Is approved by Record #
of Academic Council
Chairman of Academic Council,
Rector, professor (Z. Vadachkoria)

Is discussed by Record #
of Academic Council
Chairman of Faculty Council,
Dean, professor (D. Berashvili)

Tbilisi State Medical University
Faculty of Pharmacy

Curriculum
of the First Stage of Higher Education
Pharmacy

Academic degree: Bachelor of Pharmacy

Length of Curriculum: ***240 ECTS Credit***

Name of educational program: Pharmacy

Qualification/ awarded academic degree: Bachelor of Pharmacy

Length of program: 240 (1 ECTS Credit equals to 30 hours)

Language of study: Program is accomplished in English language.

Aim of Educational Program

Aim of program is preparing bachelors with specialty of pharmacy - of higher academic education oriented on practical activity, having competitive, appropriate competence liberal values, professional growth, who will be able to: make qualified pharmaceutical help, manufacturing of curing means, holding pharmaceutical analysis, ruling of structural units of pharmaceutical establishments and continuation of high education on the next stage.

Pharmacy as the field develops very quickly. Today, the world and Georgian pharmaceutical market as well is presented by various curing means. Qualified medical assistance should be followed by appropriate pharmaceutical assistance and rational pharmacotherapy that is impossible without qualified pharmaceutical staff. Medicine is different product from other kind of product, it is effective and safe only in the hand of specialist, and otherwise it harms human treatment.

For today, under marketing economical condition the number of pharmaceutical institutions (chemistry, pharmaceutical industry and etc) has importantly grown. Besides, there is increasing demand on pharmaceutical staff.

The faculty of pharmacy of Tbilisi State Medical University has great experience, traditions, appropriate human resources and material-technical base for preparing qualified staff with specialty of pharmacy.

Educational program “pharmacy” includes getting 240 credits. Bachelor’s program “pharmacy” provides basic education on basic (exact, natural and humanitarian sciences), social, pharmaceutical and medical disciplines and developing of abilities of effective usage of learnt theoretical material in practice.

After finishing the educational program graduate will get knowledge about preparation of pharmaceutical raw material, processing, technology of curing means, analysis, standardizations, rational pharmacotherapy and organization of pharmaceutical activities, will generate practical abilities for fulfilling pharmaceutical activities (pharmaceutical assistance, pharmaceutical and pharmacognostic analysis, pharmaceutical technologies) and also ability and values for continuation study on the next stage.

Precondition for Taking the Program

Preconditions for taking part in educational program are certificate of general education, for citizens of Georgia – certificate of confirmation of passing the united national exams.

Preconditions for taking the program include results of united national exams, taking into consideration the priority subjects and corresponding coefficients defined by the university.

Citizens of foreign countries and persons not having citizenship who have right to get higher education in accordance with legislation of the country with equivalent standards of education may study without passing united national exams.

Result of the study

General/transferable competences

Knowledge and awareness – has wide knowledge of filed including critical thinking of theories and principles. Acknowledges complex questions of this sphere.

Ability of usage knowledge in practice – is able to use several selected method characteristic for this sphere in order to solve problems, carrying out the project of research or practical character in accordance with already defined directions.

Ability of making decision – is able to collect and explain data characterized for this sphere, also analysis of abstract data and/or situations by usage of standard and several selected methods, making well-grounded decision.

Ability of communication – 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.

Ability of study – is able to assess his/her own process of studying successively and in many respect, setting necessities of further studying.

Values - participates in the process of value formation and aspires their introduction.

Branch competences:

Knowledge and awareness:

- 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.
- 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;
- knows working 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.

Ability of usage knowledge in practice:

- 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;
- reading, writing, listening and speaking abilities in Georgian and foreign languages;

Ability of making decision:

- 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 make decision on reality and good quality of curing vegetative material by using the analyze method.
- has ability to collect, process and analyze the material characteristic for professional activity;

Ability of communication:

- is able to have discussion and debates on professional issues with colleagues;
- is able to give necessary information to the customer;
- 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 group as well;
- has verbal and writing communication ability;
- has ability to adopt in new situation;

Ability of study:

- has ability to study aiming at professional and career growth;
- has ability to study on the following stage;

- has ability of study planning and selection of educational components independently,

Values

- Respects history, culture and traditions of his native country;
- has ability of using and protecting legal principles and ethics in pharmaceutical practice;
- is responsible for carrying out his activity in high quality;
- protects the interests of customers;
- has consciousness of safe liabilities and environment protection;

Methods of reaching study results

While carrying out the program following methods are used:

1. 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.

2**. 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 maximal attendance of all students in the process of study.

3. 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.

4. 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.

5. Activity oriented studying – demands active attraction of student and professor in the process of study, where practical interpretation of theoretical material takes special loadings.

6. 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.

7. 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.

8. Practical methods – During the process of study and especially during laboratory lessons student is making technology processes independently by using appropriate apparatus-machines.

System of assessing the knowledge of student

Taking the credit in academic component foreseen by student is possible only by syllabus planned after reaching the results of study, expressed by one of the positive assessment foreseen by credit system.

The assessment of the work of student includes:

a) Intermediate assessment that includes attendance component of student on lection-practical work, daily academic activeness, assessment of practical abilities and current rating. Intermediate assessment may include other components as well,

b) Assessment of final exam.

Maximal point of academic course/module equals to 100 point, maximal assessment of final exam takes 40 points. From the methods of assessment there are basically used: textual, oral or combined final assuming exam,

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

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

Negative assessments are:

a) (FX) couldn't pass- 41-50% of maximal assessment, that means that student need to work hard and is given the right to take additional exam by independent work.

b) (F) – failed - 40% of maximal 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) He/she isn't permitted on final exam;

b) He/she failed in final or corresponding additional exam.

Concrete criteria of assessments are defined by correspondence syllabus of academic course.

Curriculum

N	components	number of credits	hours						credit sharing in accordance with semesters							
			among them													
			contact	lectures	practical	examination	seminar	independent work		II semester	III semester	IV semester	V semester	VI semester	VII semester	VIII semester
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	Basics of Higher Mathematics	3	42	10	30	2		48	3							
2.	General and Inorganic Chemistry	6	90	28	60	2		90	6							
3.	Basics of Anatomy	3	42	10	30	2		48	3							
4.	Basics of Histology	3	46	14	30	2		44	3							
5.	Botany I (plant morphology, anatomy, phisiology)	5	77	15	60	2		73	5							
6.	Medical Physics and Biophysics	3	42	10	30	2		48	3							
7.	Professional Latin Language	2	30			2	28	28	2							
8.	Medical Biology	2	22			2	20	38	2							
9.	Foreign Language 1	3	32			2	28	58	3							
10.	Human Physiology I	4	61	14	45	2		59		4						
11.	Basics of Molecular Genetics	3	46	14		2	30	44		3						
12.	Botany II (plant systematic)	6	92	15	75	2		88		6						
13.	Medical Parasitology	3	42	10		2	30	48		3						
14.	Pharmacy Care I	3	46	14	30	2		44		3						
15.	Information Technologies	2	32		30	2		28		2						
16.	Bioethics	3	30			2	28	60		3						
17.	Foreign Language II	4	30			2	28	90		4						
18.	Elective Disciplines: 1. Basics of Ecology 2. Toxicology of Narcotic Drugs	2	26	20		2	4	34		2						
19.	Organic Chemistry I	4	61	14	45	2		59			4					
20.	Medical Microbiology	4	61	14	45	2		59			4					
21.	Human Physiology II	4	61	14	45	2		59			4					
22.	Clinical Skills	2	30		28	2		30			2					
23.	Analytical Chemistry	6	90	28	60	2		90			6					

24.	Basics of Hygienic in Pharmacy	3	40	10		2	28	50			3					
25.	Pathology I	3	46	14	30	2		44			3					
26.	Scientific Skills	2	22			2	20	38			2					
27.	Foreign language III	2	30			2	28	30			2					
28.	Instrumental Methods of Analysis	4	61	14	45	2		59				4				
29.	Basics of Biochemistry	6	90	28	60	2		90				6				
30.	Pathology II	3	46	14	30	2		44				3				
31.	Physical and Colloidal Chemistry	6	90	28	60	2		90				6				
32.	Pharmacognosy I	5	77	15	60	2		73				5				
33.	Organic Chemistry II	4	61	14	45	2		59				4				
34.	Immunology	2	30	14	14	2		30				2				
35.	Pharmaceutical Chemistry I	5	77	15	60	2		73					5			
36.	Pharmacognosy II	5	77	15	60	2		73					5			
37.	Technology of Galenic Preparations	10	152	30	120	2		148					10			
38.	Pharmacology I	4	61	14	45	2		59					4			
39.	Toxicological Chemistry I	4	61	14	45	2		59					4			
40.	Elective Disciplines: 1. Extreme Condition Etiology, Pathogenesis and Prevention Principles 2. Basics of Biopharmacy	2	26	20	4	2		34					2			
41.	Pharmaceutical Chemistry II	10	152	30	120	2		148						10		
42.	Pharmacology II	4	61	14	45	2		59						4		
43.	Toxicological Chemistry II	4	61	14	45	2		59						4		
44.	Technology of Pharmaceutical Dosage Forms	10	152	30	120	2		148						10		
45.	Elective Disciplines: 1. Internal Diseases 2. Basics of Pharmaceutical Cosmetology	2	30	20	8	2		30						2		
46.	Pharmaceutical Organization and Economics	8	120	28	90	2		120							8	
47.	Basics of Pharmacokinetics	4	61	14	45	2		59							4	
48.	Clinical Pharmacy	8	120	28	90	2		120							8	
49.	Pharmacotherapy	8	12	28	90	2		120							8	

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50.	Elective Disciplines: 1. Basics of Phytotherapy 2. Pharmaceutical Enterprise	2	26	20		2	4	34							2	
	Module of Practical Abilities															
51.	Pharmacy care II	6	90					90								6
52.	Pharmaceutical Technologies	8	120					120								8
53.	Pharmaceutical Analysis	8	120					120								8
54.	Pharmacognostic Analysis	4	60					60								4
55.	Pharmacotherapeutical Choice	2	30					30								2
56.	Elective Disciplines: 1. Pharmaceutical Product commodities 2. Principles of Pharmaceutical Management and Marketing	2	30			2	28	30								2

Peculiarities of study organization

Realization of educational program is provided by high qualified teachers. Educational disciplines are leaded by specialists with academic degree of corresponding profile – full, associated and assistant professors, invited specialists who are skilled in professional activity and are carrying out intensive scientific- researching methodical working along with pedagogical activity.

One of the important criteria of participation of academy staff and invited teachers and/or researchers in educational process is research activity by approved scientific/scientific-methodical publication. Publications in editions having impact-factor are priority. Important criteria for getting status of invited teacher are his/her practical and/or academy experience.

Due to successful implementation of the program faculty is actively collaborating with foreign universities: Liege University of Belgium (Belgium), Marseilles Mediterranean University (France), Quebec University in Chicoutimi (Quebec, Canada), National Pharmaceutical University of Kharkov (Ukraine), University of Lublin and University of Warsaw (Poland), many collaborators, doctorates and students underwent faculty training in mentioned universities.

Educational-methodology maintenance of academy process

Study process of every discipline in accordance with curriculum is provided by appropriate educational-methodological documentation: syllabus of discipline; lecture courses; main manuals and helping informational sources; educational-methodological recommendations; multimedia technologies of study and audio/video materials.

Educational program, constituent academic course are based on modern scientific knowledge that means that the methodology and knowledge based on approved and newest medical-biological knowledge made in the direction of pharmacy are fully and adequately participated in the process of study.

The fond existing on the base of university library and academic departments includes literature pointed in the programs of academic courses of educational programs (syllabuses) by the forms of typing and electronic trains; the reflection of actual achievements of the filed on the result of program studying are provided and also by participation in the network of international electronic library.

Material-technical equipment of educational process

The program will be accomplished on the base of educational body of the faculty of Pharmacy _ IV study building (33 Vazha-Pshavela avenue, Tbilisi, Georgia 0186), there is located profile departments with special educational literature for practical and laboratory working, technical equipment and computer techniques, lecture halls, laboratories of scientific-research and practical abilities.

Organization of educational practice

In order to achieve the results in accordance with program, especial attention is paid to educational practices, carried out in laboratories of scientific- research and practical abilities, on the base of agreement formed with pharmaceutical companies: “Aversi-Pharma”, “PSP - Chemistry”, “GEPHA” (“GPC” and “Pharmadepot”), Pharmaceutical enterprises: “GMP” and “Neopharmi”.

Employment spheres

Pharmacist may use knowledge and abilities in scientific-research institutes, pharmaceutical enterprises, in the laboratories of controlling medicine quality and toxicology laboratories, legislation and chemical expertise, pharmaceutical bases, open and close type chemistries and in the institutions of chemical reactive and medical techniques.

Possibility of study continuation

Bachelor of Pharmacy may continue study on master's educational program.