

| <b>Tbilisi State Medical University</b>                           |   |
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| <b>Tbilisi State Medical University Faculty</b>                   | <b>Pharmacy</b>   |
| <b>Program Title</b>  | <b>Pharmaceutical and Cosmetic Technologies</b>   |
| <b>Awarded academic qualification/degree</b>                      | <b>Master of Pharmacy</b>   |
| <b>Program Director</b>   | <b>Professor Aliosha Bakuridze</b>  |
| <b>Credit Value of the Program</b>                                | <b>120 ECTS Credits</b>   |
| <b>Language of Instruction</b>                                    | <b>Georgian</b>   |
| <b>Program Objectives</b>   | <p>a) Equipping MA students with deep and systemic knowledge/competence of:</p> <ul style="list-style-type: none"> <li>- Rational processing of natural and synthetic raw materials, producing effective, quality and safe pharmaceutical or cosmetic-perfumery products, applying physical, chemical, biological and technological regularities to serial production;</li> <li>- Medical and biological regularities for effective and safe use of cosmetic products;</li> <li>- Using modern tendencies, researches, research methods and their possibilities in pharmaceutical and cosmetology-perfume technologies;</li> </ul> <p>b) Equipping MA student with the skills of independent implementation and management of pharmaceutical and cosmetology-perfume technologies in compliance with the principles of good manufacturing practice (GMP).</p> |
| <b>Prerequisite(s) /Requirements for admission to the program</b> | <p>Prerequisites required for admission to the MA program:</p> <ul style="list-style-type: none"> <li>a) Academic degree of Bachelor in Pharmacy, or different fields of Medicine, in chemical and food product technologies, academic degree of MD;</li> <li>b) Successfully passing the general master's exam;</li> <li>c) Passing internal-university exams.</li> </ul>  |

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| <p><b>Program short description</b></p>           | <p>The study duration in the MA program "Pharmaceutical and Cosmetic Technologies" - 2 years or 4 semesters. The MA student must acquire 120 ECTS credits.</p> <p>90 credits are allocated to profile courses, from here:</p> <ul style="list-style-type: none"> <li>• 64 credits – compulsory courses,</li> <li>• 10 credits – elective courses,</li> <li>• 16 credits – production/manufacturing practice,</li> <li>• 30 credits - research component - master thesis.</li> </ul> <p>A total of 24 credits are allocated for elective courses, of which the student chooses 10 credits, according to the semesters:</p> <ul style="list-style-type: none"> <li>• I semester - 4 credits;</li> <li>• II semester - 2 credits;</li> <li>• III semester - 4 credits.</li> </ul> <p>The study component includes:</p> <ul style="list-style-type: none"> <li>• basic courses (15),</li> <li>• modules (2),</li> <li>• Practice (2) and</li> <li>• Elective course (12)</li> </ul>  |
| <p><b>Student Knowledge Assessment System</b></p> | <p>Assessment of the MA student achievements is carried out in accordance with the order #3 of January 5, 2007, issued by Minister of Education and Science of Georgia. The University works according to the European Credit Transfer and Accumulation System (ECTS), based on learning outcomes, transparency of educational process and student-oriented system. It is a tool of the European Higher Education Area (EHEA) for facilitating planning, implementation, evaluation/recognition of study components, as well as student mobility. Assessment components comprise midterm assessment and final assessment, their sum determines the student's final assessment.</p> <p>Maximum assessment of the study course is 100 points, which is the sum of the intermediate evaluations (minimum competence threshold - 31 points) and the final grade.</p> <p>A Master's (MA) student who can get a score of at least 51 points summarizing the intermediate assessment and the minimum positive assessment of the</p> |

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|                                 | <p>final exam is allowed to take the final exam.</p> <p>The evaluation of the activity performed by the master's student includes:</p> <ol style="list-style-type: none"> <li>a) Mid-term assessment of the student determined by 0-60 points, represents the sum of the points obtained according to the knowledge assessment methods/components (academic activity - colloquium, presentation, etc.) envisaged by the syllabus of the study course/module.</li> <li>b) Final exam grade.</li> </ol> <p>Maximum assessment of the study course is 100 points, with a portion of 0-40 points designated for the final exam evaluation</p> <p>Evaluation system allows:</p> <p>Five types of positive grades</p> <ol style="list-style-type: none"> <li>(A) Excellent – 91 - 100 points;</li> <li>(B) Very good – 81-90 points;</li> <li>(C) Good – 71-80 points;</li> <li>(D) Satisfactory – 61-70 points;</li> <li>(E) Acceptable – 51-60 points.</li> </ol> <p>Two types of negative grades</p> <ul style="list-style-type: none"> <li>- (FX) Fail – 41-50 points, meaning that a student requires some more work before passing and is given a chance to sit an additional examination after independent work;</li> <li>- (F) Fail – 40 points, meaning that the work of a student is not acceptable and he/she has to study the subject anew.</li> </ul> <p>The additional requirements established for the assessment of student achievements in a separate study course/module are detailed in the relevant syllabus and are known to students.</p> |
| <p><b>Learning Outcomes</b></p> | <p><b>Knowledge and Understanding</b></p> <p>The MA graduate shall a deep and systemic knowledge of:</p> <ul style="list-style-type: none"> <li>✓ Rational processing the natural and synthetic raw material; preparing effective, quality and safe pharmaceutical or cosmetic and perfumery products; applying the physical, chemical, biological and technological regularities to serial production; and working principles of used equipment-machines.</li> <li>✓ Medico-biological principles for selecting effective and safe cosmetic</li> </ul>   |

products developed for the skin structure, functions, diseases of the human body;

- ✓ Basics of pharmaceutical and cosmetics and perfume business administration;

The graduate comprehends the significance of utilizing research outcomes in the rational processing of natural and synthetic raw materials for serial production and development of effective, high-quality and safe pharmaceutical and cosmetic-perfume products, as well as for their own professional development;

### **Ability**

The MA graduate is proficient in:

- ✓ Independently applying rational processing techniques for natural and synthetic raw materials; production of effective, high-quality and safe pharmaceutical and cosmetics and perfume products; managing serial production, ensuring safe operation of equipment and machines; management of technologies according to the principles of good manufacturing practice (GMP) and selecting cosmetology products for customers and providing informed usage counseling;
- ✓ Identifying complex problems that may arise during the implementation of the technological process, conducting in depth analysis to determine the causes, evaluating impact and searching for original ways and adequate response; conducting research independently, employing the latest methods and approaches;
- ✓ Critical analysis of the latest research findings, innovative synthesis of information, evaluation and formation of substantiated conclusions in the process of manufacturing, improvement and development.

### **Responsibility and autonomy**

The MA graduate is capable of

- ✓ Presenting personal conclusions, arguments and research findings to both the academic and professional community in Georgian and foreign languages with adherence to academic ethical standards and utilizing information and communication technologies;

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|                                      | <ul style="list-style-type: none"> <li>✓ Evaluating, establishing and advocating for resource-saving and ecologically safe “green technologies”;</li> <li>✓ Objective assessment of their own knowledge and skills. Possessing a deep understanding of the intricacies of the learning process, enabling them to strategically plan and independently conduct their learning endeavors at a high level.</li> </ul> |
| <b>Fields of Graduate Employment</b> | The MA Graduates will be employed in pharmaceutical, cosmetic-perfume industry, pharmacy shops, cosmetology spa- and aesthetic centers, scientific-research and educational institutions, state regulatory structures of the field.  |

### Curriculum

#### MA Program in “Pharmaceutical and Cosmetic Technologies”

| No | Study courses   | Subject and Course Status: Mandatory, Elective | Total number of credits | Allocation of credits |    |     |    |
|----|---|--|-------------------------|-----------------------|----|-----|----|
|    |   |  |                         | Semesters             |    |     |    |
|    |   |  |                         | I                     | II | III | IV |
| 1. | Basics of physiological homeostasis   | Basic  | 3                       | 3                     |    |     |    |
| 2. | Biochemistry in pharmacy and cosmetology  | “  | 2                       | 2                     |    |     |    |
| 3. | Morphological basics of drug bioavailability                                    | “  | 2                       | 2                     |    |     |    |
| 4. | Skin diseases   |  | 4                       | 4                     |    |     |    |
| 5. | Good manufacturing practice (GMP)   |  | 4                       | 4                     |    |     |    |
| 6. | Technologies of traditional and new generation pharmaceutical forms and systems | “  | 5                       | 5                     |    |     |    |
| 7. | Information technologies in science   | “  | 2                       | 2                     |    |     |    |
| 8. | Sectoral English language and terminology                                       | “  | 4                       | 4                     |    |     |    |

|      |  |          |            |           |             |           |           |
|------|--|----------|------------|-----------|-------------|-----------|-----------|
|      | Elective (see. par.19)   | Elective | 4          | 4         |             |           |           |
| 9.   | Technologies of cosmetic and perfume products,<br>technology of cosmetics,<br>technology of perfumes | Basic    | 8          |           | 8<br>6<br>2 |           |           |
| 10.  | Pharmaceutical technologies, biotechnology,<br>Technology of homeopathic remedies                    | „        | 4          |           | 4<br>2<br>2 |           |           |
| 11.  | Efficacy and safety of medicinal and cosmetic products   |          | 4          |           | 4           |           |           |
| 12.  | Pharmaceutical microbiology and hygiene  | “        | 4          |           | 4           |           |           |
| 13.  | Physico-chemical methods of pharmaceutical product analysis  | „        | 4          |           | 4           |           |           |
| 14.  | Biopharmaceutics   | „        | 4          |           | 4           |           |           |
|      | Elective (see. par.19)   | Elective | 2          |           | 2           |           |           |
| 15.  | Pharmaceutical business administration   | Basic    | 4          |           |             | 4         |           |
| 16.  | Experimental research methods  | “        | 3          |           |             | 3         |           |
| 17.  | Pharmaceutical nanotechnology  | „        | 3          |           |             | 3         |           |
| 18.  | Practice in pharmaceutical technologies  | „        | 8          |           |             | 8         |           |
| 19.  | Practice in cosmetology  | “        | 8          |           |             | 8         |           |
|      | Elective (see. par.19)   | Elective | 4          |           |             | 4         |           |
| 20.  | MA thesis / Paper  | Basic    | 30         |           |             |           | 30        |
|      | <b>In Total</b>  |          | <b>120</b> | <b>30</b> | <b>30</b>   | <b>30</b> | <b>30</b> |
| 21.  | Elective courses   | Elective |            |           |             |           |           |
| 21.1 | Tissue Bioengineering and Regenerative Medicine  | „        | 2          |           |             |           |           |

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|-------|---|---|------------|-----------|-----------|-----------|-----------|
| 21.2  | Applied Pharmacology  | „ | 2          |           |           |           |           |
| 21.3  | Preventive cosmetology  | „ | 2          |           |           |           |           |
| 21.4  | Technology of phytocosmetic products                          | „ | 2          |           |           |           |           |
| 21.5  | Technology of hygienic cosmetics                              | „ | 2          |           |           |           |           |
| 21.6  | Technology of decorative cosmetic products                    | „ | 2          |           |           |           |           |
| 21.7  | Clinical pharmacokinetics                                     | „ | 2          |           |           |           |           |
| 21.8  | Standardization and registration of<br>Pharmaceutical product | „ | 2          |           |           |           |           |
| 21.9  | Marketing management  | „ | 2          |           |           |           |           |
| 21.10 | Physical pharmacy   | „ | 2          |           |           |           |           |
| 21.11 | Nano-cosmetology  | „ | 2          |           |           |           |           |
| 21.12 | Pharmaceutical enterprise management                          | „ | 2          |           |           |           |           |
|       | <b>In Total</b>   |   | <b>120</b> | <b>30</b> | <b>30</b> | <b>30</b> | <b>30</b> |