take additional exam by independent work.
- b) (F) – failed - 40% of maximum assessment and even less, that means that the work carried out by student isn't enough and he has to study the subject from beginning.

Student may get assessment "failed" if:

- a) S/he isn't permitted to final exam;
- b) S/he failed in final or corresponding additional exam.

A student shall have the right to take a makeup exam in the same semester. The time interval between the final and relevant makeup exams has to be no longer than 10 days.

Concrete criteria of assessments are defined into the corresponding syllabus of an academic course.

Employment opportunities

Areas of professional activities for the graduates:

- The provision of the population with effective and safe medicine;
- Medical Institutions (clinic, hospital et.)
- Drug production according to necessity and its serial production Drug quality control;

- Drug quality control;
- Medicinal herbal raw material production;
- Carrying our scientific-research work according to their specialty; ;

Graduates Employment spheres:

- Health care service;
- Pharmaceutical institutions (various types of property – pharmaceutical manufacture, base units, drug stores, laboratories and etc.);
- Governmental structures;
- Shop of medicinal production and chemical reagents;
- Drug quality control laboratory;
- Toxicological laboratory and chemical forensic expertizing;
- Psychotropic and narcotic drug laboratories;
- Scientific -research institutions aiming at natural and synthetic compounds, their standardization, biopharmaceutical and pharmacokinetic studies, conducting market research and also analyzing the provision of the population with medicines;

A graduate is to:

- provide the population and medical institutions with medicinal facilities and other sick care items;
- Bachelor of Pharmacy - has the right to work independently at profiled learning and scientific research institutions, in pharmacies and pharmacy bases at the initial positions.

Employment spheres

- Pharmacist can use the knowledge and skills at scientific - research institutions, the pharmaceutical industry, drug quality control and toxicological laboratory, chemical forensic expertizing, pharmaceutical bases, open and closed type of drug stores and also at the institutions of chemical reagents and medical equipment.

Opportunity to the further education

- Bachelor of Pharmacy can continue his/her study at Masters programs.

Supportive resources

Characteristics of teaching administration

Implementation of the educational program is ensured by highly qualified pedagogical personnel. Academic courses are conducted by the specialists with relevant academic degrees – full professors, associated and assistant professors and visiting specialists, who have experience in professional activities, and at the same time are engaged in intensive research and methodical work.

The most important criteria to gain the status of a visiting teacher is his/her practical and/or academic experience.

Teaching-methodological support of the educational process

Every discipline included in the curriculum is followed and supported by appropriate documentations: course syllabus; lecture courses; basic textbooks and supplementary information sources; educational guidelines; learning technologies and multimedia audio / video materials.

The Curriculum is based on modern scientific knowledge including full and adequate involvement of

biomedical, pharmaceutical and evidence-based, recent scientific knowledge in the learning process.

All teaching materials given in the syllabuses are kept in the university library or in the funds at the departments either printed or in electronic forms. The university is also involved in the net of the international online library. The success of the field is ensured by the teaching results of the program.

Logistical support of the learning process

Building of the faculty of Pharmacy (N22 Giorgi Akhvlediani str.) will be used for the implementation of the program. Academic personnel, the competent local and visiting teachers will participate into the implementation of the educational program.

The teaching and learning process will be supported by lecture rooms of the University, laboratories, library and all necessary facilities as well as internet-supported classrooms. That enables students to obtain information through online library. Students also have access to e-mails and e-portal to easily communicate with academic staff and faculty administration. Teaching of clinical disciplines are being performed on relevant clinical bases with who the University has signed agreements.

The teaching process is implemented at profiled departments, which are equipped with special academic literature and laboratories specifically designed for practical and laboratory activities. The departments are also equipped with computer techniques.

Organize training practices - To gain the results set by the curriculum, special emphases is made on training practices carried out in pharmaceutical companies affiliated to the faculty of medicine at Akaki Tsereteli State University. They are: „PSP – drug store“, „Neopharm +“, GMP and the drug quality control laboratory, on the bases of the agreement with them (appendixes of agreements and memorandums).

(I-VI Semester)																	
№	Course	cont hours in week	Credits Number	The number of hours					Semesters							preconditions	
				Total	contact.	lectures/practical/gr.work/laboratories	Midterm and final exam time	independent	I	II	III	IV	V	VI	VI I		VII I
I - semester																	
1	Professional Terminology	2	3	75	32	0/30	2	43	3								
2	Basics of higher mathematics, statistics and information technologies	4	5	125	62	.15/45	2	63	5								
3	General and non-organic chemistry	4	6	150	62	30/30	2	88	6								
4	Medical Biology	2	3	75	32	.15/15	2	43	3								
5	Human Anatomy 1	2	3	75	32	15/15	2	43	3								
6	History of Pharmacy	2	2	50	32	15/15	2	18	2								
7	Essentials of Histology	2	3	75	32	15/15	2	43	3								
8	Foreign Language - 1 (Georgian/English)	4	5	125	63	0/60	3	62	5								
		22	30	750	347		17	403	30								
II - semester																	
9	Foreign Language - 2 (Georgian/English)	4	5	125	63	0/60	3	62		5							8
10	Medical Physics and Biophysics	2	3	75	32	15/15	2	43		3							
11	Basics of Molecular Genetics	2	3	75	32	15/15	2	43		3							4
12	Human Physiology - 1	2	3	75	32	.15/15	2	43		3							
13	Botanic - 1	3	4	100	47	15/30	2	53		4							
14	Human Anatomy - 2	2	3	75	32	15/15	2	43		3							5
15	Organic Chemistry - 1	3	4	100	47	15/30	2	53		4							3
16	First Aid Skills	2	3	75	32	0/30	2	43		3							

17	Bioethics	2	2	50	32	15/15	2	18		2							
		22	30	750	349		19	401		30							
III - semester																	
18	Human Physiology - 2	2	3	75	32	15/15	2	43		3							12
19	Basics of Hygiene in Pharmacy	2	3	75	32	15/15	2	43		3							
20	Medical Microbiology and virusology	3	5	125	47	15/30	2	78		5							11
21	Organic Chemistry - 2	3	4	100	47	15/30	2	53		4							15
22	Analitical Chemistry	4	6	150	63	30/30	3	87		6							15
23	Botanic - 2	3	4	100	47	15/30	2	53		4							13
24	General Biochemistry	3	5	125	47	15/30	2	73		5							3, 15
		20	30	750	315		15	478		30							
IV - semester																	
25	Pharmacognozy - 1	3	5	125	48	15/30	3	77		5							23
26	Phizical and coloidal chemistry	3	5	125	48	15/30	3	77		5							21
27	Instrumental methods of analisys	3	5	125	47	15/30	2	78		5							22
28	Pathology	4	5	125	62	30/30	2	63		5							18
29	General Medicine and basics of diagnostic	3	4	100	47	15/30	2	53		4							18
30	Health Care Management	2	3	75	33	15/15	3	42		3							16, 17
31	General Immunology	2	3	75	32	15/15	2	43		3							20
		20	30	750	317		17	433		30							
32																	
32	Pharmaceutical Technology - 1 (galenuri preparations)	4	6	150	62	30/30	2	88		6							
33	Pharmavognozy -2	4	6	150	63	30/30	3	82		6							25
34	Pharmaceutical Chemistry -1	4	6	150	77	30/30	2	88		6							21, 22
35	Pharmacology 1	3	4	100	48	15/30	3	52		4							18, 24
36	Socail Pharmacy - 1 (Pharmaceutical Organization and Economics)	3	4	100	48	15/30	3	52		4							1, 6 17, 30
37	The Subjects of Choices- 1	4	4	100	64	30/30	4	36		4							
		22	30	750	362	332	17	398		30							
Program of The Subjects of Choices(4 credits - 2 courses)																	

	The Subjects of Choices- 1																	
1.1	Ecology	2	2	50	32	0/30	2	28										
1.2	Medicine and Internet	2	2	50	32	0/30	2	18										
2,1	Additional foreign language courses -1																	
2.2	Pharmaceutical Enterprise	3	4	100	47	15/30	2	53										
VI - semester																		
38	Pharmaceutical Technology - 2 (Technology of ready medicine formation)	5	8	200	77	30/45	2	123						8				32
39	Pharmaceutical chemistry - 2	5	8	200	77	30/45	2	123						8				34
40	Principles of Pharmaceutical Management and Marketing	2	3	75	33	15/15	3	42						3				36
41	Pharmacology - 2	3	4	100	48	15/30	3	52						4				35
42	Socail Pharmacy -2 (Pharmaceutical Organization and Economics)	3	4	100	48	15/30	3	52						4				36
43	The Subjects of Choices- 3	2	3	75	32	15/15	2	43						3				
		20	30	750	315		15	435						30				
Program of The Subjects of Choices (3 credits - 1 course)																		
	The Subjects of Choices- 3																	
3.1	Basics of phytotherapy	2	3	75	32	15/15	2	43										
3.2	Cosmetology	2	3	75	32	15/15	2	43										
3.3	Additional foreign language courses -2	2	3	75	48	0/45	3	27										
VII- semester																		
44	Pharmaceutical Care	3	4	100	48	15/30	3	52						4				29, 30,41, 42
45	Clinical Pharmacy	4	6	150	62	30/30	2	88						6				41, 42
46	Pharmacotherapy	4	6	150	62	30/30	2	88						6				41
47	Toxicological chemistry	4	6	150	62	30/30	2	88						6				39
48	Pharmaceutical biotechnology	3	5	125	47	15/30	2	78						5				11
49	Pharmaceutical information	2	3	75	32	15/15	2	43						3				40, 42
		20	30	750	313		13	437						30				
Standardization of pharmaceutical products and quality control																		
50	Standardization of pharmaceutical products and quality control	3	4	100	47	15/30	2	53									4	38, 39

51	Basics of Pharmacokinetics	3	4	100	47	15/30	2	53							4	41, 46
	Practice - in Pharmacy - 22 kr.															
52	Pharmaceutical care	6	6	150	94	0/90	4	56							6	44
53	Pharmaceutical technologies	6	6	150	94	0/90	4	56							6	38, 48
54	Pharmaceutical analysis	6	6	150	94	0/90	4	56							6	39
55	Clinical Pharmacy	4	4	100	64	0/60	4	36							4	45
		28	30	750	440		20	310							30	
Total			240													
<i>Used - hours per week, l / Pr - Lecture / practical; preconditions - in line with the number - sequential number of the course;</i>																