Tbilisi State Medical University

Tbilisi State Medical University Faculty	Pharmacy
Program Title	**Pharmaceutical Analysis**
Awarded academic qualification/degree	MA of pharmaceutical analysis
Program Director	Associate Professor Tamar Chilkviladze
Credit Value of the Program	120 ECTS credits
Language of Instruction	Georgian
Program Objectives	Healthcare and improvement are one of the priorities of the state and while society. Efficient healthcare system definitely implies providing the population with quality efficient and safe pharmaceutical product, protection form hazardous, falsified, non-useful and expired means of treatment; taking substantial measures against drug addiction and toxicomania. Pharmaceutical analysis is the most significant element in ensuring the quality of medicine and good of medical purpose; in the area of standardization of means of treatment, pharmacopeia, pharmacognostic, pharmaco-kinetic and chemical-toxicological analysis. The aim of the MA program is to train the pharmacy worker of respective qualification who will be able to work independently at the laboratories of quality control of medicine and medicine control, narrow profile scientific- research establishments, meet the requirements of GMP and ISO, be guided by the best laboratory practices principle and serve as the guarantee of quality and security of the production existing at the country's pharmaceutical market.
Prerequisite(s) /Requirements for admission to the program	Admission to the program is regulated by the rule established by the legislation of Georgia and by the regulation approved by the Academic Council of Tbilisi State Medical University on the master's degree (Decisions of the Academic Council of TSSU: №24/5, 7.05.2012, №24/3, 15.05.2017): - A person with a bachelor's degree or an equivalent degree has the right to study at the master's level;

	- In order to obtain the right to continue studying at the master's program, it is necessary to pass the common master's exam (A test) and the exams established by Tbilisi State Medical University in the specialty and English language (overcoming the 50%+1 threshold). Internal university exams are held in the exam center of TSSU, in test form; The exam in the specialty includes 3 profile training courses: pharmacognosy, pharmaceutical chemistry and toxicological chemistry, which are studied within the framework of undergraduate programs. - Only those candidates for master's degree who have passed the minimum competence limit established by Georgian legislation in the common master's exam have the right to participate in the exam/exams established by the higher educational institution; - Enrollment in the master's program is carried out within the framework of the pre-announced admission quota, according to the competition rules; - Access by mobility is done in accordance with Georgian legislation and TSU regulations.
Program short description	Master's program is focused on pharmacopoeia, On the in-depth study of pharmacogenetic, pharmacokinetic and toxicological analysis, on the study of external and internal challenges acting in this direction, obtained on critical analysis of results, on generating new ideas for solving complex problems and searching for solutions; To obtain the academic degree of Master of Pharmaceutical Analysis, the student needs to accumulate 120 ECTS credits, including; Profile main training courses - 44 credits; Non-professional basic training courses - 6 credits, optional school courses - 10 credits; professional practice - 30 credits; Research component - 30 credits The third semester is entirely devoted to four professional practices, which students undergo on the basis of the memorandums and within the framework of the agreements.

	In the fourth semester, the research component is completed, which provides for the independent research conducted by the master's student in the relevant direction, the results of which are reflected in the master's thesis. A Master in Pharmaceutical Analysis can be employed with a relevant competency, or continue their studies in a Ph.D.
Student Knowledge Assessment System	Assessment of student's/MA candidate's work envisages: a) Mid-term evaluation (all compulsory components to be fulfilled by the student, which are envisaged in accordance with the syllabi of the training course/module); b) Assessment of the final exam. Maximum assessment score of the course/module is 100 out of which 40 points are allocated to the maximum of the final exam. Main methods of assessment used are: testing, oral or com bined summative exam. There are five types of positive and two types of negative assessmen ts. Positive assessments are: a) A (Excellent) - 91-100 % of maximum assessment; 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) Sufficient - 51-60 % of maximum assessment Negative Assessments are: a) (FX) Failed to pass – 41-50 % of maximumassessment, which implies that the students' needs to work more to pass and gets the right to take an additional exam after independent work b) (F) failed – 40 % of maximum assessment and less which means that the work carried outby the student is not enough and a/he has to study the subject again The correlation between various componentsof assessment is defined by the syllabus of the separate course of the MA program. The share of the exam in the final assessment (mid-term and the final exams) does not exceed 40 %. The MA student has the right to pass the additional exam in the sam e semester. The period between final and respective additional exams should not be less than 5 days.

	Based on the criteria envisaged by the educational program, practical work, MA and/or other types of work are assessed by the 100-point system. Members of the committee of defending MA theses assess the MA work by the score of 0-100. The score is calculated by the members ofthe qualifying board of defending MA theseson the basis of the grade point average of the sum of the scores granted. In case of assessing the MA thesis at the score of 51 and more, the work is considereddefended based on the following distribution ofassessment scores: 91-100 – Best piece of work; 81-90 – Very good piece of work; 71-80 – Good piece of work; 61-70 – Average piece of work; 51-60 – Satisfactory piece of work; 0-50 – non-satisfactory piece of work; In case of the failure to appear at the defence ofthe MA thesis due to a reasonable cause (illness, etc.) the work can be submitted within the period of 1 month or at the following defense with the consent of the board of the respective department. In case of receiving less than 51 scores at the public defense, it is possible to re-submit the thesis and defend it at the coming defense on the basis of the board of the respective faculty. The MA thesis may be submitted for defense not less than two times, by retaining the teaching component.

Learning Outcomes	Knowledge and understanding - after completing the program, the master of pharmaceutical analysis will have a deep, systematic knowledge of the field, will be able to critically understand his own activities, which includes the latest achievements in the field and creates a basis for innovation, development of new, original ideas. After completing the master's program, the master of pharmaceutical analysis will know: - Methods of standardization and analysis of medicinal substances, drug forms; - Standardization and analysis methods of medicinal plants, herbal preparations; - Theoretical foundations of separation of biologically active substances from plants/plant raw materials; - Modern methods of chemical and toxicological research; Specificity of the analysis of narcotic and toxic substances; - Fundamentals of the pharmacokinetics of medicinal products, pharmaceutical and biological equivalence of drugs, rational pharmacotherapy; - Theoretical and legal bases of registration of pharmaceutical product. Ability - After completing the Master's program, the Master of Pharmaceutical Analysis can independently: - Standardization and quality assessment of medicinal substances, drug forms; - Standardization and quality assessment of medicinal plants, phyto preparations; - Biologically active from plant raw material separation of substances;

	- Assessment of pharmaceutical and biological equivalence of drugs; determining pharmacokinetic parameters; Predicting rational pharmacotherapy; - Narcotics and toxic substances court – - chemical expertise; - Preparation of pharmaceutical product documentation and registration. Responsibility and autonomy After completing the master's program, the Master of Pharmaceutical Analysis contributes to the development of knowledge and practice in the field of pharmaceutical analysis by understanding and fulfilling his/her place, role and responsibility in professional activity. can be based on an objective assessment of their own skills, continuous Determining the need for learning for professional development and planning independently.
Fields of Graduate Employment	The master of pharmaceutical analysis can independently use the acquired knowledge and practical skills in a scientific-research institute of the relevant profile, a drug agency, a pharmaceutical enterprise, drug quality control, drug quality assurance, food product quality control, pharmacokinetic and chemical-toxicological analysis laboratories, forensic examination bureau , in pharmaceutical companies, pharmacies; Also, within the scope of their competence - in clinics, chemical reagents facilities.

Curriculum
MA Program in "Pharmaceutical Analysis".

N	Study courses	credits	hours	Credit-volume			
			Among them	I semes	II semes	III	IV

			contact	lecture	seminar	practice	seminar	Independent word				
1	2	3	4	5	6	7	8	9	10	11	12	13
1	professional English language	4	48				48	76	4			
2.	Information technologies in science	2	24					36	2			
3.	Pharmacopoeia analysis	10	120	10	110			180	10			
4.	Pharmacokinetics	6	72	12	60			108	6			
5.	Toxicological analysis	6	72	12	60			108	6			
6.	Pharmacognostic analysis	10	120		120			180		10		
7	Standardization of medicinal products	10	120	60	60			180		10		
8	Pharmaceutical product quality control organization	3	36	20	16			54		3		
9	Professional practice I (drug testing laboratory	8	96		96			144			8	
10	"Global Test"	8	96		96			144			8	
11.	Professional practice II	6	72		72			108			6	
12	(Drug quality laboratory of "GMP" pharmaceutical enterprise)	8	96		96			144			8	

13	master's thesis	30	360					540				30
	Elective study courses											
14	Chromatographic methods in pharmaceutical analysis	2	24		24			36	2			
15	Technical provision of pharmaceutical analysis from plant raw materials	2	24		24			36	2			
16	Principles of screening of biologically active natural compounds	3	36				36	54		3		
17	Forensic - biological examination of toxic plants	3	36		36			54		3		
18	Registration of biologically active additives and homeopathic remedies	2	24	8	16			36		2		
19	Registration of dental materials and diagnostic equipment	2	24	8	16			36		2		
20	Registration of veterinary, disinfection, disinfection, deratization products	2	24	6	18			36		2		
21	polypragmasy	2	24	10	14			36		2		