



CURRICULUM OF ASSISTANT PHARMACIST

1477

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| <b>Educational institution</b>   | <b>TALLINN HEALTH CARE COLLEGE</b>   |
| <b>Code of educational institution</b>   | 70003980   |
| <b>Title of the curriculum</b>   | <i>FARMATSEUT</i>  |
| <b>Title of the curriculum in English</b>  | <b>ASSISTANT PHARMACIST</b>  |
| <b>Higher education level</b>  | Professional higher education  |
| <b>Curriculum code in the Estonian Education Info-System (EHIS)</b>                  | 1477   |
| <b>Data about the right for conducting studies in the curriculum</b>                 | Curriculum belongs to the “Medicine” curriculum group in which the right to conduct studies has been granted by the Standard of Higher Education (appendix 3) and the Statute of the Minister of Education No 384 from 20.04.2011. |
| <b>Primary registration of the curriculum</b>  | 05.09.2002   |
| <b>Approval date of the version of the curriculum in the educational institution</b> | The curriculum has been approved by the Council of Pharmacy Curriculum on 05.04.2016.<br>The curriculum has been approved by the Tallinn Health Care College Council with Decision No 4.1. from 24.05.2016.                        |

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| <b>Study area</b>  | Health and well-being                                  |
| <b>Field of studies</b>  | Health   |
| <b>Curriculum group</b>  | Medicine   |
| <b>Main field of study (or studies) of the curriculum and their volume (ECTS)</b>                                    | Assistant Pharmacist 180 ECTS                          |
| <b>Minor field (or fields) of study and other possible specializations in the curriculum and their volume (ECTS)</b> | The curriculum has no minor fields and specializations |
| <b>Forms of study</b>  | Daytime learning                                       |
| <b>Nominal length of studies</b>   | 3 years  |
| <b>Volume of the curriculum in European credit point system (ECTS)</b>   | 180  |
| <b>Volume of compulsory subjects (ECTS)</b>  | 170  |
| <b>Volume of elective subjects (ECTS)</b>  | 6  |

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| <b>Volume of optional subjects (ECTS)</b>   | 4   |
| <b>Study language</b>   | Estonian  |
| <b>Other languages needed for achieving the learning outcomes</b>   | English   |
| <b>Admission requirements</b>   | Certificate of the secondary or vocational secondary education or equivalent qualification. |
| <b>Aim of the curriculum</b><br>The aim of the Curriculum is to train specialists with professional higher education – assistant pharmacists who are familiar with medicines and the preparation of medicines and other medicinal and health products and whose knowledge and skills allow them to work in pharmacies, wholesale pharmaceutical companies and other companies involved in the handling of drugs, medical products and health care products. |   |

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| <b>Learning outcomes of the curriculum</b><br>Upon completion of the curriculum of Assistant Pharmacist the student: <ol style="list-style-type: none"> <li>1. Knows medicines, their composition and technologies of extemporaneous manufacturing, is capable of sensory evaluation of the quality of medicines as well as evaluation thereof by routine physical and chemical methods.</li> <li>2. Is able to explain to the client the effects and side effects as well as the adverse reactions of medicines and herbs and their use for the treatment and prevention of diseases.</li> <li>3. Is competent when dealing with the ordering, receiving, preparation and dispensing of drugs in the pharmacy, is familiar with pharmaceutical legislation.</li> <li>4. Is cognizant with the main professional problems concerning the work of a pharmacist and can make suggestions to solve them.</li> <li>5. Is able to use in their professional work, within their competence, the expertise of other specialities and, where appropriate, consults with representatives of other fields.</li> <li>6. Is capable of explaining orally and in writing specialty related problems in Estonian and in English using professional information technology tools and communication methods.</li> <li>7. Values cultural differences, is tolerant and respects the differences of people, their work is guided by the principles of professional ethics.</li> <li>8. Is able to competently use professional sources of information and support materials to solve problems arising in the work, understands the need for lifelong learning and keeps abreast of professional developments.</li> <li>9. Possesses basics skills of management, entrepreneurship and teamwork necessary for working as an assistant pharmacist.</li> </ol> |
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| <b>Conditions of fulfilling the curriculum</b><br>Curriculum contains:<br>9 modules (180 ECTS) |         |
| Chemistry  | 25 ECTS |
| Herbal Treatment   | 15 ECTS |
| Effect of Medicines on Human Body  | 25 ECTS |
| Preparation and Dispensing of Medicines  | 55 ECTS |
| Professional Development   | 10 ECTS |
| Research and Development Methodology   | 15 ECTS |

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| Basics of Health Care                         | 20 ECTS   |
| Graduation Thesis/Final Exam                  | 5 ECTS  |
| Elective and Optional Subjects                | 10 ECTS   |
| Including                                     |   |
| Volume of Practical Training                  | 37 ECTS   |
| Volume of Graduation Thesis/Final Exam        | 5 ECTS  |
| Volume of Elective Subjects                   | 6 ECTS  |
| Volume of Optional Subjects                   | 4 ECTS  |
| <b>Options for passing the curriculum</b>     | The curriculum includes elective subjects in the capacity of 6 ECTS, which support the achievement of curriculum aims and optional subjects in the capacity of 4 ECTS, which create opportunities for realization of the student's individual needs and intellectual interests in the area of the studies. On the third year, upon completion of the pharmacy curriculum, the student can choose between the graduation thesis and the final examination. |
| <b>Graduation requirements</b>                | Completing the curriculum in full and receiving a positive grade in defending the graduation thesis or a positive grade for the final examination.  |
| <b>Type of diploma issued upon graduation</b> | <i>Rakendus kõrghariduse diplom</i><br>Diploma of Professional Higher Education   |
| <b>Documents issued upon graduation</b>       | Diploma of Professional Higher Education with academic transcript and Diploma Supplement in English.  |
| <b>Possibilities for continuing studies</b>   | Master`s studies  |
| <b>Access to labour market</b>                | Has acquired the learning outcomes for working as an assistant pharmacist.  |

## **LETTER OF EXPLANATION FOR THE CURRICULUM OF ASSISTANT PHARMACIST**

Since the academic year 2016/2017 the following changes have been introduced to the Curriculum of Assistant Pharmacist:

1. The modules Basics of Health Care (5 ECTS) and Human Studies have been merged into a new module Basics of Health Care (20 ECTS). Subjects Motivating Interviewing (1 ECTS) and Measuring and Interpreting of Vital Signs (2 ECTS) have been added to the module Basics of Health Care and the volume of Anatomy and Physiology has been increased from 3 ECTS to 6 ECTS. The subject Anatomy and Physiology has been divided into two separate subjects: Anatomy (3 ECTS) and Physiology (3 ECTS). The module consists of the following subjects: Anatomy (3 ECTS), Physiology (3 ECTS), Pathology (2 ECTS), Basics of Organism Functions (4 ECTS), Life and Work Environment (3 ECTS), Pharmaceutical Care (2 ECTS), Motivating Interviewing (1 ECTS) and Measuring and Interpreting Vital Signs (2 ECTS).
2. In the module Effect of Medicines on Human Body the distribution of credit points between the subjects has been adjusted.
3. Subject Pharmacology has been divided into two separate subjects: Pharmacology I (4 ECTS) and Pharmacology II (6 ECTS).
4. The volume of the module Professional Development has been changed from 15 ECTS to 10 ECTS and the content modernized. The subjects of the module are now: Latin (2 ECTS), Organizational Behaviour (4 ECTS) and Councelling at the Pharmacy I (4 ECTS).
5. In the module Preparation and Dispensing of Medicines (55 ECTS) the subject volumes have been adjusted.
6. The subject Hospital Pharmacy has been added to the module of elective subjects, all the volumes of the subjects in this module are changed into 3 ECTS to improve the students possibilities of choosing different subjects.
7. The wording of the aims and learning outcomes of the modules and subjects has been adjusted.

In the Curriculum of Assistant Pharmacist, the name of the curriculum, conditions of commencement of the studies, the nominal duration and volume of the studies, study language, specialization possibilities and the curriculum classification have not been changed.

## **THE EXPECTED FIELD OF ACTIVITY OF THE GRADUATES**

According to the orientation of the curriculum, the preparation of assistant pharmacists is oriented primarily to pharmacy work. The specialized knowledge and skills acquired with the completion of the curriculum enable assistant pharmacists to work in wholesale companies and manufacturing companies dealing with drugs, in pharmacy-related educational and research institutions, laboratories dealing with pharmaceutical analysis and in other application areas of pharmacy. In terms of their educational preparation, in the labour market assistant pharmacists are also competitive in the adjacent areas of pharmacy.

In professional activities, accuracy, correctness, commitment to his/her profession, adherence to the principles of professional ethics, stress tolerance, ability of judgment, responsibility and good communication skills are expected from an assistant pharmacist.

The studies can be resumed in the Master level curricula.

## **BASES OF THE CURRICULUM AND ORGANIZATION OF PRACTICAL TRAINING**

Curriculum is based on the following legal acts and basic reference documents of the field:

- Republic of Estonia Education Act (30.03.1992);
- Higher Education Institutions Act (16.07.1998);
- Universities Act (18.02.1995);
- Standard of Higher Education, Government of the Republic Regulation (No 178 of 18.12.2008);
- Assistant Pharmacist III, IV, V Professional Standard (04.12.2008);
- Medicines Act (16.12.2004);
- Universities Act, the Private Schools Act and Institutions of Professional Higher Education Act and the Related Legislation Amendment Act (19.06.2008);
- Statute of Tallinn Health Care College (29.01.2009);
- The Statute of the Outcome Based Curriculum of the Tallinn Health Care College (19.04.2011).

The current Curriculum of Assistant Pharmacist was created in 1998; since then it has been upgraded in 2002 and 2003. The curriculum was approved on 5 September 2002, with the Decree of the Minister of Education No 975. The capacity of the studies determined in the curriculum is calculated in the credit points of the European credit point system (ECTS). One credit point corresponds to 26 hours of work that a student has spent learning. The capacity of the academic year is 60 credits or 1560 hours of studies conducted in one form or another. The studies are divided into contact studies (lectures, seminars, practical studies in the training environment), independent learning and practical training in the work environment. The volume of contact learning (including e-learning) in the curriculum is 1,715 h, the volume of independent work at least 1,717 h. (out of which, the Final Examination/Graduation Thesis is 130 h), the practical training in the work environment (pharmacy practical training) is 962 h and correspondingly 37 ECTS.

Main learning methods used in learning process are: lecture, seminar, e-learning, panel discussion, lecture discussion, group work, role play, problem solving and solving of practical challenges of the situation. When choosing the subjects of the Curriculum of Assistant Pharmacist, the specific nature

and needs of the profession are kept in mind. In order to integrate subjects with one another and to better achieve the objectives and outcomes of the curriculum, the subjects have been divided into 9 modules.

Modules are not limited to one academic year, but are in parts conducted throughout the entire learning cycle. Beside the professional theoretical education, practical training in the work environment has an important place in the Curriculum of Assistant Pharmacist, which is organized as Pharmacy Practical Training (37 ECTS) in full accordance with the main directions of the training.

Practical training is a targeted activity organized to achieve the learning outcomes aimed at applying the knowledge and skills in the work environment under the supervision of a supervisor. Practical training is arranged according to the Rules of Study Organization approved by the Council of the College which is available on the website of the College. If necessary, students can undergo the practical training on the basis of an individual schedule. To perform practical training, students can choose the practical training institutions according to the list approved by the Chair, which is updated every academic year. In the Curriculum of Assistant Pharmacist, the practical training institutions are general pharmacies and hospital pharmacies, where students acquire the learning outcomes of dispensing drugs. The learning outcomes of dispensing drugs are acquired by the student in the pharmacy, where manufacturing of medicinal products on the basis of a prescription takes place on a daily basis. Practical training is supervised by specialty lecturers of the College, and in the practical training institutions by practicing professionals with higher education who have also completed the training of mentors. As a result of the cooperation of students, lecturers and mentors, the students' learning opportunities in the practical training are regulated and the assessment and feedback processes are supported by method of individual and group supervision. At the end of the practical training, the lecturers analyse the organization of the practical training, coping of the students and their learning opportunities in the work environment. The summaries of the practical training process are analysed and proposals are made for planning the next academic year. The research goals of the studies are realized through course papers and graduation theses. For ensuring the efficiency of independent learning, the form of independent tasks is realized. Their solution is taken into account in shaping the final grade of the subject and/or it is important to pass the examination. The organization of the learning process is provided by the Rules of Organization of Studies of Tallinn Health Care College. The division of contact learning is determined by the timetable. The timetable governs the students' load of contact learning across study weeks and the academic year according to the curriculum. Determination of the volume and time division of the studies in the curriculum and taking into consideration thereof in the study process, ensures the maximum rationality, efficiency and student centredness of the training of assistant pharmacists. Further development of the process is ensured by the introduction and consistent implementation of modern teaching and learning methods.

## **REQUIREMENTS SET FOR THE CURRICULUM QUALITY**

The Curriculum of Assistant Pharmacist is in accordance with the action lines of Tallinn Health Care College.

The objectives and outcomes of the curriculum meet the general requirements for professional higher education and the requirements necessary to ensure the professional activities of an assistant pharmacist (Professional Standard of Assistant Pharmacist). The development and the content of the curriculum is guided by the council of the curriculum, which includes representatives of the pharmacy lecturers, assistant pharmacy students, alumni, employers' representatives and external experts. The Council of the Curriculum will monitor and analyse the modern development trends in the field of pharmacy and where appropriate, makes proposals to the Chair to supplement and

change the curriculum and develop learning environment. Conducting studies upon completion of the curriculum is fully covered with teaching staff with higher education. The required quality of teaching and the professional competency of the graduates are ensured by:

- curriculum design and compliance with professional standards;
- continuous development of the content of the curriculum in line with the changes in the nature of drug handling and pharmacy work;
- improving the teaching methods in accordance with the emergence of new opportunities for the use of information technology;
- raising the professional and teaching competence of the lecturers by carrying out various refresher courses, going on paid traineeships, professional development and working as an exchange lecturer;
- all-round development and enhancing of the cooperation between teachers and students;
- systematic collection and analysis of feedback from students, graduates and employers;
- ensuring the internationalization of the curriculum through academic and student mobility and university cooperation.

The development trends and the further development strategy of the Curriculum of Assistant Pharmacist are related to the factors that directly or indirectly affect pharmacy as a profession and a specific health care area. The most important of these factors are:

- changes in the orientations of the profession of assistant pharmacist due to the developments in the general nature of the drug trade;
- changes in the Professional Standard of Assistant Pharmacist;
- changes in the legislation of the health care system;
- changes in the legislation of educational system;
- health care reforms;
- technological changes in health care;
- demographic changes in society.

Financial resources to ensure the functioning of the curriculum are provided from the College's budget.

## MODULES AND SUBJECTS OF THE CURRICULUM, AIMS AND LEARNING OUTCOMES

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| <b>Module title:</b><br>Chemistry   |   | <b>Volume:</b> 25 ECTS<br><b>Code:</b> 1KE16 |
| <b>Aim</b>  | To provide students with necessary knowledge in the field of chemistry needed for professional activities, give overview of chemical processes in the human organism and their connections to general functions of the organism; to explain connections between the chemical structure of medicinal substances and their pharmacological effect.  |  |
| <b>Learning outcomes</b>  | Upon completion of the module, the student:<br><ol style="list-style-type: none"> <li>1. Knows the basic concepts of inorganic, organic, analytical and pharmaceutical chemistry and biochemistry.</li> <li>2. Possesses a basic knowledge of the chemical structure of the substances.</li> <li>3. Knows the main classes of inorganic and organic compounds, the reactions belonging to them related to these compounds, the relationship between the compounds, the role of the compounds in the body and their uses in medicine.</li> <li>4. Knows and is able to use the main methods of analyses used in analytical and pharmaceutical chemistry.</li> <li>5. Can explain the chemical structure of basic drug groups, their chemical and physical properties, principles of pharmaceutical analysis and the most important requirements for purity and storage of medicinal substances.</li> </ol> |  |
| <b>Evaluation of module:</b> subject-based method   |   |  |
| <b>Subjects:</b><br>Inorganic Chemistry 4 ECTS<br>Organic Chemistry 5 ECTS<br>Analytical Chemistry 6 ECTS<br>Biochemistry 3 ECTS<br>Pharmaceutical Chemistry 7 ECTS |   |  |
| <b>Code</b>   | <b>Subject title</b>  | <b>Volume</b>                                |
| 1KE16/AOK   | Inorganic Chemistry   | 4 ECTS                                       |
| <b>Aim</b>  | To provide students with basic knowledge on the structure of inorganic compounds, their physical and chemical properties and their interconnectedness.  |  |
| <b>Learning outcome</b>   | Upon completion of the subject, the student:<br><ol style="list-style-type: none"> <li>1. Knows the basic concepts of inorganic chemistry.</li> <li>2. Knows the substance classes.</li> <li>3. Has basic knowledge of redox processes.</li> <li>4. Is able to explain the nature of the process of hydrolysis.</li> <li>5. Has basic knowledge of the most important compounds of metals and non-metals.</li> </ol>  |  |
| <b>Code</b>   | <b>Subject title</b>  | <b>Volume</b>                                |

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| 1KE16/OK                 | Organic Chemistry  | 5 ECTS        |
| <b>Aim</b>               | To provide students with basic knowledge on the structure of organic compounds, their physical and chemical properties and interconnectedness.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the basic concepts of organic chemistry.<br>2. Is able to characterize the most important organic compounds (hydrocarbons, oxygen, and nitrogen-containing compounds, aromatic compounds, heterocyclic compounds) and their use in medicine.<br>3. Knows the principles of synthesis of organic compounds.<br>4. Is able to explain the properties of chemical compounds and inter-relationships between compounds.                                       |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1KE16/AK                 | Analytical Chemistry   | 6 ECTS        |
| <b>Aim</b>               | To provide students with practical skills for analysis of various compounds, including medicine.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the basic concepts of analytical chemistry.<br>2. Knows the methods used in analytical chemistry.<br>3. Is able to determine a variety of compounds.<br>4. Knows and is able to use the key methods of volume analysis.<br>5. Is able to explain the effect of cations and anions on the human body and their use in medicine in the composition of drugs.  |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1KE16/BK                 | Biochemistry   | 3 ECTS        |
| <b>Aim</b>               | To provide basic knowledge on the bio-molecules of the body and their functions in the metabolism of the organism.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Has knowledge of basic concepts of biochemistry.<br>2. Is able to explain the relationship between the structure and the properties of the substance.<br>3. Understands the relationships between the micro-structure and macro-structure and the biochemical nature of the processes taking place in the body's cells and organs.<br>4. Has knowledge of the body as a whole, its individual parts and the relationship and the cooperation between the parts. |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1KE16/FK                 | Pharmaceutical Chemistry   | 7 ECTS        |
| <b>To</b>                | To provide basic knowledge on the chemical structure of main medicinal substances, their physical and chemical properties and pharmaceutical analysis.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the main principles of pharmaceutical chemistry;  |               |

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|  | <ol style="list-style-type: none"><li>2. Is able to explain the main structure of medicinal groups and the chemical structure and properties of the medicinal substances belonging to these groups;</li><li>3. Is familiar with the principles of identification of medicinal substances and the principles of quantitative determination;</li><li>4. Knows the requirements to the purity of medicinal substances;</li><li>5. Knows the storage requirements of the medicinal substances.</li></ol> |
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| <b>Module title:</b><br>Herbal Treatment  |  | <b>Volume:</b> 15 ECTS<br><b>Code:</b> 1TR16 |
| <b>Aim</b>  | To provide students knowledge on the basics of herbal treatment necessary for practical pharmacy work and of the possibilities to use medicinal herbs and the preparations thereof to strengthen the body, for the treatment and prevention of diseases.   |  |
| <b>Learning outcomes</b>  | Upon completion of the module, the student: <ol style="list-style-type: none"> <li>1. Is able to explain the anatomical and morphological structure and the most important physiological functions of plants.</li> <li>2. Is familiar with plant systematics and knows the most important plants in the main plant groups.</li> <li>3. Knows medicinal plants, the drugs derived thereof and their active substances.</li> <li>4. Knows the principles of modern phytotherapy.</li> <li>5. Knows the use of medicinal plants and herbal remedies for the treatment of diseases.</li> <li>6. Is familiar with the nomenclature of natural preparations affecting the body functions and is able to make recommendations for their use.</li> </ol> |  |
| <b>Module evaluation:</b> subject-based method  |  |  |
| <b>Subjects:</b><br>Botany 4 ECTS<br>Pharmacognosy 5 ECTS<br>Phytotherapy 4 ECTS<br>Natural products 2 ECTS |  |  |
| <b>Code</b>   | <b>Subject title</b>   | <b>Volume</b>                                |
| 1TR16/BOT   | Botany   | 4 ECTS                                       |
| <b>Aim</b>  | To provide students with the basic knowledge on the structure of plants and their functions in order to pass specialty subjects related to medicinal plants (pharmacognosy, phytotherapy) and to understand the importance of plants in nature and human life.   |  |
| <b>Learning outcomes</b>  | Upon completion of the subject, the student: <ol style="list-style-type: none"> <li>1. Is familiar with the structure of plant cells, plant tissues and plant organs and of their functions in plants.</li> <li>2. Is able to explain the specific nature of plant reproduction and their life cycle.</li> <li>3. Has knowledge on the principles of plant classification.</li> <li>4. Knows the richest in the species plant families and the most important plant species, cultivated plants and medicinal plants belonging to them.</li> <li>5. Is familiar with the most important physiological processes in plants (photosynthesis, transpiration, mineral nutrition).</li> </ol>  |  |
| <b>Code</b>   | <b>Subject title</b>   | <b>Volume</b>                                |
| 1TR16/FGN   | Pharmacognosy  | 5 ECTS                                       |

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| <b>Aim</b>               | To provide students with basic knowledge on medicines, herbal drugs, medicinal plants, their main active substances and the biosynthesis of active substances.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the medicinal plants and the drugs derived thereof.<br>2. Knows the most important groups of active substances in medicinal plants, the chemical structure and biosynthesis mechanisms of these substances.<br>3. Is familiar with the substances on which the therapeutic effect of the most important medicinal plants and herbal drugs depends on.<br>4. Knows the principles of collection, drying and storage of medicinal plants.                                     |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1TR16/FUT                | Phytotherapy   | 4 ECTS        |
| <b>Aim</b>               | To provide students with knowledge on the basics of herbal treatment and of the usage of plants for treatment of the disorders and pathological abnormalities occurring in the human organism.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Is familiar with the principles and methods of the therapeutic use of plants.<br>2. Knows the most important herbal medicinal substances and their pharmacological effects.<br>3. Knows the most important medicinal plants and their use in the treatment of specific diseases.  |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1TR16/LT                 | Natural Products   | 2 ECTS        |
| <b>Aim</b>               | To provide expertise on the plant and animal products belonging to food supplements and external natural products and of their use.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows and is able to recommend products manufactured of natural ingredients and medicinal plants.<br>2. Knows the more common co-effects and side effects of the preparations manufactured from natural substances and medicinal plants.<br>3. Is able to assess the conformity of product package labeling.<br>4. Is able to use competent professional literature and information from the Internet environment for evaluation of the advertising claims presented in the media |               |

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| <b>Module title:</b><br>Effect of Medicines on Human Body   |   | <b>Volume:</b> 25 ECTS<br><b>Code:</b> 1RTO16 |
| <b>Aim</b>  | To provide the student with basic knowledge about the effect and the mechanisms of the action of medicines in the human body, their use for the treatment and prophylaxis of diseases, of drug interaction, as well as of the possible toxic effect of drugs and other potent substances on the performance of the organism.  |   |
| <b>Learning outcomes</b>  | Upon completion of the module, the student:<br>1. Knows the drug groups affecting the various organs and their active substances.<br>2. Is familiar with mechanisms of action of different therapeutic classes and the pharmacokinetics and -dynamics of their effect.<br>3. Knows the effect-modifying factors of drugs.<br>4. Knows the interactions of therapeutic agents.<br>5. Is familiar with modern pharmaceutical drugs and their use in the treatment of diseases.<br>6. Knows toxins and their effects on the body.<br>7. Knows the drugs used for treatment of pets and farm animals.   |   |
| <b>Module evaluation:</b> subject-based method  |   |   |
| <b>Subjects:</b><br>Pharmacology I 4 ECTS<br>Pharmacology II 6 ECTS<br>Pharmacotherapy I 3 ECTS<br>Pharmacotherapy II 5 ECTS<br>Veterinary Pharmacy 2 ECTS<br>Biopharmacy 3 ECTS<br>Toxicology 2 ECTS |   |   |
| <b>Code</b>   | <b>Subject title</b>  | <b>Volume</b>                                 |
| 1RTO16/FL-1   | Pharmacology I  | 4 ECTS  |
| <b>Aim</b>  | To obtain knowledge on pharmacokinetics, connections between nervous system and the effect of medicinal substances, action mechanisms of medicines, side and adverse effects and clinical usage.  |   |
| <b>Learning outcomes</b>  | Upon completion of the subject, the student:<br>1. Understands the pharmacodynamics and pharmacokinetics of medicines, possesses knowledge of the effect of medicines on the human organism and the factors affecting the effect.<br>2. Knows different forms of medication and the routes of administering medicines, can apply mathematical calculations in administering medicines.<br>3. Understands the nature of nervous system, the activities of its different parts and its connection to the effects of different medicines.<br>4. Knows the action mechanisms of cardiovascular medicines and hormones as well as their usage, side-effects and contraindications. |   |
| <b>Code</b>   | <b>Subject title</b>  | <b>Volume</b>                                 |

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| IRTO16/FL-2              | Pharmacology II  | 6 ECTS        |
| <b>Aim</b>               | To acquire knowledge on the action mechanisms of medicines, their side effects and adverse effects and clinical usage. Passing Pharmacology is a prerequisite to the studies of Pharmacotherapy.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Understands the pharmacodynamics of medicines.<br>2. Has knowledge on the pharmacokinetics, pharmacodynamics, dosage, contraindications and side-effects of NSAIDs, medicines for respiratory and gastrointestinal systems as well as of chemotherapeutics and central nervous system medicines, their dosage, side effects and contraindications.<br>3. Understands the effect and usage of biological medications and is able to use pharmacological information sources, handbooks, and Internet sources.  |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| IRTO16/FT-1              | Pharmacotherapy I  | 3 ECTS        |
| <b>Aim</b>               | To provide students with knowledge on pharmacotherapy: different groups of over-the-counter medicines, their effect on the organism and usage in treating diseases.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Has knowledge on commonly used drug groups, their effects on the body and the factors influencing the effects of the drugs.<br>2. Has knowledge on the indications and contraindications of the main over-the-counter medicinal groups.<br>3. Is able to explain the side effects and interactions of over-the-counter drugs.<br>4. Has general knowledge of the diseases, for the treatment of which over-the-counter medicinal drug groups are used.<br>5. Is able to use the drug information sources: pharmacology reference books, manuals and Internet-based sources. |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| IRTO16/FT-2              | Pharmacotherapy II   | 5 ECTS        |
| <b>Aim</b>               | To provide students knowledge on pharmacotherapy: different groups of prescription medicines, their effect on organism and usage in the treatment of diseases.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the most commonly used drug groups, their effects on the body and the factors influencing the effects of the drugs.<br>2. Knows the indications and contraindications of the main prescription drug groups.<br>3. Is able to explain the side effects and interactions of prescription drugs.<br>4. Possesses general knowledge of the disease, for the treatment of which prescription drug groups are used.<br>5. Is able to use information sources: pharmacology reference books, manuals and Internet-based sources.   |               |

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|                          | 6. Knows the general principles of treatment of acute drug poisoning.  |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RTO16/VF                | Veterinary Pharmacy  | 2 ECTS        |
| <b>Aim</b>               | To provide students with knowledge on the mechanisms of action, side effects and clinical usage of veterinary drugs.   |               |
| <b>Learning outcomes</b> | <p>Upon completion of the subject, the student:</p> <ol style="list-style-type: none"> <li>1. Understands the differences between humans and animals in drug administration and in determination of doses of medication.</li> <li>2. Is able to give adequate advice to animal owners within the competence of pharmacy staff.</li> <li>3. Knows the characteristics of pets and farm animals.</li> <li>4. Is able to distribute prescription medications to animals, and knows the legislation concerning animals.</li> </ol> |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RTO16/BF                | Biopharmacy  | 3 ECTS        |
| <b>Aim</b>               | To provide students with knowledge on the pharmacokinetics and biopharmaceutical meaning of medicines, of the relationship between pharmaceutical technology and pharmacology.   |               |
| <b>Learning outcomes</b> | <p>Upon completion of the subject, the student:</p> <ol style="list-style-type: none"> <li>1. Knows the options and kinetics of research of release of the active substances that form medicines;</li> <li>2. Is able to explain the principles of passive and active transportation in the organism;</li> <li>3. Knows the pharmacokinetics of medicines;</li> <li>4. Knows the physical and chemical properties of medicinal substances and biopharmaceutical significance of different pharmaceutical forms.</li> </ol>     |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RTO16/TO                | Toxicology   | 2 ECTS        |
| <b>Aim</b>               | To give the student an overview of the toxic effects of potent substances, including drugs, of the function on the organism and of the prevention of poisonings and treatment principles. To create appropriate links between everyday life and professional practice.   |               |
| <b>Learning outcomes</b> | <p>Upon completion of the subject, the student:</p> <ol style="list-style-type: none"> <li>1. Has an overview of the effects of most common poisons on the body.</li> <li>2. Knows the basic antidotes and is able to provide first aid in case of poisonings.</li> <li>3. Knows the signs and treatment principles of chronic poisonings.</li> </ol>  |               |

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| <b>Module title:</b><br>Preparation and Dispensing of Medicines  |  | <b>Volume:</b> 55 ECTS<br><b>Code:</b> 1RVV16 |
| <b>Aim</b>   | To provide students with specific professional expertise in pharmacy drugs, practical pharmacy work and the organization of the field of pharmacy in Estonia. To provide skills to prepare prescription drugs, process prescriptions and obtain interpersonal skills for serving the customers of the pharmacy.  |   |
| <b>Learning outcomes</b>   | Upon completion of the module, the student: <ol style="list-style-type: none"> <li>1. Knows the drug manufacturing technologies and is able to prepare on the basis of prescription's magistral formulae, taking into account the physicochemical properties of the active substances.</li> <li>2. Has an overview of the drugs, other medical use goods and health products sold in Estonian pharmacies.</li> <li>3. Is familiar with the active substances of pharmaceutical drugs.</li> <li>4. Knows the nomenclature of the drugs containing the main active substances and is able to comparatively evaluate pharmaceutical preparations provided by different manufacturers.</li> <li>5. Is familiar with the work organization of the pharmacy, the legislation concerning the work organization of the pharmacy and the drug- handling system in Estonia.</li> </ol> |   |
| <b>Module evaluation:</b> subject-based method   |  |   |
| <b>Subjects:</b><br>Pharmaceutical Technology I 4 ECTS<br>Pharmaceutical Technology II 4 ECTS<br>Pharmacy Internship I 12 ECTS<br>Pharmacy Internship II 25 ECTS<br>Pharmaceutical Product Intelligence I 2 ECTS<br>Pharmaceutical Product Intelligence II 3 ECTS<br>Pharmaceutical Management I 3 ECTS<br>Pharmaceutical Management II 2 ECTS |  |   |
| <b>Code</b>  | <b>Subject title</b>   | <b>Volume</b>                                 |
| 1RVV16/FTH-1   | Pharmaceutical Technology I  | 4 ECTS  |
| <b>Aim</b>   | To provide knowledge on drug manufacturing technologies and the expertise of manufacturing magistral formulae taking into account the physicochemical properties of the therapeutic agents.  |   |
| <b>Learning outcomes</b>   | Upon completion of the subject, the student: <ol style="list-style-type: none"> <li>1. Is able to use the devices of weight and measure economics.</li> <li>2. Is able to prepare powders, herbal teas, solutions, mixtures, infusions, jams, suspensions, and emulsions in a technologically correct way knowing the physicochemical properties of therapeutic agents.</li> <li>3. Is familiar with sanitary requirements.</li> <li>4. Is able to correctly formulate and store manufactured drugs for dispensing.</li> </ol>   |   |
| <b>Code</b>  | <b>Subject title</b>   | <b>Volume</b>                                 |

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| 1RVV16/FTH-2             | Pharmaceutical Technology II   | 4 ECTS        |
| <b>Aim</b>               | To provide students with knowledge on drug manufacturing technologies and the expertise of manufacturing magistral formulae taking into account the physicochemical properties of the therapeutic agents and the requirements of aseptics and antiseptics.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Is able to use the devices of weight and measure economics.<br>2. Knows the physical, mechanical and chemical sterilization processes used for sterilization.<br>3. Is able to prepare ointments, suppositories and injections drugs technologically correctly knowing the physiochemical properties of therapeutic agents.<br>4. Is familiar with asepsis and antiseptics, and is able to comply with the sanitary requirements.<br>5. Is able to correctly formalize the storage of manufactured drugs for dispensing.  |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RVV16/P-1               | Pharmacy Internship I  | 12 ECTS       |
| <b>Aim</b>               | To reinforce the knowledge acquired in theoretical and practical studies.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the technologies of manufacturing powders, herbal teas, solutions, mixtures, macerates, jams, suspensions, and emulsions and is able to, on the basis of prescriptions, prepare magistral formulae.<br>2. Has an overview of the over-the-counter drugs, other goods of medical use and health products sold in Estonian pharmacies.<br>3. Knows the nomenclature of over-the-counter medicines containing the main active substances and is able to comparatively evaluate pharmaceutical preparations provided by different manufacturers.<br>4. Is familiar with the work organization of the pharmacy and the drug-handling system.<br>5. Is able to describe in a seminar the work process and the final result regarding the technological, organizational and supervision related components, and is able to provide evaluation. |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RVV16/P-2               | Pharmacy Internship II   | 25 ECTS       |
| <b>Aim</b>               | To reinforce the knowledge acquired during theoretical and practical studies.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the technologies of manufacturing powders, medicinal teas, liquid medicines, ointments, suppositories and injection drugs and is able to, on the basis of prescriptions, prepare magistral formulae.<br>2. Has an overview of the over-the-counter and prescription drugs, other medical use goods and health products sold in Estonian pharmacies.   |               |

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|                          | <ol style="list-style-type: none"> <li>3. Knows the nomenclature of over-the-counter and prescription drugs containing the main active substances and is able to comparatively evaluate pharmaceutical preparations provided by different manufacturers.</li> <li>4. Is familiar with the work organization of the pharmacy and with the system of medicine handling.</li> <li>5. Analyses in a seminar, the work process and the final result regarding the technological, organizational and supervision related components, and is able to provide evaluation.</li> </ol> |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RVV16/FKT-1             | Pharmaceutical Product Intelligence I  | 2 ECTS        |
| <b>Aim</b>               | To provide knowledge on different over-the-counter medicines and skills to compare and and recommend them.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student: <ol style="list-style-type: none"> <li>1. Knows the groups of over-the-counter drugs and health products.</li> <li>2. Can recommend pharmacy products based on customer needs.</li> <li>3. Is able to check basic health indicators, analyse them and give further advice in their areas of expertise.</li> </ol>   |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RVV16/FKT-2             | Pharmaceutical Product Intelligence II   | 3 ECTS        |
| <b>Aim</b>               | To provide knowledge on different prescription medicines and skills to compare and recommend them.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student: <ol style="list-style-type: none"> <li>1. Knows the prescription drug classifications.</li> <li>2. Is familiar with the active substances and the respective preparations within the groups.</li> <li>3. Is able to on the basis of active substance-based prescription compare and recommend medication according to the customer's needs.</li> <li>4. Is able to read and process digital and paper prescriptions.</li> </ol>   |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1RVV16/FKR-1             | Pharmaceutical Management I  | 3 ECTS        |
| <b>Aim</b>               | To provide knowledge on the work management of a pharmacy and of current legislation.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student: <ol style="list-style-type: none"> <li>1. Has an overview of the history of pharmacies.</li> <li>2. Knows the conditions of pharmacy service and pharmacy work management by different agencies.</li> <li>3. Is familiar with the legislation concerning the pharmacy organization.</li> <li>4. Is able to use information materials in counselling clients as well as health care workers.</li> </ol>  |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |

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| 1RVV16/FKR-2             | Pharmaceutical Management II   | 2 ECTS |
| <b>Aim</b>               | To provide students with knowledge on pharmacy work organization, current legislation and Good Pharmacy Practice.  |        |
| <b>Learning outcomes</b> | <p>Upon completion of the subject, the student:</p> <ol style="list-style-type: none"> <li>1. Has an overview of Good Pharmacy Practice.</li> <li>2. Knows the requirements for prescribing medicines and requirements for dispensing medicines from the pharmacy.</li> <li>3. Knows the conditions set for providing pharmacy service and the work management of a pharmacy in different agencies.</li> <li>4. Has an overview of different pharmacy-related organizations.</li> <li>5. Is able to use necessary information materials to counsel patients as well as health care workers.</li> </ol> |        |

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| <b>Module title:</b><br>Professional Development   |   | <b>Volume:</b> 10 ECTS<br><b>Code:</b> 1PA16 |
| <b>Aim</b>   | To provide students with necessary knowledge and skills to ensure learning-related professional development and lifelong learning.  |  |
| <b>Learning outcomes</b>   | Upon completion of the module, the student: <ol style="list-style-type: none"> <li>1. Knows the specialty terminology in Latin, abbreviations and expressions used on prescriptions;</li> <li>2. Knows the main principles and theories of organizational behaviour;</li> <li>3. Is able to use different techniques used in customer service;</li> <li>4. Is able to apply teamwork skills;</li> <li>5. Knows the differences between cultures;</li> <li>6. Knows the psychological characteristics of a person's lifecycle.</li> </ol>  |  |
| <b>Module evaluation:</b> subject-based method   |   |  |
| <b>Subjects:</b><br>Latin 2 ECTS<br>Organizational behavior 4 ECTS<br>Counselling in the Pharmacy I 4 ECTS |   |  |
| <b>Code</b>  | <b>Subject title</b>  | <b>Volume</b>                                |
| 1PA16/LK   | Latin   | 2 ECTS                                       |
| <b>Aim</b>   | To acquire Latin skills needed for the profession of assistant pharmacist.  |  |
| <b>Learning outcomes</b>   | Upon completion of the subject, the student: <ol style="list-style-type: none"> <li>1. Is able to correctly use specialty terminology, including expressions and abbreviations used in prescriptions.</li> <li>2. Knows how to form necessary expressions and how to correctly use them.</li> <li>3. Values eruditeness, correct specialty language and its proper usage.</li> </ol>  |  |
| <b>Code</b>  | <b>Subject title</b>  | <b>Volume</b>                                |
| 1PA16/OK   | Organizational behavior   | 4 ECTS                                       |
| <b>Aim</b>   | To provide students with main basic knowledge and skills for lifelong professional development. To provide students with an overview of conceptual thinking, management as a process by valuing every single member of the staff.   |  |
| <b>Learning outcomes</b>   | Upon completion of the subject, the student: <ol style="list-style-type: none"> <li>1. Has an overview of the functioning of Tallinn Health Care College and its curricula;</li> <li>2. Is familiar with the Estonian and international higher education system;</li> <li>3. Has knowledge on the main principles of developmental psychology and its main approaches.</li> <li>4. Knows the psychological characteristics of a person's lifecycle;</li> <li>5. Knows the specifics of management and main trends in management;</li> <li>6. Knows the basics of teamwork and coping with different changes.</li> </ol> |  |
| <b>Code</b>  | <b>Subject title</b>  | <b>Volume</b>                                |

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| 1PA16/NA-1               | Counselling in the Pharmacy I  | 4 ECTS |
| <b>Aim</b>               | To improve the students knowledge on medicinal counselling and provide additional skills to successfully pass the pharmacy practical training. To direct students into understanding and use in practice the techniques of professional customer service.  |        |
| <b>Learning outcomes</b> | <p>Upon completion of the subject, the student:</p> <ol style="list-style-type: none"> <li>1. Is able to collect information by carefully listening the customer during the medicinal counselling;</li> <li>2. Is able to effectively counsel and empower the customer;</li> <li>3. Uses scientific sources and knows where to find them.</li> </ol> |        |

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| <b>Module title:</b><br>Research and Development Methodology  |  | <b>Volume:</b> 15 ECTS<br><b>Code:</b> 1UAM16 |
| <b>Aim</b>  | To introduce the students the principles of evidence-based research and to teach them to use a variety of evidence-based information sources, to prepare a proper herbarium and graduation thesis and a course paper.  |   |
| <b>Learning outcomes</b>  | Upon completion of the module, the student:<br>1. Is able to use professional evidence-based sources for writing a course paper.<br>2. Is able to use Estonian and/or English language for writing development and research papers.<br>3. Is able to prepare a herbaarium.<br>4. Is familiar with different research methods and is able to use them in carrying out applied research.<br>5. Values ethics and is ready to apply the knowledge gained in professional work.<br>6. Has practical skills in information searching and processing (word processing, spreadsheet, presentation, computer-graphics, and file operations). |   |
| <b>Evaluation of module:</b> subject-based method   |  |   |
| <b>Subjects:</b><br>Language learning 6 ECTS<br>Basic of research 4 ECTS<br>Herbarium 2 ECTS<br>Course paper 3 ECTS |  |   |
| <b>Code</b>   | <b>Subject title</b>   | <b>Volume</b>                                 |
| 1UAM16/KO   | Language Learning  | 6 ECTS  |
| <b>Aim</b>  | To develop knowledge on the correct use of the Estonian language in speaking and in writing student research papers; to teach professional terminology in English for reading literature and for information retrieval, for preparation of reports and oral presentation thereof; to provide knowledge of the Russian language for communication with customers.   |   |
| <b>Learning outcomes</b>  | Upon completion of the subject, the student:<br>1. Values the Estonian language, the importance of words in the communication process and the correct use of language.<br>2. Knows the requirements set for scientific language and is able to use them.<br>3. Knows English language professional terminology.<br>4. Is able to translate the English language professional literature.<br>5. Is able to communicate in English and in Russian.   |   |
| <b>Code</b>   | <b>Subject title</b>   | <b>Volume</b>                                 |
| 1UAM16/TA   | Basic of Research  | 4 ECTS  |
| <b>Aim</b>  | Using evidence-based principles of research to identify different sources of information (including subject-specific databases), to plan and carry out   |   |

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|                          | applied scientific research and development work and to appreciate the ethical issues of research.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Is able to use professional evidence-based sources.<br>2. Is familiar with different research methods and is able to use them in carrying out applied research.<br>3. Values ethics and is ready to apply the knowledge gained in professional work.<br>4. Has practical skill in information searching and processing (word processing, spreadsheet, presentation, computer-graphics and file operations).   |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| IUAM16/HE                | Herbarium  | 2 ECTS        |
| <b>Aim</b>               | To provide the skills for identification of naturally occurring plant species using plant identification key books and for preparation of herbarised plant collections.  |               |
| <b>Learning outcomes</b> | On the basis of the knowledge and experience acquired upon preparation of the herbarium the student:<br>1. Is able to use plant identification key books for identification of unknown plants.<br>2. Knows how to collect from nature, preserve and store the plant specimens necessary for examination.<br>3. Is able to properly herbarise and document the plant specimens collected for preparation or enhancement of botanical collections.   |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| IUAM16/KT                | Course Paper   | 3 ECTS        |
| <b>Aim</b>               | To provide skills for application of professional knowledge on independent study and critical examination of a specific practical problem or a situation occurring in practice.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Will be able to independently see their own specialty challenges for the solution of which research needs to be performed.<br>2. Will be able to work independently through the scientific literature related to the research problem.<br>3. Will be able to find the statistical data related to the research problem from the data bases or be able to use the laboratory methods necessary for experimental research and to analyze them.<br>4. Is able, within the framework of the treated problem, to carry out monitoring, benchmarking, survey studies, laboratory experiments, or perform any other type of specific research work.<br>5. Will be able, on the basis of their results, to see the problems to be resolved in the area under study and to make proposals to solve these problems. |               |

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| <b>Module title:</b><br>Basics of Health Care   |   | <b>Volume:</b> 20 ECTS<br><b>Code:</b> 1TA16 |
| <b>Aims</b>   | To provide basic knowledge on the function of human organism, organ systems and their normal and pathological functioning in order to understand the effect of medicines and aid one's general professional activity. To acquire knowledge on the basics of pharmaceutical care, basics of sustainability of health, developing coping strategies and on prevention of work-related diseases.   |  |
| <b>Learning outcomes</b>  | Upon completion of the module, the student:<br>1. Knows the structure and functioning of human organism, the biological basics of functioning. Is able to measure and interpret primary health care indicators.<br>2. Knows the nature of pathological and genetic processes and their action mechanisms.<br>3. Knows the principles and ways of application of a-and antiseptics.<br>4. Is familiar with the organizational problems accompanying the use of medicines, their manufacturing, inspection and information.<br>5. Is familiar with the main principles of legislation, public health and legislation of work health care as well as the criteria of assessing and improving the health condition of the population. |  |
| <b>Module evaluation:</b> subject-based method  |   |  |
| <b>Subjects:</b><br>Anatomy 3 ECTS<br>Physiology 3 ECTS<br>Pathology 2 ECTS<br>Basics of organism functions 4 ECTS<br>Living and working environment 3 ECTS<br>Pharmaceutical care 2 ECTS<br>Motivational Interviewing 1 ECTS<br>Measuring and Interpreting of Vital Signs of the Body 2 ECTS |   |  |
| <b>Code</b>   | <b>Subject title</b>  | <b>Volume</b>                                |
| 1TA16/AT  | Anatomy   | 3 ECTS                                       |
| <b>Aim</b>  | To provide an overview of the structure of human organism and to create preconditions to learn physiology and pathology.  |  |
| <b>Learning outcomes</b>  | Upon completion of the subject, the student:<br>1. Understands the biological structures in human organism and the functions on the level of cells, tissues and organs;<br>2. Is able to connect the acquired knowledge with other subjects;<br>3. Knows the main latin terminology.  |  |
| <b>Code</b>   | <b>Subject title</b>  | <b>Volume</b>                                |
| 1TA16/FU  | Physiology  | 3 ECTS                                       |
| <b>Aim</b>  | To provide students with knowledge to understand the development of human organism, its structure, functions and mechanism regulating the actions of different organ systems.   |  |

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| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Understands the development of human organism;<br>2. Understands the functioning of human organism;<br>3. Knows the mechanisms regulating the functioning of the human organism;<br>4. Is able to connect the acquired knowledge with other subjects.   |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1TA16/PAT                | Pathology  | 2 ECTS        |
| <b>Aim</b>               | To give students an overview of the general pathoanatomical and pathophysiologic changes in the human body.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the nature of pathology and is able to use the basic concepts of general pathology.<br>2. Knows the alternative changes, in the case of which tissue damage dominates.<br>3. Has an overview of inflammatory processes and immunopathology.<br>4. Is familiar with the compensatory adaptable and regenerative processes, as well as the nature and mechanisms of emergence of tumors.<br>5. Has knowledge of the pathological processes in case of most common internal diseases.  |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1TA16/OEA                | Basics of organism functions   | 4 ECTS        |
| <b>Aim</b>               | To give students a comprehensive natural-scientific picture of the world based on the views of the specialty, in order to understand human vital functions and micro-biological, genetic and variability processes.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Has knowledge of the basic concepts of genetics and microbiology.<br>2. Has basic knowledge of the structure of matter and receives an overview of the nature of heredity and variability, of the most widespread chromosomal and gene diseases and on the possibilities of application of genetics in medicine.<br>3. Has a knowledge of more widespread microorganisms and the diseases caused by them and knows the measures to prevent the transmission of diseases caused by infection.<br>4. Is aware of environmental risks. |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1TA16/KK                 | Living and working environment   | 3 ECTS        |
| <b>Aim</b>               | To provide knowledge for ensuring the durability of health, development of coping ability and prevention of work-related diseases.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the criteria of evaluation and improvement of the state of health of the population.<br>2. Knows the health risks of living and working environment and the principles of their assessment and prevention.<br>3. Knows the options of primary care and first aid techniques.  |               |

| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
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| 1TA16/FH                 | Pharmaceutical care  | 2 ECTS        |
| <b>Aim</b>               | To provide students with intact, scientific world-view arising from the principles of one's profession, in order to understand the vital functions and microbiological, hereditary and variability processes.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Has an overview of the legislative principles.<br>2. Has acquired knowledge of employment legislation and the health related legislation.<br>3. Knows the system of pharmaceutical care and has knowledge of the basics of pharmaceutical marketing.<br>4. Knows the factors that influence the consumption of drugs.<br>5. Has a general idea of the new drug development process. |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1TA16/MI                 | Motivational Interviewing  | 1 ECTS        |
| <b>Aim</b>               | To provide students with knowledge and skills on motivating interviewing, its styles and usage in medicine.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the principles of motivating interviewing, communication styles and skills;<br>2. Is able to use motivating interviewing when consulting clients.   |               |
| <b>Code</b>              | <b>Subject title</b>   | <b>Volume</b> |
| 1TA16/TMT                | Measuring and Interpreting of Vital Signs of the Body  | 2 ECTS        |
| <b>Aim</b>               | To provide knowledge of a pharmacist's role in primary level health care and in measuring the primary health markers theoretically as well as practically in terms of interpreting the results.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Knows the main principles of primary health counselling and patient education.<br>2. Knows and complies with the rules of a- and antiseptics.<br>3. Knows how to measure blood sugar, cholesterol, level of haemoglobin and blood pressure, and document the results.<br>4. Knows how to give primary recommendations in case os results differing from the norm.                   |               |

## GRADUATION THESIS

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| <b>Module title:</b><br>Graduation Thesis/Final Exam |   | <b>Volume:</b> 5 ECTS<br><b>Code:</b> 1LT16 |
| <b>Aim</b>   | To ensure the integration and readiness of professional knowledge and skills.   |   |
| <b>Learning outcomes</b>                             | Upon completion of the module, the student: <ol style="list-style-type: none"><li>1. Will be able to work independently and analyze the scientific literature related to the research problem.</li><li>2. Has acquired the ability to use experimental research and laboratory methods to solve the research problem and, where appropriate, is able to modify them.</li><li>3. Is able, within the framework of the treated problem, to carry out monitoring, benchmarking, survey studies, laboratory experiments, or perform any other type of specific research work.</li><li>4. Will be able, on the basis of their results, to see the problems to be resolved in the area under study and to make proposals to solve these problems.</li><li>5. Is able to write a proper graduation thesis and present the results thereof in the oral defense.</li></ol> |   |

## FINAL EXAM

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| <b>Module title:</b><br>Graduation Thesis/Final Exam |   | <b>Volume:</b> 5 ECTS<br><b>Code:</b> 1LE16 |
| <b>Aim</b>   | To ensure the integration and readiness of professional knowledge and skills for beginning employment.  |   |
| <b>Learning outcomes</b>                             | Upon completion of the module, the student: <ol style="list-style-type: none"><li>1. Knows drugs, their composition and the technology of extemporaneous preparation of drugs.</li><li>2. Knows the effects, co- and side effects of medicines and medicinal plants.</li><li>3. Knows the use of drugs and medicinal plants for disease prevention and treatment.</li><li>4. Knows the methods used in analytical chemistry and is able to determine the various compounds.</li><li>5. Knows pharmacy work and deals in the pharmacy with the receipt, preparation and dispensing of drugs and counseling of customers regarding drugs.</li></ol> |   |

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|---|--|------------------------|
| <b>Module title:</b><br>Elective Subjects and Optional subjects   |  | <b>Volume:</b> 10 ECTS |
| <b>Aim</b>  | Enhancement of specialist knowledge based on the objectives of the curriculum and development of general knowledge by way of subjects freely chosen by the student.  |                        |
| <b>Learning outcomes</b>  | According to the learning outcomes of the selected subjects.   |                        |
| <b>Module evaluation:</b> subject-based method  |  |                        |
| <b>Subjects:</b><br>Nutrition Studies 3 ECTS<br>Healthy Nutrition 3 ECTS<br>Food Supplements and Food 3 ECTS<br>Counselling in the Pharmacy II 3 ECTS<br>Hospital Pharmacy 3 ECTS<br>Optional subjects 4 ECTS |  |                        |
| <b>Code</b>   | <b>Subject title</b>   | <b>Volume</b>          |
| VAFATO16  | Nutrition Studies  | 3 ECTS                 |
| <b>Aim</b>  | To provide knowledge of the body based healthy diet, to deal with food and nutrition-related basic concepts, to explain the tasks of and needs for nutrients in the body and thereby to shape ability in the student to eat in a healthy and balanced way and to use the acquired knowledge in future professional work. |                        |
| <b>Learning outcomes</b>  | Upon completion of the subject, the student:<br>1. Has knowledge of the main nutrients of the body and of their role in the body.<br>2. Is familiar with the nutrition related terminology.<br>3. Has knowledge of the basics of healthy eating and is able to implement them in their professional work.                |                        |
| <b>Code</b>   | <b>Subject title</b>   | <b>Volume</b>          |
| VAHN12  | Healthy Nutrition  | 3 ECTS                 |
| <b>Aim</b>  | The purpose of the course is to introduce the basic aspects of healthy nutrition and healthy eating with the support of various articles, animations, individual exercises and tests.  |                        |
| <b>Learning outcomes</b>  | Upon completion of the subject, the student:<br>1. Knows the classification and roles of nutrients.<br>2. Knows the components of energy expenditure.<br>3. Considers the principles of functioning of digestive system.<br>4. Is able to plan an individual diet.<br>5. Is able to make healthy choices.                |                        |
| <b>Code</b>   | <b>Subject title</b>   | <b>Volume</b>          |
| VAFATL16  | Food Supplements and Food  | 3 ECTS                 |

|                          |   |               |
|--------------------------|---|---------------|
| <b>Aim</b>               | To provide an overview of the food supplements and food additives used in the Republic of Estonia.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Has an overview of the legislation on food supplements, of applications of food supplements marketable in Estonia.<br>2. Can advise on the use of food supplements and is able to critically analyze the information regarding food supplements.<br>3. Has an overview of the food additives or e-substances used in Estonia, of their classification, reasons for use and potential hazards.<br>4. Is able to consciously direct their choices and provide advice to prospective customers. |               |
| <b>Code</b>              | <b>Subject title</b>  | <b>Volume</b> |
| VAFANA16-2               | Counselling in the Pharmacy II  | 3 ECTS        |
| <b>Aim</b>               | To deepen the student's knowledge of drug counseling.   |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. In the course of pharmaceutical interaction is able to collect information about the problem and propose solutions.<br>2. Is able to advise a pharmacy customer based on the customer's individual needs.<br>3. On counselling, knows how to find and use science based sources.   |               |
| <b>Code</b>              | <b>Subject title</b>  | <b>Volume</b> |
| VAFAHF16                 | Hospital Pharmacy   | 3 ECTS        |
| <b>Aim</b>               | To provide an overview of the characteristics of working in a hospital pharmacy.  |               |
| <b>Learning outcomes</b> | Upon completion of the subject, the student:<br>1. Has theoretical and practical knowledge on aseptics.<br>2. Is able to use appropriate work equipment and work techniques, is familiar with the work in modern hospital pharmacies clean rooms.<br>3. Knows the work organisation of a hospital pharmacy including different stages of work.  |               |
| <b>Code</b>              | <b>Subject title</b>  | <b>Volume</b> |
|                          | Optional Subjects   | 4 ECTS        |
| <b>Aim</b>               | Create opportunities for realization of the student's individual needs and intellectual interests within the area of the studies.   |               |
| <b>Learning outcomes</b> | According to the outcomes of the subject.   |               |