

APPROVED
by Rector of the Tallinn Health Care College
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**DEVELOPMENT PLAN OF THE MEDICAL TECHNOLOGY
EDUCATION CENTRE
2017–2021**

Tallinn, 2017

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Introduction

The Medical Technology Education Centre is a unit of the academic structure of the Tallinn Health Care College covering three areas: pharmacy, optometry and dental technology. Currently, one professional higher education programme is offered in each of these areas: the Pharmacy and Dental Technology study programmes belong to the health and welfare area in the health field of study and the Medicine group of programmes, while the Optometry programme belongs to the health field of study and the Health Care group of programmes. The College has the right to provide education in these groups of programmes under Annex 3 to the Standard of Higher Education and Directive No. 385 of the Minister of Education of 20 April 2011.

The Pharmacy study programme (EHIS code 1477) was approved by Directive No. 975 of the Minister of Education in the Ministry of Education on 5 September 2002. The nominal duration of the programme is 3 years and its volume is 180 ECTS.

The Dental Technology study programme (EHIS code 80166) was approved by Directive No. 433 of the Minister of Education in the Ministry of Education on 23 May 2005. The nominal duration of the programme is 3.5 years and its volume is 210 ECTS.

The Optometry study programme (EHIS code 1479) was approved by Directive No. 975 of the Minister of Education in the Ministry of Education on 5 September 2002. The nominal duration of the programme is 3.5 years and its volume is 210 ECTS.

The study programmes correspond to the areas of activity of the Tallinn Health Care College. The objectives and outcomes of the study programme meet the general requirements for professional higher education and the requirements for ensuring professional activities. The Development Plan of the Medical Technology Education Centre was prepared on the basis of the proposals made by the teaching staff of the Centre in 2017 with the involvement of alumni and employers. The Development Plan takes account of professional trends and developments in society and technology. The Development Plan of the Medical Technology Education Centre for 2017–2021 is based on the following documents: [Republic of Estonia Education Act](#) (30 March 1992), [Institutions of Professional Higher Education Act](#) (16 July 1998), [Universities Act](#) (18 February 1995), [Standard of Higher Education](#) Government of the Republic Regulation (No. 178, 18 December 2008), [Development Plan of the Tallinn Health Care College](#) (3 April 2017), [Professional Standard. Dental Technician, Level 6](#) (23 May 2013), [Professional Standard. Pharmacist, Level 6](#) (15 November 2016), [Professional Standard. Optometrist, Level 6](#) (28 April 2016), [Universities Act, Private Schools Act and Institutions of Professional Higher Education Act and Related Acts Amendment Act](#) (19 June 2008), [Statutes of the Tallinn Health Care College](#) (5 January 2015), [Product-Oriented Study Programme Statute of the Tallinn Health Care College](#) (19 April 2011), [Medicinal Products Act](#) (16 December 2004), [National Health Plan 2009–2020](#)

Summary of previous Development Plans

All the main objectives of the previous Development Plans (Development Plan of the Chair of Pharmacy 2012–2016, Development Plan of the Chair of Dental Technology 2012–2016, Development Plan of the Chair of Optometry 2012–2016) have been met; the partial implementation of some of the activities did not prevent the achievement of the strategic objectives.

1. All the subjects of the study programme are taught by specialised teaching staff; practising specialists in the respective fields and teaching staff from partner high schools through the ERASMUS programme are involved in teaching.
2. Teaching staff participate in development activities and counselling of students.
3. Study programme development has been a continuous process involving employers, students and alumni; as a result, the students admitted for the academic year 2017/2018 began their studies on the basis of improved programmes.
4. The study programmes correspond to developments in society, graduates are anticipated in the labour market and most of them begin to work in their acquired profession.
5. E-courses and learning objects (10) have been created.
6. Traineeship environments were developed and traineeship supervisors trained in cooperation with employers and professional associations (3).
7. The selection of evidence-based specialised literature was widened, including periodicals and new handbooks, and new textbooks were purchased.
8. From the academic year 2014/2015, Pharmacy students can choose between a final exam and a diploma paper.
9. New laboratories meeting current requirements and the needs of the study programme were completed for the academic year 2015/2016 (the Pharmacy Laboratories project, total cost of 444,631.58 euros).
10. The Chair of Pharmacy offers laboratory analyses for a fee from the academic year 2015/2016.
11. Under the Counselling in the Pharmacy subject, the Chair of Pharmacy offered counselling to the public in the field of pharmaceuticals through the College's website on 26 occasions during 2014–2016.
12. Third-year Dental Technology students studied dentistry materials for course papers in cooperation with TalTech; 12 course papers were written as a result.
13. The admission of Dentistry students was increased from 12 to 13.
14. Teaching staff and students of the Optometry programme conducted a screening of visual acuity in the Tallinn Arte Upper Secondary School. A total of 185 pupils were screened.
15. One digital and one slide-based ophthalmoscopy simulator were purchased for the contact lenses and ophthalmology laboratory of the Optometry study programme, and a new phoropter was purchased for the vision testing laboratory.
16. A ceramic oven, model saw and gel apparatus were purchased for the dental technology laboratory.
17. During the Development Plan period, information days and excursions were organised to present the specialisations to elementary, basic and secondary school pupils; training courses

were developed and conducted (customer service and science of commodities for pharmacy workers without specialised education, general optometry for eyewear shop assistants, training for traineeship supervisors, pharmacy management and the work duties of a pharmacist in the USA, etc.).

Mission

Ensuring the continuity of training in the specialisations of Pharmacy, Dental Technology and Optometry, the conduct of applied research, activities for the public and development of study programmes are in line with the labour market needs, ensuring the continuous development of study programmes, taking into account the developments in the professions and the needs of society.

Vision

Sustainable high-quality teaching and research and development of specialisations through applied research. Offering area-specific competence and expertise in activities for the public. The specialisations have developed into recognised centres of competence by the end of the period.

1. Development objectives

1. Development of the Dental Technology, Optometry and Pharmacy study programmes to ensure the arrival in the labour market of qualified and internationally recognised specialists who have research experience and are up to date with new developments in their field.
2. Development of continuing professional training in the field.
3. Conduct of research in the fields of pharmacy, dental technology, optometry and health behaviour, including interdisciplinary applied research, the results of which can be applied for the common good of society.

2. Strategic activities and objectives

2.1. Members

The members of the Medical Technology Education Centre are the teaching staff, support staff and students.

2.1.1. Employees

Objective

The teaching and support staff are specialists in their respective fields who value teamwork and professional self-development. Teaching staff are familiar with and lead developments in their fields, they apply modern teaching methods and study aids, participate in international programmes, supervise applied research and regularly attend professional continuing training in teaching methods and digital competences.

Indicators

- At least two members of the teaching staff with a doctoral degree teach in each study programme;
- At least three members of the teaching staff a year have taught in a foreign higher education establishment;
- At least three contractual international teaching staff teach in the study programmes;
- One position for an associate professor is created in the Centre.

Activities	Description of activity	Result and/or outcome by 2021
Development of staff competences	Staff participate in professional conferences and fairs with presentations and organise workshops according to their competences.	The results of each applied research project are reflected in a research publication. At least two popular scientific articles are published and at least one conference presentation is made in each study programme every year.
	Teaching staff is ensured the possibility to receive continuing training in English.	The teaching staff of the study programme have English skills corresponding to level B2
	Teaching staff regularly receive continuing training in professional and educational knowledge and digital competences.	All members of the teaching staff have digital competence and they apply learning by simulation.
Internationalisation	Teaching staff participate in mobility programmes, international projects etc.	Assistants (5) and lecturers (4) participate in teacher exchange in foreign higher education institutions at least once and twice, respectively, during five years.
	International teaching staff is involved with funding from the ASTRA project.	At least three contractual international lecturers per study programme are involved in teaching during the period.

2.1.2. Students

Objective

Graduates are anticipated in the labour market, they have evidence-based professional competences and skills. Students contribute to the promotion and development of the specialisations through public activities and participation in applied research, development activities and professional associations.

Students are involved in the development of study programmes through feedback, discussions and participation in the work of the study programme council.

Indicators

- 50% of course and diploma papers are part of applied research;
- At least 70% of the students in all study programmes graduate within the nominal study period;
- The three-year dropout rate in each study programme is under 7%;
- At least 85% of graduates begin to work in their acquired professions;
- 20% of students are mobile.

Activities	Description of activity	Result and/or outcome by 2021
Development of students' competences	Conditions are created in cooperation with alumni and employers for the development of professional digital skills; methods of learning by simulation are used.	According to a survey of employers (in the academic year 2019/2020), all graduates have digital competences within their area of specialisation; the reputation of the professions is high and graduates are highly motivated to begin working in their professions.
	Students and alumni are involved in applied research.	Course and diploma papers are defended every year, of which 30%, 40% and 50% are part of applied research by the years 2019, 2020 and 2021 respectively. The concept of smart diploma papers is applied. Diploma papers are reviewed by alumni.
	Students' papers are entered in the College's internal and external research competitions.	At least 9 students' papers are entered in competitions every year.
Internationalisation	The share of international students is increased through subjects taught in foreign languages and The Pharmacy study programme taught in English. Student exchange is intensified through the	20% of students are mobile.

	involvement of new cooperation partners.	
	Student mobility is increased by participation in joint subjects and conferences.	Students of each study programme have participated in joint subjects and made presentations in at least one international conference every year.
Development activities	Students are continuously involved in activities for the public and in the internal working groups of the College.	Students are involved in the internal working groups of the College. Every year, Pharmacy students have been involved in conducting pre-vocational training in upper secondary schools (6), in organising and conducting health days in a higher education institution (4), and in providing laboratory services for a fee and counselling in the field of pharmaceuticals free of charge together with the teaching staff (30). Optometry students (14) have annually assessed visual acuity and 6 students a year have made presentations on eye health. Six students have made presentations. The public activities of the Dental Technology study programme are related to the Specialisation Development subject, under which oral hygiene trainings are organised every year in kindergartens (3) and denture care trainings are held in retirement homes (2). The activities are covered in the <i>Hambaarst</i> journal.
	To reduce dropping out and increase the share of students graduating within the nominal study period, the student counselling and admission system is reviewed in cooperation with the Study Department.	At least 70% of students of all study programmes graduate within the nominal study period; the dropout rate for each programme is under 7%.

2.2. Studying and teaching

Objective

Staff and students are involved in the development of study programmes through feedback, discussions and participation in the work of the study programme council. Study programmes are developed on the basis of developments and trends concerning the specialisations and the needs of the labour market. Joint studies are carried out between the study programmes.

Indicators

- Joint subjects between study programmes are available in a scope of at least 20 ECTS.
- The Pharmacy programme is launched in English in 2020 with 15 international students enrolled;
- 95% of students are satisfied with the learning process;
- Joint subjects with partner schools are available for each study programme in a scope of at least 5 ECTS;
- 20% of the diploma papers are smart diploma papers by the end of the Development Plan period;
- Four specialised textbooks in Estonian have been published.

Activity	Description of activity	Result and/or outcome by 2021
Study programme development	Study programmes are developed on the basis of developments and trends concerning the specialisations and the needs of the labour market; the development process involves the teaching staff, students and alumni of the programme, as well as representatives of professional associations and employers.	The study programmes meet the needs of the labour market. The study programmes are comparable with programmes of the same profile applied in other countries.
	Joint subjects taught in English are created and developed on the basis of the joint components of study programmes with partner schools in a scope of at least 5 ECTS for each study programme.	Joint e-subjects in English have been created as follows: <ol style="list-style-type: none"> 1. with partner schools for the Optometry programme (e.g. Metropolia and University of Latvia, Oulu University of Applied Sciences) (Vision Therapy LU ja Ophthalmic Optics M); 2. in the Organisation of Pharmacy for the Pharmacy programme;

		3. in the Study of Materials for the Dental Technology programme with the Kaunas College.
	Study programmes are modernised and harmonised through the creation of joint subjects and increasing the share of learning by simulation.	The Customer Service subject is taught by simulation in a training pharmacy. Joint subjects between study programmes are developed (General Pharmacology, Diseases, Anatomy and Physiology, etc.).
	Cooperation with domestic partner higher education institutions is developed.	Cooperation with TalTech is carried out in the Dental Technology study programme. As a result of the cooperation, at least 25 course or diploma papers have been written on material technologies. In the Optometry study programme, cooperation with the TalTech School of Science is continued for developing the Optics 1 and Optics 2 subjects. In the Pharmacy study programme, cooperation with the University of Tartu Institute of Pharmacy continues.
	The organisation of studies is flexible, taking into account the needs of working students.	95% of students are satisfied with the learning process.
Quality of study programmes	The recommendations and proposals of the 2016 quality assessment of the Health Care (Optometry) Medicine groups of programmes are analysed and implemented. Syllabi are regularly monitored and improved where necessary.	Feedback has been analysed and proposals implemented by 2019.
	Outputs of the Optometry study programme are analysed and compared with the ECOO European diploma.	Outputs of the Optometry study programme have been analysed by 2019 and brought into compliance with the requirements for the ECOO European diploma by 2020.
	Coherence analysis is carried out for all study programmes.	Coherence analysis has been carried out for each study programme by 2019

		and the resulting changes have been made in the programmes by 2021.
Launch of new study programmes.	A Pharmacy study programme in English is developed and implemented with support from the ASTRA programme.	Fifteen students have been enrolled on the programme in 2020.
Learning environment	Modern equipment is put into use for determining the bioavailability of medicines and modernising biopharmacy studies in the Pharmacy study programme.	Equipment for determining bioavailability is used in studying and teaching biopharmacy by the end of the Development Plan period.
	A herb garden is created to support applied research and for using in the studies of Pharmacy and other programmes.	The herb garden is used for teaching botany, pharmacognosy and phytotherapy, an applied research project has been carried out to study the presence in herbs of toxic compounds from the soil.
	Technical equipment and measuring devices are acquired for the optics and vision laboratory for making optics experiments (demonstrations) for studies and applied research.	The theoretical knowledge of students has been complemented with learning by simulation. An applied research project has been carried out.
	Possibilities are sought to use a dentist's room for learning customer service and denture procedures.	Traineeships for Dental Technology and Dental Assistant students take place in a dentist's room.
Support for students with special needs.	Support services are made available to students with special needs and infrastructure is adapted accordingly.	Students with special needs use the support services offered by the College (psychological counselling, cognitive assistance, sign language interpreter, personal assistant, etc.). Infrastructure supports the coping of students with special needs.

2.3. Development and applied research

Objective

Staff participate in applied research and contribute to promotion and development of the specialisations taught through participation in public activities and professional organisations. The

objective of study programme development is to improve the programmes and cooperation between interest groups in order to share professional competence and give students experience in applied research, as well as international experience through study programme development and serving society.

Indicators

- Students' satisfaction with the supervision of course and diploma papers (satisfaction survey results) – target 4.7;
- Eight applied research projects are carried out in the Medical Technology Education Centre during the Development Plan period;
- The structural unit has published 40 publications, including 10 research publications;
- A guideline/e-textbook on the preparation of extemporal medicines has been compiled and published.

Activity	Description of activity	Result and/or outcome by 2021
Applied research	<p>Five applied research projects are carried out in the field of pharmacy:</p> <ol style="list-style-type: none"> 1. Preparation and publication of learning materials on the technology of medicinal products. 2. Analysis of the effectiveness of magnesium preparations. 3. Dependence of active ingredient content in herbs on growing site conditions. 4. Pharmacy customers'/patients' awareness of and expectations to health care services available in Estonian pharmacies. 5. Analysis of the cost to the community of return of medicines to pharmacies and the reasons for such return. 	<p>Five applied research papers and 5 research articles have been published and 5 conference presentations made by 2021.</p>
	<p>Two applied research projects are launched in optometry with the involvement of students and teaching staff from the Metropolia University of Applied</p>	<p>Two applied research projects have been completed.</p>

	Sciences, Helsinki, and the Chair of Optometry of the Faculty of Mathematics and Physics of the University of Latvia.	At least 3 research articles have been published.
	In the field of dental technology, an applied research project on the qualities of dentistry materials is under way.	At least 3 research articles have been published.
	An interdisciplinary applied research project is carried out.	An interdisciplinary applied research project has been carried out by the end of the Development Plan period.

2.4. Management, communication and alumni

Objective

The Medical Technology Education Centre is managed democratically, based on the objectives and needs of the College and the study programmes, applying a management system in which decision-making and responsibility is divided between employees. The development of study programmes is managed on a discipline basis. Professional self-development of the staff is valued, their participation in domestic and international training courses, projects and teacher exchange is supported.

Indicators

- 40% of the teaching staff (5 teachers) have received management training;
- Institutional accreditation is passed in 2020.

Activity	Description of activity	Result and/or outcome by 2021
Management	The Centre's staff are up to date on the events in the College and participate actively in the College's development work.	The Centre's staff contribute to the work of the internal working groups of the College (RUTA, quality working group, working environment council, project working groups, etc.) and are experts in their fields outside the College.
	The Centre's staff are up to date on the events in the College and participate actively in the College's development work.	The Centre's staff contribute to the work of the internal working groups of the College (RUTA, quality working group, working environment council, project working groups, etc.) and are experts in their fields outside the College.

	Management quality is improved through training, self-assessment of the structural unit is planned in cooperation with the quality working group.	Five employees of the structural unit have received management training by the end of the Development Plan period and apply the received knowledge in their daily work. Self-assessment of the structural unit has been completed.
Management quality	The Centre participates in the implementation of ASTRA projects.	The pharmacy, dental technology and optometry activities of the ASTRA project have been completed: 1. Activity 9: Pharmacy study programme in English; Activity 14.2: Concept of alternative ways of defending innovative diploma papers.
ASTRA activities	Alumni are involved in study programme development, career counselling and the admission process, as well as other development activities.	2. Alumni participate in study programme councils, admission panels, presentation of specialisations, applied research, and review of diploma papers.
Alumni	Services for a fee are developed in the field of optometry and services for a fee in the field of pharmacy are developed further.	A system of providing services for a fee has been developed, such services are provided as a part of studies from the academic year 2019/2020.
Marketing	Video clips and virtual tours of the Centre's laboratories are created to introduce the specialisations to the public and improve competition for admission.	Video clips and virtual tours to introduce the specialisations have been created in cooperation with alumni.

2.5. Study and work environment

Objective

The study environments for the programmes are modern, new technologies have been implemented, study environments are continuously developed and ensure the sustainability of the study programmes and meet the needs of the labour market.

Indicators

- Equipment has been purchased for determining bioavailability and at least one diploma paper has been defended in the field of biopharmacy;

- The Centre has a functioning herb garden used in studies and research; five diploma papers have been written in the course of applied research;
- In the field of optometry, an optics and vision learning laboratory is operable and two applied research projects are carried out in the laboratory.
- In the field of dental technology, a CAD/CAM system is put into use for applying learning by simulation in the scope of 2 ECTS.

Activity	Description of activity	Result and/or outcome by 2021
Administration	Laboratory equipment is continuously improved in terms of equipment, small devices and relevant user skills.	<p>A spectrometer, UV/IP spectrophotometer, grow lights, equipment for drying herbs, equipment for making suppositories, packaging ointments, etc. have been purchased for implementing and developing the Pharmacy study programme.</p> <p>Sandblasters, etc. have been purchased for implementing and developing the Dental Technology study programme.</p> <p>The necessary measuring equipment has been purchased for implementing and developing the Optometry study programme.</p>
	Modern equipment is put into use for determining the bioavailability of medicines and modernising biopharmacy studies.	Equipment has been purchased for determining bioavailability.
	Conditions are created for studying implantology.	Equipment have been purchased for teaching CAD/CAM technology.
	The ventilation of dental technology laboratories is assessed and the ventilation system improved if necessary.	The laboratory has an effective ventilation system.

	For smooth study and development activities, the condition of laboratory equipment is regularly analysed and equipment is renewed as necessary. All equipment are regularly maintained according to the manufacturers' guidelines.	The training laboratories have modern equipment that is correctly used and maintained. Estonian manuals have been prepared for all equipment.
ASTRA activities	A herb garden is created to support applied research and for using in the studies of Pharmacy and other programmes.	The herb garden is usable, an applied research project has been carried out to study the presence in herbs of toxic compounds from the soil.

2.6. Activities geared to the public

Objective

The Centre is a centre of competence in the fields of pharmacy, dental technology and optometry; professional training for various groups is conducted in cooperation with professional associations and employers. Services for a fee are provided in the relevant areas.

Indicators

- At least one information day concerning each specialisation is carried out every year;
 - Number of participants in health education and health promotion events in a year (current number as of March 2018):
 - pre-school children – currently 0, target 40;
 - basic school children – currently 46, target 55;
 - secondary school children – currently 20, target 30;
 - working age adults – currently 181, target 200;
 - seniors – currently 130, target 180.
- Services provided for a fee by pharmacy laboratories: currently 730 euros (in 2016), target 800 euros.

Activity	Description of activity	Result and/or outcome by 2021
Activities geared to the public	Information days on occupational safety and first aid organised in education institutions and elsewhere.	Six information days have been held by 2021.

	Cooperation with the Kristiine City District Government is continued and developed in order to hold information days on vision and eye health in various establishments of the city district.	Six information days have been held by 2021.
	Information days on nutrition, the use of medicines and food supplements are held in public agencies, companies, etc.	Six information days have been held by 2021.
	Teaching staff and students participate in the organisation and conduct of College health days.	Study programmes of the Medical Technology Education Centre have participated in the organisation and conduct of 3 information days (health days) every academic year (reports, presentations, workshops, health measurements, etc.).
	The students and teaching staff of the Optometry study programme led by a lecturer of the Optometry study programme and in cooperation with other study programmes (Health Promotion, Occupational Therapy) develop and implement a preventive action plan to prevent vision and posture problems in pupils.	The students and teaching staff of eight schools can assess the risks arising from the working / learning environment, follow the Working and Rest Time Act and, where necessary, make proposals for changing the working and/or learning environment.
	Additional possibilities are found to advertise the free counselling service "Ask the Pharmacist" and increase the number of inquiries.	The environment is used for teaching counselling in the pharmacy. The number of inquiries has increased by 60% during the Development Plan period (19 inquiries in 2017, 30 inquiries in 2021). At least 2 articles on the service have been published in the <i>Eesti Rohuteadlane</i> ja <i>Apteeker</i> journals.
Services for a fee	Extension of laboratory and counselling services.	The volume of services for a fee has increased by at least 10%. (730 euros in 2017, at least 803 euros in 2021.)
	Visual acuity assessment is provided in the optometry laboratories.	A price list of services has been prepared. From the academic year 2019/2020, services for a fee are offered as part of studies to at least two institutions.

2.7. Continuing education

Objective

The Centre offers need-based continuing education to alumni, partners and other members of society based on the Lifelong Learning Strategy.

Indicators

- Number of participants in continuing training – currently (in 2017) 220, target 240;
- Income from continuing training – currently (in 2017) 40,000 euros, target 44,000 euros;
- Number of participants in professional orientation courses for upper secondary schools – currently (in 2017) 63, target 75.

Activity	Description of activity	Result and/or outcome by 2021
Organisation	The Centre participates in organising professional orientation courses in upper secondary schools.	Courses are taught in at least two upper secondary schools every year. Teaching staff and students of the Centre prepare for and conduct professional orientation courses in upper secondary schools.
Development	The Medical Technology Education Centre cooperates with the Lifelong Learning Centre and employers in preparing and developing continuing training courses.	At least 5 training courses for a fee have been developed and held in each area. At least two new continuing training courses have been added in the form of e-learning.

3. Procedure for updating the Development Plan

1. An annual action plan is prepared to implement this Development Plan.
2. Performance of the Development Plan is analysed twice during the calendar year:
 - during the budgeting period;
 - at the beginning of the academic year on the basis of a report from the Chair that analyses activities and objectives and measures progress toward the target indicators.
3. The Development Plan will be amended if circumstances arise that materially prevent the implementation of the existing Development Plan.