TALLINNA TERVISHOIU KÕRGKOOL

Tallinn Health College

CURRICULUM TITLE: DENTAL TECHNICIAN CURRICULUM

CURRICULUM LEVEL: FIRST LEVEL HIGHER EDUCATION
APPLIED HIGHER EDUCATION

CURRICULUM CODE IN THE REGISTRY OF CURRICULA OF THE MINISTRY OF EDUCATION AND RESEARCH OF ESTONIA: 80166

# SELF-EVALUATION REPORT

APPROVED BY:

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Tallinn 2008

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## 1. Overview of Tallinn Health College

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|---|---|
| **Name of the higher educational institution** | **TALLINN HEALTH COLLEGE** |
| **Address** | 67 Kännu Street, 13418 Tallinn |
| **Home page** | www.ttk.ee |
| **E-mail** | info@ttk.ee |
| **Phone number** | +372 6711 701 |
| **General number of students at applied higher education level** (01.02.2008) | **1073** |
| **General number of students at vocational education level** (01.02.2008) | **110** |
| **Total number of students at applied higher education curricula** (01.02.2008) | |
| nurse | **724** |
| in Tallinn | **625** |
| in Kohtla-Järve | **99** |
| midwife | **108** |
| dental technician | **27** |
| occupational therapist | **29** |
| optometrist | **54** |
| assistant pharmacist | **98** |
| health promotion specialist | **14** |
| **Total number of students at vocational education curricula** (01.02.2008) | |
| nurse assistant | **110** |
| in Tallinn | **40** |
| in Kohtla-Järve | **70** |
| **Total area of college buildings** | |
| campus in Tallinn | **7357,7 m$^2$** |
| campus in Kohtla-Järve | **1341,7 m$^2$** |
| student hostel Tallinn | **3306,4 m$^2$** |
| **Number of lecturers in the college** (26.06.2008) | |
| full-time job 1,0 | **80** |
| part-time job over 0,5 | **18** |
| part-time job under 0,5 | **91** |
| **General number of staff in college** (26.06.2008) | **221** |
| **Chairs** | **8** |
| **Total number of curricula** (01.09.2008) | **8** |
| applied higher education | **7** |
| vocational education based on secondary education | **1** |
| **Average number of graduates with applied higher education** (2006-2008) | |
| basic nursing | **223** |
| midwife | **34** |
| dental technician | **8** |
| occupational therapist | **5** |
| optometrist | **16** |
| assistant pharmacist | **23** |
| health promotion specialist (opened in 2007) | **-** |
| **Average number of graduates (vocational education level)** (2006-2008) | **54** |

Tallinn Health College is a state applied higher education institution administered by the Ministry of Education and Research. The college operates following the Law on Applied Higher Education Institutions, the Standard of Higher Education, the Law on Vocational Education Institutions, the Statute of the College, and other legislation.

The college offers internationally accepted education on health care, service, and social fields at applied higher and vocational education levels in modern learning environment, and also professional training.
The college has eight chairs: the chairs of nursing, midwifery, optometry, dental technology, occupational therapy, pharmacy, health promotion and the chair of general and supportive subjects. The vocational education department and study department were created in September 2008 (see Appendix 1-2). Diplomas of the graduates at applied higher education level have been accepted in Estonian and European labour market and make it possible to continue studying at Master-study.
All the lecturers in the college have higher education, 17 of them have PhD Degree, 86 lecturers have Master's Degree or corresponding qualification. Four lecturers are studying for their doctorate (as of June 2008).
To guarantee the quality, curriculum development is conducted in co-operation with our partners: analysis of the teaching content, comparing and upgrading; modernizing teaching methods and comparing the level of studying outputs.

### 1.1.Tallinn Health College history and strategic documents

Since the year 1800, several health care schools have been operating for shorter periods in Tallinn. Medical courses for training midwives, nurses and doctor's assistants for army were conducted. Consistent training in health care specialities started in 1940, when the Nurses` School was opened. After consolidation with the Assistant Physicians` School, the Tallinn Medical Secondary School was established. During the World War II, the school was evacuated to Tambov, Russia. In 1944, the school continued working in different hospitals and schools in Tallinn. The school had a department in Kohtla-Järve until the year 1966, when the department became an independent medical school.

During the 68 years of operating as educational institution, 14 specialities have been trained by following the needs of health care system. Since 1992, only candidates with secondary education have been admitted and in 1996 gradual transition to higher education level was started.

In 2005, as a result of reorganisation, the school acquired the status of state applied higher education institution (Republic Government decree from Feb. 28$^{th}$ , 2005, No 118) and is now operating as Tallinn Health College. In 2006, Kohtla-Järve Medical School was reorganised and it became a structural unit of Tallinn Health College.

Tallinn Health College **development plan** for 2005-2008 has been approved by the directive of the Minister of Education and Research. During the current year (2008), the composing of development plan for the years 2009-2011 is under way (see Appendix 1-1). As an internationally recognized applied higher education institution, the **mission** of Tallinn Health College is to provide the students quality higher and vocational education in the fields of health care, service and social care, job-training, and to develop its specialities through applied research and internationalization.

The college is characterized by curricula that conform to with international requirements and local specifics, motivated students, the including of speciality

practicians into teaching and development, cooperation with different Estonian universities and the existence of joint curricula, very good studying and working environment, contemporary practical studying instruments, a continuously developing info technological environment, a constant participation in international programs, inner state project-work, close cooperation with employers and speciality unions. In its activities, the college proceeds from **basic values** like equality, independence and commitment, justice, competency and critical thinking, constant development, internationalization and cooperation, student-centeredness (see Appendix 1-1).

The management of Tallinn Health College proceeds from the college's **statute** and other legal acts. The college is managed and represented by rector. The rector is responsible for the general condition of the college, development and for legal and rational exploiting of financial resources. The highest collegial decision-making body is the council, which is elected for three years. The council consists of the rector who is also the chair person, vice rectors, a representative of lecturers from every chair, and representatives of the student representation, who make at least 1/5 from the council. According to the statute, the college also has a body of advisors, which is a consulting body that connects the college with society (see Appendix 1-2).

In the college budget, a chair is a structural unit with independent sub-budget. The chair carries out teaching, applied research and development activities; its activities proceed from the statute of the college, statute of the chair and other legal acts; the chair implements the development plan of the college and the speciality. The head of the chair is a lecturer, who manages the speciality and reports to the college's council.

### 1.2.The basics of study-organisation in the college

According to the Standard of Higher Education, education at every curriculum in Tallinn Health College is full-time, and according to the college's regulations of study-organisation. To provide learning consistency, studies in the college are regulated by various instructions.

The **Regulations of Study-Organisation** (approved by decision no 3.1, from 20.06.2007 of Tallinn Health College Council) is a basic document for carrying out teaching in the college and it regulates the main rules in the study process.

An **academic calendar**, composed for each academic year, fixes the periods of the academic year date by date, the terms marking the beginning and the end of teaching, the students` status and changes related to their studies, and noteworthy events in the college (see Appendix 1-3). A **teaching schedule**, a schedule for organizing studying in the college, is also developed for each academic year (see Appendix 1-4). It includes chronological division of theoretical study, practical training, a course paper, exams and a final thesis/final exam week by week for each year students and each group. As any applied higher education curriculum includes at least 30% of practical training, a timetable is composed for fixing clearly the organisation of study. The teaching schedule is the basis for developing the **timetables** in chairs, and for planning working hours for teaching staff (see Appendix 2-11). The academic calendar and teaching schedule for next year is annually approved by the council of the college at a session in March. In addition to aforementioned, teaching and the processes related to it are regulated by the **Curriculum Statute**, Requirements for Admission, the Instructions on accreditation of prior studies and work experience (TAKE), Regulations for conducting final examination and final thesis, the Regulation on study

allowance. The documents regulating teaching are reviewed once a year and amendments are made if needed, resulting from the feedback given by the client groups.

To enable the integration between theory and practice in the organisation of studying, the principles of the integration between subjects, sequence of the periods of theoretical studies and practical training are followed. A timetable is developed by the chair for the whole academic year which is available in the web-based study information system and on stands.

To improve the availability of information, the technical organisation of studying has been allocated to the web-environment. **Study-Information System** (SIS) is a web-environment for students and lecturers with logging-in system. Curricula, grades, room plans, timetables, study materials, and information for the students are available in the SIS. A feedback monitoring system has been connected with the SIS, too. The advantage of information in web-environment is the access to the information from around the world, thus it is possible to work outside the college building. The passing of study materials for the students has become considerably better. The possibility to compile graduation documents and to record working hours of teaching staff in the SIS has been planned for the future.

In organizing the studying, the possibilities of implementing different teaching methods are considered. The number of students in a group depends on the subject specifics and the build-up of the subject. Different active teaching methods are used in teaching. In some subjects, E-learning or partial E-learning is used. The capacity of E-learning will be increased in the nearest future, it is supported by the project „Development and introducing of E-learning in vocational and applied higher education institutions“. Theoretical subjects include 50%, practical subjects 20% of independent work. In case of large volume of independent work like course papers or final theses, students are tutored individually or in small groups (up to 5 students in a group).

There are enough classes with different size and equipment for lectures and seminars. Wireless internet is available in the college campus. There are graphic projectors in each classroom, 14 classrooms have been equipped with computers and data projectors that are connected to intranet. In several classrooms it is possible to use presentation technology for digital information (CD, DVD, VHS etc.) (see Appendix 1-9). For all specialities, practical work classes and laboratories are equipped with modern teaching instruments. The college has a computer class that is used for computer training, for lessons of information search and for independent work. Students can use computers for free use (with Internet connection) in the library, where librarians instruct them in the search for information. The library has been specially subdivided, allowing students to learn and do their independent work.

The college is cooperating with employers, speciality associations, other higher education institutions and organisations. The cooperation includes curriculum development, organisation of high-quality practical training, research work and popularizing the health care field in the society. The college has cooperation and/or practical training contracts with several organisations.

## 1.3.Material resources

**Relative economic indicators** (% from the total amount of the budget of the year 2007)

| | |
|---|---|
| on salaries, including taxes | 52% |
| on library | 1,5% |
| on information technology | 3,2% |
| on improving the furnishing | 2% |
| subsidies for students | 12% |

The training need in the health care field is presented to the Ministry of Education and Research by the training commission of the Ministry of Social Affaires, basing on national strategies, development plans, and the suggestions presented by higher educational institutions and professional unions. The state commission for educating is presented to the college by the Ministry of Education and Research annually.

The income of the college and budget policy enable to achieve the aims of the college and curricula. The college development plan, the development priorities of the fiscal year and the most important investments are followed in the drawing up of fiscal year budget for the college. Structural units (chairs, library) and student representation draw their budgets, that are discussed at the rectorate and as a result the college total budget is formed. The college budget is approved by the council and is enacted by the rector.

The college values the supporting of students by offering different possibilities to apply for various scholarships. Students have the right to apply for the best final paper scholarship, the scholarship for best research work, scholarship for the best student, for international ERASMUS exchange-student scholarship for studying abroad, trainees' scholarship to support internationalization etc.

## 1.4.Basics of Quality Assurance in the college. Feedback.

The objective of the quality work in the college is the satisfaction of the clients inside and outside the college, as well as respective improvement and development work. Quality requirements for higher education are defined by Standard of Higher Education, University Act and Applied Higher Education Act. The development of quality management system is one of the objectives in the college development plan for the years 2005-2008.

In 2005, the Rectors Conference of Applied Higher Education Institutions signed a declaration "The Development of Quality Assurance System in Applied Higher Education Institutions", in which they agreed to elaborate joint quality assurance system.

One important step in the development of quality system inside the college was the participation in European Structural Fund project under the aim 1.1. "The Development of Quality Systems in Applied Higher Education Institutions" (2005 – 2007) together with three other state colleges. The objective of the project was to prepare a basic model of feedback and monitoring system with the including of info-technological implementation environment. As the result of the project, it is now easier to provide feedback to different target groups (students, lecturers, alumnae, employers etc) in web-environment (see Appendixis 1-5, 1-6, 1-7).

The common interest of the Rectors Conference of Applied Higher Education Institutions is to develop a transparent quality system in applied higher education institutions. The development of joint quality system was implemented within the European Structural Fund project "Continuous Development of Applied Higher Education Institutions via Quality Management and Co-operation" (2007-2008). The project was managed by Tallinn Health College. As a result of the project in co-operation with universities, a sample handbook about quality was prepared and respective quality management trainings were conducted for the personnel of applied higher education institutions. In addition, a joint website for applied higher education institutions was prepared that includes information in connection with quality issues.
A workshop for all the lecturers of the college took place in January 2008; a process map of the college was prepared within the workshop.

Feedback is collected from every target group, interviews, self analyses (lecturers and chairs), from supervision of the rectorate, questionnaires to customers, and from external and internal revision. With the received feedback, the functioning of the college is developed either directly or through strategic processes.

### 1.5.Cooperation and Internationalization

The activity of Tallinn Health College proceeds from Bologna and Lissabon Declaration, the Internationalization Strategies of Estonian Higher Education, and the Agreement about good traditions of internationalization in higher education institutions of Estonia. The college has formulated the internationalization principles in the development plan for 2005-2008, and is creating the conditions for providing intra-European cooperation and quality through cooperation, mobility, curriculum development, joint studying, and research between other institutions. To achieve this, the college is a member of several networks.

Tallinn Health College participates in cooperation and internationalization in following organisations and projects:

**EURASHE** - European Association of Institutions in Higher Education

**EAHIL** - European Association for Health Information and Libraries

**EAIE** - European Association for International Education.

**Training in health care specialities:**

**COHEHRE** - Consortium of Institutes of Higher Education in Health and Rehabilitation.

**EBHC** - Evidence-Based Health Care Teachers and Developers.

**ENOTHE** - European Network of Occupational Therapy in Higher Education.

**IUHPE** - International Union for Health Promotion and Education.

**Cooperation in Europe**:

Tallinn Health College, possessor of ERASMUS CHARTER, is the 2008 silver medal winner in the area of quality in teacher mobility in the network of Lifelong Learning Program (previous title SOCRATES) sub-program ERASMUS.

Within the frames of **Leonardo da Vinci** programme, Tallinn Health College is a partner in the following development projects: „From Review to Improvement in

European Vocational Education and Training“, REVIMP, „Interactive Guiding- A New Approach“, IGUANA, „SAGE- Senior citizen pArticipate in creating their FuturE“, „Learning Materials for Social and Health Care Students- Foreign Placements“, ETM II, The speciality competency evaluation of the graduates in bio-medicine specialities, Teacher and supervisor exchange, Student and teacher exchange in health and social care.

Within the frames of the **NORD plus** programme, the college took part in the projects: „Laterna Nordica“ and „PaTu II“, HUUTA. Tallinn Health College has joined a new application round of the NORD plus programme.

**INTERREG programme** project HUUTA „Decreasing the use of drugs and prevention of infectious diseases in Helsinki and Tallinn“ has been started; the topic is continuing as an optional subject.

**Support from Europe to the nearest countries**:

**TEMPUS** programme project: „Health Promotion and Nurses Guidance Skills“.

The college with its partners is applying for financing by the **European Social Fund** (ESF), to develop continuing ability, quality management, teaching methods, engaging the information technology means in study process, implementing lifelong learning strategies (retraining) etc.

The college has several bilateral cooperation contracts with Tallinn University, Tartu University Clinic for assuring quality, and with Tallinn Technology College for conducting joint research work.

## 2. The curriculum of dental technology speciality

Dental technician is a specialist who produces dentures to be installed into oral cavity, and orthodontic apparatuses. The chair of dental technology in Tallinn Health College is the only location in Estonia where it is possible to study the speciality of dental technology on the higher education level.

Dental technician curriculum is the applied higher education level of studying; the graduates of the curriculum acquire knowledge about the nowadays technology of dentures and orthodontic apparatuses, about the human organism, and also manual skills.

The higher education curriculum for dental technology speciality was opened in 2005. It provides a basis for understanding the speciality that is closely connected with stomatology and installing dentures as a whole, thus also for understanding the technology of producing dentures and orthodontic apparatuses. The earlier, vocational education curriculum paid major attention only on the acquiring of manual skills.

The curriculum provides the student with the skills and knowledge for helping a person in need of a denture, basing on modern evidence-based know-how. A dental technician with applied higher education is a partner to the dentist, who defines the exact task for the dental technician - the type of denture and other components. Dental technician realizes understands the goal in the same categories as the doctor, being able to offer the doctor different options that are based on evidence-based know-how and technological justifications. A dental technician with higher education possesses general medical and speciality terminology, knows the main processes in human organism, realizes the technological process that is in constant development. This is how the basis for producing quality dentures and orthodontic treatment apparatuses is created, so that the risk of unfavourable effect on human health and denture braking would be minimized.

The supposition for becoming a dental technician with higher education - in addition to different types of work experience, is the ability to develop the speciality, to participate in respective applied researches, and to predict the trends in material and technology developments.

**About the development of dental technology speciality in Estonia.** The dental technology study was institutionalized on the basis of the medical school after World War II. The admission to dental technology speciality started from 1945 and in 1947 the first class of dental technicians with vocational education graduated. Through history, about 400 students have acquired the dental technology speciality in Tallinn Health College. In Estonia, the number of dental technicians with higher education is currently 55, they all have graduated our college.

**The accreditation experience.** In 2004, preparations were made for accrediting the dental technician curriculum on the level of higher education, but a positive result was not achieved. Suggestions made by the experts, and the efforts that have been made by Tallinn Health College since 2004 to eliminate the necessities are presented in article 2.10. At this point, we wish to emphasize that the mentioned necessities were thoroughly analysed and solutions were found to all the issues. In the process of curriculum development, recommendations have also been considered from Jeffrey Lewis, MSc, Head of Centre for Dental Technology at University of Wales Institute

Cardiff, School of Health and Social Sciences, in 2005 (see Appendix 2-16).

The chair of dental technology, together with its study-laboratory, is a substantial partner to all major dental technical firms in Estonia in organizing trainings and in training their dental technicians. Basic standpoints for dental technician's professional standard and curriculum are worked out in the chair in cooperation with employers' representatives; during practical study-work, continuous feedback is given for applying different technologies; through the courses taking place in the chair, the already working dental technicians receive up-to-date knowledge.

In cooperation with Tallinna Tehnikakõrgkool University of Applied Science, continuous applied research is conducted for exploring and developing different technologies and materials. In continuous applied research, the chair's intelligence potential is applied in the development of technologies.

This is the general framework how the life long learning of dental technicians and the development of dental technology speciality is supported in Estonia.

**Composing the self-evaluation**. The team members and the timetable of composing the self-evaluation of the dental technology speciality curriculum have been adopted by the rector's decree from November 14, 2007. The team is lead by Tõnu Kauba, head of the chair; the team members are lecturers Marit Paljak, Veera Laidvee, Helen Pullisaar, Marika Merits, graduates Helina Maripuu, Eva Suits, and students Rene Kaur, Siret Sepp, Evelin Pärnaste, Kadri Randmer, Indrek Linnamägi. In the process of composing the self-evaluation, series of joint discussions have been held with teams composing other speciality curricula self-evaluations. When composing the evaluation, all chapters were reviewed, SWOT analysis was applied, respective curricula from Finnish, Norwegian and Lithuanian higher education institutions were compared; the strong and weak sides were ascertained and an action plan was composed. The team analysed respective legal acts and the college's regulating documents. During several years of cooperation, dental technology lecturers from Helsinki Polytechnic *Stadia* (since 2008 Helsinki Metropolia University of Applied Sciences; see Appendix 2-13) and from the Department of Stomatology, University of Tartu have been included into the discussions of self-evaluation. The self-evaluation has been made accessible to all the staff of the college for receiving feedback. The main standpoints have been discussed with employers and students.

Ulvi Kõrgemaa, Vice Rector of Studies, was responsible for coordination and development of the general part of the self-evaluation in the college. The general part of the self-evaluation was developed by Ülle Ernits, Rector; Tiina Juhansoo, Vice Rector of Development and International Relations and Ave Sireli, Head of Finance and Administration.

The self-evaluation was translated into English by Gunnar Riisenberg, Eve Epner, Ene Kotkas, Kateriina Rannula and Piret Tamme.

The report of the self-evaluation was available in the Intranet to get feedback from all employees in the college. Ülle Ernits, the rector of Tallinn Health College, took active part in the self-evaluation process.

The self-evaluation report was discussed by students, graduates, and employers. Feedback was provided by Maiki Udam, Head of the Department of Studies in Tallinn University of Technology; Monika Ilves, quality manager in Tallinn University of Technology; Olev Salum, docent from the Department of Stomatology, University of Tartu; Anne Männik, Head of SA Tallinna Hambapolikliinik (Foundation Tallinn Dental Clinic).

## 2.1. Educational-political organisation of working

### *2.1.1. The chair's participation in the realization of the curriculum's educational-political goals*

The chair of dental technology proceeds in its activities from the mission of Tallinn Health College (see art.1.1). The dental technology speciality is demanded and acknowledged in Estonian society. In connection with the population's general ageing, the number of people in need for dentures increases. Estonia needs training that meets the requirements for quality and modern technology; there is a need for dental technicians with respective knowledge and skills who can correct malocclusions and perform dental restorations.

The general goal of the curriculum of dental technology speciality results from above, i.e. the preparation of specialists who are required by the society. In accordance with the needs from the curriculum, the chair guarantees the systematic training that enables the students to acquire theoretical knowledge and practical skills. The chair sees its position not as limited in the sphere of Estonian education, but in the participation of shaping people's quality of living (The Population Health Action Plan 2008–2020; also the World Health Organisation frame-policy "Health for Everybody" (2005)), guarantying the quality preparation of dental technicians in Estonia based on evidence-based know-how.

### *2.1.2. The accordance of institutional targets, goals and priorities with the curriculum's targets, goals and priorities*

According to the statute of the chair of dental technology, the chair's mission is the successful passing of general competencies to students that are necessary for dental technicians and characteristic for educated people. The goal of the chair is to prepare dental technicians with internationally recognized applied higher education: who possess the skills for preparing dentures to be installed into oral cavity, and orthodontic apparatuses; for working in enterprises that sell dental materials; for composing research work, and with the willingness to develop the speciality with the help of speciality research and projects (see art. 2.9.). The chair's development plan will be composed by a work-group in the leadership of the head of the chair; the development plan will be then presented to the college's development team for receiving suggestions and for adopting it as a part of the college's general development plan.

The chair's task is to introduce the employers and professional unions the goals and activities concerning the speciality's development inside the college. Originating from the college's development plan, the chair's annual work-plan will be composed, in the making of which the fulfilling of previous year work-plan will be analysed. The college staff, students, graduates and employers have been included into the process of shaping dental technological education policy. The chair's annual work-plan will be composed, originating from the development plans for the college and the chair.

The orientations of research works that are necessary for developing the curriculum and speciality have been worked out at the chair (see Appendix 2-15), concentrating on different researches in material and colour studies. Respective evidence based researches are carried out mainly during the composition of student course-papers. During the 2005-2008 period, the curriculum has been frequently introduced outside the college in medical journalism and electronic media (see Appendix 2-10).

### *2.1.3. The division of responsibility in the creating and development of the curriculum in the college*

Dental technician curriculum originates from the professional standards (Appendix 2-14), and the Estonian and international general orientations in the area of dental technology. The main new directions currently in use are the fixed and combined dentures, including dental implants; in comparison with earlier decades, more neutral materials for human organism are being used. The producing of dentures is expanding, basing on CAD/CAM technology.

During 2004-2006, frequent consultations and round-tables have been held in Estonia between dentists, employers, dental technicians, the Ministry of Education and Research, University of Tartu and representatives of universities. As a result, it has been regarded necessary to offer the training of dental technicians on the level of applied higher education. Dental technician's professional standard from 2004 states the requirements, being the main internal state document. Resulting from above, a curriculum was composed on the level of applied higher education that considers the orientations and objectives of dental technology training in different European countries (see art. 2.9.), and also the activities that are applied in the continuous development of the curriculum. In addition to the aforementioned, as an important orientation we can also mention the cooperation between educational institutions in different countries, especially in applying of innovative technologies and the improving of availability of this technology.

The necessary enhancements for developing the curriculum are prepared by lecturers and the curriculum's council, whose activities are coordinated by the head of the chair (see art. 2.2.7.). The basis for improvement propositions is the development of the subject programs and the teaching methods, also the analysis of the succession and connections of timetable and subjects. Originating from the development plan of the chair, the appliance of new and recognized technologies is being constantly observed.

The integration of practical activities and technology with the theory engages an important position. Teaching is based on evidence-based know-how. The up-to-date level of knowledge of the lecturers is guaranteed by the constant participation in trainings, fairs and info days. The feedback received from practical training is important. Thus the curriculum's amendment propositions include different propositions from the area of the speciality, as well as from the area of educational methodology, concerning speciality subjects as well as supporting subjects.

## 2.2. Curriculum

| | |
|---|---|
| Nominal studying period | 3,5 years |
| Volume | 210 ECTS |
| Curriculum code in EEIS registry of curricula | 80166 |
| Qualification title | Dental technician |
| Number of obligatory subjects, percentage in the curriculum's volume | 26 subjects, i.e. 97,2 % |
| Average capacity of obligatory subjects in ECTS | Average volume of one subject 4,3 |
| Capacity of Elective- and /or optional subjects in the curriculum's volume | 2,8% |
| Capacity of practical work in the curriculum's volume:<br>in working environment<br>in studying environment | 32%<br>58%<br>42% |
| Capacity of auditory work in the curriculum's volume:<br>Lectures/ seminars<br>Research and development work | 68%<br>67% / 33%<br>7,2% |
| Total number of exams in the curriculum<br>of which complex-exams that comprise written, practical and oral part<br>Of which written | 9<br>7<br>2 |

### *2.2.1. Curriculum's correlation with Standard of Higher Education*

Tallinn Health College dental technician curriculum conforms to the Standard of Higher Education (see Table 1).

**Table 1.** *Curriculum's correlation with Standard of Higher Education*

| **Requirements from Standard of Higher Education** | **Dental technician curriculum** |
|---|---|
| **The objective of applied higher education study:**<br>Applied higher education study is the first level of higher education, during which the student acquires necessary competencies for working in certain profession or continuing one's studies on Master level. | **The objective of dental technician curriculum:** to educate dental technicians with applied higher education, possessing sufficient knowledge and skills for technological production of dentures to be installed into oral cavity, and orthodontic apparatuses; for working in enterprises dealing with dental materials; for composing research work and willingness for developing the speciality. |
| **Precondition for starting:**<br>Secondary education or equivalent foreign country qualification | **Condition for starting/admission:**<br>Secondary education or equivalent foreign country qualification |
| **Nominal duration:** 3 to 4 years | **Nominal duration**: 3,5 years |
| **Studying volume:**<br>180 ECTS/120 AP up to 240 ECTS/160 AP | **Studying volume:**<br>210 ECTS/140 AP |

| | |
|---|---|
| **Forms of studying:**<br>• Auditory work;<br>• Practical work;<br>• Independent work. | **Forms of studying:**<br>• Auditory work,<br>• Practical work;<br>• Independent work. |
| **Teaching staff:**<br>• 100% from the curriculum's subject volume are taught by lecturers with higher education or respective qualification, whereat 75% of the curriculum's subject volume are taught by lecturers with Master level degree or with respective qualification.<br>• Practical speciality subjects are taught by lecturers with at least higher education or respective qualification and a 3-year experience in professional work.<br>• At least 50% of the curriculum's subject volume is taught by lecturers working with at least 51% teaching-load in current education institution, or in institutions with joint curricula or with cooperation agreement. | **Teaching staff:**<br>• 100% from the curriculum's subject volume are taught by lecturers with higher education or respective qualification, whereat 83% of the curriculum's subject volume are taught by lecturers with Master-level degree or with respective qualification.<br>• Practical speciality subjects are taught by lecturers with at least higher education or respective qualification, and a 3-year experience in professional work.<br>• At least 50% of the curriculum's subject volume is taught by lecturers working with at least 72,6% teaching-load in current education institution, or in institutions with joint curricula or with cooperation agreement. |
| **The volume of auditory work** makes no more than 50% from subject's volume. | **The volume of auditory work** makes 47% from subject's volume. |
| **Practical work** makes at least 30% from the curriculum's study volume, and practical training in working environment with mentor's instruction makes at least 50% from practical work. | **Practical work** makes 32% from the curriculum's study volume, 28,5% of which (i.e. 60 ECTS or 1600 hours) takes place with the mentor's instruction in working environment; 3,5% takes place with lecturer's instruction in studying environment. |
| **Final exam/final paper** makes at least 3 credit points from the curriculum's study volume, 5 ECTS when applying the European credit system. | **Final paper / Final exam** makes 6 ECTS/ 4 credit points from the volume assigned in the curriculum. |
| **Applied higher education study closes** with passing the final exam or defending the final paper.<br>**The graduate** is issued a respective diploma that certifies the passing of certain curriculum, also a sheet of grades and *diploma supplement* by the educational institution. | **Dental technician study closes** with the passing of the final exam.<br>**The graduate is issued a** diploma that certifies the passing of the curriculum, an academic certificate and a *diploma supplement.* |
| **A person having acquired applied higher education** has the right to continue studying in Master studies, following the conditions and regulations established by the institution's council. | **A dental technology speciality graduate has the right to** continue studying in Master studies on general basis. |

### *2.2.2. Curriculum objectives, the requirements for starting and terminating studies, requirements for final paper*

The curriculum's objective originates from the Standard of Higher Education and from dental technician's professional standard (see Appendix 2-14). The curriculum's

objective is to prepare dental technicians (*dental technician, dental technologist*), who possesses knowledge and skills for producing dentures to be installed into oral cavity, and for producing orthodontic apparatuses; for working in enterprises dealing with dental materials, for composing research work and the willingness for developing the speciality.

Resulting from the number of state-commissioned studying vacancies, the studies in dental technology speciality can be started in 3 year cycles, i.e. there is no admission on every third year (see articles 2.3.1. and 2.6.).

The organisation of admission has been regulated in the rules of student admission, in which the preferred state exams have been listed: biology, chemistry, English language. English language as foreign language can be explained by the fact that a significant part of science-based literature is in English and usually the speciality magazines present a summary in English. The studying is in Estonian (state language), that is why the entrants must take a test in Estonian language. Studying can be started by persons who – on the basis of earlier high grades, manual aptitude test and a conversation that demonstrates motivation – reach the top of the list to be compiled. A modulating test (see art. 2.6.1.) will take place for demonstrating the initial manual aptitude. During conversation, the candidates are evaluated on the basis of their primal overview about dental technology speciality, the clear reasoning of their choice, and their ethical attitudes; attention will be drawn on their success in studying so far. Thus, equal opportunities have been created for the candidates in the applying process. In addition to lecturers, heads of speciality unions and practical training bases act as assessors in the admission commission. The same assessors participate in the practical training instructing in practical training bases, which makes them competent in the area of the conditions, necessary for the student's development.

Basing on life long learning principles, and considering the nowadays labour market requirements for dental technician's knowledge and speciality skills, it is possible for the student to file an application to accredit prior studying and working experiences (see art. 2.3.2.). For example, in the area of certain type of denture, it is possible to count the practical working skills of a dental technician with vocational education and work experiences, by proceeding from the analysis of the done work.

For passing the curriculum, it is necessary to pass all obligatory subjects, optional subjects and final exam in full volume and with positive grade. Final exam's questions and tasks originate from all the curriculum's subjects passed in courses.

According to professional standard and the curriculum, the graduate of the dental technology speciality possesses a systematic overview about the basic concepts, theoretical principles and research methods in dental technology. The person who has been awarded the diploma is able to independently gather information by using respective methods and means, and critically and creatively to interpret it; she/he is able to apply the acquired knowledge and skills in one's work and to constantly supplement oneself in speciality and in work.

### *2.2.3. The graduates' expected area of activity*

The dental technology graduate has diverse areas of activities, all the graduates will find a job related with their speciality. Main possibilities for speciality work are: the position of dental technician in a laboratory of a firm that produces dentures; as a manager in a firm that produces dentures; as an employee in a firm delivering dental

technical products; as a lecturer of dental technician speciality after 3 year working experience as a dental technician, and also as a developer of the speciality in private sector or educational institution. The graduate of the curriculum has the right to start studying on Master level. The chair considers necessary to motivate dental technicians who have work experience in multiple dental technical laboratories, to actively participate in applied research and in the development of the speciality.

The multiplicity of the work possibilities for the graduates is indicated also by the fact, that the students are offered speciality work already during the passing of the curriculum.

### *2.2.4. Description of the compulsory knowledge, skills, proficiency and behavioural norms that determine the education's content*

Dental technology is a branch of applied science that uses systematic approach in the planning and carrying out of the activities. Such approach needs analytical and critical thinking, problem solving skills and psychomotoric skills. The curriculum of dental technology speciality is based on evidence-based knowledge, which is guaranteed by the continuing and developing integration of theory and practice.

Professional standard "Junior Dental Technician III, Senior Dental Technician IV, Master Dental Technician V" is a document containing descriptions of professional skills, adopted on March 10$^{th}$, 2004 with the decision No 14 by the Profession Council of Health Care and Social Work. The vocational qualifications contained in the standard have been entered into Vocational Registry (see Appendix 2-14). Resulting from this, the dental technician requires knowledge concerning professional ethics, and legislature about prosthetic dentistry because usually the working takes place in multi-professional team, comprising communication with clients, fulfilling orders. There is also necessary the knowledge and skills about the safety of health and environment of oneself and the patient; about the basic principles of prosthetic dentistry; the knowledge and skills for developing the speciality and for participating in applied research, and the knowledge about the necessity of life long learning and constant self-complementing. Having passed the curriculum, the student acquires knowledge and skills for the requirements of third level professional standard.

The subject programs of basic subjects originate from professional standard and are competency-based, i.e. the requirements that were established in professional standard are expressed in studying outputs that a dental technician with respective level must know and to be able to apply.

### *2.2.5. The general structure of the curriculum, the tasks, dynamics and the development strategy*

The nominal studying period of the curriculum, 3.5 years, has been divided into four courses: courses I, II and III with 60 ECTS, course IV with 30 ECTS (see Appendix 2-1 and Appendix 2-2).

According to the Standard of Higher Education, the volume of theory studies is 68% and the volume of practical studies is 32% from curriculum's general volume.

The subjects in studying environment are divided into major blocks as follows:

(1) Speciality subjects as basic subjects 69,75 ECTS,
(2) Subjects supporting the basic subjects 36 ECTS,
(3) Research work basics 15 ECTS,

(4) Subjects developing studying skills and career, and society science subjects total 17,25 ECTS and
(5) Optional subjects 6 ECTS.

The volume of practical training in working environment is 60 ECTS; the volume of final exam/final paper is 6 ECTS. Practical studying makes 32% from the curriculum, 42% of which takes place in studying environment and 58% in working environment.

The curriculum's structure guarantees the consistent acquiring of basic subjects, the studying process does not stop when dealing with certain type of denture and the student gets a complete overview of the subject; the subjects supporting the basic subjects are logically integrated with basic subjects. In the analysis of the curriculum's structure, respective structures of Finland's (Helsinki Polytechnic *Stadia*) and Lithuanian's (Kaunas Medical College) educational institution's curricula have been considered.

In the process of curriculum development, recommendations have also been considered from Jeffrey Lewis, MSc, Head of Centre for Dental Technology at University of Wales Institute Cardiff, School of Health and Social Sciences, in 2005 (see Appendix 2-16).

The volumes of independent work have been clearly stated, proceeding from the volume, objective and teaching method of the subject. In the future, it is necessary to weigh the closer integration of smaller volume subjects (sociology, philosophy), in order to achieve thus the increase in students' ability to generalize.

The passing of basic subjects in the college provides the necessary knowledge and skills for producing all major types of dentures. The so-called phantom dentures are produced by the students in the study laboratory – this is how everybody is guaranteed equal and even acquiring of experiences. During the practical training in working environment it is possible for the students to produce different combined dentures that are meant for particular patients.

The practical training in working environment during which the dentures to be installed into mouth and orthodontic apparatuses are produced, is taking place in practical training bases with modern equipment, with experienced dental technicians engaged as mentors.

The subject "Research work basics" passes through all the years, guarantying thus the accumulation of the knowledge and skills needed for developing the speciality (see Appendix 2-1). "Research work basics" comprises the acquiring of data processing, professional literature, main research methodology, and the practical skills and experiences of research work. As a result of the subject since the year 2006, the student composes a term paper, which is an applied research directed to the research of materials and technologies.

### *2.2.6. The relations and effectiveness of the curriculum's auditory, practical and independent studies; methods of realizing creative and research objectives*

Studying takes place in the forms of theoretical studying (lectures, seminars), independent studying and practical studying in study-laboratories and practical training bases.

During the studying, knowledge will be acquired in general anatomy, scull-anatomy and physiology. Special attention is drawn on teeth structure, morphology. On these

theoretical basics it is possible to acquire practical skills in the constructing of dentures.

Occupational health and occupational safety are also important, because a dental technician has to work in a safe and environment friendly manner to oneself and to others.

The curriculum of dental technology speciality has been compared to the dental technology curriculum of Helsinki Polytechnic *Stadia* (see Appendix 2-13) that corresponds to the level of applied higher education. As a result, the experience of their chair's experience in the elaboration of the proportion of lectures, seminars and practical training has been considered; this has been presented in the following table (see table 2). When comparing to the earlier curriculum valid before 2005 in Tallinn Health College, the volume of theoretical part of basic subjects and the subjects supporting basic subjects has been increased, with the aim to build the curriculum more on evidence-based knowledge, and that the students could develop their skills which are needed in applied science.

During the visits to Helsinki Polytechnic *Stadia*, the head of the chair is convinced that the contents and volumes of subjects in *Stadia* and Tallinn Health College are comparable and similar.

**Table 2**: *The volumes of auditory work and practical works in speciality subjects.*

| **Subject** | **Lectures (hours)** | **Seminars (hours)** | **Practical training in studying environment** |
|---|---|---|---|
| Acrylic plate dentures | 30 | 10 | 288 |
| Bugel dentures | 30 | 10 | 176 |
| Orthodontics | 20 | 20 | 144 |
| Morphology | 20 | - | 20 |
| Fixed dentures | 34 | 6 | 384 |
| Combined dentures | 36 | 4 | 96 |
| Deepened studies | 10 | - | 64 |
| **Total** | **180 hours** | **50 hours** | **1172 hours** |

Although the manual activities are prevailing in practical activities, before the start of every new work-stage the students are given a short theoretical overview, and the done works are associated to what has been studied earlier. When the independent practical works have been completed, the students must give an assessment, compose work instructions, add comparing tables, translate instructions and complete those into study-folio, in order to prove their professional development. Thus the analytical thinking, manual activity and self-evaluation skills are being developed.

Auditory studying takes place in auditoriums and dental technical study-laboratories with up-to-date furnishing. Quality materials and study-instruments are being used. Practical work in working environment comprises the connecting of theoretical knowledge and practical skills acquired earlier, the actual applying of these in working environment with the instruction of an experienced dental technician in respective practical training bases. The independent work enables the student to achieve necessary studying objectives; their content is formulated in subject programmes by the subject's lecturer, originating from the subject's objectives. During auditory work, independent work and the practical work in studying environment, the student

acquires the knowledge, understandings and professional skills that are necessary for dental technical activities.

Professional literature is available in libraries (see art. 2.8.3.). In planning the volume of independent work, the existing studying materials and their language (foreign language or mother tongue) are taken into account. There are study-materials in Estonian language, composed by the lecturers of the dental technology chair and printed by the college (see Appendix 2-3), thanks to which the starting and continuing of the studies is convenient. Study-materials in foreign language are also available, and additional time has been planned on the working through and translation of these. This is how the arising of studying-habits and the acquiring of speciality foreign language is supported during independent work.

The student develops the skills of science-based research work with various obligatory works, learns to obtain and apply basic speciality knowledge, is familiar with the developments of the speciality and acquires new working methods and technologies.

The realization of creative and research goals proceeds from observing the common requirements set for research works, based on carrying out of theoretical and applied researches, thus the theory and practice are closely integrated.

### *2.2.7. The system of modifying and complementing of curriculum*

Since the 2006/2007 academic year, a curriculum statute is in force that regulates the conditions and rules of composing, opening, holding, modifying and closing the curriculum. Calculation about the registration, modifying, accreditation and closing of curricula in the college is made by Department of Studies.

The chair's teaching staff has a central role in the development of the curriculum; they proceed from the curriculum's fulfilling analysis and make their suggestions in relation with the subjects. During a development conversation between the lecturers and the head of the chair, the contents of subjects, volume, structure, assessment and temporal location in the curriculum is analysed. Amendment propositions that are motivated and analysed will be presented to the curriculum council. Members of the curriculum council are responsible for the curriculum's contents.

The developing of the curriculum proceeds from the fact that the society's constant development influences the general development of technology, including the development of dental technology. The basis for improving the curriculum are the propositions presented to the **curriculum council**. The council's personnel is reviewed every year, consisting of the representatives from the chair of dental technology, other specialists, students, employers, representative from University of Tartu, and a foreign expert. The chair is responsible for the curriculum's development, the competence of decisions is guaranteed by including of different parties.

The decisions concerning the curriculum's modification are made in curriculum's council. The curriculum council gathers to regular meetings twice a year for analysing the contents of the studying. The basis for the analysis is the feedback from employers, students including exchange students. The reasons for modifying the curriculum result from the speciality's new opportunities as a whole, in the area of constantly developing technology and education. The modification proposals that have been approved by the curriculum council will be presented to the college's council by the head of the chair.

In the process of elaborating the modification proposals, the changes in labour market, modernization of teaching methods and the integration of subjects will be considered, in addition to the development in speciality. It is considered vital to observe the lecturers' work effectiveness, the problems with students' employment, ordering study-instruments and organizing their maintenance. During the previous level of curriculum, the level of vocational education 5-6 years ago, only a few computer technical opportunities were available. Today the students perform 3D (spatial or 3-dimensional) scanning (*Computer aided design*/*Computer aided manufacturing*, introducing CAD/CAM technology) and analyse different possibilities for scanning methods in dental technical study-basis. There are also several new materials (new types of acryl) that the students explore (see Appendix 2-15) and apply, the spreading of which has become possible during recent years.

Curriculum development is based on cooperation with the main speciality union, the National Society of Professional Dental Technicians, and the chair of stomatology in the University of Tartu. The cooperation is based on a common ideology and expresses foremost in the organizing of common trainings and seminars. The chair and speciality union inform the public about their cooperation, forwarding information about the events in electronic media.

### *2.2.8. Curriculum's strengths and areas to be developed*

***Strengths***

(1) The curriculum is diverse, assuring the integration of theory and practice, and thus a broad-based preparation for coping in labour market as well as for life long learning;

(2) during admission, the entrants are guaranteed equal opportunities;

(3) curriculum's composition and structure are logic, moving from general subjects to speciality subjects, from simple to complicated;

(4) a comparative analysis is conducted with partner educational institutions, work with curriculum is being developed and the exchange of students and lecturers has been started;

(5) with its composition, the curriculum corresponds to respective curricula from other countries, creates an opportunity for exchanging students with different educational institutions from different countries;

(6) the subjects are evidence-based, according to which the curriculum development, the forwarding of fresh information and the teaching of skills is under way;

(7) the curriculum council that was established for developing the curriculum, is a body of high professionalism, consisting of speciality and general specialists, students, graduates and employer representatives, possessing thorough necessary know-how and participating constantly in curriculum development;

(8) the speciality subjects are taught also by lecturers from other colleges, including universities having the respective level;

(9) the research work methodology is being applied in studying that helps to create close connection between theory and practice, enables to evaluate the activities from generalizing positions, and to conduct applied researches.

***Areas to be developed (see art.2.11.)***

(1) The necessity to put together subjects with small volume (philosophy, sociology) for guarantying better generalizing abilities;

(2) due to a great work-load, dental technicians in practical training base are not enough interested in participating in curriculum development;

(3) it is necessary by the chair to increase the volume of instructing by practical training bases.

## 2.3. Organisation of Studies

### *2.3.1. Organisation of study-process during semester and the whole study-period*

The numbers of scheduled weekly lessons in semesters

| | |
|---|---|
| Minimal | 14* |
| Average | 24 |
| Maximum | 32 |

| | |
|---|---|
| Maximum amount of subjects during one semester | 11 |
| Average estimated volume of independent work in study-week, in hours | 15 |
| Group sizes of auditory studying | minimal 12<br>maximum 65 |
| Total number of independent written papers during studying period | 35 |
| Rate of existing professional literature, percentages: | |
| Proportion of subjects in the curriculum not covered with professional literature | 0 |
| Subjects with freely purchasable Estonian language professional literature | 64 |
| Subjects with professional literature in Estonian | 100 |
| Proportion of students having graduated in nominal time, percentage | 91 |
| Proportion of graduates with distinction, percentage | 17 |

Note:

* - preparation week for exam, additional time for independent work is planned;

The number of students at the beginning of 2007/2008 academic year is 40. Resulting from the number of state-commissioned vacancies, students from I, III and IV year were studying on the first semester; IV year students graduated the college at the beginning of second semester, and I and III year students continued their studying. Thus the number of students in active studying is varying during periods. In 2008/2009 academic year studying is commenced by I, II and IV year students (see art. 4.6.).

Studying organisation is regulated by academic calendar, the study-schedule composed on the basis of the curriculum, and the timetable composed basing on the study-schedule.

Academic calendar (see Appendix 1-3) is approved by college council in March every year and then made public; it prescribes the main events during the academic year. The speciality's theory- and practicing study periods, exams and brakes from studying will be presented in study-schedule (see Appendix 1-4), composed for every academic year.

The timetable defines the division of students' auditory, practical studying and independent work loads. The timetable is available for the students in a web-based SIS in real time and on information stands for the week in progress. The stability of timetable enables to plan one's time, including the time for independent work, creates assumptions for dividing the studying-load evenly, and for good studying results (see Appendix 2-11).

When composing the timetable, the necessity of dividing evenly the weekly load is followed. The studying is organized with 40-hour weekly load, comprising the auditory and independent work. The organisation of subjects that need larger volume

of independent work (for example the term-paper in III year) ensures the independent work to be accomplished in a way that there is no accumulation of the subject on short period. A time is fixed in the timetable for independent work, which is especially necessary from the point of view of rational using of study-laboratory and instructing independent practical work. Theory and practicing exams are also fixed in the timetable. There are 17 weeks in the autumn semester and 23 in spring semester, the weekly load is 40 hours. Three days in the independent work period are separated for studying before the exam.

Some lectures are conducted together with students from other specialities (for example introduction to anatomy, philosophy, introduction to sociology), because they are not speciality specific; seminars are held separately for specialities. Thus the conformity of the presentation of general subjects is secured to the needs of speciality.

The subjects supporting the basic subjects are placed parallel with the time in progress of particular basic subject. Subjects that are prerequisite subjects for acquiring a basic subject are located in the timetable before the commencing of the basic subject. The studying success analysis indicates that the first year students need individual consulting for motivating to adopt equally all the subjects. Earlier insufficient academic capability could become an obstacle for participating in studying process.

Proposals from student representation are also taken into consideration in the composing of the timetables. For example, earlier overload in some study-periods has been relocated in the timetable from the initiative of students and lecturers. As a result, the subjects with very high load of independent work (over 50%) have been dispersed across the whole academic year. Additional information for improving the studying organisation is also received from the analysis of students' success and setback, and from feedback.

The inevitable changes in the timetable (lecturer's illness or exceptional absence) will be announced immediately to students through various data-sources. This is how the substitution of cancelled lecture or accomplishing of independent work is organized

In case of the emerging of external factor, a flexible shift will be worked out in the timetable; in case of student's illness, it is possible to change individually the period of practical works, or to provide the possibility of following an individual curriculum. The individual consulting and instruction of students, and the assessment of student's personal abilities is also functioning outside the timetable.

For adjusting more successfully with the college study-organisation, the subject 'Speciality development and professionalism' for the first year students contains a module 'Introduction to studying', during which the students will be introduced to primary informing, the introduction to consulting system and the basics of study-organisation. The subject also contains career consulting that has proved to be extremely necessary for some students in connection with insufficient participation in studying.

### *2.3.2. Developing a learner-centred system*

The analysis of learner-centred system proceeds from the empirical truth that the learner as a subject reflects the studying process and is therefore an active participant in this process. The learner-centred system is organized, by proceeding from the basic documents of study-organisation. The curriculum objectives will be fulfilled by passing the studying in cycles, auditory work varies with practical training. The

students have the possibility to use the components of E-learning (introduction to studying, acrylic plate dentures) in several subjects.

According to Institutions of Professional Higher Education Act and the Standard of Higher Education, TAKE as part of the curriculum is also possible. The transmission system in the college is regulated by respective instructions. The consulting and transmission decisions in the area of obligatory subject counting and transmission is conducted by the lecturer of the respective subject. For the assessment of prior studying results or work experiences in a speciality, it is aloud to assign the student practical tasks, to conduct a conversation, or to evaluate the student's knowledge and skills in another way. Decisions concerning the TAKE-system result from the student's consulting, starting from the moment of informing the student about TAKE-system. The accreditation of prior studies and work experiences with TAKE-system enables the student to gain additional planned time for studying (see art. 2.2.2.), it is possible for the students to choose optional subjects from the list of optional subjects approved for every academic year.

The library together with the computer class is available for students. Consulting information and also information about extraordinary changes is available on stands. Students have the possibility to submit modification proposals into the study-process and curriculum through their representatives. Regular feedback from students is asked also for evaluating new lecturers. Students can receive individual consulting. In case of arising studying insufficiencies, a flexible approach will be worked out for liquidating them, providing opportunities for additional reciting and for extending the independent work period in accordance with regulations for study-organisation. The possibility of passing individual curriculum is also important, for instance after returning from academic leave.

Cooperation with other structural units inside the college is an important component for guarantying the quality in teaching. The main cooperation is between the chair of general and supporting subjects, which conducts the teaching in anatomy, physiology, foreign languages including Latin etc. In study-laboratories, students have access to their working places during the period meant for independent work.

### *2.3.3. The availability of information, detailed plans and calendar plans to the students*

Dental technician speciality's curriculum and the information concerning the student is available at www.ttk.ee web-site. In addition to the web-site, there is also a study-brochure on paper, and the information about the coming weeks of timetable is on stands. The study-brochure is issued regularly every year, containing fresh information about study-organisation and other daily information that has been considered necessary in feedback. With the aforementioned, the students are assured with informing in all the issues that concern them. Thus every student can plan one's independent work and the activities outside one's studying.

The availability of continuous consulting creates the conditions for information to reach the students also in unforeseen situations, for instance in case of illnesses.

The auditory and study-practical activity that is instructed by the lecturer, is documented in subject protocols in digital study-information system and presented on paper to study-secretary.

### *2.3.4. Guarantying the harmonizing of actual study-load*

When planning the study-load in dental technician curriculum, the students' independent work is counted into the timetable. The goal is to divide auditory, practical and independent work evenly throughout the academic year. The result is the equal weekly load of 40 hours, where the auditory and practical studying vary with independent studying in library, study-laboratories and elsewhere in a convenient study-environment. Thus the hourly load does not exceed 40 hours weekly, changes could emerge with illnesses and other external factors.

Independent work can be clearly separated from auditory work. The availability of studying environment has been guaranteed during the time that is planned for independent work, i.e. during the practical independent work, the student can work in the study-laboratory with the presence of the chair's representative.

The datelines of independent works have been dispersed, in order to avoid overload during the completion of studying assignments. The auditory division of study-load is divided evenly into study-work, guarantying the optimal usage of time.

### *2.3.5. The strengths of study-organisation and the areas to be developed*

***Strengths***

(1) Equal requirements in study-organisation guarantee student's equal informing and treatment;

(2) the curriculum, timetable and subject specifications, subject programs, electronic study-materials are available in study-information system and on paper;

(3) the timetable is planned for long term, but it is possible to engage flexible changes if needed (illnesses etc);

(4) the study-organisation will be improved with the analysis of students' success and setbacks, if needed;

(5) the study-load is divided evenly;

(6) the mailing lists of lecturers and students guarantees the forwarding of same information.

***Areas to be developed (see art. 2.11.)***

(1) To apply more contemporary information technology in study-laboratory, including on-line web-environment.

## 2.4. Studying process

### *2.4.1. Teaching and studying methods, ways of their realization*

Studying takes place in the forms of auditory work, independent work and practical work. All these studying forms use different teaching methods that motivate the students to achieve the study-goals. The teaching methods used in studying are fixed in subject-program and depend of the specifics and objectives of the subject. The specific teaching/studying method is selected by the lecturer of the subject for every lecture, because as a specialist of the area she/he knows, which methods are suitable to achieve different study-objectives. Every lecturer reflects one's activities, and according to that completes one's knowledge and skills in the applying of teaching methods. At the same time, the head of the chair and the lecturer analyse the used teaching methods in a development conversation.

The main methods of auditory studying are lecture, lecture-discussion, disputes, group-works and seminars. The main emphasis in lectures is set on the systematic presenting of the subject. An active communication is held during a lecture-discussion, the creating of active connection with what has been learned earlier, and the applying of it during the discussion. The supposition for that is the existence of earlier knowledge. Seminar comprises: discussions on particular topic; the applying of group-work for making certain conclusions and formulating objectives that are commonly understood; analysis of self-evaluations, information-folios, essays, projects and project-drafts.

Auditory work is supplemented by E-learning (mostly in IVA-environment) that enables to use more flexibly the studying-time and to give faster feedback to students. The used information technology has been more widely applied in dental technician's curriculum through different scanning and presentation techniques. For instance, with the help of table camera it is possible to illustrate and visualize lectures and practical studying. But at the same time, the appliance of E-learning has slowed down due to some technical problems.

The teaching methods of independent work are learner-centred and individual. We can mention the composing of work instructions, short conspectuses and/or comparative tables; composing and finalizing of reports, translation of foreign language professional literature etc. This enhances the skill of associating theory and practice, helps to restore the order of work-stages in case of repeated activity, and helps to accomplish practical works.

Practical studying can take place in studying or working environment. All the methods of acquiring practical skills are purposeful and directed to fulfilling certain study-objectives. During the practical studying in studying environment, the following teaching methods are used: general and direct instructing, illustrated mini-lecture, demonstration, group work, working in couples, solving of construction exercises, discussion, oral and written checking of knowledge, analysis of works done, mutual evaluations, study-trips etc. In selecting the studying method, the basis for it is that the learner is an active participant in the studying process and is able to guide oneself as a learner. Active engagement guarantees high studying motivation. Students receive constant individual instructing, feedback, assessments etc from the lecturers.

Attention has been drawn on the use and conducting of different active studying

methods, as recommended in the evaluation commission report from Oct. 24th, 2004. Since 2004, trainings have been continuously organized for intensifying the lecturers' methods of active studying. Since 2007, the training of new lecturers is functioning, the basic theme of which is connected with the development and supporting of lecturer's identity, including the development of the skills of applying active studying methods. Active participation in E-vocational school projects and in international projects as exchange lecturer has significantly contributed to the diversification of study-methods used by lecturers.

A mentor-lecturer is appointed to a young lecturer by the college, who consults the lecturers with lower teaching experiences, helping them to select and accomplish different methods. The mentor also recommends the new lecturer relevant literature. All dental technician curriculum lecturers are competent to apply studying methods that are diverse and motivating for the students, developing thus the student's general knowledge and dental technological skills.

### *2.4.2. Assessment of studying results, guarantying the objectivity, and analysis of results*

The basis for assessment is the Minister of Education regulation No 10 from Feb.11th, 1999, and the 6-point assessment system from the Minister of Education regulation No 40 from June 28th, 1999. The assessment objectives are supporting the curriculum's objectives, motivation of student's development, objective checking of knowledge and the skill of applying one's knowledge, and receiving feedback about the level of student's knowledge and skills. Assessment of studying results and feedback as part of assessment enables to analyse study-results from the standing points of students' studying processes and the effectiveness of applied studying methods.

A subject program contains each subject's assessment criteria that are available for students before the commencing of the subject. Depending of the subject, it can end with differentiated or non-differentiated preliminary or exam. The timetable of exams is public from the beginning of every academic year (in the study-schedule that is confirmed by the college's council); previous consulting also takes place either individually or for the whole course. The student may submit an appeal concerning the assessment, in this case the assessment will be provided once again by the subject's lecturer and the head of the chair.

Assessment (exam, graded preliminary, preliminary) can be in written form, oral or a complex exam (test, practical performance and oral explanation). For instance, every basic subject ends with a complex exam that consists of theoretical test and practical task. The adequacy of student's own evaluation has a role in the formulation of practical task grade.

The final grade of basic subject consists of four components:

(1) Summarized grade of the practical works that have been made during the year;
(2) Summarized grade of theory lessons (tests, preliminaries, seminars);
(3) The independent work grade in theory and practical training;
(4) Complex exam grade.

The student's assessment takes place continuously during tests and practical exercise works in every subject. In applying different forms of studying (auditory, independent or practical work), assessment methods are used that are most suitable in that form of

studying. Mostly tests and coverage tests are conducted in auditory studying. During the assessment in the practical part of the studying, a component that counts the student's individuality is applied. The students give an evaluation to the works of their own and their fellow student's work; this is important for growing into a self-guiding learner, reducing the risk of later mistakes.

For preventing subjectivity, mostly two lecturers participate in the assessment of practical works, during exams there are three lecturers. Criteria for guarantying objectivity have been worked out for assessing practical works, to reflect the level of study-objectives achieved.

Exam, preliminary or graded preliminary is conducted during the final lessons of the subject, except the final exam in the fourth year that comprises everything that has been studied during the whole study-period. The final exam is preceded by consultation and a longer preparation period (3 weeks).

Studying results are constantly analysed in discussions between speciality lecturers, students and the head of the chair. The studying results have been documented on paper and electronically in SIS-system as grades. The in-time returning of feedback has an important role in the assessment of studying results; feedback is provided by every subject's lecturer in the frames of their lecture. In the assessment of study-results not only the final result has the decisive importance, but also the process that has lead to it. That is why different components are used in assessment of study-results, like active participation in the studying, independent work that has been submitted in time and finalized as required, its content etc. The dentures and independent works (for example work-instructions) are kept for the whole study-period, thus assuring the possibility for analysing student's individual development.

Practical training in working environment is conducted in cooperation with practical training bases, intensifying thus the integration of theory and practice, enabling the attaching of manual skills in the producing of particular treatment-works (dentures) to be installed into mouth. The assessment of practical training outcomes originates from the objectives of practical training.

### *2.4.3. The controlling and analysing of study-process and its level*

The objective of studying-process is to provide an opportunity for the students to study, exercise and develop dental technological basic skills, to acquire up-to-date dental technological terminology, to acquire safe and environment friendly working skills with tools, apparatuses and materials. In subject-courses, the student develops one's skills through exercise works, in which the theory is integrated with practical activity. For analysing the studying-process and to observe the students' development, the students write evaluations about their own and their fellow students' practical works, study-folios and presentations. The lecturers also reflect and evaluate their own activities. As a result of this continuous self-evaluation, it is possible to enhance the studying-process in the frames of the subject and in the whole curriculum as a whole.

At the end of the subject-course, the student can provide feedback to lecturers, and to receive feedback about oneself. Providing feedback is anonymous and is done electronically. Summaries are made on the basis of feedback questionnaires. As a result of these summaries, the chair will hold development conversations with the particular lecturer, in which the received feedback will be analysed and a necessary action plan will be composed for the next academic year. Thus the continuous analysis

of assessing the study-results will be assured.

Discussions concerning the curriculum and study-process are conducted every year in the chair. Study-process is analysed also in joint meetings of the chair and rectorate. According to the curriculum, the student has to pass 60 ECTS per every academic year, otherwise it is not possible to progress to the next phase. For controlling this, a continuous fixing of study-results into the protocols and necessary scoring is held.

The objective of study-periods in practical training bases is to fix the students' theoretical knowledge and practical skills in working environment. Students produce various dentures under the instruction of experienced dental technician to real patients, not on the basis of phantom models. They follow the quality requirements and working instructions that are effective in study-laboratory, they learn to use equipment, new technologies and materials, and rehearse team-work.

### *2.4.4. The strengths of study-process and the areas to be developed*

***Strengths***

(1) Equably applicable assessment instructions and criteria are used;

(2) the assessment of study-results is based on clearly formulated requirements that have been described in subject-program and that have been informed to the student;

(3) the assessment documentation is made electronically (SIS) and on paper;

(4) student feedback questionnaires about the subject are used, regular outcome reviews are composed about these for lecturers and students, the questionnaires are used for developing the studying;

(5) continuous analysis on students' progress, study-load, studying-results, and analysis on assessment system is conducted;

(6) through a continuous self-evaluation, the students evaluate their own and fellow student's practical works, study-folios, presentations etc;

(7) the assessment does not originate only from final results, but also from different studying components (active participation in studying, the content and finalizing of independent work that has been submitted in-time and meets the requirements);

(8) if necessary, students receive constant individual instruction, feedback, assessment etc from the lecturers;

(9) the composing of work-instructions enhances the skill of associating theory with practice, helps to restore the order of work-stages in case of repeated activities, and helps to accomplish works in practical training;

(10) various study-methods are applied in the studying that motivate the students to achieve necessary study-objectives.

***Areas to be developed (see art.2.11.)***

(1) A small number of feedback questionnaires are filled (ca 25% from all the students);

(2) increasing the amount of E-learning in speciality subjects.

## 2.5. Practical training

### *2.5.1. The basics of practical training organisation*

The basics of practical training organisation consists of the curriculum and the regulations of study-organisation that establishes other conditions for conducting practical training, including necessary documents (see Appendixes 2-5, 2-7 and 2-8).

Practical training in working environment for dental technology students takes place during the first year in the amount of 6 ECTS, 18 ECTS during the second year, 12 ECTS during the third year and 24 ECTS during the fourth year, so in total of 60 ECTS. This responds to the volume that is necessary for constructing and designing different types of dentures, and acquiring the technology.

The development of practical training has been analysed with the chair of dental technology of Helsinki Polytechnic *Stadia* (see Appendix 2-13). The dental technician study in Estonia varies from Finnish one by the fact, that all the works that are made in study-laboratory are phantom-works, i.e. dentures that will not be placed into mouth. Real dentures to be placed into mouth are produced during practical studying in studying environment, i.e. dentures that the dentist will place into patient's mouth. Phantom-works are based on standard; dentures to be placed into mouth are more individual. The use of phantom-works in studying environment is based upon the fact that this will create equal opportunities in the initial studying situation, and similar basis for assessment. The suitability and quality of phantom-works is evaluated on control-models. Thus, diverse study-methods are being used in practical studying.

Practical studying in working environment has been arranged in accordance with the curriculum and the studying timetable. The basis for arranging it are the objectives and necessities originating from the curriculum and the professional standard. During the practical trainings in working environment, four different practical trainings with different content and volume will be passed (see Appendixes 2-1 and 2-2). The general objective of the practical trainings in working environment is the integration of student's knowledge from theory studying, and the skills and work methods from practical training of studying environment, and also the development of speciality and professional attitudes and value judgements in team work.

In some cases (for example getting ill) the practical training in working environment has to be made by following an individual schedule, however, the chair's studying schedule and the instruction possibilities of the practical training base are considered.

**The selection of the practical training base** depends of the subject matter of the particular studying-practice assigned in the curriculum, and considers the possibilities of practical training base.

Basing on the above, the list of practical training bases will be affirmed for the academic year. This list (see Appendix 2-8) is renewed after the end of every academic year, following the reviews of the students' and lecturers' feedback, and propositions from the practical training base. Thus, the selection of bases is made in cooperation between the students and lecturers.

As the objective of the curriculum is to train dental technicians with wide-ranging knowledge and experiences, the students perform their studying-practice in different practical training bases during their study-time. This is how they gain necessary wide-

ranging knowledge and skills, and compare the different work regulations and the use of different technical equipment.

Students receive information about accepted practical training bases from lecturers during the studying. Some students already work in the dental technical laboratory, thus they possess relevant prior information.

The conformity of practical training base to the requirements of the curriculum is analysed by college's practical training tutors (head of the chair, assistant) in discussions with students and representatives from the practical training bases.

### *2.5.2. Instruction and assessment of practical training*

The practical training objective is the attaching and applying in practice the knowledge and skills acquired in theory, also the acquiring of practical skills, and the shaping of special and professional attitudes and value judgements. The practical training attaches and improves the student's theoretical knowledge and practical skills; the time-period and volume for accomplishing it is fixed in the curriculum; the timeline location in the academic year will be determined in the study-schedule. Practical training is performed in practical training bases that have been approved by the chair and affirmed by the head of the chair; the condition and know-how of the practical training bases is constantly assessed by the chair.

The chair appoints an instructor (tutor) of the practical training, a lecturer, who knows one's subject and who instructs the students during the practical training and is in connection with them. The practical training instructor in the practical training base (mentor) is a specialist, who instructs the students during the practical training. The organisation and assessment of the practical training are regulated also by the documentation of the practical training which will be handed to the students before the commencing of practical training. The documentation consists of confidentiality agreement, student's assessment sheet, trilateral agreement (student – practical training base – college), report of practical works and instructions for composing the practical training report (see Appendix 2-5).

During the practical training, two practicing seminars will be held in the college – the first seminar before the commencing of practical training, and the second seminar on the final day. On the first day, students receive the necessary documentation. The college tutors instruct and explain how and when it is necessary to fulfil the documents. During the first seminar, students raise their personal objectives for the practical training, and write them down on the student's assessment sheet.

The selection of practical training base originates from the goals of particular practical training and considers the possibilities of the practical training base. The mentors are chosen depending on their level of education, experiences and skills for instructing. Depending on the goal and the topic of the practical training, a dental technician is chosen for the students' mentor whose work responsibilities correspond to instructing. So the student has a specialist as mentor who commands one's area at its best.

During the visit to the practical training base, the college tutor has an overview about the technological possibilities of the laboratory, and what type of dentures are mostly produced there. Basing on the latter information, it will be found out whether the laboratory suites for conducting everybody's practical training there. The student's individual goals of the practical training are discussed between tutor, mentor and the student. At the end of the practical training the mentor gives an assessment on the

student's assessment sheet. Sometimes the assessment of students' works is formal, i.e. the mentor assesses the student with maximum highest grade.

On the final seminar of the practical training, the objectives of practical training will be reviewed once again and every student gives an evaluation about the achieving of the practical training objectives. The student's specification about the practical activities will be written on student's evaluation sheet. The students will present their practical training report on the final seminar that provides an overview about the activities during the practical training. The results will be analysed with the instructions of tutor/lecturer. The tutor/lecturer evaluates the presentation, contents and finalizing of the practical training report. Practical training reporting together with competent instructing provides the basis for the wide-ranging of practical skills.

The final assessment of the practical training will be attended by the practical training mentor, practical training tutors from the college and the student. The assessment of practical training will be marked as passed/ not passed. The basis for formulating the final grade is the student's practical training evaluation sheet, the assessment from the practical training base, and the presentation, composing and finalizing of the practical training report.

**Conformity to the aspects of vocational qualification**. The dental technician curriculum is competency based, originating from professional standard (see Appendix 2-14). In the organisation of practical training, the goal has been set to develop the student's every skill and proficiency for managing in changing situations.

### *2.5.3. The strengths and the areas to be developed*

***Strengths***

(1) In practical studying, diverse studying methods are used for achieving studying objectives; the practical training objectives are clear and guarantee necessary primary practical skills;

(2) practical training in studying-environment is closely connected with theory studying;

(3) there are wide-ranging practical training bases all over Estonia that have been checked and conform with the requirements, the students are guaranteed with the opportunity to stay in different practical training bases;

(4) the practical training instructors in the bases (mentors) are speciality specialists whose qualification meets the level of master dental technician;

(5) there is a regularly renewed database about mentors and practical training bases.

***Areas to be developed (see art 2.11.)***

(1) Not all the practical training base mentors are sufficiently motivated to instruct the students;

(2) at times, formal assessment of students' works occurs that in some cases can cause non-objective over assessment;

(3) in the motivation of mentors, it is necessary to include representatives from speciality unions and cooperation partners, and to emphasize the moral stimulus.

## 2.6. Students

Contest ratio during entering:

| | |
|---|---|
| 2005/2006 | 8,3 |
| 2006/2007 | No admission |
| 2007/2008 | 11,2 |

Admission numbers to state commissioned study-vacancies

| | |
|---|---|
| 2005/2006 | 12 |
| 2006/2007 | No admission |
| 2007/2008 | 13 |

Admission numbers to state non- commissioned study-vacancies

| | |
|---|---|
| | 1 |
| 2005/2006 | No admission |
| 2006/2007 | 1 |
| 2007/2008 | 1 |

| | |
|---|---|
| Average age of accepted entrants 2007/2008 | 23 |
| Proportion of accepted female /male 2007/2008 | 9 F / 5 M |

Average absolute number of speciality graduates:

| | |
|---|---|
| 2005/2006 | 12 |
| 2006/2007 | No admission |
| 2007/2008 | 11 |

Average annual dropping off

| | |
|---|---|
| 2005/2006 | 0 |
| 2006/2007 | 1 |
| 2007/2008 | 2 |

| | |
|---|---|
| The proportion of non-citizens among the students: | 0 |

### *2.6.1. Admission organisation and analysis of the level of entrants.*

The admission of new students is regulated by Tallinn Health College Admission Regulations that is reviewed every academic year. The admission regulations are composed in cooperation with different chairs. The admission regulations are adopted in council of the college which establishes the general requirements concerning the admission, rules and norms, and the forms for different documents.

The regulations are available at college's web-site before the admission period commences. It is possible to ask about the regulations (with e-mail in the chair's mailing list) and to receive competent replies.

The nationwide admission system (SAIS) enables web-based finalizing of documents, automatic counting of final exam grades, and calculating the average grades necessary to form a ranking-list. Using SAIS enables to reduce significantly the number of mistakes that may arise, if the candidate enters his/her earlier grades. SAIS is connected with state registries (Estonian Education Info-System (EHIS), registry of state exam results, Population registry, all used through "X-tee"), where the received data reduces the number of documents required from the entrants and the necessity to verify them.

The expected level of education required for the entering is secondary education or respective foreign state qualification.

The competition to the dental technician speciality has risen during recent years, from 8,3 to 11,2, which is significantly higher than the competition in other specialities in the college. The earlier passing of state exams is recommended, but not obligatory. Their existence enables the admission commission to evaluate the candidate's level of knowledge better, and for the candidate to get a better position in the ranking-list. During the pre-consultation, the candidates are recommended to make several visits to dental technical laboratory and to get acquainted with the work there. Pre-consultation is possible via e-mail and telephone, also during the days of open doors, and via web-site.

Tests will be conducted during the entering: Estonian language (web-based), modulating, and conversation about the speciality. During the individual conversation, the candidate's motivation for entering will be clarified and an overview about studying habits will be received.

The modulation test in its current form has been adopted from Helsinki Polytechnic *Stadia* chair of dental technology in 2005 after the introducing of the new curriculum. During the test, the candidate has to prepare a three-dimensional figure, similar to the showed example. The result will be evaluated by an expert commission consisting of lecturers and employers. Thus the modulation test provides a slight overview about the candidate's sense space, planning skill and the speed of activities.

According to the population registry, the origin of dental technology students indicates that people from all Estonian regions have equal opportunities to start their studying. The division of dwelling locations of the 28 students having started their studying in 2007/2008 academic year is presented in the following table:

**Table 3.** *The origin of dental technology students according to population registry*

| | **Year 2005** | **Year 2007** | **Total** |
|---|---|---|---|
| Tallinn | 7 | 5 | 12 |
| Harjumaa | - | 1 | 1 |
| Virumaa | 2 | 3 | 5 |
| South-Estonia | 5 | 1 | 6 |
| West-Estonia | - | 1 | 1 |
| Central-Estonia | 1 | 2 | 3 |
| **TOTAL** | **15** | **13** | **28** |

Division by gender: 1/3 male and 2/3 female students. Additional information is available about the studying satisfaction of the first year students (see Appendixes 1-6 and 1-7).

### *2.6.2. Analysis about the student's work-load and succeeding, finding out the reasons for dropping off, consulting and additional reciting*

The provisions from regulations of study-organisation are used in the analysis of succeeding in studies.

The number of students in dental technology curriculum – 12 state-budget commissioned vacancies – enables to observe accurately the succeeding in studies of every particular student, and to consult them if necessary. Through the SIS it is

possible to evaluate succeeding, success in the passing of particular subjects or academic debts. Feedback from practical training base is also used in the evaluation of succeeding.

High competition in entering and the possibility of constant individual consulting help to guarantee the level of studying success, and studying motive. Appointing a study-allowance for studying-success up to two times a year motivates in studying. In 2008, two students graduated with gold medal, others also had good or excellent succeeding in studying.

There is exchange of information between different lecturers with the aim of finding out in good time the arising or occurring of academic debts.

Student consulting and additional reciting, if necessary, are inseparable parts of the study-process. Every-day work with students starts from the first day of studying and continues until the day the student is awarded with a document proving the graduation of the college. Entrants have the opportunity to receive prior information about studying in the college from the college's web-site and through the events that have been arranged for the publicity; the information and professional consulting is concrete.

There is a possibility for individual consulting for all the students. The students' individual consulting is problem-centred; if necessary, consulting can be received from the college's psychologist, student secretary, and study-secretary, lecturers from the chair or members of the student representation. Lecturers and practical training base mentors also consult students about the forming of further career.

Since the 2007 academic year there have been 2 drop-offs. In these cumulating circumstances the arising of academic debts could be associated with the so-called domestic and life-related circumstances.

### *2.6.3. Academic mobility*

There is no dental technology teaching in other Estonian educational institutions. If the student would wish to discontinue dental technology studying and to start studying a new speciality, the possibilities would be on general basis.

In dental technology chair the academic mobility is relatively low, determined from very high studying motivation. Majority of third year students work in different dental technical laboratories, acquiring thus necessary additional experiences.

### *2.6.4. Analysis about the working possibilities of graduates*

No targeted labour market research concerning the job-openings for dental technicians has been ordered from the state. It is known from the size of the admission contest and the orders that have been presented to dental technical laboratories, that the demand for dental technicians is very high. The graduates from every year, having passed the curriculum, have found job-positions of their speciality; students are sent job-offerings from dental technical laboratories and from other speciality related firms during the study-period. The big amount of dental technical firms provides good suppositions for finding job-positions. All the 2008 fourth year graduates work at speciality positions. The curriculum subjects 'Management studies´ and 'Entrepreneurship' provide the basis for participating in private business, and for creating a new firm.

### *2.6.5. Connections between the student representations and the studying process*

The college's student life is lead by student representation; its main obligations are to stand for students' interests in the organizing of studies and the guarantying of optimal studying conditions. The members of the representation are elected by students for one year on general basis. The representation elects a chairman, whose task is to coordinate the representation's work.

The student representation mediates the students' communication with the management, having their representatives in college's council; if necessary, the representation composes different work-groups for standing for student's interests, and participates in the curriculum council.

The student representation is a member of Estonian Students' Organisation, which is a member of International Student Union (ISU). Through the student representation, students have the possibility to sign for ISIC-card and the lecturers' ITIC-card, both actively used. The students introduce the specialities taught in college during the youth information-fair "Teeviit" ("Signpost") and in many other fairs, also at the college's open doors day; the students also participate at the college's international conferences and represent the college at conferences in partner colleges, participate in teams that coordinate the college's general work, help to organize ceremonial events in college.

### *2.6.6. The strengths and the areas to be developed*

***Strengths***

(1) The interested entrants have the possibility to get prior information about studying in dental technology curriculum through the college's web-site and publicity events; the information and consulting is concrete;
(2) admission regulations and admission organisation, the conditions for stopping, continuing, finishing and restoring one's studying are public and meet the requirements foreseen in legal acts;
(3) the admission arrangement in dental technology speciality guarantees the selection of students with high motivation;
(4) the students represent proportionally the whole Estonia, thus there is no preference of dwelling location;
(5) academic mobility is low;
(6) resulting from curriculum, the system of observing the teaching, succeeding and success is flexible and student-centred, it is used for improving studying results and reducing the arising of studying academic debts;
(7) the graduates have enough possibilities for finding speciality work;
(8) the students have a possibility to be represented through their representing institution, also to receive formal and informal information about what is happening in the college.

***Areas to be developed (see art. 2.11.)***

(1) Some students are not interested in the activities of student representation and do not participate in elections; as a result, the dental technology students do not have their direct representation, thus a bigger motivation of students is necessary for participation in representation's activities.

## 2.7. Lecturers

| | |
|---|---|
| Number of lecturers elected through contest | 8 |
| The structure of lecturers' work-load in percentage | |
| With full-load | 7 |
| With half-load | 1 |
| Less than half-load | 11 |
| Average age of lecturers' | 37 |
| Average work-length of the lecturers in college | 8 years |
| Qualification of the lecturers | 100% higher education<br>53% MA<br>32% PhD |
| Publications per lecturer | 3 |
| Participations in international science forums /conferences (2007/2008 academic year) | 15 |
| The studying instruments composed | 8 |
| Total number of supporting staff in the college | 51 |
| In the chair | 2 |

### *2.7.1. Analysis about the sufficiency, suitability and qualification of basic lecturers, conformity to the Standard of Higher Education*

Dental technology chair has two lecturers working with full work-load. The number of lecturers with partial work-load (the main job is outside the college) in the first course of 2007/2008 was 7 and 6 on the third course. Selection has been made by proceeding from the speciality's specifics, they have teaching and practical work experience. All the dental technology speciality lecturers have at least applied higher education and a three year experience of speciality work. The head of the chair corresponds to PhD level, the chair's assistant has passed Master level studies and one of the lecturers is studying on Master level.

All theoretical subjects in dental technician curriculum are taught by lecturers with higher education (University of Tartu, Tallinn University, Tallinn Technical College). 100% of the curriculum's volume of subjects is taught by lecturers with higher education or with respective qualification; 83% of the curriculum's volume of subjects are taught by lecturers with Master degree or with respective qualification (see Table 1in art 2.2.1.). Proceeding from the curriculum's objectives, all the lecturers improve constantly their qualification; they participate in research work, development activities, seminars and conferences and in complementary study (see Appendix 2-9), this is how the development of lecturers' aftergrowth also takes place.

The lecturers participate in research works (see Appendixes 2-6, 2-10 and 2-15), profession and speciality trainings. The new knowledge and skills acquired in trainings are applicable in teaching (new skills, to be well informed with technologies and material qualities etc).

Lecturers with partial work-load, who have participated in teaching for several years, possess modern practical experiences, thus they bring the feedback gained from teaching experience into practical work.

Resulting from the directions and necessities of curriculum development activities,

foremost the younger lecturers participate in self-improvement and various speciality trainings. The chair's necessity is to have a higher number of lecturers with basic work-load, who know their speciality and have applied higher education. As of the current labour-market situation, it is meaningful to include into the studying process the dental technicians with respective qualification, on the basis of partial work-load. Resulting from the number of studying-positions that are created on the basis of state commission – 12 positions on every course – the number of speciality lecturers for individual instruction is sufficient, it is covered by lecturers with partial work-load. Thus the individual high-level instruction has been guaranteed, including also during independent work.

### *2.7.2. The analysis on selecting, raising the qualification and renewing the staff of lecturers.*

The assessment, the job responsibilities, rights, obligations and planning of the work-time of lecturers is regulated by the general document "The basis for evaluating the qualification and planning of work-time of Tallinn Health College lecturers", which is adopted by the college council, as well as in respective job-contracts. The selection of lecturers to the positions is conducted through a competition, by proceeding from legal acts. During the competition, an individual conversation is held in the competition commission, attended by other lecturers and students. After the competition, a contract will be concluded for 3-5 years.

Internal trainings are held in the college which include all the staff – management, lecturers, assisting staff. Trainings are held twice a year on topics of quality raising and coordinating team-work. Trainings are also attended by lecturers with partial work-load. The lecturers also participate in speciality and other type of trainings elsewhere.

In April 2007, a training-program for new lecturers was launched, with the objective to provide a readiness for specialists to work as a lecturer. The target group consists of young specialists working in their speciality who have sufficient motivation for teaching in college and speciality lecturers who work in the college for the first year. Regular training days are held every month for young lecturers participating in the training; necessary knowledge and skills about the principles of adult training are received.

### *2.7.3. The principles of dividing lecturers' work-load and fulfilling additional administrative tasks*

The lecturers' work-time is regulated by the college's internal regulations and fixed in job-contract. The temporal division of lecturers' work time is fixed on lecturer's work-sheet in accordance with the decision No 5.1 of the college council (from April 17, 2007). In assigning the hourly teaching load for lecturers, attention is drawn on planning the lecturers' time on development activities and conducting applied research work. Opportunities are provided for participating in speciality conferences, seminars and supplementary training. The lecturer's working time is 40 hours a week.

The lecturers' work-load is divided into teaching, administrative work and development activities. Resulting from aforementioned document, a series of administrative tasks have been planned into the lecturers' working time. One of the development activities is the popularization of dental technology speciality, participation in various commissions and expertises, organizing and participating in

conferences, organizing and conducting students' reception. The instruction of term papers also comprises speciality's popularization, because the works accomplished provide interest to dental technicians outside the college. For instance, the course papers from 2006/2007 and 2007/2008 academic years have been introduced to publicity in conferences and journalism.

In relation with the working time, it is necessary to emphasize the instructing work in practical training bases, including the assessment of practical training works; all these works demand precise awareness with the conditions of practical training and repeated visits to practical training bases.

The fulfilling of necessary additional administrative tasks is decided individually. In the assigning of tasks, it is proceeded from the job position, the individual qualities, and from the necessity of curriculum development.

### *2.7.4. Analysis on lecturers' research activities, creative activity and results*

In the chair of dental technology, the applied research work is connected with course papers. In 2006, the orientations of applied research works were adopted for the next 5 years by the chair (see Appendix 2-15). In the framework of course papers, the research objects are mostly various dental technical materials (acryls, metals etc) and technologies (see Appendix 2-15); the material-research laboratory of Tallinn Technical College is used on the grounds of cooperation agreement, and also the technical possibilities of the laboratory of Tallinn Health College chair of pharmacy.

Among the course papers composed in 2007, three papers have been presented in international conferences, including outside Estonia (instructor: head of the chair); these papers have also been introduced in medical journalism (see Appendix 2-10).

In the frames of international week in 2007/2008 academic year, three first year and nine third year students presented speciality presentations, which were listened and analysed by the representatives of the society of the profession. Dissertations were finalized as thesis and on stands, by the instruction of the head of the chair.

Studying materials have been composed for teaching the areas of bugel dentures (2007), orthodontic treatment (2007), acrylic plate dentures (2007), aesthetics of denturing (2007), partial dentures (2008), teeth anatomy (2007), morphology (2007), and the basic terminology of dental technology (2008) (see Appendixes 2-3 and 2-10).

Main attention in the lecturers' research work is drawn on the cooperation with students. As a result, an applied research article about the mechanical qualities of orthodontic materials has been published in 2008 (see Appendix 2-10). The research work was completed in cooperation with Tallinn Technical College.

In addition to applied research, the chair has regularly published information on speciality web-site and in the medical newspaper "*Meditsiiniuudised*" ("Health Care News"), introducing the chair. Lecturers with partial work-load also participate in development activities, by popularizing applied research works and representing the college in speciality organisation.

### *2.7.5. Proportion and work organisation of lecturers with partial work-load*

Lecturers with partial work-load work in the dental technical laboratory of the college with main position, which will assure the modernity of their skills. In average, they participate in the teaching of respective subject 4 hours a day during a 4-6 week cycle.

A dental technician can divide one's weekly load in a way that the possibility for teaching the speciality and working in dental technical firm remains. The same organisation of work is suitable for lecturers with partial work-load who work at dental and other institutions. A mentor-lecturer has been appointed to new lecturers with partial work-load for supporting his/her activities.

Having fulfilled a work-assignment, lecturers with partial work-load submit a detailed report for counting the conducted teaching. The applied higher education for dental technicians that was commenced in 2001, is a motivation for graduates to become a trainer, a practical training mentor and/or a developer in that speciality. These people are also the main contingent for becoming a dental technology lecturer in Tallinn Health College; the possibility of teaching on the level of higher education is a motivation for them to work in the speciality of dental technology training. The chair also encourages students with very good studying results to connect their future with the teaching of dental technology.

### *2.7.6. The strengths and the areas to be developed*

***Strengths***

(1) Speciality teaching and other subjects are conducted by specialists, who know their area of speciality very well;

(2) the graduates of recent years are the main aftergrowth of lecturers;

(3) lecturers participate in professional and speciality trainings;

(4) applied research is taking place in cooperation between the students and lecturers;

(5) the studying-materials are improved by the lecturers, new materials are composed if necessary;

(6) mentor-lecturers are appointed to new lecturers for facilitating their integration;

(7) regular internal trainings are conducted in Tallinn Health College that are also conducted by external trainers;

(8) the applying of knowledge received during the raising of qualification;

(9) majority of lecturers with partial working load work in Tallinn Health College already for several years in a row, thus being experienced in the areas of the speciality and study-organisation;

(10) a continuously high entering competition enables to find capable young people, who would be motivated of becoming lecturers in the future;

(11) the specializing in the dental technology speciality enables to include lecturers with different level of specialization.

***Areas to be developed (see art. 2.11.)***

(1) To motivate dental technicians with significantly higher wages to work in educational institutions;

(2) lacking of professional Master-level studies.

### *2.7.7. Analysis on the selecting, work assignments and training of supporting staff in the chair*

The supporting staff is selected through competition. The majority of the supporting staff has been hired and their work has been arranged with the including of the work from all over the college (study-secretary, student secretary, studying referent).

The supporting staff of the dental technology chair consists of the laboratory's manager and technician. The technician is elected on the basis of his/her knowledge about the speciality, and the capability of conducting simpler preparation works, including the producing of work-models necessary for the study-process; the training and the learning of particular work-tasks is conducted on the spot. The manager of the laboratory is a person, who knows the speciality, materials and equipment. The manager's task is the ordering of equipment and materials necessary for every-day work, and guarantying the maintenance of the equipment. In every academic year, the manager collects the data for revenue and inventory and submits them to the head of the chair; the manager is responsible for working safety in the laboratory.

The studies can be conducted as the result of the cooperation between the laboratory's manager and the technician; both are also responsible for the maintaining of the laboratory condition.

## 2.8. Studying environment

The resources of state funded study-commissioned on the curriculum

| | |
|---|---|
| 2005/2006 | 12 |
| 2006/2007 | No admission |
| 2007/2008 | 12 |
| Total number of available auditoriums for the curriculum | 23 |
| Total number of practical trainings in studying environment for curriculum | 2 |
| Total number of computer positions free to use | 40 |
| Total area of work rooms for lecturers of dental technology | 30 $m^2$ |
| Total amount of literature in the library | 23245 |
| From it books connected with curriculum | 598 |
| From it journals connected with curriculum | 8 |
| Average cost of credits in paid studying (in Estonian kroons) | 2457 |

### *2.8.1. Analysis on sufficiency, condition and equipment of study rooms*

A development plan has been elaborated for applying the dental technology curriculum and for enhancing material condition, according to which in addition to available resources, the plan also considers the orientations of speciality and technology. The cornerstone of dental technician curriculum is the producing of quality dental restorations based on strong theoretical preparation. All the necessary auditory studying takes place in one campus building. The study-base for **basic subjects** consists of two study-laboratories (each has 12 studying positions and 2 lecturer positions) and two general work-rooms - gypsum and polishing room. The total area of speciality study rooms is 162 $m^2$. The lecturers of the basic subjects have 2 rooms with the total of 30 $m^2$ in their disposal (the rooms No 232 and 219). The storerooms for preserving study-instruments are with total of 19 $m^2$.

There is sufficient amount of rooms for conducting studying in Tallinn Health College (see Appendix 1-9): the aforementioned studying and supporting rooms guarantee sufficient space for applying the curriculum.

### *2.8.2. The development strategy and level analysis of special equipment in study-laboratories and rooms, and possibilities for free disposal*

The working conditions (the status of health protection and occupational safety in study-laboratories is under constant observation) conform to the requirements of health protection and occupational safety (“The requirements of health protection and occupational safety established for working spots”, The Government of the Republic regulation No 176, from June 14, 2007). The working spot is ergonomic. There is enough moving space, the placement of the chair and working desk/working-level guarantees ergonomically correct body-position for the student and the worker. The location of equipment/apparatuses in the room meets the requirements in the way, that the equipment or constructions installed on the walls and to the ceiling have been attached in a safe mode, excluding their falling down. The floors are not slippery and with no dangerous leanings. There is sufficient air conditioning in the working-room. Working spots are lightened enough. For avoiding overheating in the rooms, windows are coverable with shades that obstruct the sun-radiance.

The rooms for preparing and processing materials with relevant equipment are located

in the immediate neighbourhood of the study-laboratories; all the rooms are ventilated centrally: in addition, all the rooms have local ventilation. The sufficient lighting of rooms and working spots is assured by general as well as local lighting.

The students attend the study-laboratory in clothing that corresponds to the requirements of occupational safety. In 2007, students participated in a campaign and a follow-up campaign “Safe Start”, organized by the European Agency for Safety and Health at Work, aiming to bring into consciousness the requirements and methods of occupational safety regarding clothing, footwear, the use of work-instruments etc.

The chair has 2 study-laboratories with 12 working spots. Their main part was completed in the frames of PHARE project starting from 1995. The project “PHARE Vocational Education Reform in Estonia” was launched in 1995 with the duration of 4 years. Without stopping the studying process, new furnishing was supplied and the studying was rearranged. The completing of two new working spots started in 2008.

During the renewing of furnishing, the every-day activities and recommendations from cooperation partners and practical training bases are analysed. The upgrading of apparatuses/equipment is made according to the necessities and the possibilities of technical development. Products from countries like Germany, Italy, Great Britain, USA and others are used. At the same time, in the upgrading of technology, a principle is observed, according to which only those methods will be applied that have been tested and are securely working; ultra fast changes, resulting from advertising pressuring will be avoided.

Students will acquire all the necessary basic skills foreseen in the curriculum with the help of contemporary apparatuses and equipment in the study-laboratory (see Appendix 2-12). All the study-laboratories are available for students and freely disposable, according to necessities also during independent work with the presence of lecturer. During the period when there is no studying, the existing equipment enables to conduct various speciality trainings, necessary for the general development of dental technology as a speciality. Relevant video equipment for demonstrating the lecturer’s technique and manual activities is available in study-laboratories (modern cameras, monitors, saving and playback equipment for VHS and digital signal). A permanent exhibition about dentures produced during study-process can be seen in study rooms; working instructions for all the equipment and other information is available in all the rooms. Every student has a working-spot for what he/she is responsible.

### 2.8.3. Library’s condition, development plan, accessibility of study-material

In the complementing of study-material it is proceeded from the college’s orientations for studying, research and development in the dental technology speciality. Library’s **mission** is to support the studying and research work in the college with the help of its collection of materials and opened environment.

The library is used by students, lecturers and other workers of the college. The library can also be used by graduates, specialists working in particular specialities, employers and speciality unions. The purchasing of study-materials into the library is made on the basis of suggestions from the chairs; the number of users is considered. The removing of old study-materials from the library is also necessary, for assuring the modernity of literature, as the students themselves are not competent to evaluate the level of study-materials (see Appendixes 2-3 and 2-4).

A great deal of speciality studying materials is composed by lecturers. These are available in library after reviewing. Students can use speciality periodicals and reference literature in English, Russian, Finnish and Estonian language.

The library informs regularly all the lecturers about new literature, assuring thus the large-scale using of studying materials. Since 2007, the library has expanded in the area of opened shelves that reduces the possible time for borrowing books. In case an urgent book is not available, it is possible to make a reservation for the book. The number of study-materials currently available in the library can be seen through the web-site by registered users. A search through RIKSWEB enables the user to see, whether the desired book is available in some other library. Thus, through e-library, it is possible to search information in the RIKSWEB catalogue, in the joint catalogue of major libraries ESTER, in the database of research articles EBSCO and OVID, in the data-base of articles ISE, in the database of State Gazette. Links have been created for journals in Estonian language, to web-sites of health care related institutions, health care portals and on-line book-stores.

The feedback received from the readers indicates, that the possibilities of using the library are assessed as good, the quick availability of information about other libraries is estimated very valuable. A copying machine and printer is located in the reading room, thus the possibility of duplicating study-materials is available for everybody. The printing service is offered by the library since 2007. The students and lecturers can use the library for printing reports, study-materials and other necessary materials. Students are instructed and consulted about the using conditions of materials from starting of the first week in the first course. The computers for general use are located in library and computer-class. It is possible to buy necessary books from the library, for example “Teeth anatomy”.

**Possibilities of using information networks.** Intranet is available in the college in which the navigation is smooth and handy, all the college staff in the have rights to use it when they are issued user’s rights. There is also access to SIS and other information networks in the universities of Tallinn (E-University, Moodle, IVA) and Tartu (OVID).

### *2.8.4. The sufficiency and level of servicing units (eating, hygiene, resting etc)*

The college has a student home Tallinn which is situated in the same district as the campus. The student needs a personal magnetic-card to enter the student home 24 hours a day. The same card enables to enter the student’s floor and the computer class on the first floor. The computer class is opened 24 hours a day, internet-connection is available. There is a washing-machine with a dryer in the student home, kitchens and hygiene-rooms are situated on every floor.

A canteen is situated in the campus building, opened from 9.30–16.30; a gymnasium with shower at evenings is also available in the campus. A vending machine for beverages (coffee, chocolate) is situated on the II floor.

Recreation areas and hygiene-rooms are located in the campus nearby the study-laboratories. All the hygiene-rooms have been renovated during the last 2 academic years. A copying machine is available for use on the second floor and one in the library.

A separate room with furniture is available for the student representation on the first floor. Finances are foreseen in the college budget for student representation which are

used for the functions that are delegated in legal acts and the statute.

### *2.8.5. The sufficiency of material resources for development*

A development plan until 2010 has been composed for enhancing the condition of dental technology speciality and upgrading furnishing. The development plan proceeds from the directions of development and considers the preparation of dental technicians on the level of applied higher education. Material resources are guaranteed through the state commission for training that comprise dental technical equipment and machinery, expense materials for producing dentures, office equipment and other supplies.

**IT- info technology.** The number of computer positions for free use in the college is 40. It is possible for the students to use the computers during independent work in the library rooms. The computer classes and group-work rooms in the library are used for e-learning (IVA-courses on the basis of Tallinn University server). Wireless internet (WiFi) is available in the campus building. The chair has 4 computers available: 3 local computers and one laptop computer, and a scanning device for preparing study-materials.

Concerning software, MS Windows (Win2000, XP and Vista) have been licensed as operation system together with necessary legal office software. Well-timed information about the use of free-ware (*OpenOffice* and others) is forwarded to students. The capacity of hardware corresponds to the necessities of the curriculum and is sufficient; it is possible to compose and finalize studying instruments in the chair that correspond to requirements and to put them on the web-site.

The chair of dental technology together with other chairs participates in the project of E-vocational school: Developing and introducing E-learning in vocational educational institutions and the universities of applied higher education in 2004-2008 and continuing under the title of BeSt during 2008-2013. The students have access to different databases (OVID and others) for composing independent work

**Speciality equipment/apparatuses.** The equipment/apparatuses necessary for teaching the basic subjects meet the requirements for passing the curriculum and the development of the speciality (see Appendixes 2-12 and 2-14). The supplying with equipment that circulates is conducted daily according to necessities, the required dental technical materials are preferably ordered in advance to get a favourable price. The equipment/materials in all the rooms are placed in technical cabinets, following a certain system, or are located on the store premises. The technical cabinets have special marking. The level of equipment in study-laboratory enables to conduct speciality training for practicing dental technicians.

**Study rooms.** There are enough spots in study rooms for students to teach basic subjects and supporting subjects; there are different projection-systems in the rooms (data, graphic, VHS/DVD-projection and 4 monitors in the study-laboratories for demonstrating manual skills of the lecturer). Room reservations are easily made through SIS that assures the expediency and privacy of the using of rooms.

A competent staff is available for maintenance and enhancing the study rooms and apparatuses/equipment.

### *2.8.6. The strengths and the areas to be developed*

***Strengths***

(1) A long term development plan has been elaborated for applying dental technician curriculum and enhancing the material status, that considers the development directions of dental technology as a speciality, the material possibilities of the chair, and also the possibilities of conducting practical training by cooperation partners;

(2) for conducting auditory studying, a sufficient number of study rooms and enough working-spots are available in study-laboratory;

(3) the upgrading of equipment/apparatuses is done in a continuous process, following present-day necessities and guarantees the achieving of curriculum objectives;

(4) a sufficient amount of contemporary computer and office equipment is used, including the possibility to present the lecturer's activities with the help of contemporary video-projection system simultaneously to all the students; the intranet is easy to navigate;

(5) the amount of the professional literature, obligatory and recommended, is sufficient and is constantly completed and available for all the students in library, also in SIS, in IVA in case of E-learning; the library is ready for consulting and the students have adequate possibilities for working there;

(6) the amount of study-materials composed by lecturers has significantly increased;

(7) it is possible for all lecturers with full work-load to work in the same time in chair's or other rooms;

(8) in addition to study rooms, necessary rooms have been furnished for the well-being, hygiene, resting and independent work in full volume for the students.

***Areas to be developed (see art. 2.11.)***

(1) For introducing the modern top technology to the students, the college has started cooperation with practical training bases and is the area of further development;

(2) skills of using freeware and other necessary computer programs are relevantly modest and are in need of further enhancing.

## 2.9. International relations and quality assurance

### *2.9.1. Cooperation and connections with other institutions, professional unions and employer representatives*

The chair of dental technology has direct connections with major Estonian speciality unions. Representatives from the National Society of Professional Dental Technicians participate in students' admission and final exam commissions, in curriculum council, and also in the presentation of student works during the international week. Two works from the total of 14 works that were produced and assessed during the 2007/2008 academic year achieved an award-winning position (first and second) in an all-college competition. Both works corresponded to the directions of applied science fixated in the chair.

The National Society of Professional Dental Technicians and the Union of Dental Technicians of Estonia are included into the elaboration of professional standard and the analysis of necessary amendment propositions, and organizing the training.

On the basis of the college's study-laboratory, substantial supplementary training is conducted for dental technicians with the introducing of the most modern technologies. The supplementary training is held with the average of once during a quarter of the year for lecturers, thus assuring the modernity of technology-related knowledge. The participation in the annual international week of the college enables the lecturers and students to be informed about contemporary orientations in the speciality. Seminars with the participation of foreign lecturers and speciality experts motivate the students to actively prepare for their own dissertations. The mentioned dissertations provide an overview for employer about the student's theoretical knowledge. For guarantying the curriculum's quality, cooperation is made between the chairs inside and outside the college.

The main speciality cooperation partners as practical training bases where all the necessary and contemporary practical training tasks are performed or from where the lecturers of basic subjects come from, are: Tallinn Clinic of Dentistry, University of Tartu Foundation Clinicum's Stomatology Clinic's Dentistry Centre, the Clinic of Dentistry of Rakvere, City-Med, Rivalab, AS Hambastuudio, also Tallinn Technical College and the Univesity of Tartu.

### *2.9.2. The connections with international organisations and colleges, the functioning cooperation programs, student exchange*

When describing internationalization, we emphasize the participation of the whole college in international activities as pointed out in art. 1.5.

During the 2007/2008 academic year, two second year dental technology students from Kaunas Medical College attended Tallinn Health College in the frames of ERASMUS student exchange; two students from our college will attend their college during the 2008/2009 academic year. In 2007, dental technology lecturers from the mentioned college visited Tallinn in frames of speciality lectures. In 2007, direct connections were concluded with the chairs of dental technology from Lithuanian Utina and Kaunas colleges. Regular participation in conferences and seminars is also functioning between the representatives of Riga Medical College dental technology speciality.

At the end of March 2008, the aforementioned partner-organisations (Kaunas, Utina and Riga medical colleges) together with the dental technical training centre *IBU GmbH* located in Germany, submitted an application in the framework of *Leonardo da Vinci* program *Mobility Project* for „*Die Zahntechnik geht ins Baltikum*" and *Transfer Project* „*CAD/CAM Zahntechnik*". The mentioned projects provide better opportunities for continuing international cooperation and to develop dental technological know-how in Estonia.

The lecturers of the chair of dental technology have participated in several all-college projects like *IGUANA* (applying interactive methods in teaching), HUUTA (prophylactics of infections); they have visited the department of dental technology in Oslo City College in Norway, the department of dental mechanics at Riga Medical College, the London Schottlander training-centre, and repeatedly the Helsinki Polytechnic *Stadia* chair of dental technology.

### *2.9.3. The international dimension of the curriculum*

In the framework of bilateral cooperation, the curriculum has been discussed and compared with the lecturers from the chair of dental technology in Helsinki Polytechnic *Stadia* (2005; 2007-2008), the dental technology lecturers from Oslo City College, Norway (2006), with lecturers from Riga Medical College (2005-2008), lecturers from Lithuanian Utina and Kaunas Medical Colleges (2005-2007). Thus it can be said that the college is participating in a network of international relations. The curriculum and its development has been directly influenced by Finnish, Norwegian and Lithuanian relevant curricula, and their analysis. The cooperation partners have continuously emphasized the modernity of our dental technology studying organisation and curriculum.

Observations and suggestions from foreign trainers are used in the modernization of speciality teaching. All speciality lecturers have obtained an international working experience starting from the PHARE project.

### *2.9.4. The organisation of guarantying the studying quality in the area of the curriculum*

The work-group dealing with quality issues is functioning all over the college (see art. 1.4.), it includes a representative (assistant) from every chair and the objective of the work is to equalize understandings and activities in applying the curriculum.

One of the objectives of monitoring the curriculum quality is the conformity of the preparation process of dental technicians to higher education; this objective is connected with the college's other speciality structures. The components of assuring quality teaching are human resources, teaching instruments and the used technology. Feedback about assuring quality teaching is received from employers, and also from students' opinions about teaching.

In the frames of joint events, regular data collection and analysing is conducted about the speciality activities of graduates, and about the content of employers with the knowledge and skills of the graduates. The collected data can be applied in the modernisation of the curriculum and for enhancing teaching. The regular subscribing of evidence-based professional literature and speciality periodicals helps to ensure the modernity of the curriculum.

In guarantying the curriculum quality, the work of the curriculum council engages an

important position. Modifications in the curriculum reflect the requirements of labour market, the wishes and necessities from the students.

### *2.9.5. The participation of staff in quality raising*

The chair's lecturers participate in regular speciality and professionalism development trainings (internal end external, see art. 1.4.). College's internal trainings are conducted twice a year (August, January). Participating in various trainings of production firms ensures the state of being informed about innovative technologies. Belonging to college's commissions and teams enables to participate in the describing and modifying of processes.

After visiting lectures of fellow lecturers, an analysis is conducted in a chair's meeting for comparing the appliance of teaching methods. Thus a systematic monitoring is carried out, afterwards the summarized resume is made and necessary decisions and conclusions are made for improving the quality of teaching. Lecturers participate in college's feedback monitoring that provide a regular overview about the lecturers' valuations concerning the organisation of teaching, and other areas.

### *2.9.6. Quality related feedback from students, graduates and potential employers. The system of realizing quality related propositions.*

Info-days and info-hours are held with mentors from practical training bases, the curriculum council is having meetings, comprehensive practical training reports are composed during practical training seminars, visits are made to practical training bases and speciality fairs, events with speciality unions including the annual days of Estonian dentists are conducted.

It is important to emphasize that the chair's decisions originate from the feedback received after the lectures of every new lecturer. The head of the chair can use the received feedback in development conversations, for influencing the teaching process. Feedback from employers is received during the visits to practical training bases, from joint trainings and other events.

A regular web-based feedback monitoring system (FMS) has been applied in the college. All propositions from students and the stuff is analysed, and if necessary, presented to curriculum council, the chair and rectorate. Students' representatives are included in disputations of the team and into the composing of a handbook about quality, launched during the 2007/2008 academic year by relevant quality work-team. A participant from every chair is included into work-team; the college's basic and supportive processes are currently being described in the process-card. This is how it is possible to mediate the all-college quality-related feedback to the chair.

Lecturers compose their work analysis at the end of every academic year. This is the basis for conducting the work analysis in the chair, also the contents of development conversations with the head of the chair, and the basis for composing the work-plan for the next academic year.

### *2.9.7. The strengths and the areas to be developed*

***Strength***

(1) Curriculum development is conducted in cooperation with foreign (Helsinki Polytechnic Stadia, Lithuanian Kaunas College of Medicine) and Estonian (University of Tartu, Tallinn University, Tallinn Technical College) educational institutions;

(2) cooperation is made with speciality unions – National Society of Professional Dental Technicians and the Union of Dental Technicians;

(3) cooperation is made with foreign training centres and the colleges offering trainings;

(4) during the visits to Tallinn Health College by foreign lecturers, the modernity of teaching organisation has been highlighted;

(5) a sufficient number of practical training bases with quality modern technology is available, thus a selection can be made;

(6) the college is participating in international projects;

(7) it is actively participated in the events of college's international week, the results of applied research have been published;

(8) a quality work-group is working in the college that includes all chairs;

(9) a lively student, lecturer and employer feedback is functioning together with its monitoring;

(10) a student-centred system that considers the propositions and necessities of students is elaborated, basing on the cooperation between the student representation and the college council.

***Areas to be developed (see art. 2.11.)***

(1) The quality system has been launched; the continuous describing of processes, systemizing and applying them need to be developed further;

(2) the continuing of exchanging students and lecturers is necessary;

(3) the encouraging of lecturers for higher speciality participation in international projects is necessary.

## 2.10. Activities launched after the recommendations from expert commission in 2004

| Experts' comments and recommendations (2004) | Chair's activities |
|---|---|
| *I. Management of educational policy*<br>The Dental Technician programme demonstrates a clear appreciation of the mission and goals of the programme and a vision for the future. Staff and students are aware and working towards achieving the programme mission and goals. | *I. Management of educational policy*<br>The activities in educational policy are constantly specified, resulting from the requirements of labour market and technology. |
| *II. Students*<br>**Manual dexterity features** as criteria for admission to the programme. | *II. Students*<br>The admission organisation was reformed starting from 2005. A new modulating test was implemented for assessing manual skills; candidate's previous studying success and motivation is considered. |
| **Recommendation 1.** Different teaching methods should be used to increase student motivation. | Lecturers apply active teaching methods in teaching, aiming to support students' studying.<br>A training program for young lecturers has been launched from 2007 that supports the starting lecturers in adjusting and the appliance of different teaching methods in teaching.<br>The amount of teaching methods was increased, E-learning was added; feedback indicates continuously high motivation of students. |
| **Recommendation 2.** Time tables should be compiled that give students even weekly workloads.<br>In relation to student mobility and employment following qualification, the School has identified that the labour market for Dental Technicians is quite restricted | Since 2005, the weekly and semester workloads have been equalized, thus the equal study-load has been assured;<br>Resulting from the cooperation with speciality unions, wide-ranging education, and providing more information to publicity, the students' job opportunities have improved. |
| *III. The Curriculum*<br>The team described the programme as a manual programme with some theoretical knowledge. | *III. The Curriculum*<br>Starting from 2005, the proportion of theoretical study has been significantly increased, basing on curriculum examples from other countries' curricula. |

| | |
|---|---|
| It is questionable whether the curriculum conforms with the requirements of the Standard of Higher Education, professional standards and international legislation as the programme appears to be a skills based. | During the 2005-2006 periods, the curriculum was harmonized with the requirements of the Standard of Higher Education, and professional standard; international contacts have been made during which the curriculum has been analysed and developed. |
| **Recommendation 3.** The curriculum meets the requirements of vocational education and should remain at this level. | The curriculum was reformed, harmonized with the requirements of the Standard of Higher Education and professional standard, in 2005 teaching was started on a new level. |
| *IV. The Educational (Teaching) Process*<br>The focus is primarily on the development of manual skills.<br><br>Computers and licensed software are used in teaching and learning. | *IV. The Educational (Teaching) Process*<br>Starting from 2005, the proportion of theoretical study and research work has been significantly increased.<br>The using of different computer software has been increased, students gain experiences from the making of research work and from using higher technology. |
| *V. Organisation of Studies*<br>The organisation of studies supports the development of manual skills in relation to the aforementioned. | *V. Organisation of Studies*<br>The proportion of theoretical study and research work has been significantly increased. |
| *VI. Teaching Staff*<br>70% of the teachers do not have a Masters Degree which is a requirement in Higher Education.<br><br>On discussing this with the teachers, it was determined that no teachers are involved in research.<br>**Recommendation 4.** Acquisition of research skills by teachers is considered necessary in Higher Education. | *VI. Teaching Staff*<br>Starting from 2006, 83% of the teaching staff have at least Master degree, 100% of teaching staff has higher education.<br>Lecturers are included into development and applied research.<br><br>Lecturers participate in applied research, which is conducted within the frames of cooperation in Tallinn Technology College and dental technical laboratories. |
| *VII. Practical Training*<br>**Recommendation 5.** The number of practice credits for this programme should not be changed as this programme is a vocational training programme. | *VII. Practical Training*<br>The proportion of practical training was modified accordingly with Standard of Higher Education. |

| | |
|---|---|
| *VIII Learning Environment and Resources*<br>The number of study rooms is adequate. | *VIII Learning environment*<br>In addition to the better general furnishing in study rooms, the number of computers for free use has been increased. |
| There is a shortage of specific professional literature in the Estonian language therefore teachers have compensated by duplicating materials for students.<br>**Recommendation 6.** Teachers should be encouraged and given time to publish journal articles and books in the Mother tongue of Estonia. | Inside working time, a time period has been separated for development activities; study materials for general subjects and speciality subjects in Estonian language have been composed by lecturers that are available in library and in study-information system. |
| *IX Quality Assurance*<br>Quality assurance is a continual process and processes appear to be in place to monitor the programme and evaluate teaching and learning. | *IX Quality Assurance*<br>Regular feedback is gained, the curriculum, studying process and study-organisation is monitored; it is being participated in the work of all-college quality evaluation team. |

## 2.11. Activity plan for the areas to be improved and in curriculum development

| Areas to be developed | Activities |
|---|---|
| **(1) Curriculum** | |
| The necessity to put together subjects with smaller volume for achieving better generalizing abilities. | During the curriculum development, proposals are made to curriculum council for adding together small-volume subjects for December, 2008. |
| | The transition to output-based curriculum will take place, starting from 2009/2010 academic year; for achieving this, the outputs of subjects and curriculum (all courses) will be formulated in the chair from February 2009, and in curriculum council in March 2009. |
| Mentors in practical training bases are with low interest in curriculum development due to their high work-load. | In February 2009, the graduated dental technicians, who have qualified the curriculum in 2009, will be included into curriculum council. |
| **(2) Study-organisation, study-process** | |
| To increase the amount of modern information technology in study-laboratories, including on-line web-environment. | For introducing the most recent technology in study-laboratories, inter-active and other info technology possibilities are used; from the beginning of 2009 budget period, new software that is necessary for demonstrations will be installed for working in on-line web-environment. |
| Increasing the proportion of E-learning in speciality subjects. | For increasing the proportion of E-learning, E-test and E-learning objects will be added to speciality subjects from September, 2008. |
| A small number of feedback questionnaires are filled (ca 25% from all the students). | For increasing the number of filled feedback questionnaires, I year students will be motivated for this by including them into the analysing of feedback; for achieving this, earlier analysis of feedback questionnaires will be introduced and the connection between feedback and the applied modifications will be explained in the subject 'Introduction to studying', starting from the second week of the first course. |

| | |
|---|---|
| **(3) Practical training** | |
| Sporadically, the insufficient motivation for instructing occurs from practical training mentors which can be explained with low instruction fees; at times, formal evaluation of students' works occurs that in some cases can cause non-objective over evaluation; | Mentor training in the practical training bases will be introduced by the chair. |
| In the motivation of mentors, it is necessary to include representatives from speciality unions and cooperation partners, and to emphasize moral stimulus. | In cooperation with speciality unions, the topics of student papers will be used for organising speciality training for practicing dental technicians. |
| **(4) Student** | |
| Some students are not interested in the functions of student representation and do not participate in elections. | For more regular informing of students about the tasks of student representation and for including into their activities, and also for intensifying the cooperation between the chair and student representation, propositions will be made in the college for reforming the electing procedure of student representation by the principle that students from all specialities are guaranteed a representative in the representation. |
| **(5) Lecturer** | |
| To motivate dental technicians with significantly higher wages to work in educational institutions; | Starting from 2008/2009 academic year, salaries of lecturers have been raised. |
| Lacking of professional Master-level studies | Students and graduates will be included into development and teaching activities through the writing of joint publications. Best graduates will be encourage to take professional master courses. |

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| **(6) Studying environment** | |
| For introducing the modern top technology to the students, the college has started cooperation with practical training bases and is the area of further development | For thorough familiarizing with production processes and modern technologies, including 3D scanning equipment (CAD/CAM), demonstrations are conducted once in semester for all the students in practical training bases possessing the technology; respective work-processes and newest technologies are saved as study-films in dental technology laboratories, which were added into the subject programs from 2007/2008 academic year. A study-film about occupational safety in working and studying environment will be completed in 2009. |
| Skills of using freeware and other necessary computer programs are relevantly modest and are in need of further enhancing. | For raising the using skills for different software solutions, freeware and various technology demo-programs will be introduced during theory-study and the visits to practical training bases. |
| **(7) Foreign relations and quality** | |
| The continuing of exchanging students and lecturers is necessary; the encouraging of lecturers for higher speciality participation in international projects is necessary; | For increasing the lecturers' participation in research and development work also outside the speciality, including in projects outside Estonia, the existing external dental technology cooperation projects will be introduced and the participation in science-conference in foreign country at least once in semester will be guaranteed. For continuing of exchanging students and lecturers, relevant proposition will be made to Helsinki Polytechnic Stadia and Kaunas College. |
| The quality system needs development, describing of processes, systemizing. | The launched quality controlling system needs developing; for this, it is participated in the composing of handbook about quality in 2008/2009 academic year, in the describing of processes and in the preparation of the handbook about quality. The importance of feedback is constantly explained to motivate students and lecturers to provide feedback. |