TALLINNA TERVISHOIU KÕRGKOOL

ASSISTANT PHARMACIST

1477

Tallinn 2020

Educational institution	**TALLINN HEALTH CARE COLLEGE**
Code of educational institution	70003980
Title of the curriculum	***FARMATSEUT***
Title of the curriculum in English	**ASSISTANT PHARMACIST**
Higher education level	Professional higher education
Curriculum code in the Estonian Education Info-System (EHIS)	1477
Data about the right for conducting studies in the curriculum	Curriculum belongs to the "Medicine" study programme group in which there is a right to conduct studies. 11.07.2019 Regulation No 62 "Standard of Higher Education" issued by the Government of Estonia.
Primary registration of the curriculum	05.09.2002
Approval date of the version of the curriculum in the educational institution	The curriculum has been approved by the Council of Pharmacy Curriculum on 07.05.2020. The curriculum has been approved by the Tallinn Health Care College Council with Decision No 2.1. from 26.05.2020.

Study area	Health and well-being
Field of studies	Health
Curriculum group	Medicine
Main field of study (or studies) of the curriculum and their volume (ECTS)	Assistant Pharmacist 180 ECTS
Minor field (or fields) of study and other possible specializations in the curriculum and their volume (ECTS)	The curriculum has no minor fields and specializations
Forms of study	Daytime learning
Nominal length of studies	3 years
Volume of the curriculum in European credit point system (ECTS)	180
Volume of compulsory subjects (ECTS)	175
Volume of elective subjects (ECTS)	5

Study language	Estonian
Other languages needed for achieving the learning outcomes	English
Admission requirements	Certificate of the secondary or vocational secondary education or equivalent qualification.

Aim of the curriculum

The aim of the Curriculum of Assistant Pharmacist 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.

Learning outcomes of the curriculum

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.
2. Is able to explain to the client the effects and side effects of medicines and medicinal herbs and their use for the treatment and prevention of diseases.
3. Is competent when dealing with the ordering, receiving, preparation and dispensing of drugs in the pharmacy, is familiar with pharmaceutical legislation.
4. Is cognizant with the main professional problems concerning the work of a pharmacist and can make suggestions to solve them.
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.
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.
7. Values cultural differences, is tolerant and respects the differences of people, their work is guided by the principles of professional ethics.
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.
9. Possesses basics skills of management, entrepreneurship and teamwork necessary for working as an assistant pharmacist.

Conditions of fulfilling the curriculum

Curriculum contains:
8 modules (180 ECTS)

Chemistry	25 ECTS
Herbal Treatment	15 ECTS
Effect of Medicines on Human Body	30 ECTS
Preparation and Dispensing of Medicines	55 ECTS
Professional Development	10 ECTS
Research Methodology	20 ECTS
Basics of Health Care	20 ECTS
Elective Subjects	5 ECTS

Volume of Practical Training 35 ECTS Volume of Graduation Thesis/Final Examination 5 ECTS Volume of Elective Subjects 5 ECTS	
Options for passing the curriculum	The curriculum includes elective subjects in the capacity of 5 ECTS, which support the achievement of curriculum aims and create opportunities for realization of the student's individual needs and intellectual interests in the area of the studies. In addition, on the third year, upon completion of the pharmacy curriculum, the student can choose between the graduation thesis and the final examination.
Graduation requirements	Completing the curriculum in full and receiving a positive grade in defending the graduation thesis or a positive grade for the final examination.
Type of diploma issued upon graduation	College graduate is awarded the Diploma of Professional Higher Education and *Meditsiiniteaduse bakalaureus* Bachelor of Medicines (BSc).
Documents issued upon graduation	Diploma of Professional Higher Education with academic transcript and Diploma Supplement in English.
Possibilities for continuing studies	Master`s studies
Access to labour market	Has acquired the learning outcomes for working as an assistant pharmacist.
Additional information	http://www.ttk.ee/et/kontaktileht

LETTER OF EXPLANATION FOR THE CURRICULUM OF ASSISTANT PHARMACIST

Since the academic year 2020/2021 the following changes have been introduced to the Curriculum of Assistant Pharmacist:

1. The volume of Biopharmacy as an essential subject is increased by 1 ECTS (from 2 ECTS to 3 ECTS), due to the fact that development trends in the field of pharmacy as well as its studies require modernization. In addition, new professional technological methods are used during the teaching of which it is possible to emphasize the importance of biopharmacy as a discipline in the light of modern field of pharmacy.
2. The rise in the importance of digital security necessitates the addition of the subject "Health Technology and e-Health" in 2 ECTS:
3. The subject Psychology (3 ECTS, PSU17) is removed from the curriculum. The outcomes of the subject regarding the principles of individual developmental and social behaviour, communication and team work are addressed within the subject "Councelling at a Pharmacy" together with practical situations. Learning outcome on discipline key terms and main treatments are acquired during gymnasium studies. The learning outcomes of the subject "Councelling at a Pharmacy" have been complemented to cover the outcomes of psychology as well, which include the necessary skills of a future assistent pharmacist regarding client service, forming preparedness for successful teamwork and understanding the needs of a client.
4. Conducting specialty subjects Pharmacology I and II, Pharmacotherapy I and II are moved forward by one semester, in order to provide students with the opportunity to understand whether their choice of profession is justified.
5. Some subjects, e.g. "Measuring and Interpreting Health Indicators", "Biopharmacy", "Pharmacognosy", "Phytotherapy", "Pharmaceutical Care", "Pharmaceutical Product Intelligence" I and II is moved further by one semester due to the previous changes.
6. The wording of module and subject aims and learning outcomes has been adjusted.
7. To conclude, new solutions enhance securing students´ professional choice as well as the reinforcement of knowledge in students integrating working at the pharmacy with studying.

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 Act (19.03.2019);
- Standard of Higher Educaion, Government of the Republic Regulation (No 62 of 11.07.2019);
- Pharmacist VI Professional Standard (15.11.2016);
- 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 (07.01.2015);
- The Statute of the Outcome Based Curriculum of the Tallinn Health Care College (22.05.2018).

The current Curriculum of Assistant Pharmacist was created in 1998; since then it has been upgraded in 2002, 2003 and 2017. 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 up to 1,885 hours, the volume of independent work at least 1,885 hours (out of which, the Final Examination/Graduation Thesis is 130 hours), the practical training in the work environment (pharmacy practical training) is 910 hours.

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 8 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 (35 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 and available on College's website. 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 at 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 timetable determines the division of contact learning. The timetable also 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

Module title: Chemistry		**Volume:** 25 ECTS
Aim	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.	
Learning outcomes	1. Knows the main terms of inorganic, organic, analytical, pharmaceutical, and biochemistry. 2. Possesses a basic knowledge of the chemical structure of the substances. 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. 4. Knows and is able to use the main methods of analyses used in analytical and pharmaceutical chemistry. 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.	
Evaluation of module: subject-based method		
Subjects		
Code	**Subject title**	**Volume**
1KE17/AOK	Inorganic Chemistry	4 ECTS
Aim	To acquire basic knowledge of the structure of inorganic compounds, their physical and chemical properties and their mutual relationships.	
Learning outcome	1. Knows the basic concepts of inorganic chemistry. 2. Knows the substance classes. 3. Has basic knowledge of redox processes. 4. Is able to explain the nature of the process of hydrolysis. 5. Has basic knowledge of the most important compounds of metals and non-metals.	
Code	**Subject title**	**Volume**
1KE17/OK	Organic Chemistry	5 ECTS
Aim	To acquire the basic knowledge of the structure of organic compounds, their physical and chemical properties and mutual relationships.	
Learning outcomes	1. Knows the basic concepts of organic chemistry. 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.	

	3. Knows the principles of synthesis of organic compounds. 4. Is able to explain the properties of chemical compounds and inter-relationships between compounds.	
Code	**Subject title**	**Volume**
1KE20/AK	Analytical Chemistry	6 ECTS
Aim	To provide students with practical skills for analysis of various compounds, including medicine.	
Learning outcomes	1. Knows the basic concepts of analytical chemistry. 2. Is able to determine a variety of compounds using the main qualitative and quantitative methods of analytical chemistry. 3. Knows and is able to use some devices to perform instrumental analysis (gas chromatography-mass spectometry, UV liquid chromatography, atomic absorption spectroscopy, infrared spectroscopy).	
Code	**Subject title**	**Volume**
1KE20/BK	Biochemistry	3 ECTS
Aim	To acquire basic knowledge on the biomolecules of the body and their functions in the metabolism of the organism. To provide introductory knowledge on biochemistry which enable student with a comprehensive scientific worldview deriving from the needs and standpoints of the speciality. The aim of the subject Biochemistry is to acquire knowledge in order to understand the composition of human organism, its vital functions and development and to provide basic knowledge to continue with studying speciality subjects.	
Learning outcomes	1. Has knowledge of basic concepts of biochemistry, is able to explain the relationship between the structure and the properties of the substance, 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. 2. Has knowledge of the body as a whole, its individual parts and the relationship and the cooperation between the parts. 3. Is able to express the acquired knowledge in a written form as well as orally, is able to use the acquired terminology. 4. Is able to read and understand basic biochemistry related texts in foreign languages.	
Code	**Subject title**	**Volume**
1KE17/FK1	Pharmaceutical Chemistry I	3 ECTS
Aim	To acquire basic knowledge of the chemical structure of the main medicinal substances, their physical and chemical properties and pharmaceutical analysis.	
Learning outcomes	1. Knows the basic concepts of pharmaceutical chemistry. 2. Knows the requirements set for the chemical purity of therapeutic agents. 3. Knows the storage requirements of therapeutic agents. 4. Is able to explain the main structure of inorganic medicine groups and the	

	chemical composition and properties of therapeutic agents within groups. 5. Is familiar with the principles of identification and quantitative determination of major therapeutic agents.	
Code	**Subject title**	**Volume**
1KE17/FK2	Pharmaceutical Chemistry II	4 ECTS
Aim	To acquire basic knowledge of the chemical structure of the main medicinal substances, their physical and chemical properties and pharmaceutical analysis.	
Learning outcomes	1. Is able to explain the main structure of organic medicine groups and the chemical composition and properties of the therapeutic agents within groups. 2. Connects the effects of organic therapeutic agents with functional groups included in them. 3. Is familiar with the principles of identification and quantitative determination of major therapeutic agents of organic substances.	

Module title: Herbal Treatment		**Volume:** 15 ECTS
Aim	To acquire knowledge of the basics of herbal treatment necessary for practical pharmacy work and of the possibilities to use herbs and the preparations thereof to strengthen the body, for the treatment and prevention of disease.	
Learning outcomes	1. Is able to explain the anatomical and morphological structure and the most important physiological functions of plants. 2. Is familiar with plant systematics and knows the most important plants in the main plant groups. 3. Knows medicinal plants, the drugs derived thereof and their active substances. 4. Knows the principles of modern phytotherapy. 5. Knows the use of medicinal plants and herbal remedies for the treatment of diseases. 6. Is familiar with the nomenclature of natural preparations affecting the body functions and is able to make recommendations for their use.	
Module evaluation: subject-based method		
Subjects		
Code	**Subject title**	**Volume**
1TR20/BOT1	Botany I	4 ECTS
Aim	To acquire 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.	
Learning outcomes	1. Has knowledge of the structure of plant cells, plant tissues and plant organs and of their function in plants. 2. Is able to classify vegetative organs and has an overview of the most important physiological processes in plants (photosynthesis, transpiration, mineral nutrition). 3. Is able to classify generative organs and explain the characteristics of plant reproduction and its course of the life cycle. 4. Knows the principles of plant classification, the richest in the species among plant families, is able to classify plant species accordingly including cultivated plants and medicinal plants.	
Code	**Subject title**	**Volume**
1TR17/BOT2	Botany II	2 ECTS
Aim	To acquire skills in determining the species of plants in wildlife using plant determining materials and to compile plant collections.	
Learning outcomes	1. Knows how to determine plants and identify unknown plants. 2. Is able to collect necessary plant samples from wildlife, conserve and preserve them.	

	3. Is able to appropriately herbarize and document plant samples to compile or add to botanical collections.	
Code	**Subject title**	**Volume**
1TR17/FGN	Pharmacognosy	5 ECTS
Aim	To acquire basic knowledge of medicines, herbal drugs, medicinal plants, their main active substances and the biosynthesis of active substances.	
Learning outcomes	1. Knows the medicinal plants and the drugs derived thereof. 2. Knows the most important groups of active substances in medicinal plants, the chemical structure and biosynthesis mechanisms of these substances. 3. Is familiar with the substances on which the therapeutic effect of the most important medicinal plants and herbal drugs depends on. 4. Knows the principles of collection, drying and storage of medicinal plants.	
Code	**Subject title**	**Volume**
1TR17/FÜT	Phytotherapy	4 ECTS
Aim	To acquire knowledge of the basics of herbal treatment and of the use of plants for treatment of the disorders and pathological abnormalities occurring in the body.	
Learning outcomes	1. Is familiar with the principles and methods of therapeutic use of plants. 2. Knows the most important herbal medicinal substances and their pharmacological effects. 3. Knows the most important medicinal plants and their use in the treatment of specific diseases.	

Module title: Effect of Medicines on Human Body		**Volume:** 30 ECTS
Aim	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.	
Learning outcomes	1. Knows the drug groups affecting the various organs and their active substances. 2. Is familiar with mechanisms of action of different therapeutic classes and the pharmacokinetics and -dynamics of their effect. 3. Knows the effect-modifying factors of drugs and the interactions of therapeutic agents. 4. Is familiar with modern pharmaceutical drugs and their use in the treatment of diseases. 5. Knows toxins and their effects on the body. 6. Knows the drugs used for treatment of pets and farm animals.	
Module evaluation: subject-based method		
Subjects		
Code	**Subject title**	**Volume**
UF17	General Pharmacology	2 ECTS
Aim	To acquire knowledge about concepts of general pharmacology, groups and different forms of medications, and routes of administration.	
Learning outcomes	1. Knows concepts of general pharmacology and can use them. 2. Describes effects of the medication groups on a human body and factors influencing them. 3. Names different forms and routes of administration of medications, and dependence of a form or route of administration on the effect of medication.	
Code	**Subject title**	**Volume**
1RTO20/FL1	Pharmacology I	5 ECTS
Aim	To familiarize himself/herself with pharmacodynamics: action mechanisms of medicines, side and adverse effects, clinical usage, contraindications and interactions with other medicines.	
Learning outcomes	1. Understands and is able to describe the pharmacodynamics of medicines. 2. Has knowledge and is able to describe the effect of medicines on the organism and the factors affecting the effect. 3. Knows and is able to describe the action mechanisms, usage, side effects, and contraindications of hormones, analgesics and anti-inflammatory, respiratory, digestive and biological medicines.	
Code	**Subject title**	**Volume**

1RTO20/FL2	Pharmacology II	5 ECTS
Aim	To acquire knowledge of action mechanisms of medicines, their side effects and adverse effects, clinical usage, contraindications and interaction with other medicines. Passing Pharmacology is a prerequisite to the studies of Pharmacotherapy.	
Learning outcomes	1. Understands and is able to describe the pharmacodynamics of medicines. 2. Knows and is able to describe the effect of medicines on an organism and factors affecting them. 3. Knows and is able to describe the action mechanisms, usage, side-effects and contraindications of cardiovascular medicines, chemotherapeutics and central nervous system medicines. 4. Is able to use evidence-based pharmacological reference books, handbooks, and online sources.	
Code	**Subject title**	**Volume**
1RTO17/FT1	Pharmacotherapy I	3 ECTS
Aim	To acquire knowledge of pharmacotherapy: different medicine groups of over-the-counter medicines, their effects on the organism and usage in treating diseases.	
Learning outcomes	1. Has knowledge of commonly used drug groups, their effects on the body and the factors influencing the effects of the drugs. 2. Has knowledge of indications and contraindications of the basic drug groups sold over the counter. 3. Is able to explain the side effects and interactions of over-the-counter drugs. 4. Has general knowledge of the diseases, for the treatment of which over-the-counter medicinal drug groups are used. 5. Is able to use the drug information sources: pharmacology reference books, manuals and Internet-based sources.	
Code	**Subject title**	**Volume**
1RTO20/FT2	Pharmacotherapy II	5 ECTS
Aim	To acquire knowledge of pharmacotherapy: different groups of prescription medicines, their effect on organism and usage in the treatment of diseases.	
Learning outcomes	1. Knows the most commonly used prescription drug groups pharmacokinetics and pharmacodynamics, the effect of these drug groups on organism and the factors affecting the effect. 2. Knows the indications and contraindications of the basic prescription drug groups. 3. Is able to explain the side effects and interactions of prescription drugs. 4. Possesses general knowledge of the disease, for the treatment of which prescription drug groups are used. 5. Is able to use information sources: pharmacology reference books, manuals and Internet-based sources.	
Code	**Subject title**	**Volume**

1RTO20/VF	Veterinary Pharmacy	2 ECTS
Aim	To acquire knowledge of the mechanisms of action, side effects and clinical use of veterinary drugs.	
Learning outcomes	1. Understands the differences between humans and animals and knows the nuances in determining the doses of medication. 2. Is able to give adequate advice to animal owners within the competences of an assistent pharmacist. 3. Knows the legislation concerning animals.	
Code	**Subject title**	**Volume**
1RTO20/BF	Biopharmacy	3 ECTS
Aim	To acquire knowledge on the pharmacokinetics and biopharmaceutical meaning of medicines, of the relationship between pharmaceutical technology and pharmacology.	
Learning outcomes	1. Knows the kinetics of release of active substances from medicines and the possibilities of investigating it. 2. Is able to explain the principles of passive and active transportation in the organism. 3. Knows and is able to explain the processes of bioavailability and bioequivalence. 4. Knows the biopharmaceutical meaning of different medicinal forms.	
Code	**Subject title**	**Volume**
1RTO16/TO	Toxicology	2 ECTS
Aim	To give 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.	
Learning outcomes	1. Has an overview of the effects of most common poisons on the body. 2. Knows the basic antidotes and is able to provide first aid in case of poisonings. 3. Knows the signs and treatment principles of chronic poisonings.	
Code	**Subject title**	**Volume**
1RTO20/NA	Counselling in a Pharmacy	3 ECTS
Aim	To provide in-depth knowledge on councelling on medicine-use, to facilitate students in acquiring complementary skills to successfully pass pharmacy practical training. To direct students into understanding and practical usage of measures to offer professional service to clients.	
Learning outcomes	1. Understands the nature and causes of an individual's social behaviour. 2. Is able to acquire information when communicating with the client on the topic of medicines and then to effectively advise the client. 3. Knows how to use diferent communication techniques (incl. motivating interviewing) and the principles of teamwork. 4. Uses evidence-based information sources and knows where to find them. 5. Knows how to process digital and printed prescription.	

Module title: Preparation and Dispensing of Medicines		**Volume:** 55 ECTS
Aims	1. To acquire specific professional expertise in pharmacy drugs, the real pharmacy work and the organization of the pharmaceutical industry in Estonia. 2. To provide students with skills to prepare prescription drugs, process prescriptions and interpersonal skills for serving the customers of the pharmacy.	
Learning outcomes	1. Knows the drug manufacturing technologies and is able to prepare on the basis of prescription's magistral formulae, taking into account the physiochemical properties of the active substances. 2. Has an overview of the drugs, other medical use goods and health products sold in Estonian pharmacies and is familiar with the active substances of pharmaceutical drugs. 3. Knows the main principles of client service and is able to implement them in the service process. 4. Knows the nomenclature of the drugs containing the main active substances and is able to comparatively evaluate pharmaceutical preparations provided by different manufacturers. 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.	
Module evaluation: subject-based method		
Subjects:		
Code	**Subject title**	**Volume**
1RVV20/FTH1	Pharmaceutical Technology I	4 ECTS
Aim	To acquire knowledge of drug manufacturing technologies and the expertise of manufacturing magistral formulae taking into account the physiochemical properties of the therapeutic agents.	
Learning outcomes	1. Is able to rationally use the devices of weight and volume measuring. 2. Is able to prepare powders, solutions, mixtures, suspensions, and emulsions in a technologically correct way knowing the physiochemical properties of therapeutic agents. 3. Is able to prepare medicines according to the requirements set in the Medicines Act. 4. Is able to correctly store and formalize the manufactured drug for dispensing.	
Code	**Subject title**	**Volume**
1RVV20/FTH2	Pharmaceutical Technology II	4 ECTS
Aim	To acquire knowledge of drug manufacturing technologies and the expertise of manufacturing magistral formulae taking into account the physiochemical properties of the therapeutic agents.	

Learning outcomes	1. Is able to rationally use the devices of weight and measuring. 2. Knows the principles of a- and antiseptics and physical, mechanical and chemical sterilization processes used for sterilization. 3. Is able to prepare powders, solutions, mixtures, suspensions, emulsions, ointments, suppositories and injections drugs technologically correctly knowing the physiochemical properties of therapeutic agents. 4. Is able to prepare medicines according to the requirements set in the Medicines Act. 5. Is able to correctly store and formalize the manufactured drug for dispensing.	
Code	**Subject title**	**Volume**
1RVV17/PrA1	Pharmacy Practical Training I	10 ECTS
Aim	Reinforcing of the knowledge acquired in theoretical and practical training in preparing powders and liquid medicines and on over-the-counter medicines.	
Learning outcomes	1. Knows the technologies of manufacturing powders, medicinal teas, solutions, chemical mixtures, leach liquors, brews, suspensions, and emulsions and is able to, on the basis of doctor's prescriptions, produce magistral formulae. 2. Has an overview of the over-the-counter drugs, other goods of medical use and health products sold in Estonian pharmacies. 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. 4. Is familiar with the work organization of the pharmacy and the drug-handling system. 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.	
Code	**Subject title**	**Volume**
1RVV17/PrA2	Pharmacy Practical Training II	25 ECTS
Aim	Reinforcing of the knowledge acquired in theoretical and practical training in preparing powders, liquid medicines, ointments, suppositories and on over-the-counter medicines. Reinforcing of councelling skills in a pharmacy.	
Learning outcomes	1. Knows the technologies of manufacturing powders, medicinal teas and other liquid medicines, ointments, and suppositories, and is able to, on the basis of doctor's prescriptions, produce magistral formulae. 2. Has an overview of the over-the-counter and prescription drugs, other medical use goods and health products sold in Estonian pharmacies. 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. 4. Is able to counsel clients according to their needs. 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.	

Code	Subject title	Volume
1RVV17/FKT1	Pharmaceutical Product Intelligence I	2 ECTS
Aim	To acquire knowledge of the differences of over-the-counter medicines and skills for their selection, comparison and recommendation.	
Learning outcomes	1. Knows the groups of over-the-counter drugs and health products. 2. Can recommend pharmacy products based on customer needs. 3. Is able to check basic health indicators, analyse them and give further advice in their areas of expertise.	
Code	**Subject title**	**Volume**
1RVV20/FKT2	Pharmaceutical Product Intelligence II	2 ECTS
Aim	To acquire knowledge on prescription medicines and skills for their comparison and recommendation.	
Learning outcomes	1. Knows the prescription drug classifications. 2. Is familiar with the active substances and the respective preparations within the groups. 3. Is able to on the basis of active substance-based prescription compare and recommend medications according to the customer's/patients` needs.	
Code	**Subject title**	**Volume**
1RVV20/FKR1	Pharmaceutical Management I	3 ECTS
Aim	To acquire konwledge on the history of pharmacies, work management of a modern pharmacy and of current legislation.	
Learning outcomes	1. Has an overview of the history of pharmacies. 2. Knows the conditions of pharmacy service and pharmacy work management by different agencies. 3. Is familiar with the organization of work and legislation concerning the pharmacy.	
Code	**Subject title**	**Volume**
1RVV20/FKR2	Pharmaceutical Management II	2 ECTS
Aim	To acquire and reinforce knowledge on pharmacy work organization, current legislation and quality guidelines of pharmacy services. To understand and comply with ethical norms in providing pharmacy services.	
Learning outcomes	1. Has an overview of Good Pharmacy Practice. 2. Knows the requirements for prescribing and dispensing medicines from the pharmacy. 3. Knows the conditions set for providing pharmacy service and the work management of a pharmacy in differents agencies. 4. Is able to analyse information materials needed at the pharmacy and to use it to counsel patients as well as health care workers. 5. Has an overview of different pharmacy-related organizations.	
Code	**Subject title**	**Volume**

KL17	Client Service	3 ECTS
Aim	To acquire knowledge about client service foundations and provide readiness for understanding and fulfilling clients` needs in service process.	
Learning outcomes	1. Knows foundations and ethical aspects of client service. 2. Knows the nature of service process and can participate properly in this. 3. Knows types of products/service and is able to plan and carry out (sales) conversation. 4. Uses appropriate communication techniques in client service.	

Module title: Professional Development		**Volume:** 10 ECTS
Aim	To acquire necessary skills and knowledge to ensure learning-related professional development and lifelong learning.	
Learning outcomes	1. Knows the specialty terminology in Latin, abbreviations and expressions used in prescriptions. 2. Knows the main principles and theories of organizational behaviour and leadership. 3. Is able to plan and manage one's studies in Tallinn Health Care College. 4. Is able to implement the principles of teamwork.	
Module evaluation: subject-based method		
Subjects:		
Code	**Subject title**	**Volume**
SO17	Introduction to Learning	2 ECTS
Aim	To create possibilities for managing successfully in study process in Tallinn Health Care College.	
Learning outcomes	1. Has an overview of Estonian higher education system and possibilities for international cooperation. 2. Knows organization of studies and practical training, and study counselling system in Tallinn Health Care College. 3. Is able to compose and execute letters and study documents. 4. Knows foundations of studies, teamwork, stress and time management, and career planning.	
Code	**Subject title**	**Volume**
TTE20	Health Care Technology and e-Health	2 ECTS
Aim	To develop knowledge about electronic health information systems and the principles of technologies used in healthcare.	
Learning outcomes	1. Knows and uses health care technology terminology and the developed e-solutions, understands the importance of data transfer. 2. Has an overview of health telematics implication possibilities. 3. Understands data protection requirements and the importance of cyber security requirements.	
Code	**Subject title**	**Volume**
JuEt17	Management and Entrepreneurship	4 ECTS
Aim	To create possibilities for developing basic skills related to organization management and starting enterprise.	
Learning outcomes	1. Can describe an organization and its management process, including personnel management, and associate them with his/her specialty. 2. Knows different forms of enterprise and principles for choosing them. 3. Chooses and analyses a business idea, can develop a business plan, and	

	plan and carry out projects. 4. Has elementary knowledge about foundations of tax system and accountancy, and can apply to financial institutions or funds for getting financing. 5. Knows principles of product and service development, and marketing.	
Code	**Subject title**	**Volume**
1PA20/LK	Latin	2 ECTS
Aim	To acquire Latin skills needed for the profession of assistant pharmacist.	
Learning outcomes	1. Is able to correctly pronounce Latin. 2. Knows how to form necessary expressions and how to correctly use them. 3. Is able to translate expressions based on nouns and adjectives from Latin to Estonian. 4. Is able to correctly use specialty terminology, including expressions and abbreviations used in prescriptions.	

Module title: Research Methodology		**Volume:** 20 ECTS
Aim	To create possibilities and support for conducting research and developing academic writing skills.	
Learning outcomes	1. Can find and use reliable evidence-based scientific sources for the professional research. 2. Can analyse and report information found from different sources. 3. Knows foundations of statistics, can methodically collect data and analyse them properly. 4. Knows ethics in research and can follow this. 5. Can set professional problems, and based on the research, give recommendations for solving them.	
Evaluation of module: subject-based method		
Subjects		
Code	**Subject title**	**Volume**
UTM1-17	Foundations of Research I	5 ECTS
Aim	To create readiness for collecting and analysing evidence-based information.	
Learning outcomes	1. Can apply principles of systematic literature search and record search results. 2. Can independently use scientific data bases and analyse relevant evidence-based materials. 3. Can report professional scientific literature in English and Estonian. 4. Knows foundations of statistics and is able to find and interpret statistics. 5. Can compose and form independent works, and uses scientific language.	
Code	**Subject title**	**Volume**
UTM2-17	Research II	5 ECTS
Aim	To create skills for conducting research.	
Learning outcomes	1. Understands concepts and principles of scientific research and differences between types of research. 2. Knows different research methods, and planning the research, can choose the most suitable method for collecting and analysing data. 3. Can collect or find statistical data and relevant evidence-based sources, analyse, report and refer properly them in his/her paper. 4. Understands principles of ethics in science and medicine, is able to pay attention to ethical aspects, when composing his/her research.	
Code	**Subject title**	**Volume**
LP1-17	Graduation Thesis I	5 ECTS

Aim	To acquire skills for using his/her professional knowledge to search independently and analyse critically a particular problem or situation in practice.	
Learning outcomes	1. Is able to independently plan and carry out a research, and present properly its results. 2. Can pay attention to professional problems and research focuses. 3. Is able to give research-based recommendations for solving professional problems.	
Code	**Subject title**	**Volume**
LP2-17	Graduation Thesis II	5 ECTS
Aim	To show a student`s ability to apply his/her knowledge and practical skills, developed across the curriculum, to carry out a research, using different research methods.	
Learning outcomes	1. Understands research ethics and principles of reliability, and considers them when carrying out the research. 2. Is able to go through and analyse scientific literature associated with a research problem. 3. Knows the way of data collection and method of analysis used in the research. 4. Can explain research results and importance of them in specialty. 5. Is able to analyse critically and defend his/her viewpoints presented in the research, and discuss the searched topic.	
Code	**Subject title**	**Volume**
LE17	Final Examination	5 ECTS
Aim	To show a student`s ability to integrate his/her professional knowledge and skills, and readiness for starting professional field job.	
Learning outcomes	1. Has a systematic overview of the profession and its competencies. 2. Has knowledge, skills and readiness for starting professional field job. 3. Can connect professional theory with practice and use the knowledge without causing harm to a patient/client interests.	

Module title: Basics of Health Care		**Volume:** 20 ECTS
Aims	1. To acquire basic knowledge of the function of human organism, organ systems and their normal and pathological functioning in order to understand the effect of medicines and one's general professional activity. 2. To acquire knowledge of the foundations of pharmaceutical care, basics of sustainability of health, developing coping strategies and preventing work-related diseases.	
Learning outcomes	1. Knows the structure and functioning of human organism, the biological basics of functioning. Is able to measure and interpret primary health care indicators. 2. Knows the nature of pathological and genetic processes and their action mechanisms. 3. Knows the principles and ways of application of a-and antiseptics. 4. Is familiar with the organizational problems accompanying the use of medicines, their manufacturing, inspection and information. 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.	
Module evaluation: subject-based method		
Subjects		
Code	**Subject title**	**Volume**
AnF17	Anatomy and Physiology	6 ECTS
Aim	To acquire basic knowledge in anatomy and physiology.	
Learning outcomes	1. Uses appropriate anatomy and physiology related terminology. 2. Knows and is able to explain the structure of the human body and the mechanisms regulating its functioning and development. 3. Knows the shape, structure and location of organs in human body by body systems.	
Code	**Subject title**	**Volume**
HaOp17	Pathology	5 ECTS
Aim	To acquire foundation knowledge about causes and onset of diseases, signs and disease-related changes in the human body.	
Learning outcomes	1. Knows fundamental processes and concepts of general pathology. 2. Knows etiopathogenesis and pathogenesis of most prevalent diseases, and ways to prevent the diseases treating each organ system separately. 3. Has basic knowledge about microbiology and function of the immune system, most common micro-organisms and diseases caused by them affecting human functioning. 4. Knows genetic bases and understands the nature of heredity and mutability, has foundation knowledge about more common chromosomal and genetic diseases, and possibilities to apply genetics in medicine.	

Code	Subject title	Volume
TO17	Occupational Safety	3 ECTS
Aim	To acquire first aid skills, ability to act safely in the work environment and in case of fire hazard.	
Learning outcomes	1. Knows the principles of quality and risk management in health care organization. 2. Is able to assess risk factors in the work environment and develop a risk analysis. 3. Knows, how to use ergonomic job methods and promote health at workplace. 4. Is able to give first aid without any medical devices. 5. Is able to act in case of fire hazard.	
Code	**Subject title**	**Volume**
RaTer17	Public Health	2 ECTS
Aim	To form knowledge about theoretical foundations and functions of public health, public health policy principles, and give an overview of the situation and organizational arrangement of public health in Estonia.	
Learning outcomes	1. Understands the nature of public health field, tasks, public health policy principles, and is able to interact health factors having effect on an individual and the community. 2. Knows most common health problems of population in Estonia and activities within the frames of the National Health Development Plan to prevent diseases and promote health. 3. Has an overview of the organizational arrangement of public health in Estonia and creates connections between activities of different institutional sectors and levels.	
Code	**Subject title**	**Volume**
1TA17/FH	Pharmaceutical Care	2 ECTS
Aim	To give an overview of responsible and proper usage of medicines, including other health care professionals and clients/patients.	
Learning outcomes	1. Knows the principles of pharmaceutical care, has an overview of pharmaceutical production and marketing. 2. Knows the factors influencing the use of medicines. 3. Has an overview of the process of manufacturing new medicines. 4. Understands the need to use one's specialty knowledge for the good of the client/patient, and if necessary, consults other health care professionals.	
Code	**Subject title**	**Volume**
1TA20/TMT	Measuring and Interpreting of Vital Signs of the Body	2 ECTS
Aim	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.	

Learning outcomes	1. Knows the main principles of primary health counselling and patient education. 2. Complies with the requirements of a- and antiseptics. 3. Knows how to measure blood sugar, cholesterol, level of haemoglobin and vitamin D as well as body composition and blood pressure, and document the results. 4. Knows how to give primary recommendations in case os results differing from the norm.

Module title: Elective Subjects		**Volume:** 5 ECTS
Module evaluation: subject-based method		
Subjects		
Code	**Subject title**	**Volume**
VA17/TÕ	Nutrition	5 ECTS
VA17/HN	Healthy Nutrition	5 ECTS