TALLINNA TERVISHOIU KÕRGKOOL

CURRICULUM OF AN ASSISTANT PHARMACIST 1477

Tallinn 2012

Educational institution	**TALLINN HEALTH CARE COLLEGE**
Code of educational institution	70003980
Name of the curriculum	**ASSISTANT PHARMACIST**
Name of the curriculum in English	**ASSISTANT PHARMACIST**
Studies of higher education level	Professional Higher Education
Curriculum code in EHIS	1 4 7 7
Data on the right of carrying out of the studies on the curriculum	The curriculum belongs to the curriculum category of "Medicine", in which has been given the right to conduct studies according to the Higher Education Standard Annex 3)andDecree of the Minister of Education No. 385 dated 20.04.2011.
The initial registration of the curriculum	05.09.02
The date of approval of the version of the curriculum in the educational institution	The curriculum has been approved by the Council of Curriculum of Pharmacy on 09.05.2012 The curriculum has been approved by the Tallinn Health Care College Council No 13 Decision No 5.1 of 15.05.2012

Broad group of studies	Health and Welfare
Field of study:	Health
Curriculum group	Medicine
The major specialty (or specialties) of the curriculum and the volume thereof (ECTS)	Assistant Pharmacist 180 ECTS
Minor specialty(s), other possible specializations in the curriculum and their	The curriculum has no minor specialties and specialization

volume (ECTS)	
Types of study	Day time study, cyclical study
The nominal length of the study	3 years
The volume of the curriculum in the credit points of the European credit point system (ECTS):	180
The volume of required subjects (ECTS)	170
The volume of elective subjects (ECTS)	6
The volume of optional subjects (ECTS)	4
Language of instruction	Estonian
Other languages needed to achieve learning outcomes	English
Conditions for the commencement of learning	Secondaryschoolcompletioncertificate, certificate of vocational secondary education or an equivalent qualification

The goal of the curriculum

The goal 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 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

Upon completion of the curriculum of anassitant pharmacist the student:

1. Knows medicines, the composition thereof and technologies of extemporaneous manufacturing of drugs, 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 the effects and side effects and adverse reactions and the use of medicines and herbs for the treatment and prevention of diseases;
3. Is competent to deal 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 specialties and, where appropriate, consults with representatives of other fields;

6. Is capable orally and in writing to explain specialty related problems in Estonian and in English, using specialized information technology tools and communication techniques;
7. Values cultural differences, is tolerant and respects differences between 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 the basics of management, entrepreneurship and teamwork necessary for working as an assistant pharmacist.

Conditions of completion of the curriculum

The curriculum includes:
10 modules (180 ECTS):

1. Chemistry (25 ECTS)
2. Herbal treatment (15 ECTS)
3. Effect of drugs on the human body (25 ECTS);
4. Preparation and dispensing of drugs (55 ECTS)
5. Professional development 15 ECTS;
6. Research and development methodology (15 ECTS);
7. Foundations of health care (5 ECTS);
8. Human studies (10 ECTS)
9. Graduation thesis/final exam (5 ECTS)
10. Elective subjects and optional subjects (10 ECTS);

Including

The capacity of internship: 38 ECTS
The capacity of the graduation thesis/final exam 5 ECTS
The capacity of elective subjects 6 ECTS
The capacity of optional subjects 4 (ECTS)

Options to complete the curriculum	The curriculum includes elective subjects in the capacity of 6 ECTS, which support the achievement of curriculum goals, 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. In the third year, upon completion of the pharmacy curriculum, the student can choose between the graduation thesis and the final exam.
Conditions for completion of the curriculum	Completion of the curricula in full and defending of the graduation thesis or passing the final exam for a positive grade
The name of the diploma granted upon graduation	Diploma of professional higher education *Diploma of Professional Higher Education*

Documents issued at graduation	Professional higher education diploma, the accompanying academic transcript and diploma supplement in English
Further education opportunities	Master's studies
Access to labor market	Has acquired learning outcomes for employment as an assistant pharmacist

Letter of explanation of the curriculum of **AN ASSISTANT PHARMACIST**

From 2012, the following changes have been introduced into the curriculum of an assistant pharmacist:

1. An option has been created for students to complete the curriculum with the final exam or with a graduation thesis, giving students the opportunity to use their knowledge on solving the theoretical and practical tasks related to their future occupation;
2. The wording of the objectives and outcomes of the modules and subjects have been adjusted;
3. In the module of elective and optional subjects (10 ECTS) the proportion of elective (6 ECTS) and optional subjects (4 ECTS) has been determined.
4. The subject "The basics of research" (9 ECTS) has been divided into several different subjects: the basics of research (4 ECTS) herbarium (2 ECTS) and the course paper (3 ECTS), in order to ensure a better understanding of the content and objectives of the subjects.

In the basic curriculum of an assistant pharmacist, the name of the curriculum, the conditions for commencement of the studies, the nominal duration and capacity of the studies, the language of instruction, specialization options and the curriculum content 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 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 labor market assistant pharmacists are also competitive in the adjacent areas of pharmacy.

In professional activities, accuracy, correctness, commitment to his or 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's study curricula.

Upon completion of the curriculum in its full capacity, the graduates can apply for the qualification of an assistant pharmacist.

THE BASES OF THE CURRICULUM AND ORGANIZATION OF INTERNSHIP

The curriculum is based on the following legal acts and basic documents of the field of activity:

1. Republic of Estonia Education Act(30.03.1992)
2. Higher Education Institutions Act(16.07.1998);
3. Universities Act(18.02.1995)
4. Standard of Higher Education, Government of the Republic Regulation (No 178 of18.12.2008);
5. Pharmacist III, IV, V, the professional standard(04.12.2008)
6. Medicines Act(21.09.2007)
7. Universities Act, the Private Schools Act and Institutions of Professional Higher Education Act and the Related Legislation Amendment Act(19.06.2008);
8. Statutes of the Tallinn Health Care College(29.01.2009);
9. The Statute of the Outcome Based Curriculum of the Tallinn Health Care College (19.04.2011).

The current curriculum of an assistant pharmacist was created in the year 1998; it has since been upgraded in the years 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 internship 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 exam/graduation thesis is 130 h), the internship in the work environment (pharmacy practice) is 988 h, or 38 ECTS.

The main learning methods used in learning are: lecture, seminar, e-learning, a 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 an assistant pharmacist, the specific nature and needs of the profession are kept in mind. In the view of integrating the subjects with one another and to better achieve the objectives and outcomes of the curriculum, the subjects have been divided into 10 modules.

Modules are not limited to one academic year, but in parts are carried through the entire learning cycle. Beside the professional theoretical education, in the curriculum of an assistant pharmacist, internship in the work environment has an important place, which takes place as pharmacy internship (38 ECTS) in full accordance with the main directions of the training.

Internship 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. Internships are 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 perform the internship on the basis of an individual schedule. To perform internships, students can choose the internship bases according to the list of internship bases approved by the Chair, which is updated every academic year. In the curriculum of an assistant pharmacist, the internship bases are general pharmacies and hospital pharmacies, where the students acquire the learning outcomes of dispensing drugs. The learning outcomes of dispensing drugs are acquired by the student in the pharmacies, where manufacturing of medicinal products on the basis of prescription takes place on a daily basis.

Internships are supervised from the College by specialty lecturers and in the internship bases by practicing professionals with a higher education who have completed the training of mentors. As a result of the cooperation of students, lecturers and mentors, the students' learning opportunities in the internships are regulated and the assessment and feedback processes are supported by way of individual and group supervision. At the end of the internship, the lecturers analyze the organization of the internship, the coping of the students and learning opportunities in the work environment. The summaries of the internship process are analyzed and proposals are made for planning for the next academic year.

The research goals of the studies are realized through the course papers and the graduation thesis.

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 is important to pass the examination.

The organization of the learning process is provided by the Rules of Organization of Studies of the Tallinn Health 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 the taking into consideration thereof in the study process, ensure the maximum rationality, efficiency and student centeredness of the training of pharmacists. The further development of the process is ensured by the introduction and consistent implementation of modern teaching and learning methods.

REQUIREMENTS SET FOR THE CURRICULUM AND THE QUALITY OF STUDIES

The curriculum of an assistant pharmacist is in accordance with the action lines of the Tallinn Health Care College The objectives and outcomes of the curriculum meet the general requirements of professional higher education and the requirements necessary to ensure the professional activities of an assistant pharmacist (professional standard of an 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, pharmacy students, alumni, employers' representatives and external experts. The council of the curriculum will monitor and analyze the modern development trends in the field of pharmacy and where appropriate, make proposals to the Chair to supplement and change the curriculum and develop the 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:

1. Curriculum design and compliance with professional standards;
2. Continuous development of the content of the curriculum in line with the changes in the nature of drug handling and pharmacy work;
3. Improving the teaching methods in accordance with the emergence of new opportunities for the use of information technology;
4. Raising the professional and teaching competence of the lecturers by way of carrying out various refresher courses, professional development and working as an exchange lecturer;
5. All-round development and enhancing of the cooperation between teachers and students;
6. Systematic collection and analysis feedback from students, graduates and employers;
7. 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 an assistant pharmacist are related to the factors that directly or indirectly affect pharmacy as a profession and a specific healthcare area. The most important of these factors are:

1. Changes in the orientations of the profession of an assistant pharmacist due to the developments in the general nature of the drug trade;
2. Changes in the professional standard of an assistant pharmacist;
3. Changes in the legislation of the health care system;
4. Changes in the legislation of educational system;
5. Health care reforms;

6. Technological changes in health care;
7. Demographic changes in society.

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

CURRICULUM MODULES AND SUBJECTS, THEIR OBJECTIVES AND LEARNING OUTCOMES

Name of the module: CHEMISTRY	**Capacity: 25 ECTS** **Code:** 1KE09
Objective	To develop the chemistry knowledge base necessary for professional activities, to give an overview of the chemical processes in the body and their relationship with the functioning of the body, to clarify the relationship between chemical structure and pharmacological effects of the medicinal substances.
Learning outcomes	Upon completion of the module, the student: 1. Knows the basic concepts of inorganic, organic, analytical and pharmaceutical chemistry 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 the basic drug groups, their chemical and physical properties, principles of pharmaceutical analysis and the most important requirements of purity and storage of medicinal substances.
Evaluation of the module: The module is assessed according to a subject-based method	
Subjects: Inorganic chemistry, 4 ECTS Organic chemistry, 5 ECTS Analytical chemistry, 6 ECTS Biochemistry, 3 ECTS Pharmaceutical chemistry, 7 ECTS	

Code	***Name of the subject***	***Volume***
1KE09/AOK	***INORGANIC CHEMISTRY***	4 ECTS
Objective	To give students the basic knowledge of the structure of inorganic compounds, their physical and chemical properties and their mutual relationships.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the basic concepts of inorganic chemistry; 2. Knows the substance classes; 3. Is able to explain the nature of the process of hydrolysis; 4. Has basic knowledge of redox processes;	

	5. Has basic knowledge of the most important compounds of metals and non-metals.	
Code	***Name of the subject***	***Volume***
1KE09/OK	***ORGANIC CHEMISTRY***	5 ECTS
Objective	To give students the basic knowledge of the structure of organic, physical and chemical properties and their mutual relationships.	
Learning outcomes	Upon completion of the subject, the student: 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	***Name of the subject***	***Volume***
1KE09/AK	***ANALYTICAL CHEMISTRY***	6 ECTS
Objective	To provide students with the practical skills for analysis of various compounds, including drugs.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the basic concepts of analytical chemistry; 2. Knows the methods used in analytical chemistry; 3. Is able to determine a variety of compounds; 4. Knows and is able to use the key methods of volume analysis; 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.	
Code	***Name of the subject***	***Volume***
1KE09/BK	***BIOCHEMISTRY***	3 ECTS
Objective	To provide basic knowledge of the bio-molecules of the body and their functions in the metabolism of the organism.	
Learning outcomes	Upon completion of the subject, the student: 1. Has knowledge of basic concepts of biochemistry; 2. Is able to explain the relationship between the structure and the properties of the substance; 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; 4. Has knowledge of the body as a whole, its individual parts and the relationship and the co-operation between the parts.	
Code	***Name of the subject***	***Volume***
1KE09/FK	***PHARMACEUTICAL CHEMISTRY***	7 ECTS
Objective	To provide a basic knowledge of the chemical structure of the main	

	medicinal substances, their physical and chemical properties and pharmaceutical analysis.
Learning outcomes	The student who has completed the course: 1. Knows the basic concepts of pharmaceutical chemistry; Is able to explain the basic structure of drug groups and 2. the chemical structure and properties of the medicinal substances belonging therein; 3. Is familiar with the principles of identification and quantitative determination of major therapeutic agents; 4. Knows the requirements for the chemical purity of therapeutic agents; 5. Knows the storage requirements of therapeutic agents.

Name of module: HERBAL TREATMENT	**Capacity: 15 ECTS** **Code:** 1TR09

Objective	To provide assistant pharmacists the knowledge of the basics of herbal treatment necessary for practical pharmacy work and of the options to use herbs and the preparations thereof to strengthen the body, for the treatment and prevention of disease.
Learning outcomes	Upon completion of the module, the student: 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 the natural preparations affecting the body functions and is able to make recommendations for their use.

Evaluation of the module: The module is assessed according to a subject-based method

Subjects:
Botany, 4 ECTS
Pharmacognosy 5 ECTS
Phytotherapy 4 ECTS
Natural products 2 ECTS

Code	***Name of the subject***	***Volume***
1TR09/BOT	***BOTANY***	4 ECTS
Objective	To provide the basic knowledge of the structure and function of plants and of the importance of plants in wildlife and in the lives of people necessary for the acquisition of the professional subjects (pharmacognosy, aromatherapy) related to medicinal plants.	
Learning outcomes	Upon completion of the subject, the student: 1. Has knowledge of the structure of plant cells, plant tissues and plant organs and of their function in plants; 2. Is able to explain the specific nature of plant breeding and their life cycle; 3. Has knowledge of the principles of plant classification; 4. Knows the richest in the species plant families and the most important plant species, cultivated plants and medicinal plants belonging to them; 5. Has knowledge of the most important physiological processes in plants (photosynthesis, transpiration, mineral nutrition).	
Code	***Name of the subject***	***Volume***
1TR09/FGN	***PHARMACOGNOSY***	5 ECTS
Objective	To provide basic knowledge of drugs, herbal drugs, medicinal plants, their main active substances and the biosynthesis of active substances.	
Learning outcomes	Upon completion of the subject, the student: 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 depends the therapeutic effect of the most important medicinal plants and herbal drugs; 4. Knows the principles of collection, drying and storage of medicinal plants.	
Code	***Name of the subject***	***Volume***

1TR09/FUT	***PHYTOTHERAPY***	4 ECTS
Objective	To provide expertise on 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	Upon completion of the subject, the student: 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.	
Code	***Name of the subject***	***Volume***
1TR09/LT	***NATURAL PRODUCTS***	2 ECTS
Objective	To provide expertise of the plant and animal products belonging to food supplements and external natural products and of their use.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows and is able to recommend products manufactured of natural ingredients and medicinal plants, 2. Knows the more common co-effects and side effects of the preparations manufactured from natural substances and medicinal plants, 3. Is able to assess the conformity of product package labeling, 4. Is able to use competent professional literature and information from the Internet environment for evaluation of the advertising claims presented in the media.	

Name of the module: EFFECT OF MEDICINES ON THE BODY		**Capacity: 25 ECTS** **Code:** 1RTO09
Objective	To provide the student with basic knowledge of the effect and the mechanisms of the action of plants 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 body.	

Learning outcomes	Upon completion of the module, the student: 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. Knows the mechanisms of absorption and transformation of therapeutic agents in the body; 5. Is familiar with modern pharmaceutical drugs and their use in the treatment of diseases; 6. Knows toxins and their effects on the body; 7. Knows the drugs used for treatment of pets and farm animals.

Evaluation of the module: The module is assessed according to a subject-based method

Subjects

Pharmacology - 9 ECTS;
Pharmacotherapy I, 3 ECTS
Pharmacotherapy II 5 ECTS
Veterinary pharmacy 2
ECTSBiopharmacy 4 ECTS
Toxicology 2 ECTS

Code	***Name of the subject***	***Volume***
1RTO09/FL	***PHARMACOLOGY***	9 ECTS
Objective	To give the students knowledge of the mechanism of action, the side-effects, by-effects and clinical use of drugs.	
Learning outcomes	Upon completion of the subject, the student: 1. Understands the pharmacokinetics and pharmacodynamics of drugs; 2. Has knowledge of the effects of drugs on the body and of the factors influencing the effects; 3. Knows the different ways of administration of medicines and the effects of a drug depending on the form of medicine and the way of administration of the medicine; 4. Has knowledge of drug groups, their pharmacokinetics, pharmacodynamics, dosing, contraindications and side effects; 5. Is able to use pharmacology-related reference books, manuals and online resources.	

Code	***Name of the subject***	***Volume***
1RTO09/FT-1	***PHARMACOTHERAPY I***	3 ECTS

Objective	To provide knowledge of pharmacotherapy: the different drug groups, their effects on the body and their use in treating diseases.	
Learning outcomes	Upon completion of the subject, the student: 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 a 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	***Name of the subject***	***Volume***
1RTO09/FT-2	***PHARMACOTHERAPY II***	5 ECTS
Objective	To provide knowledge of pharmacotherapy; the different drug groups, their effects on the body and their use in treating diseases.	
Learning outcomes	Upon completion of the subject, the student: 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 prescription drug-groups; 3. Is able to explain the side effects and interactions of prescription drugs; 4. Has a general knowledge of the disease, for the treatment of which prescription drug groups are used; 5. Is able to use drug information sources: pharmacology reference books, manuals and Internet-based sources; 6. Knows the general principles of treatment of acute drug poisoning.	
Code	***Name of the subject***	***Volume***
1RTO09/VF	***VETERINARY PHARMACY***	2 ECTS
Objective	To give the students knowledge of the mechanism of action, side effects and clinical use of veterinary drugs.	

Learning outcomes	Upon completion of the subject, the student: 1. Understands the differences between humans and animals in drug administration and in determination of doses of medication; 2. Is able to give adequate advice to animal owners within the competence of pharmacy staff; 3. Knows the characteristics of pets and farm animals; 4. Is able to distribute prescription medications to animals, and knows the legislation concerning animals.	
Code	***Name of the subject***	***Volume***
1RTO09/BF	***BIOPHARMACY***	4 ECTS
Objective	To provide students with knowledge on the pharmacokinetics and biopharmaceutical meaning of drugs, of the relationship between pharmaceutical technology and pharmacology.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the options and kinetics of research of release of the active substances that form medicines; 2. Is able to explain the principles of passive and active transport taking place in the body; 3. Knows the pharmacokinetics of drugs; 4. Knows the biopharmaceutical meaning of the physio-chemical properties and of the various pharmaceutical forms manufactured of drugs.	
Code	***Name of the subject***	***Volume***
1RTO09/TO	***TOXICOLOGY***	2 ECTS
Objective	To give the students an overview of the toxic effects of potent substances, including drugs, of the function of the body and of the prevention of poisonings and treatment principles. To create appropriate links between everyday life and professional practice.	
Learning outcomes	Upon completion of the subject, the student: 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.	

Name of the module: PREPARATION AND ISSUING OF DRUGS	**Capacity: 55 ECTS** **Code:** 1RVV09
Objective	To provide the assistant pharmacist with specific professional expertise in pharmacy drugs, the real pharmacy work and the organization of the pharmaceutical industry in Estonia, the ability to prepare prescription drugs, processing prescriptions and interpersonal skills for servicing the customers of the pharmacy.
Learning outcomes	Upon completion of the subject, the student: 1. Knows the drug manufacturing technologies and is able to prepare on thebasis of prescription's magistral formulae, taking into account the physio-chemical properties of the active substances; 2. Has an overview of the drugs, other medical use goods and health products sold in Estonian pharmacies; 3. Is familiar with the active substances of pharmaceutical drugs; 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.
Evaluation of the module: The module is assessed according to a subject-based method	
Subjects: Pharmaceutical technology I 4 ECTS Pharmaceutical technology II, 4 ECTS Pharmacy internship I, 13 ECTS Pharmacy internship II, 25 ECTS Pharmaceutical product intelligence I 2 ECTS Pharmaceutical product intelligence II 3 ECTS Pharmaceutical management I 2 ECTS Pharmaceutical management II, 2 ECTS	

Code	***Name of the subject***	***Volume***
1RVV09/FKT-1	***PHARMACEUTICAL TECHNOLOGY I***	4 ECTS
Objective	To provide expertise of drug manufacturing technologies and the expertise of manufacturing magistral formulae taking into account the physio-chemical properties of the therapeutic agents.	
Learning outcomes	Upon completion of the subject, the student: 1. Is able to use the devices of weight and measure economics; 2. Is able to prepare powders, herbal teas, solutions, mixtures, infusions, jams, suspensions, and emulsions in a technologically correct way knowing the physio-chemical properties of therapeutic agents; 3. Is familiar with asepsis and antisepsis, and is able to comply with	

	sanitary requirements; 4. Is able to correctly formalize the storage of manufactured drugs for dispensing.	
1RVV09/FKT-2	***PHARMACEUTICAL TECHNOLOGY II***	4 ECTS
Objective	To provide expertise of drug manufacturing technologies and the expertise of manufacturing magistral formulae taking into account the physio-chemical properties of the therapeutic agents.	
Learning outcomes	Upon completion of the subject, the student: 1. Is able to use the devices of weight and measure economics; 2. Knows the physical, mechanical and chemical sterilization processes used for sterilization; 3. Is able to prepare ointments, suppositories and injections drugs technologically correctly knowing the physio-chemical properties of therapeutic agents; 4. Is familiar with asepsis and antisepsis, and is able to comply with the sanitary requirements; 5. Is able to correctly formalize the storage of manufactured drugs for issuing.	
Code	***Name of the subject***	***Volume***
1RVV09/P-1	***PHARMACY INTERNSHIP I***	13 ECTS
Objective	Registration of the knowledge acquired in theoretical and practical training.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the technologies of manufacturing powders, medicinal teas, solutions, chemical mixtures, leach liquors, jams, 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 medical use goods and health products sold in Estonian pharmacies; 3. Knows the nomenclature of the over the counter drugs 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 coaching related components and is able to provide evaluation thereto.	
Code	***Name of the subject***	***Volume***
1RVV09/P-2	***PHARMACY INTERNSHIP II***	25EAP
Objective	Registration of the knowledge acquired in theoretical and practical training.	
Learning	Upon completion of the subject, the student:	

outcomes	1. Knows the technologies of manufacturing powders, medicinal teas, liquid medicines, ointments, suppositories and injection drugs and is able to, on the basis of doctor's prescriptions, produce magistral formulae; 2. Has an overview of 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 familiar with the work organization of the pharmacy and the drug-handling system; 5. Analyses in a seminar, the work process and the final result regarding the technological, organizational and coaching related components and is able to provide evaluation thereto.	
Code	***Name of the subject***	***Volume***
1RVV09/FKT-1	***PHARMACEUTICAL PRODUCT INTELLIGENCE***	2 ECTS
Objective	To provide the knowledge of the differences of over the counter drugs and skills for their selection.	
Learning outcomes	Upon completion of the subject, the student: 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, analyze them and give further advice in their areas of expertise.	
Code	***Name of the subject***	***Volume***
1RVV09/FKT-2	***PHARMACEUTICAL PRODUCT INTELLIGENCE***	3 ECTS
Objective	To provide the knowledge of the differences of prescription drugs and skills for their selection.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the prescription drug groups; 2. Is familiar with the active substances and the respective preparations within the group; 3. Is able to on the basis of active substance based prescription compare and recommend medication according to the customer’s needs; 4. Is able to read and process digital and paper prescriptions.	
Code	***Name of the subject***	***Volume***
1RVV09/FKR-1	***PHARMACEUTICAL MANAGEMENT I***	2 ECTS
Objective	To provide the students with knowledge of the work organization and current	

	legislation of the pharmaceutical field.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the conditions set for the provision of pharmacy services; 2. Is able to arrange the preparation and dispensing of medicines in a pharmacy in accordance with the required procedure; 3. Knows the work organization of a pharmacy by different agencies; 4. Is familiar with the legislation concerning the pharmacy organization; 5. Is able to apply the acquired knowledge in practical work; 6. Is able to use the information material needed in pharmacy work in counseling of both patients and health care workers.	
Code	***Name of the subject***	***Volume***
1RVV09/FKR-2	***PHARMACEUTICAL MANAGEMENT II***	2 ECTS
Objective	Pharmacy management is one of the main subjects of training for pharmacists, which gives the knowledge of the organization of work of the area of a pharmacy and of the current legislation.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the requirements for prescribing of drugs and dispensing thereof from pharmacies; 2. Knows the work organization of a pharmacy by different agencies; 3. Is familiar with the legislation concerning the pharmacy organization; 4. Has an overview of the conditions of wholesale sales and of the rules of production of drugs; 5. Has knowledge of a variety of pharmaceutical companies; 6. Is able to apply the acquired knowledge in practical work; 7. Is able to use the information material needed in the pharmacy work in counseling of both the patients and health care workers.	

Name of the module: PROFESSIONAL DEVELOPMENT	**Capacity: 15 ECTS** **Code:** 1PA09
Objective	Introduction of students into the learning necessary for professional development through integrated subjects of medical humanities and organizational behavior. Opportunities will be created to support the professional development for discussing the issues of the field of the subjects forming the medical humanities and organizational behavior, writing of topical essays and performing tests. Basic knowledge and skills are provided for lifelong professional development of the students.
Learning outcomes	Upon completion of the module, the student: 1. Knows the Latin professional terminology, the expressions and abbreviations used in prescriptions

	2. Is able to write the necessary expressions correctly; 3. Values the development of pharmacy as a science; 4. Is able to use the basic concepts and basic theories of philosophy and sociology of medicine and different paradigms explaining the development of the society; 5. Knows the basic concepts and the main theories of organizational behavior; 6. Can use a variety of techniques used in customer service; 7. Implements the teamwork skills received in the management studies; 8. Knows the difference between cultures; 9. Knows the psychological features of human life span; 10. Knows how to use modern literature on organizational behavior.
Evaluation of the module: The module is assessed according to a subject-based method	
Subjects: Medical humanities 4 ECTS Latin 3 ECTS Organizational behavior I, 4 ECTS Organizational behavior II 2 ECTS Organizational behavior III, 2 ECTS	

Code	***Name of the subject***	***Volume***
1PA09/MH	***MEDICAL HUMANITIES***	4 ECTS
Objective	To provide expertise to discuss the issues in the field of medical humanities and basic knowledge and skills for lifelong professional development of students.	
Learning outcomes	Upon completion of the subject, the student: 1. Has an overview of the development of the pharmacy as a science; 2. Is able to use the basic concepts and basic theories of philosophy and sociology of medicine and different paradigms explaining the development of the society.	

Code	***Name of the subject***	***Volume***
1PA09/LK	***LATIN***	3 ECTS
Objective	To achieve the proficiency in Latin necessary for an assistant pharmacist.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows how to properly use professional terminology, including the terms and abbreviations used in prescriptions; 2. Knows how to set up the necessary expressions and communicate them properly; 3. Values education, proper professional language and	

	adequate use thereof.	
Code	***Name of the subject***	***Volume***
1PA09/ORK	***ORGANIZATIONAL BEHAVIOR I***	4 ECTS
Objective	To provide basic knowledge and skills for lifelong professional development of the students.	
Learning outcomes	Upon completion of the subject, the student: 1. Has an overview of the operation and the curriculum of Tallinn Health Care College; 2. Is familiar with the Estonian and international higher education system; 3. Has knowledge of the basic concepts and the major treatises of developmental psychology; 4. Is aware of his or her personal abilities and is able to critically analyze them; 5. Knows the psychological features of human life span; 6. Is able to use modern professional literature and databases and is able to manage and plan individual work based on the subject.	
Code	***Name of the subject***	***Volume***
1PA09/ORK	***ORGANIZATIONAL BEHAVIOR II***	2 ECTS
Objective	To give students an overview of the conceptual thinking of leadership as a process, valuing every individual employee.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the specifics of management and the main directions of leadership; 2. Has an overview of the nature of the functions of the manager; 3. Is familiar with the changing environment, knows and is able to appropriately use different management styles; 4. Knows the principles of teamwork and the basics of change management.	
Code	***Name of the subject***	***Volume***
1PA09/ORK	***ORGANIZATIONAL BEHAVIOUR III***	2 ECTS
Objective	To give the students knowledge of the principles and key issues of contemporary customer service.	
Learning outcomes	Upon completion of the subject, the student: 1. Is familiar with different communication models; 2. Is aware of the principles of service ethics; 3. Can map customers and knows techniques to cope with the various types of customers;	

	4. Is able to plan (sales) conversation; 5. Knows the psychological features of the human life span; 6. Is able to resolve complaints and problems; 7. Is able to apply the principles of teamwork.

Nameof themodule:RESEARCH AND DEVELOPMENT METHODOLOGY		**Capacity: 15 ECTS** **Code:** 1UAM09
Objective	To introduce to 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.	
Learning outcomes	Upon completion of the module, the student: 1. Is able to use professional evidence-based sources for writing a course paper; 2. Is able to use Estonian and/or English language for writing development and research papers; 3. Is able to prepare a herbarium; 4. Is familiar with different research methods and is able to use them in carrying out applied research; 5. Values ethics and is ready to apply the knowledge gained in professional work; 6. Is able to use e-learning opportunities in the learning environment and has practical skills in information searching and processing (word processing, spreadsheet, presentation, computer-graphics, and file operations).	
Evaluation of the module: The module is assessed according to a subject-based method		
Subjects: Language learning 6 ECTS Basic of research 4 ECTS Herbarium 2 ECTS Course paper 3 ECTS		
Code	***Name of the subject***	***Volume***
1UAM09/KO	***LANGUAGE LEARNING***	6 ECTS

Objective	To develop knowledge of 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.	
Learning outcomes	Upon completion of the subject, the student: 1. Values the Estonian language, the importance of words in the communication process and the correct use of language. 2. Knows the requirements set for scientific language and is able to use them; 3. Knows English language professional terminology; 4. Is able to translate the English language professional literature. 5. Is able to communicate in English and in Russian.	
Code	***Name of the subject***	***Volume***
1UAM09/TA	***BASICS OF RESEARCH WORK***	4 ECTS
Objective	Using evidence-based principles of research to identify different sources of information (including subject-specific databases), to plan and carry out applied scientific research and development work and to appreciate the ethical issues of research.	
Learning outcomes	Upon completion of the subject, the student: 1. Is able to use professional evidence-based sources; 2. Is familiar with different research methods and is able to use them in carrying out applied research; 3. Values ethics and is ready to apply the knowledge gained in professional work; 4. Is able to use e-learning opportunities in the learning environment; 5. Has practical skill in information searching and processing (word processing, spreadsheet, presentation, computer-graphics and file operations).	
Code	***Name of the subject***	***Volume***
1UAM12/HE	***HERBARIUM***	2 ECTS
Objective	To provide the skills for identification of naturally occurring plant species using plant identification key books and the skills for preparation of herbarised plant collections.	
Learning outcomes	On the basis of the knowledge and experience acquired upon preparation of the herbarium the student: 1. Is able to use plant identification key books for identification of unknown plants;	

	2. Knows how to collect from nature, preserve and store the plant specimens necessary for examination; 3. Is able to properly herbarise and document the plant specimens collected for preparation or enhancement of botanical collections.	
Code	***Name of the subject***	***Volume***
1UAM12/KT	***COURSE PAPER***	3 ECTS
Objective	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.	
Learning outcomes	Upon preparation of a course paper, the student: 1. Will be able to independently see their own specialty challenges for the solution of which research needs to be performed; 2. Will be able to work independently through the scientific literature related to the research problem; 3. Will be able to find the statistical data related to the research problem from the data bases and to analyze them; 4. Is able to acquire the laboratory methods necessary for experimental research and, if necessary, modify them; 5. 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; 6. 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.	

Name of the module: FOUNDATIONS OF HEALTH CARE	**Capacity: 5 ECTS** **Code:** 1TA09
Objective	To provide knowledge of the basis of pharmaceutical care, development of coping ability and prevention of work-related diseases.

Learning outcomes	Upon completion of the module, the student: 1. Knows the organizational problems associated with drug use, drug information, drug manufacturing, and drug controls; 2. Knows the fundamentals of legislation, the key positions of the legal acts concerning public health and occupational health; 3. Knows the criteria of evaluation and improvement of the state of health of the population; 4. Knows the health risks of the living and working environment and the principles of their assessment; 5. Knows the options of primary care and first aid techniques.

Evaluation of the module: The module is assessed according to a subject-based method

Subjects:
Pharmaceutical care 2 ECTS
Life and work environment 3 ECTS

Code	***Name of the subject***	***Volume***
1TA09/FH	**PHARMACEUTICAL CARE**	2 ECTS
Objective	To provide students with basic knowledge of employment legislation and of general health care related legislation and organizational problems associated with drug use, distribution, drug information, pharmaceutical manufacturing and control.	
Learning outcomes	Upon completion of the subject, the student: 1. Has an overview of the legislative principles; 2. Has acquired knowledge of employment legislation and the health related legislation; 3. Knows the system of pharmaceutical care and has knowledge of the basics of pharmaceutical marketing; 4. Knows the factors that influence the consumption of drugs; 5. Has a general idea of the new drug development process.	

Code	***Name of the subject***	***Volume***
1TA09/KK	***LIVING AND WORKING ENVIRONMENT***	3 ECTS
Objective	To provide knowledge for ensuring the durability of health, development of coping ability and prevention of work-related diseases.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the criteria of evaluation and improvement of the state of health of the population; 2. Knows the health risks of living and working environment and the principles of their assessment and prevention; 3. Knows the options of primary care and first aid techniques.	

Name of the Module: HUMAN STUDIES		**Maht: 10 EAP** **Code:** 1IO09
Objective	To provide the basic knowledge of the structure of the human body, organ systems and their functioning necessary for professional activities and understanding the effect of drugs, as well as the knowledge of the pathological anomalies of organ function and body metabolism in case of microbial infections and hereditary diseases caused by gene defects.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the biological bases of structure and function and operation of the function of the human body; 2. Knows the nature of disease processes and their formation mechanisms; 3. Knows the most important pathogens and the diseases caused by them; 4. Knows the principles of asepsis and antisepsis and the forms of application thereof; 5. Knows the nature of heredity, variability and the most common hereditary diseases.	
Evaluation of the module: The module is assessed according to a subject-based method		
Subjects: Bases of the life of organism 4 ECTS Anatomy and physiology 3 ECTS Pathology 3 ECTS		
Code	***Name of the subject***	***Volume***
1IO09/OEA	***BASICS OF THE VITAL FUNCTIONS OF THE BODY***	4EAP
Objective	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	
Learning outcomes	Upon completion of the subject, the student: 1. Has knowledge of the basic concepts of genetics and microbiology; 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; 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; 4. Is aware of environmental risks.	
Code	***Name of the subject***	***Volume***
1IO09/AF	***ANATOMY AND PHYSIOLOGY***	3 ECTS
Objective	To give students the capability to understand the development, structure and the functioning of the human body and the mechanisms regulating the activity of the organ systems.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the development of the human body; 2. Knows the structure and operation of the human body; 3. Knows the mechanisms regulating the structure and operation of the human body; 4. Is able to explain the processes taking place in the body, based on the physical processes taking place in the body; 5. Has the ability to link the knowledge acquired with other subjects; 6. Knows Latin terminology.	
Code	***Name of the subject***	***Volume***
1IO09/PAT	***PATHOLOGY***	3 ECTS
Objective	To give students an overview of the general pathoanatomical and pathophysiologic changes on different levels of the human body.	
Learning outcomes	Upon completion of the subject, the student: 1. Knows the nature of pathology and is able to use the basic concepts of general pathology; 2. Knows the alternative changes, in the case of which tissue damage dominates; 3. Has an overview of inflammatory processes and immunopathology; 4. Is familiar with the compensatory adaptable and regenerative processes, as well as the nature and mechanisms of emergence of tumors; 5. Has prior knowledge of the special pathological processes in case of most common internal diseases.	

GRADUATION THESIS

Name of the module: GRADUATION THESIS/FINAL EXAM	**Capacity: 5 ECTS** **Code:**
Objective(s)	To ensure the integration and readiness of professional knowledge and skills.
Learning outcomes	Upon completion of the module, the student: 1. Will be able to work independently and analyze the scientific literature related to the research problem; 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; 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; 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; 5. Is able to write a proper graduation thesis and present the results thereof in the oral defense.
Assessment: Exam	

FINAL EXAM

Name of the module: GRADUATION THESIS/FINAL EXAM	**Capacity: 5 ECTS** **Code**
Objective(s)	To ensure the integration and readiness of professional knowledge and skills for beginning employment.

Learning outcomes	Upon completion of the module, the student: 1. Knows drugs, their composition and the technology of extemporaneous preparation of drugs; 2. Knows the effects, co- and side effects of medicines and medicinal plants; 3. Knows the use of drugs and medicinal plants for disease prevention and treatment; 4. Knows the methods used in analytical chemistry and is able to determine the various compounds; 5. Knows pharmacy work and deals in the pharmacy with the receipt, preparation and dispensing of drugs and counseling of customers regarding drugs.

Assessment: Exam

Name of module: ELECTIVE SUBJECTS AND OPTIONAL SUBJECTS	**Volume: ECTSEAP** **Code: VAFA12**

Objective	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.
Learning outcomes	According to the learning outcomes of the selected subjects.

Evaluation of the module: The module is assessed according to a subject-based method

Subjects:
Nutrition studies 2 ECTS
Nutritional supplements and food additives 4 ECTS Counseling in the pharmacy 6 ECTS
Elective subjects 4 ECTS

Code	***Name of the subject***	***Volume***
VAFATO12	***NUTRITION STUDIES***	2 ECTS
Objective	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.	
Learning outcomes	Upon completion of the subject, the student: 1. Has knowledge of the main nutrients of the body and of their role in the body; 2. Is familiar with the nutrition related terminology; 3. Has knowledge of the basics of healthy eating and is able to implement them in their professional work.	

Code	***Name of the subject***	***Volume***
VAFATL12	***FOOD SUPPLEMENTS AND FOOD***	4 ECTS
Objective	To provide an overview of the food supplements and food additives used in the Republic of Estonia.	
Learning outcomes	Upon completion of the subject, the student: 1. Has an overview of the legislation on food supplements, of applications of food supplements marketable in Estonia; 2. Can advise on the use of food supplements and is able to critically analyze the information regarding food supplements; 3. Has an overview of the food additives or e-substances used in Estonia, of their classification, reasons for use and potential hazards; 4. Is able to consciously direct their choices and also provide advice to prospective customers.	
Code	***Name of the subject***	***Volume***
VAFANA12	***COUNSELING IN THE PHARMACY***	6 ECTS
Objective	To deepen the student's knowledge of drug counseling.	
	Upon completion of the subject, the student: 1. In the course of pharmaceutical interaction is able to collect information about the problem and propose solutions; 2. Is able to advise a pharmacy customer based on the customer's individual needs; 3. On counseling, knows how to find and use science based sources.	
	OPTIONAL SUBJECTS	4 ECTS
Objective	Create opportunities for realization of the student's individual needs and intellectual interests within the area of the studies.	
Learning outcomes	According to the outcomes of the subject.	