

# DentEdEvolves VISITATION



INSTITUTE OF DENTISTRY

## University of Oulu, Finland

22-26 September 2001

P.O.BOX 5281, 90014 UNIVERSITY OF OULU, FINLAND  
TEL +358-8-537 5011, FAX +358-8-537 5560

**DENTED VISITATION**  
**University of Oulu, Institute of Dentistry, Finland**  
**22-26 September 2001**

**Visitors**

Chairperson	Prof. Mary Kelly	Physiology	Dublin, Ireland
Rapporteur	Prof. Jerome Rotgans	Operative Dentistry/ Health Professions	Aachen, Germany
	Prof. Irmtrud Jonas	Orthodontics	Freiburg, Germany
	Prof. Nils-Erik Fiehn	Microbiology	Copenhagen, Denmark
	Prof. Fusun Ozer	Operative Dentistry	Selcuk, Turkey

**Hosting Institute**

**Dean of the Institute**

Prof. Aune Raustia	Head, Department of Prosthetic Dentistry and Stomatognathic Physiology
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**Contact Person**

Prof. Lassi Alvesalo	Head, Department of Oral Development and Orthodontics
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**Heads of the Departments**

Dean	Prof. Aune Raustia	Department of Prosthetic Dentistry and Stomatognathic Physiology
Vice Dean	Prof. Markku Larmas	Department of Pedodontics, Cariology and En- dodontics
	Prof. Lassi Alvesalo	Department of Oral Development and Orthodon- tics
	Prof. Hannu Hausen	Department of Community Dentistry
	Prof. Matti Knuutila	Department of Periodontology and Geriatric Den- tistry
	Prof. Tuula Salo	Department of Diagnostics and Oral Medicine
	Prof. Kai Sundquist	Department of Oral and Maxillofacial Surgery

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# **Section 1 Introduction and General Description**

## **1.1 BACKGROUND**

When the University of Oulu was founded more than 40 years ago, its key task was defined to secure the availability of academic professionals for the need of Northern Finland. There was a shortage of people with an academic education in the region at that time. Professionally oriented academic fields formed the foundation on which the university was later built upon. For faculties – those of education, science, medicine and technology – were founded. Dentistry was included in the operational plan of the Faculty of medicine from the very beginning.

The education of physicians was initially carried out so that introductory-staged chemistry and physics were taught at temporary faculties of the University of Oulu, after which the degree of Bachelor of Medicine (in practical terms courses in anatomy, medical chemistry, physiology, pharmacy, etc.) was obtained at the Medical Faculty of the University of Turku. Once they had received their Bachelor's degrees, the students came back to Oulu for their clinical courses at the Provincial Hospital in Oulu.

The completion of the Oulu University Central Hospital in 1972-1973, and the completion of the department buildings of the Medical Faculty at Kontinkangas even before that it was made possible to give all necessary training to the future physicians in Oulu, time had come to put the original plan into action and to start education of dentists in Northern Finland as well.

A great change had taken place in Finnish university policy in the early 1970s. Medical education had also been launched at Tampere University and Kuopio University, the latter including also dental education. So there were two new educational units in Finland, which started education of dentists 1973, in Oulu and Kuopio.

The education of dental students in Kuopio was carried out according to the model that had been adopted fifteen years earlier in Turku; a temporary dental clinic was set up in a rented facility, where the students were clinically trained during the first few years. Oulu chose a different approach. Clinical training was first carried out at Turku University in co-operation with the Institute of Dentistry. Thus the initial two professors of dentistry could devote their time for planning dental curriculum and the future building of the Institute of Dentistry.

Dental pre-clinical education was implemented by teachers of its Medical Faculty, and the last three years of clinical training were carried out by clinical teachers at the University of Turku.

## **1.2 THE PRIMARY FUNCTIONS OF THE INSTITUTION**

### **Mission Statement**

The Institute of Dentistry of the University of Oulu is dedicated to

Training of general and specialist dentists for Northern and Eastern Finland.

Scientific postgraduate training.

Maintain research co-operation with other faculties of the University of Oulu.

Maintain the high international profile in dental research.

International student exchange.

Continuing dental education.  
Maintain the existing co-operation with the Medical Faculty in training programmes.

### **1.3 GENERAL DESCRIPTION OF CURRICULUM**

Currently two universities in Finland give full-scale education in dentistry, the Universities of Oulu and Helsinki. The annual intake for the basic degree program is 44 students in Oulu and 35 in Helsinki (the numbers from the year 2000). Both in Oulu and Helsinki about 40% of all the applicants who participated in the entrance examination were chosen for the program. There are three different basic degree (graduate) study programs in the Faculty of Medicine, leading to the degrees of Licentiate in Dentistry, Licentiate in Medicine and Master of Nursing Science.

Studies in dentistry consist of theoretical pre-clinical studies and clinical theoretical studies including phantom courses and clinical work with patients. To break down a kind of barrier between these two parts students have their first contacts with patients at this early stage of the curriculum. In order to arrange teaching to cover more comprehensive themes certain subjects from different departments have been integrated and taught together. This reorganization of teaching has been carried out jointly with the Central Unit of the University of Oulu.

The theoretical studies during the first two preclinical years consist of cell biology; anatomy, physiology, biochemistry and public health qualify the students for the degree of Candidate in Dentistry. After this stage the studies continue at the facilities of the Institute of Dentistry for three years period.

Clinical studies comprise lectures, clinical demonstrations, teamwork and actual clinical work with patients. The work with the patients is of prime importance and gives the students the necessary skills in clinical diagnostics and treatment procedures.

### **ADMISSION REQUIREMENTS**

The admission requirements for studies in dentistry comprise the Matriculation Examination Certificate and an entrance examination. The applicants who have a vocational secondary level degree without a secondary school certificate can also apply, but their admission is based exclusively on the results of the entrance examination.

All applicants have to participate in the national entrance examination, which is usually arranged in June. The students who have graduated from senior secondary school the same spring when they apply receive extra points. The entrance examination consists of three subjects: chemistry, biology and either physics or psychology. The applicants have to pass all three examinations in order to be admitted.

### **LICENTIATE IN DENTISTRY<sup>1</sup>**

The aim of the studies towards the degree of Licentiate in Dentistry is to prepare students for full-scale practical work as general dentists as well as for postgraduate studies. The degree also gives competence for teaching and research work and for such administrative duties that require dental expertise.

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<sup>1</sup> Equivalent to D.D.S. degree in anglo-american countries

The number of study weeks required to complete the degree of Licentiate in Dentistry is about 200 (300 ECTS credits). A Finnish study week refers to the input of approximately 40 hours of work required from the student for the attainment of set objectives. An academic year consists of 40 study weeks (60 ECTS credits). Medical studies are pre-scheduled and the average time required to complete the degree is five years.

In Finland, the National Board of Medicolegal Affairs is responsible for awarding legal status to dentists and for overseeing the profession. After having the dental degree, the graduate applicant can apply for restricted legal recognition from the National Board of Medicolegal Affairs. This entitles dentist to take certain posts in health care centres or private practitioners under supervision and guidance. After the graduates have worked for six months under supervision in health care centres or private practitioners the National Board of Medicolegal Affairs grants them full recognition, which is the prerequisite for working as a private practitioner and for applying for posts and duties in the field of dentistry in Finland.

## **STRUCTURE OF THE LICENTIATE PROGRAM**

Until 1999 the curriculum was divided into 5 sections: general studies, subject studies, advanced studies, practical training and language studies. The pre-clinical stage lasts for two years and consists of mostly basic and biomedical studies and subject studies. The completion of clinical studies takes three years. During this phase the students focus on the occurrence, onset, diagnostics, treatment and prevention of various diseases.

Approximately two years ago (since 1-1-2000) a project to develop the assessment of quantity and quality of teaching was launched. This project was initiated to reconsider the present curriculum as it was no longer possible to incorporate new information into the available credit unit volume and the curriculum had become very laborious.

A core analysis was performed, aiming at the definition of the skills that a newly graduated dentist should have. This 'skills list' was used as a basis for defining the level of theoretical knowledge, ethics, clinical and social skills that a newly graduated dentist needs in order to be able to implement comprehensive patient care.

The curriculum development project that was launched under the Teaching Development Unit a year ago moved away from a department-centred approach to theme-based teaching according to the concept of authentic learning. This group includes senior lecturers from the departments and student representatives. It was agreed upon that the curriculum content should be arranged accordingly ten 'theme' ('strands' or 'traits'), i.e. (1) Pre-clinical strand, (2) Basic Competence, (3) Dental and General Diseases, (4) Occlusal Rehabilitation, (5) Operative Dentistry, (6) Traumas and Pain, (7) Growth and Evolution, (8) Gerodontology, (9) Scientific Education, (10) Electives, and the assessment should be revised accordingly. There have not been significant changes in volumes.

The first Table below shows the information of the sections of the old curriculum required by the visitors before the visit. The whole old curriculum appears in the pages 17-20.

The 'old' curriculum	Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits
5.1 Biochemistry	30 h	NO	NO	NO	C2	1.50	2.25
Medical Biochemistry	34 h	16 h	NO	NO	C2	2.50	3.75
5.2 Molecular Biology	76 h	22 h	NO	22 h	C2	6.00	9.00
6.1 Anatomy	90 h	NO	NO	100 h	C1-C2	10.00	15.00
6.2 Physiology	96 h	40 h	NO	14 h	C3	9.50	14.25
Physiological Physics	20 h	NO	NO	10 h	C3	1.50	2.25
Cell And Developmental Biology	68 h	40 h	NO	NO	C1-C2	5.60	8.40
7.1 Pharmacology and Toyesicology	90 h	YES	NO	30 h	C4-C7	9.00	13.50
Clinical Pharmacology	10 h	YES	NO	NO	C9	0.50	0.75
7.2 Microbiology	84 h	30 h	NO	11 h	C4, C8	4.25	6.35
8.1 Internal Medicine I	40 h	YES	NO	13 h	C5	3.00	4.50
8.2 Internal Medicine li	10 h	NO	NO	NO	C9	0.50	0.75
8.2 Surgery I	20 h	NO	NO	NO	C5	1.00	1.50
8.3 Anaesthesiology	8 h	2 h	NO	NO	C7	0.50	0.75
9 Oral Development and Orthodontics	122 h	50 h	NO	YES	C5-C9	8.00	12.00
10 Community Dentistry							
An Introduction to Dentistry and Oral Health Care	YES	YES	NO	NO	C2	0.50	0.75
Organisation of Oral Health Care	YES	YES	NO	YES	C6	0.50	0.75
Ergonomics	YES	YES	YES	NO	C5	0.30	0.45
Dentist-patient relationship I	YES	YES	YES	YES	C5	0.50	0.75
Dentist-patient relationship II	YES	YES	YES	YES	C9	0.50	0.75
Oral Health, Individual and Community	YES	YES	NO	YES	C8	1.50	2.25
Seminars in Community Dentistry	YES	YES	NO	YES	C9	1.50	2.25
11.1 Conservative Dentistry							
Pedodontics, Cariology and Endodontics	100 h	140 h	NO	YES	C5-C10	11.00	16.5
11.3 Prosthetic Dentistry	110 h	112 h	YES	NO	C6-C9	10.50	15.75
Stomatognathic Physiology	35 h	NO	5 h	YES	C4, C6	2.00	3.00
Stomatognathic Physiology I (Orthofunction)	YES	NO	YES	YES	C4	1.00	1.50
Stomatognathic Physiology II (Pathofunction)	YES	NO	YES	YES	C6	1.00	1.50
Dental Materials	18 h	YES	YES	NO	C6-C7	0.90	1.35
Fixed Prosthodontics	21 h	48 h	YES	YES	C6	3.50	5.25
Removable Partial Dentures	14 h	24 h	YES	YES	C6-C7	1.90	2.90
Complete Dentures	15 h	20 h	YES	YES	C6	1.75	2.60
Periodontology and Geriatric Dentistry							
Periodontology I	YES	YES	YES	YES	C5	3.50	5.25
Periodontology II	YES	NO	NO	NO	C6	1.50	2.25
Periodontology III	YES	YES	YES	YES	C7	2.00	3.00
Periodontology IV	NO	NO	NO	YES	C9	1.50	2.25
Geriatric Dentistry	YES	YES	NO	YES	C9	0.70	1.05
13 Oral Surgery and Dental Radiography and Radiology							
13.1 Oral Surgery	146 h	NO	YES	NO	C5-C9	7.80	11.70
13.2 Oral Radiology	80 h	30 h	NO	YES	C5-C9	4.50	6.75
14 Oral Medicine and Oral Pathology							
Oral Pathology and Forensic Dentistry	40 h	NO	20 h	NO	C9	3.00	4.50
Diseases of the Oral Mucosa	YES	NO	NO	NO	C7	0.50	0.75
Clinical Physiology of Saliva	YES	NO	NO	NO	C7	0.50	0.75
Clinical Nutrition	YES	NO	NO	NO	C9	0.50	0.75
15.1 Integrated Patient Care							
15.2 Dental Emergencies							
15.3 Care of Special Need Patients							
16 Behavioural Sciences							
16.2 Communications							
16.3 Ethics and Jurisprudence							
16.4 Practice Management							

The second Table shows the general structure of the new curriculum.

The 'new' curriculum
<b>Cursus 1 (1<sup>st</sup> year, autumn, 1<sup>st</sup> pre-clinical year)</b>
As the old curriculum
+ strand 1: Pre-clinical strand
<b>Cursus 2 (1<sup>st</sup> year, spring, 1<sup>st</sup> pre-clinical year)</b>
As the old curriculum
+ strand 1: Pre-clinical strand
<b>Cursus 3 (2<sup>nd</sup> year, autumn, 2<sup>nd</sup> pre-clinical year)</b>
As the old curriculum
+ strand 1: Pre-clinical strand
<b>Cursus 4 (2<sup>nd</sup> year, spring, 2<sup>nd</sup> pre-clinical year)</b>
As the old curriculum
+ strand 1: Pre-clinical strand
<b>Cursus 5 (3<sup>rd</sup> year, autumn, 1<sup>st</sup> clinical year)</b>
strand 2: Basic Competence
strand 3: Dental and General Diseases
strand 4: Occlusal Rehabilitation
strand 5: Operative Dentistry
<b>Cursus 6 (3<sup>rd</sup> year, spring, 1<sup>st</sup> clinical year)</b>
strand 2: Basic Competence
strand 3: Dental and General Diseases
strand 4: Occlusal Rehabilitation
strand 9: Scientific Education
<b>Cursus 7 (4<sup>th</sup> year, autumn, 2<sup>nd</sup> clinical year)</b>
strand 2: Basic Competence
strand 3: Dental and General Diseases
strand 4: Occlusal Rehabilitation
strand 5: Operative Dentistry
strand 7: Growth and Evolution
strand 9: Scientific Education
<b>Cursus 8 (4<sup>th</sup> year, spring, 2<sup>nd</sup> clinical year)</b>
strand 2: Basic Competence
strand 3: Dental and General Diseases
strand 6: Traumas and Pain
strand 7: Growth and Evolution
strand 9: Scientific Education
<b>Cursus 9 (5<sup>th</sup> year, autumn, 3<sup>rd</sup> clinical year)</b>
strand 3: Dental and General Diseases
strand 4: Occlusal Rehabilitation
strand 6: Traumas and Pain
strand 8: Gerodontology
strand 9: Scientific Education
strand 10: Electives
<b>Cursus 10 (5<sup>th</sup> year, spring, 3<sup>rd</sup> clinical year)</b>
strand 2: Basic Competence
strand 3: Dental and General Diseases
strand 4: Occlusal Rehabilitation
strand 5: Operative Dentistry
strand 6: Traumas and Pain
strand 7: Growth and Evolution
strand 8: Gerodontology
strand 9: Scientific Education
strand 10: Electives

### Advantages of the integrated teaching concept:

Integrated clinical teaching, in which the principle of comprehensive treatment is implemented.

Patients in basic and special care are treated side by side and therefore the co-operation of the teachers is flexible i.e. undergraduate and postgraduate students, teachers and researchers work in a team.

In spite of the administrative integration of clinical training to public health organisation we have succeeded in maintaining the standard of teaching at the same level as before integration.

The individual teachers give both theoretical and practical education.

A core analysis has been carried out in the departments to pinpoint the skills and knowledge every graduating dentist should master.

Lectures were earlier separately within each department. Along with the education reform the theoretical and practical education given by the departments will be integrated into themes, i.e. learning modules with a joint content.

The reformed theme-based model calls for more inter-departmental co-operation than the 'old' department-centred model of teaching. Smooth cooperation between departments is an advantage for the patient.

Early contacts with the patients after the basics have been mastered

Multiform teaching methods (lectures, practical exercises, team work, tutorials, clinical training)  
The teaching facilities generally are of high quality.

**Critical aspects of the integrated concept:**

The education could include more medical aspects. However, in that case the education program should be lengthened by one year to lead to the degree of oral physician.

The integrated teaching model is vulnerable because of changes in staff or schedule of the staff.

**SPECIALIZATION**

University Institutes of Dentistry are also responsible for specialist training in Finland. Before entering post-graduate training, which takes from three to six years, the trainee must have worked two years period in general practice. The aim of specialist training is to provide the dentists with advanced, comprehensive theoretical and practical skills which are defined as clinical dentistry, orthodontics, oral and maxillofacial surgery and community dentistry. A national examination is arranged and must be passed by each trainee.

**DOCTOR OF ODONTOLOGY<sup>2</sup>**

Dental graduates may continue their studies in preparing a dissertation and completing other doctorate studies. The degree is called Doctor of Odontology (Dr.Odont). In order to obtain the degree, a doctoral candidate must participate in theoretical research training, the extent of which is 20 study weeks. The training includes prescribed courses in general postgraduate training (5 weeks) and special training (15 weeks) according to the topic. The candidate must also conduct research, write and publish a doctoral dissertation and defend it in a public debate. Generally the minimum time needed to obtain a doctorate corresponds to 3 to 4 years of full-time work. In reality, however, it often takes longer.

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**VISITORS COMMENTS**

The DentEd-Visit of the Institute of Dentistry of the Medical Faculty of the University of Oulu is scheduled in a situation of transition from a traditional organisational structure towards an innovative structure in which the legal form of the University Hospital is changed from an educational organisation into an economical enterprise: The University Hospital is transferred out of the unique responsibility of the university into an organisation with an self-responsible liability. At the same time, curriculum changes are introduced. These transformations are accompanied with uncertainty for faculty, personnel and students.

The references, in the foregoing text, to a new curricular initiative, which is said to be already established in a wide variety of areas, are confusing for the visiting group. All of the documentation supplied to the visitors prior to the last two days of the visit described the 'Old Curriculum' only. Almost all of the interviews with individual de-

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<sup>2</sup> Equivalent to Ph.D. degree in anglo-american countries

partments also focused on the 'old Curriculum' and did not refer to their intention to introduce significant changes in the current academic year. The visitors have some difficulty reconciling the dichotomy. Our conclusions, based on our observations during the visit are that the new curriculum is at a relatively early stage of design.

The new curriculum will be based on the format of 'authentic learning' driven by nine 'strands'. In Oulu authentic learning is defined as learning in the authentic situation of integral dental practice. Central to this concept is the 'Clinic Hall', in which patient treatment takes place comprehensively, with all cohorts together (the unique unit/student-ratio is 1:1). In the second place authentic learning in the new curriculum is understood as adult learning. From the information given it is a modified problem-based learning format: From brief discussion with faculty it is concluded that in fact these tend to take the form of case-based seminars. Thus, a shift towards student-centred learning experiences is proposed. This conclusion is supported by the data of the first three Courses given in the Table of the new curriculum: Implementation of this curricular change will be difficult unless additional small tutorial rooms are made available.

The visitors commend the initiative taken by the Institute to review their curriculum and introduce change. They recognise that they have not got sufficient information on the new proposals to make informed comment on them but in general would recommend a slow and careful approach making sure that all staff are fully cognizant and broadly supportive of the new philosophies.

## Section 2 Facilities

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Total area of the Institute of Dentistry is 9,916.18 m<sup>2</sup>

### 2.1 CLINICAL FACILITIES

	<u>Dental units</u>
Central Clinic	100
Diagnostic units	7
Special Care units	5
Department of Oral and Maxillofacial Surgery	18
Lecture room units	2
Total	<u>132</u>

### 2.2 TEACHING FACILITIES

<u>Lecture rooms</u>	<u>Seats</u>
Lecture room 1	170
Lecture room 2	66
Lecture room 3	62
Lecture room 4	66
Lecture room 5	70
Total	<u>434</u>

### 2.3 TEACHING LABORATORIES

#### Phantom laboratory

Facilities for 35 students for different disciplines

### 2.4 RESEARCH LABORATORIES

Seven Ph.D. students and nine technicians work in seven laboratory rooms and one separate histological unit.

#### Methods:

Cell and organ culture  
Microarrays  
*In-situ* hybridisation  
RT-PCR  
RPA  
Gel electrophoresis

Northern blottings  
Southern blottings  
Western blottings  
Gelatin degradation assay  
Immunoassays  
Histochemistry

### 2.5 LIBRARY

The Dental Institute has its own library with 230 metres of shelf space and 22 reading places. Opening hours are Monday through Friday from 10 till 14 hours.

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## **VISITORS COMMENTS**

The laboratory and clinical facilities for undergraduate students are excellent. The lecture theatres are in good condition and well equipped, but there is a shortage in seminar rooms for small group teaching. There is an apparent lack of computers for student access – in comparison to the availability of computers in the Linnanmaa Campus.

Library facilities of the Institute of Dentistry are limited both in the range of material available and in the hours of opening. The school would benefit considerably from an extension of the service.

However, the close-located excellent Medical Library gives all available services also to dental personnel and students.

## **Section 3 Organisational and Administrative Structures**

### **UNIVERSITY OF OULU**

The University of Oulu is a democratic organisation with a Senate ('University Government') and six faculties, from which one is the Medical Faculty (Table I).

<b>Faculty of Humanities</b>	<b>Faculty of Economics and Industrial Management</b>
Department of English	Department of Management and Entrepreneurship
Department of History	Department of Economics
Department of Information Studies	Department of Accounting and Finance
Department of German, French and Scandinavian Languages	Department of Marketing
Department of Finnish, Saami and Logopedics	Department of Industrial Engineering
The Giellagas Institute - Institute of Saami Language and Culture	
Department of Art Studies and Anthropology	
<b>Faculty of Education</b>	<b>Faculty of Technology</b>
Department of Educational Sciences and Teacher Education	Department of Architecture
Kajaani Department of Teacher Education	Department of Mechanical Engineering
	Department of process and environmental engineering
	Department of Electrical Engineering
<b>Faculty of Science</b>	<b>Independent Departments</b>
Department of Biochemistry	<b><i>Interfaculty Service Organisations</i></b>
Department of Biology	Library
Department of Physical Sciences	Laboratory Animal Centre
Department of Geosciences	Learning and Research Services
Department of Chemistry	Language Centre
Department of Geography	<b><i>Adapted Institutions</i></b>
Department of Mathematical Sciences	Center of Arctic Medicine
Department of Information Processing Science	Biocenter Oulu
	Institute of Electron Optics
	InfoTech Oulu
	Research and Development Centre of Kajaani (REDEC)
	Meri-Lappi Institute
	Sodankylä Geophysical Observatory
<b>Faculty of Medicine</b>	Thule Institute Research Centre
	Oulu Southern Institute

Table I: Faculties and their departments of the University of Oulu (except of the Faculty of Medicine)

The university organisation is supported by an Administrative Department (Table II).

Administrative Department
Rector's Office
Personnel Services
Educational Affairs and Student Services
International Relations
Planning Unit
Department of Finance and Estates
IT Administration Services
Press and PR Unit

Table II: The Administrative Department of the University of Oulu

Each faculty has a Dean and a Faculty Council. In the Senate the university is represented by 20 members: Rector, 3 Vice Rectors, 6 Deans, 6 members of university staff (teachers, technical and administrative personnel) and 4 students.

## MEDICAL FACULTY

The Medical Faculty has 26 departments, the Institute of Dentistry and the Technical Services Unit (Table III).

Faculty of Medicine	
Department of Anatomy and Cell Biology	Department of Medical Microbiology
Department of Anaesthesiology	Department of Neurosurgery
Department of Pharmacology and Toxicology	Department of Neurology
Department of Physical Medicine and Rehabilitation	Department of Forensic Medicine
Department of Physiology	Department of Pathology
Department of Nursing Science and Health Administration	Department of Clinical Genetics
Department of Dermatology and Venereology	Department of Psychiatry
Department of Public Health Science and General Practice	Department of Diagnostic Radiology
Department of Surgery	Department of Ophthalmology
Department of Clinical Chemistry	Department of Internal Medicine
Department of Otorhinolaryngology	Department of Obstetrics and Gynaecology
Department of Paediatrics	Department of Oncology and Radiotherapy
Department of Medical Biochemistry	Technical Services Unit
Department of Medical Technology	<b>Institute of Dentistry</b>

The Medical Faculty Council has 27 members: Dean (presently the professor of pharmacology), Vice Dean (presently the professor of psychiatry), 11 other professors (one representing dentistry), 7 members of other staff (2 representing dentistry), 6 students (1 representing dentistry) and, as an 'external member', the Medical Director of the University Hospital.

## INSTITUTE OF DENTISTRY

Apart from the departments and the Technical Service Unit the Institute of Dentistry is organised as a 'faculty', with a Departmental Board in which a Dean is Chairperson

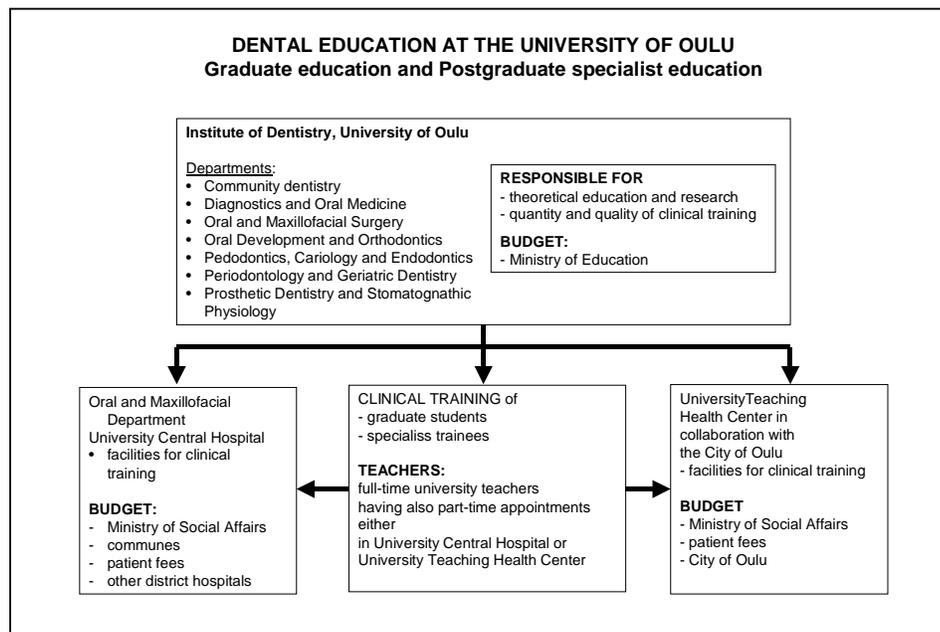
of the Institute. Members are 7 Professors (Heads of the Departments), 2 teachers, 2 other staff members and 4 students.

The Departmental Board is responsible for the development and evaluation of the research and the teaching of the Institute, the financial affairs of the Institute, and to make proposals of the appointment of the teachers and other staff to the Faculty of Medicine.

- The Institute of Dentistry has 7 departments
- Department of Community Dentistry
  - Department of Diagnosis and Oral Medicine
  - Department of Oral Development and Orthodontics
  - Department of Oral and Maxillofacial Surgery
  - Department of Pedodontics, Cariology and Endodontics
  - Department of Periodontology and Geriatric Dentistry
  - Department of Prosthetic Dentistry and Stomatognathic Physiology

All Departments of the Institute are situated together in the Institute building. The Department of Oral and Maxillofacial Surgery also has facilities at the University Hospital.

### ORGANISATIONAL STRUCTURE OF THE INSTITUTE OF DENTISTRY



Organisationally, since 1<sup>st</sup> January 2000, the Institute of Dentistry as an academic institution (teaching and research) is assigned to the University of Oulu; as a dental clinic (patient treatment) it is part of Public Health Service. Beside that the Department of Oral Radiology and the Dental teaching belong still to the University.

Due to a contract with the Public Health Service – the Municipality of Oulu – the Institute simultaneously serves as a dental clinic within the Public Health System of

Finland: the 'Oulu University Dental Health Centre'. In addition Oral and Maxillofacial Department of University Central Hospital is located at the Institute of Dentistry. This complicated structure has implications for the function of the Institute and its staff in all areas. The six clinical professors of the Institute of Dentistry are members of the board of the unit. The intimate relationship between the two institutions is stressed by the fact that faculty (staff) of the Institute is/can be employed by the University Dental Health Centre – to a maximum of 11 hours weekly – as well.

## Section 4 Staffing

### 4.1 STAFFING LEVELS

See 4.2.

### 4.2 LIST OF STAFF

#### FULL TIME ACADEMIC STAFF

	Name	Position	Qualifications
<b>Department of Diagnosis and Oral Medicine</b>			
1	Salo, Tuula	Head of the Department, Professor	DDS, Ph.D., Specialist in Oral Pathology
2	Hietala, Eeva-Liisa	Senior Lecturer	DDS, Ph.D., Docent, Specialist in Clinical Dentistry, Master of Science in Technology
3	Rosberg, Jukka	Senior Lecturer	DDS, Specialist in Dental Radiology
4	Soikkonen, Kari	Senior Lecturer	DDS, Ph.D., Specialist in Dental Radiology
5	Kainulainen, Tiina	Lecturer	DDS, Ph.D.
6	Sulkala, Merja	Lecturer	DDS
<b>Department of Community Dentistry</b>			
1	Hausen, Hannu	Head of the Department, Professor	DDS, Ph.D., Specialist in Dental Public Health
2	Lahti, Satu	Senior Lecturer	DDS, Ph.D., Specialist in Dental Public Health
3	Kärkkäinen, Sakari	Senior Lecturer (part time)	DDS, Ph.D., Specialist in Dental Public Health
4	Hiiri, Anne	Lecturer	DDS
<b>Department of Oral Development and Orthodontics</b>			
1	Alvesalo, Lassi	Head of the Department, Professor	DDS, Ph.D., Specialist in Orthodontics
2	Heikkinen, Tuomo	Senior Lecturer	DDS, Ph.D., Specialist in Orthodontics
3	Laine-Alava, Maija Tellervo	Senior Lecturer	DDS, Ph.D., Docent, Specialist in Orthodontics
4	Montell, Marja-Leena	Senior Lecturer	DDS, Specialist in Orthodontics
5	Pirttiniemi, Pertti	Senior Lecturer	DDS, Ph.D., Docent, Specialist in Orthodontics
6	Alaniska, Minna	Lecturer	DDS
7	Julku, Johanna	Lecturer	DDS

Name	Position	Qualifications
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**Department of Oral and Maxillofacial Surgery**

1	Oikarinen, Kyösti	Head of the Department, Professor (leave of absence)	DDS, Ph.D., Specialist in Oral and Maxillofacial Surgery
2	Sundquist, Kai	Acting Professor	DDS, Ph.D., Docent, Specialist in Oral and Maxillofacial Surgery
3	Akural, Ethem	Senior Lecturer	Lic. of Medicine, Specialist in Anaesthesiology
4	Pernu, Hannu	Senior Lecturer	DDS, Lic. of Medicine, Specialist in Oral and Maxillofacial Surgery
5	Raunio, Antti	Senior Lecturer	DDS, Specialist in Oral and Maxillofacial Surgery
6	Ylikontiola, Leena	Senior Lecturer	DDS, Specialist in Oral and Maxillofacial Surgery
7	Kainulainen, Vesa	Lecturer	DDS
8	Kantola, Saara	Lecturer	DDS, Ph.D.

**Department of Pedodontics, Cariology and Endodontics**

1	Larmas, Markku	Head of the Department, Professor	DDS, Ph.D., Specialist in Clinical Dentistry
2	Rantala-Ryhänen, Sirpa	Senior Lecturer	DDS, Specialist in Clinical Dentistry
3	Seppä, Liisa	Senior Lecturer	DDS, Ph.D., Docent, Specialist in Clinical Dentistry
4	Tjäderhane, Leo	Senior Lecturer	DDS, Ph.D., Docent, Specialist in Clinical Dentistry
5	Korhonen, Marjut	Lecturer	DDS
6	Käkilehto, Taina	Lecturer	DDS
7	Ollila, Päivi	Lecturer	DDS, Specialist in Clinical Dentistry
8	Virtanen, Jorma	Lecturer	DDS, Ph.D.

**Department of Periodontology and Geriatric Dentistry**

1	Knuutila, Matti	Head of the Department, Professor	DDS, Ph.D., Specialist in Periodontology
2	Pernu, Hilikka	Senior Lecturer	DDS, Specialist in Clinical Dentistry
3	Tervonen, Tellervo	Senior Lecturer	DDS, Ph.D., Docent, Specialist in Clinical Dentistry
4	Syrjälä, Anna-Maija	Senior Lecturer	DDS, Ph.D., Specialist in Clinical Dentistry
5	Anttila, Sirpa	Lecturer	DDS, Specialist in Clinical Dentistry
6	Karjalainen, Kaisa	Lecturer	DDS, Ph.D., Specialist in Clinical Dentistry
7	Sakki, Tero	Lecturer	DDS, Ph.D.

Name	Position	Qualifications
<b>Department of Prosthetic Dentistry and Stomatognathic Physiology</b>		
Raustia, Aune	Professor, Head of the Department	DDS, Ph.D., Specialist in Prosthetic Dentistry and Stomatognathic Physiology
Hujanen, Erkki	Senior Lecturer	DDS, Ph.D., Specialist in Prosthetic Dentistry and Stomatognathic Physiology
Koskinen, Kai-Jeri	Senior Lecturer	DDS, Specialist in Prosthetic Dentistry and Stomatognathic Physiology
Linden, Robin	Senior Lecturer	DDS, Specialist in Prosthetic Dentistry and Stomatognathic Physiology, Master of Science in Technol.
Salonen-Kemppi, Maarit	Senior Lecturer	DDS, Ph.D., Specialist in Prosthetic Dentistry and Stomatognathic Physiology
Sipilä, Kirsi	Senior Lecturer	DDS, Specialist in Prosthetic Dentistry and Stomatognathic Physiology
Näpänkangas, Ritva	Lecturer	DDS
Ollila, Petri	Lecturer	DDS
Peltola, Minna	Lecturer	DDS

#### Other Staff

Clinical Counselling Officer	1
Nursing Staff (University)	5
Nursing and Technical Staff (University Hospital)	27
Nursing and Technical Staff (Health Care Centre of Oulu)	16
Department Secretary	1
Office Secretaries	3
Secretary of Student Affairs	1
Laboratory Supervisor	1
Laboratory personnel, Research Laboratory	4
Dental Technicians	5
Laboratory personnel, Dental Laboratory	3
Senior Technician	1
Technician	1
System Analysts	3
Caretakers	2

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# The Old Dental Curriculum

## CURRICULUM SCHEDULE OF THE PRE-CLINICAL STAGE (STILL ACTUAL CURRICULUM AT THE PRE-CLINICAL STAGE)

### Pre-Clinical Stage (1<sup>st</sup> Year Studies)

#### CURSUS 1 (1<sup>ST</sup> YEAR, AUTUMN)

Name of the course	ECTS credits
Introduction to University Studies	1.5
Cell and development biology	8.4
Anatomy	15.0
Chemistry	6.0
English (reading for academic purposes) or Medical German text workshop	1.5
	1.5
	<b>32.4</b>

#### CURSUS 2 (1<sup>ST</sup> YEAR, SPRING)

Biochemistry	2.25
Medical biochemistry	3.75
Molecular biology	9.00
Medical computer science	1.50
First aid	1.05
Man, society, health and disease:	
- Man and society	3.75
- Health and disease	1.50
Practical part	0.75
	<b>23.55</b>

### Pre-clinical stage (2<sup>nd</sup> year studies)

#### CURSUS 3 (2<sup>ND</sup> YEAR, AUTUMN)

Physiology	14.25
Physiological physics	2.25
Psychology	4.50
Meeting with sick individual and his family in special health care	2.25
Environmental health care	1.50
Biostatistics	1.50
Swedish for Finnish speaking students or Finnish for Swedish speaking students	3.00
	3.00
	<b>29.25</b>

### Pre-clinical stage (2<sup>nd</sup> year studies)

#### CURSUS 4 (2<sup>ND</sup> YEAR, SPRING)

Pharmacology	10.50
Microbiology I	7.50
General pathology	4.50
Clinical physiology	1.50
Biostatistics	1.50
Basics of epidemiology	1.50
Introduction to scientific research	2.25
Stomatognathic physiology I	1.50
Tooth morphology	1.80
	<b>32.55</b>

## **CURRICULUM SCHEDULE OF THE CLINICAL STAGE**

**THE OLD CURRICULUM, OF WHICH THE STUDIES OF CURSUS 9 AND CURSUS 10 ARE STILL ACTUAL AT THE CLINICAL STAGE**

### **Clinical Stage (1<sup>st</sup> Clinical Year Studies)**

#### **CURSUS 5 (3<sup>RD</sup> YEAR, AUTUMN)**

<b>Name of the course</b>	<b>ECTS credits</b>
Cariology I and II	10.65
Endodontics I	1.95
Periodontology I	5.25
Oral surgery I	5.25
Orthodontics I	4.80
Radiology I	1.50
Dentist-patient relationship I	0.75
Prescriptions	0.75
An introduction to clinical work	0.75
Clinical medicine:	
- Internal medicine I	4.50
- Surgery I	1.50
Clinical training	1.50
	<b>39.15</b>

#### **CURSUS 6 (3<sup>RD</sup> YEAR, SPRING)**

<b>Name of the course</b>	<b>ECTS credits</b>
Stomatognathic physiology II	1.50
Prosthetic dentistry I	4.50
Prosthetic dentistry II	5.25
Orthodontics: Patient seminars	0.75
Periodontology II	2.25
Functionaires of oral health care	0.75
Advanced course on English	1.50
Radiology II	1.50
Clinical training	12.75
	<b>30.75</b>

## **CURRICULUM SCHEDULE OF THE CLINICAL STAGE**

**THE OLD CURRICULUM, OF WHICH THE STUDIES OF CURSUS 9 AND CURSUS 10 ARE STILL ACTUAL AT THE CLINICAL STAGE**

### **Clinical stage (2<sup>nd</sup> clinical year studies)**

#### **CURSUS 7 (4<sup>TH</sup> YEAR, AUTUMN)**

<b>Name of the course</b>	<b>ECTS credits</b>
Prosthetic dentistry III	4.50
Oral surgery II	2.40
Diseases of the oral mucosa	0.75
Pedodontics	1.50
Periodontology III	3.00
Radiology III	1.50
Orthodontics IV	0.75
Clinical physiology of saliva	0.75
Clinical medicine:	
- Oto-rhino-laryngology	1.50
- Pediatrics	1.50
- Neurology	0.75
Clinical training	11.25
	<b>30.15</b>

#### **CURSUS 8 (4<sup>TH</sup> YEAR, SPRING)**

<b>Name of the course</b>	<b>ECTS credits</b>
Oral surgery III	3.60
Orthodontics II	3.45
Radiology IV	1.05
Oral health, individual and community	2.25
Cariology III	1.50
Endodontics II	0.90
Acute dental treatment	0.75
Microbiology II	6.00
Clinical training	9.75
	<b>29.25</b>

## **CURRICULUM SCHEDULE OF THE CLINICAL STAGE**

### **THE OLD CURRICULUM, OF WHICH THE STUDIES OF CURSUS 9 AND CURSUS 10 ARE STILL ACTUAL AT THE CLINICAL STAGE**

<b>Clinical stage (3<sup>rd</sup> clinical year studies)</b>	
<b>CURSUS 9 (5<sup>TH</sup> YEAR, AUTUMN)</b>	
<b>Name of the course</b>	<b>ECTS credits</b>
Oral surgery IV	0.45
Periodontology IV	2.25
Geriatric dentistry	1.05
Radiology V	0.75
Prosthetic dentistry IV	1.50
Orthodontics III	0.75
Oral pathology and forensic dentistry	3.00
Oral pathology: microscope examinations	1.50
Clinical nutrition	0.75
Clinical pharmacology	0.75
Seminars in community dentistry	2.25
Dentist-patient relationship II	0.75
Clinical medicine:	
- Anaesthesiology	0.75
- Dermatology and venereology	0.75
- Internal medicine II	0.75
Clinical training	10.50
	<b>28.50</b>

<b>CURSUS 10 (5<sup>TH</sup> YEAR, SPRING)</b>	
<b>Name of the course</b>	<b>ECTS credits</b>
Advanced studies	15.00
Patient seminars of orthodontics	0.75
Clinical training	8.25
(A volunteer course on medical rescue work)	(1.05)
	<b>24.00</b>

## **VISITORS COMMENTS**

This description of the curriculum formed the basis for the discussions with all departments.

## Section 5 The Biological Sciences

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### 5.1 BIOCHEMISTRY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
30 h	-	-	-	C2	1.5	2.25	Finnish

**Contents:**

Structure of carbohydrates, structure of proteins, structure of nucleid acids and lipids.

**Contact Hours and Assessment:**

30 h of lectures, written examination. The grade is common together with Medical Biochemistry and Molecular Biology.

**Course Director:**

Professor Taina Pihlajaniemi

**Literature:**

Murray RK: Harper's Biochemistry, 24<sup>th</sup> edition or newer (1996)

### MEDICAL BIOCHEMISTRY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
34 h	16 h	-	-	C2	2.5	3.75	Finnish

**Contents:**

Metabolism of carbohydrates, lipids, amino acids, purines and pyrimidines. Porphyrines and the bile pegments. Vitamines, body minerals, prostaglandins, tromboxanes and leukotrienes.

**Contact Hours and Assessment:**

34 h of lectures, 16 h of laboratory exercises. Written examination. The grade is common together with Medical Biochemistry and Molecular Biology.

**Course Director:**

Professor Taina Pihlajaniemi

**Literature:**

Murray RK: Harper's Biochemistry, 24<sup>th</sup> edition or newer (1996)

## 5.2 MOLECULAR BIOLOGY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
76 h	22 h	-	22 h	C2	6.0	9.0	Finnish

### Contents:

DNA replication and correction mechanisms. Structure of genes and chromosomes. Control of gene manifestation. RNA synthesis, sorts and functions. Post-translational modification and transport of proteins. Hybrid DNA technique; basics and applications. Hemoglobins and the family of globins. Mitochondrial DNA and mitochondrial diseases. Secondary messenger system. Energy metabolism. Hormones controlling metabolism, molecular action mechanisms. Biology of components of intercellular matrix.

### Contact Hours and Assessment:

76 h of lectures, 44 h of lab exercises and small groups teaching. Written examination. The grade is common together with Medical Biochemistry and Molecular Biology.

### Course Director:

Professor Taina Pihlajaniemi

### Literature:

Murray RK: Harper's Biochemistry, 24<sup>th</sup> edition or newer (1996)

## 5.3 GENETICS

Given primarily in the connection with Cell and Development Biology course (Section 6.3). See also Section 9: Orthodontics III (Dental Genetics)

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## VISITORS COMMENTS

The visitors did not meet with members of this department.

## Section 6 The Pre-clinical Sciences

### 6.1 ANATOMY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
90 h	-	-	100 h	C1–C2	10	15	Finnish

#### Contents:

The course includes systematic anatomy by organ groups: Nervous and sensory systems, circulatory systems, lymphatic system, respiratory system, gastrointestinal system, urinary tract, kidneys, skin, mammary gland, reproductive organs, endocrine organs and locomotor system. Topographic and regional anatomy. Examples of clinical applications of anatomical knowledge.

#### Contact Hours and Assessment:

90 h of lectures, 100 h teaching in small groups. 4 written examinations.

#### Course Director:

Professor Hannu Rajaniemi

#### Literature:

Moore, KL: Clinically oriented Anatomy, Williams & Wilkins co. Baltimore, 1992.

Kahle W, Leonhardt H, Platzer W: Color atlas and textbook of human anatomy in 3 volumes, G Thieme Publ, Stuttgart (Newest Edition).

Feneis, H: Pocket Atlas of Human Anatomy G Thieme Publ, Stuttgart (Newest Edition).

Burkitt, HG, Daniels VG: Wheater's Functional Histology, Churchill Livingstone, Edinburgh.

Niemi M, Väänänen K; Ihmisyksilön kehitysbiologia, Kustannus Oy Duodecim, 1993 or Sadler TW; Langman's Medical Embryology, Williams & Wilkins Co, Baltimore, 7<sup>th</sup> Edition, 1995.

Niemi M, Virtanen I, Vuorio E; Solu ja molekyylibiologia, Weilin & Göös, 5<sup>th</sup> Edition, 1994.

### 6.2 PHYSIOLOGY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
96 h	40 h	-	6 h + 4 h + 4 h	C3	9.5	14.25	Finnish, English

#### Contents:

General physiology: Fluid kinetics, electric characteristics of cell membranes, biological homeostasis, blood, circulation, respiration, muscles, digestion, metabolism, fluid- and electrolyte and acid-base balance, urinary system, endocrinology, reproduction, peripheric nervous system, CNS and senses. Cell physiology: Molecular biology, cell membrane, muscle, transduction mechanisms.

**Contact Hours and Assessment:**

96 h of lectures, 6 h of group discussions, 4 h seminar, 40 h of practical exercises, 4 h of lectures in English, 25 h of essay working, 4 h of tutorial teaching and 11 h of examinations.

There will be preliminary examination, two written intermediate examinations, student essay and a final examination.

**Course Director:**

Professor Juhani Leppäluoto

**Literature:**

Rodney A, Rhoades and George A Tanner (ed.): Medical Physiology, 1<sup>st</sup> edition, 1995, lecture handout material.

**PHYSIOLOGICAL PHYSICS**

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
20 h	-	-	10 h	C3	1.5	2.25	Finnish

**Contents:**

Basics of biomechanics, thermodynamics, bioelectrical phenomena, acoustics, optics and radiation physics, where applicable.

**Contact Hours and Assessment:**

20 h of lectures, 10 h of small group teaching. Written examination. This course will be held in adjunction to Physiology.

**Course Director:** Professor Kalevi Kiviniitty

**6.3 HISTOLOGY**

**CELL AND DEVELOPMENTAL BIOLOGY**

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
68 h	40 h	-	-	C1–C2	5.6	8.4	Finnish

**Contents:**

The course includes basics for human biology, general embryology, cytology, cell biology, molecular biology, genetics and general histology.

**Contact Hours and Assessment:**

68 h of lectures, 40 h of demonstrations and exercises. Written examination.

**Course Director:** Department of Anatomy and Cell Biology

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## **VISITORS COMMENTS**

The visitors were welcomed to the Department of Anatomy by professor Hannu Rajaniemi who was extremely helpful and willing to discuss all aspects of the courses.

As their strengths were recognized:

Excellent newly refurnished lecture theatre and small group teaching facilities provide a very pleasant environment for students.

The histology laboratory contains state of the art microscopy facilities and computer link ups to the Intranet of the institution, which should have a major impact on student learning.

The staff/student-ratio is very good compared with many other dental schools.

As their weaknesses:

The students spend 232 hours in their first year in the Anatomy Department including lectures and small group teaching.

For most students neither prosected specimens, practical dissection nor computer interactive programmes are used.

The students enjoy being treated as if they were medical students.

The detailed study of the anatomy of the abdomen, pelvis and limbs, while good in itself, might perhaps be reviewed to ensure that it is not replacing material more appropriate to an already overcrowded dental curriculum.

The visitors did not meet members of the Physiology Department.

## Section 7 Para-clinical Sciences

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### 7.1 PHARMACOLOGY AND TOXICOLOGY

#### PHARMACOLOGY AND TOXICOLOGY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
90 h	X	-	30 h	C4–C7	9.0	13.5	Finnish

**Contents:**

General pharmacology: Pharmacodynamics and pharmacokinetics. Pharmacology of autonomous nervous system. Medical treatment of cardiovascular, gastrointestinal, psychiatric, endocrinological and neurological diseases. Painkillers. Anaesthetics. Antimicrobials. Basics of toxicology. Chemical carcinogenesis, mutagenesis, teratogenesis. Testing toxicity and risk evaluation. Specific questions of pharmacology.

**Contact hours and Assessment:**

90 h of lectures and 40 h of small group teaching in C4, practical exercises in C5–C7. During C4 two written intermediate examinations and one final written examinations.

**Course director:**

Professor Olavi Pelkonen

**Literature:**

Pelkonen O, Ruskoaho H: Lääketieteellinen farmakologia ja toksikologia, Kustannus Oy Duodecim 1998.

#### CLINICAL PHARMACOLOGY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
10 h	X	-	-	C9	0.5	0.75	Finnish

**Aim of the course:**

Course on medication with special attention from the dentist's point of view.

**Contents:**

- Causes of failure of microbic medication.
- Medication of inflammation pain.
- Selection of anaesthetics.
- Securing the patient and other pre-medication.
- Medication in adjunct to anamnesis and patient data registration. (specially in context of plaque diseases).
- Medication and pregnancy.
- Vomiting reflex.

Clinically important effects of medication from the dentist's point of view.

**Contact hours and Assessment:**

Lectures, 10 h and written examination

**Course director:**

Professor Olavi Pelkonen

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**VISITORS COMMENTS**

It is suggested that the course 'Basic Pharmacology and Toxicology for Dental Students' – which currently is taught in the 2<sup>nd</sup> year – might be returned to the 3<sup>rd</sup> year and its content re-evaluated.

Also; that 120 hours of basic Pharmacology is excessive.

The course 'Clinical Pharmacology for Dental Students' is excellently adapted to the needs of the clinical environment; the involvement of the Department of Pharmacology in later years of the years is to be welcomed.

**7.2 MICROBIOLOGY**

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
84 h	30 h	-	11 h	C4, C8	4.25	6.35	Finnish

**Introduction**

Teaching in medical microbiology is given in two phases:

- 1.) microbiology I in pre-clinical phase (C4) to teach the basic of microbiology and
- 2.) microbiology II in clinical phase (C8) to teach the clinical significance and diagnostics of microbial and immunological diseases

**Primary aims**

The aim is to educate dentists and doctors who understand the impact of microbes on health and disease and who are capable of preventive and curative medical interventions against infectious agents.

**Main objectives**

- Basic knowledge is given for understanding the structure and replication of bacteria, viruses, fungi and parasites and consequently the microbiological taxonomy.
- The pathogenic mechanisms of microbes and the principles of antimicrobial treatment are introduced.
- Clinical features of microbial diseases and the principles of laboratory diagnostics are given.
- Microbial epidemiology is featured.
- The human immune response and deviating immune responses are explained.
- Prevention of infective diseases and vaccination are taught.

## **Hours in curriculum**

Lectures 84 h

Laboratory practicals 30 h

Seminars/Small groups 11 h

## **Method of learning/teaching**

### **Lectures:**

Specialists from each subject are invited to give a lecture from his/her field. Modern computer assisted Power-point facilities are provided. The students are given lecture handouts in advance when appropriate.

### **Laboratory practicals:**

Laboratory practicals are done in small groups; there is one teacher per 8-10 students. There is a booklet (124 pages), which contains the theoretical background for laboratory practicals and gives detailed methods for the performance. It is compulsory for the student to perform the practicals. Paper case patient histories are also discussed.

### **Seminars/Small groups:**

International paper case patient histories are given to students for problem solving under teacher supervision. Each case is discussed with the larger group of students.

## **Assessment methods**

Teaching and learning are discussed regularly in a weekly meeting among the teaching staff in the department (current status, problems, future plans, and student responses). The students are asked to literally respond to the different aspects of teaching they have got during each course. A meeting for mutual discussion is arranged with the students of each course. The representative of the students is a member of the board of the department.

The students have a short preliminary exam to be able to attend the laboratory practicals.

After each course there is a written examination to give an individual score for the student. This examination covers the lecture book, lectures, laboratory practicals and seminars.

## **Strengths**

The department has broad knowledge within microbiology and immunology to offer. The teaching staff has the possibility to practice in clinical microbiology laboratory processing patient samples, which enables high quality professionalism.

## **Weaknesses**

The department building is old and impractical with poor aeration. The number of teachers is too small and there are no resources to have teachers especially for dental microbiology. The number of students taken to the curriculum has been increased in 2001 thus contributing to our existing problems.

## Innovations

Dental students get the same knowledge in microbiology as the medical students, which gives the dentists a broad background in this field.

## Plans for future changes

New building for the department is currently under architectural planning. The teaching in the curriculum has to be adapted to the increasing number of students.

## Teaching staff

Pekka Saikku, professor, MD, PhD

Sylvi Silvennoinen-Kassinen, MD, PhD

Riitta Karttunen, MD, PhD

Jaana Kauppila, MD

Tarja Anttila, MD, PhD

Ying Yan, (MD in China)

In addition to the permanent staff there are several invited senior lecturers.

## MICROBIOLOGY I

### Lectures

#### Introductionary lectures

1. Introducing the study program: Microbes in the history of mankind
2. Microbiology in paediatrics
3. Microbiology in infectious diseases
4. Microbiology in outpatient healthcare
27. *Borrelia*, *Bartonella*, *Ehrlichia* and *Rickettsia*
28. Yeast
29. Dermatophytes
30. *Corynebacterium*, *Legionella* and *Francisella*

#### General Bacteriology

5. Structure, metabolism and genetics of bacteria
6. Biological bases of antibacterial drug effects
7. Resistance to antimicrobial agents
8. Bacterial virulence and bacterial toxins
9. Sterilization and disinfection

#### Systematic bacteriology, mycology and parasitology

10. Diagnostic methods in clinical microbiology
11. Bacteria and parodontitis
12. *Streptococcus* (including *Pneumococci*)
13. *Haemophilus*, *B.pertussis*
14. Anaerobic bacteria
15. *Neisseria* and *Treponema*
16. Parasites I

#### Virology

31. General properties of viruses
32. Viral pathogenesis and taxonomy of viruses
33. Antiviral drugs
34. Diagnostics of viral infections
35. Respiratory viruses  
*Viruses causing rash*
36. Herpes viruses  
*Congenital viral infections*
37. Hepatitis
38. Enteroviruses  
*Viral gastroenteritis*
39. Viral central nervous system  
*HIV*

#### Immunology

40. Cells involved in the immune response. The lymphoid system

- |  |                                  |
|--|----------------------------------|
| 17. Parasites II   | 41. Innate immunity              |
| 18. Staphylococcus   | 42. HLA complex                  |
| 19. Enterobacteriaceae   | 43. Adaptive immunity I          |
| 20. Vibrio, Campylobacter and Helicobacter                       | 44. Adaptive immunity II         |
| 21. Introduction to practical work in microbiological laboratory | 45. Adaptive immunity III        |
| 22. Mycoplasma   | 46. Mucosal immunity             |
| 23. Chlamydia  | 47. Failure of the immune system |
| 24. Mouth microbiology I   | 48. Immunological techniques     |
| 25. Mouth microbiology II  | 49. Infection immunity           |
| 26. Mycobacterium  | <i>Vaccination</i>               |
|  | 50. Cytokines                    |

## MICROBIOLOGY II

### Lectures

- |  |  |
|--|--|
| 1. Basic bacteriology, update  | 18. Dental infections                              |
| 2. Diagnostic bacteriology I   | 19. Central nervous system infections I            |
| 3. Diagnostic bacteriology II  | 20. Central nervous system infections II           |
| 4. Clinically significant antibacterial resistance, epidemiological overview | 21. Fungal diseases                                |
| 5. The strategy of antimicrobial therapy                                     | 22. Immunology, update                             |
| 6. New vaccines  | 23. Antiviral drugs and their clinical usage       |
| 7. Infections of elderly people  | 24. Viral laboratory diagnostics                   |
| 8. Control of community infections and national guidelines                   | 25. HIV-infections                                 |
| 9. Outpatient infections   | 26. Herpes viruses and their clinical significance |
| 10. Infections of immigrants   | 27. Hepatitis viruses                              |
| 11. Chlamydia pneumoniae infections  | 28. National guidelines for food safety            |
| 12. Sexually transmitted, diseases   | 29. Autoimmune diseases I                          |
| 13. Hantavirus infections  | 30. Autoimmune diseases II                         |
| 14. Viruses causing gastroenteritis  | 31. Autoimmune diseases III                        |
| 15. Skin infections  | 32. Hypersensitivity                               |
| 16. Respiratory infections I   | 33. Immunodeficiency                               |
| 17. Respiratory infections II  | 34. Immunological patient case histories           |

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## VISITORS COMMENTS

The visitors did not meet with members of this department.

The extensive exposure of the dental students to Microbiology, as described above, is perhaps a cause for concern in a crowded dental curriculum. The content of the course basic and medical oriented. The visitors suggest that oral aspects should be strengthened.

## Section 8 Human Diseases

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### 8.1 INTERNAL MEDICINE

#### Aim of the course:

During the course in internal medicine the dental student will be given the basics of most common internal diseases and of the internal diseases, which are most important in the field of dentistry. The aim is to give the student a good introduction to internal diseases and to give information on their effects on dentistry. The course is in two parts, Internal Medicine I and II.

#### INTERNAL MEDICINE I

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
40 h	X	-	13 h	C5	3	4.5	Finnish

#### Contents:

A propedeutical course on Internal Medicine; Anamnesis and status of the patient. Cardiological anamnesis and status. Physical examination of lungs. Lectures on procedural technique.

#### Contact hours and Assessment:

40 h Lectures, 13 h of teaching in small groups, written examination and examination of two patients by students working in pairs

**Course director:** Professor Antero Kesäniemi

#### INTERNAL MEDICINE II

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
10 h	-	-	-	C9	0.5	0.75	Finnish

#### Contents:

Metabolic diseases, gastroenterology, rheumatology, endocrinology, kidney diseases, hematology, side effects of prescriptions, lung diseases

#### Contact hours and Assessment:

10 h lectures, written examination

**Course director:** Professor Antero Kesäniemi

## 8.2 SURGERY I

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
20 h	-	-	-	C5	1.0	1.5	Finnish

### Aim of the course:

To give a general description of surgery and to give a general description of surgical diseases and their treatment

**Contents:** Lectures on propedeutic surgery

**Contact hours and Assessment:** Lectures, written examination

**Course director:** Senior lecturer, MD Jyrki Mäkelä

## 8.3 ANAESTHESIOLOGY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
8 h	2 h	-	-	C7	0.5	0.75	Finnish

### Aim of the course:

To give information on dental anaesthesiology and especially to instil capability and skills to react in emergency situations

### Contents:

Effective emergency medicine (pre-operative examination and treatment) first aid, treatment of anaphylactic shock, pre-medication, progress and complications of dental anaesthesiology. Treatment of pain.

### Contact hours and Assessment:

8 h lectures, 2 h practical exercises

**Course director:** Senior lecturer, MD

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## VISITORS COMMENTS

The visitors did not meet with members of these departments.

## Section 9 Orthodontics and Child Dental Health

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### ORAL DEVELOPMENT AND ORTHODONTICS

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
122 h	50 h	-	X	C5-C9	8.0	12.0	Finnish

#### **Aim of the course:**

To introduce student into normal development of jaws and dentition, their structural and functional disorders and to factors that have effect on them. Further the goal is to learn to diagnose early enough developing malocclusions and to prevent them, when possible and the treatment of manifest disorders.

#### **Contents:**

This course includes theoretical part, practical exercises, patient seminars and clinical service. Clinical service will be conducted through C6 to C10.

#### **Contact hours and Assessment:**

Lectures and seminars 122 h, 50 h of practical exercises, clinical service.

**Course director:** Professor Lassi Alvesalo

### A: THEORETICAL PART

#### **ORTHODONTICS I**

##### **Contents:**

Orthodontic diagnostics: Basic terms of clinical orthodontics, examination methods and equipment; anamnesis; status praesens, structural analysis, biological stage of development, functional analysis, general and oral health condition; diagnosis, principles of the treatment plan.

Orthodontic treatment of a deciduous dentition and early mixed dentition.

Orthodontic treatment of late mixed dentition.

#### **ORTHODONTICS II**

##### **Contents:**

Growth and development of structures of cranium, nasopharynx and the jaws. Post-natal growth and development. Treatment of cleft lip and palate patients.

#### **ORTHODONTICS III**

##### **Contents:**

Dental genetics: size, structure and number of the teeth, development of the teeth, torus mandibularis and palatinus, characteristics of pulpa, occlusion, oral features

and characteristics in chromosomal anomalies; autosomal and sex chromosome aberrations.

## **ORTHODONTICS IV**

### **Contents:**

Principles of orthodontic treatment of adult patients.

## **B: PRACTICAL EXERCISES**

### **Contents:**

Cephalometrics, growth analysis, preparing of orthodontic appliances, following and participating in the treatment of patients.

## **C: PATIENT SEMINARS**

### **Contents:**

Planning, participating and arranging the treatment of orthodontic patients. Part of the course will be arranged in co-operation with the students of C10 (5<sup>th</sup> year) and students of C6 (3<sup>rd</sup> year). The senior students transfer their patients to juniors in a seminar-type of occasion.

### **Literature:**

Thilander B & Rönning O: Introduction to Orthodontics. Tandläkarförlaget, Stockholm.

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## **VISITORS COMMENTS**

According to the old curriculum education in orthodontics comprises four courses, consisting of lectures, practical exercises, clinical service with teacher and patient seminars. Education seems to be comprehensive and of high standard. It fulfils the primary aims, which have been set for diagnostic skills and assessment of treatment in orthodontics. Students learn to use removable and fixed orthodontic appliances and are confronted with orthodontic problems of all age-groups. Due to the integral patient care treatment philosophy of the Institute of Dentistry there are formal links to its paediatric, periodontal, prosthodontic and maxillofacial units.

Strengths are:

Patient's treatment and follow-up by the students over a longer period.

Clinical instruction includes treatment of patients as the institute has close connections to the nearby school, so that also young patients are easily available.

## Section 10 Public Dental Health and Prevention

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### COMMUNITY DENTISTRY

#### Introduction:

The Department of Community Dentistry is responsible for the teaching of community dentistry (or dental public health as it is called in some countries). Teaching of the subject takes place throughout the five-year curriculum. Some courses are carried out together with the Department of Public Health for both medical and dental students and the teachers of the Department of Community Dentistry take part on the teaching. The names of the courses, their contents in short, their extent in credit weeks and the timing of the courses are given in the details in the following pages.

#### Primary aims:

- to support clinical studies by widening the students' views from the oral cavity of the individual patient to see the patient as an entity
- to understand the patient's role as a part of a community and a society, and
- to understand the importance of the good relationship between the patient and oral health care personnel

#### Main objectives:

To ensure that the students become acquainted with

- trends in health, illness and social environment at national and global level and the effect of these trends on his/her own environment;
- producing, processing, critically analyzing and applying scientific and professional information by using modern methods in his/her own environment;
- basic principles of planning, implementation, evaluation, management, leadership and health economics; and
- ethical, social and behavioral issues ensuring a good patient relationship

#### Method of learning:

The learning methods include lectures, seminars, problem based group work, individual studies and visits to the public health service. Methods for learning as well as materials covered (scientific articles, chapters of books, legislation etc.) are updated annually. On the average, the division between teaching methods is following:  $\frac{1}{4}$  lectures,  $\frac{1}{4}$  seminars, problem based group work and visits and  $\frac{1}{2}$  individual studies.

The students also treat patients within the public health service. The connection between the public health service and the university is beneficial for both parties. The university students get familiar with the organization where half of them will work after graduation. The public health service in turn gets the latest information from the scientific field during the students' visits.

#### Assessment methods:

Assessment methods include log-book, tutored group assignments, and two exams with multiple choice and short essay questions. Half of the final grade consists of the last year's exam on seminar course. No final exam is taken.

## AN INTRODUCTION TO DENTISTRY AND ORAL HEALTH CARE

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	-	-	C2	0.5	0.75	Finnish

### Contents:

An introduction to health care and its organization. The role of oral health care as a part of the health care system.

### Contact hours and Assessment:

Lectures, site-visits, practical exercises, assessment made by preparing an abstract under tutoring and presenting it as a poster/oral presentation.

### Course director:

Senior lecturer Satu Lahti

## ORGANISATION OF ORAL HEALTH CARE

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	-	X	C6	0.5	0.75	Finnish

### Contents:

Organisation of oral health care and the role and training of oral health care personnel in Finland.

### Contact hours and Assessment:

Lectures, group work, self-study, log-book.

### Course director:

Senior lecturer Satu Lahti

## ERGONOMICS

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	X	-	C5	0.3	0.45	Finnish

**Contents:** Basics of dental ergonomics

**Contact hours and Assessment:** Lectures, practical exercises, demonstrations

**Course director:** Senior lecturer Satu Lahti

## DENTIST-PATIENT RELATIONSHIP I

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	X	X	C5	0.5	0.75	Finnish

**Contents:** Basics of dentist-patient relationship

**Contact hours and Assessment:**

Lectures, group work, self-study, case reports, demonstrations

**Course director:**

Senior lecturer Satu Lahti

## DENTIST-PATIENT RELATIONSHIP II

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	X	X	C9	0.5	0.75	Finnish

**Contents:** Dentist-patient relationship among specific patient groups

**Contact hours and Assessment:**

Lectures, group work, self-study, case reports, demonstrations

**Course director:**

Senior lecturer Satu Lahti

## ORAL HEALTH, INDIVIDUAL AND COMMUNITY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	-	X	C8	1.5	2.25	Finnish

**Contents:**

Oral diseases as public health problems, health policy, legislation, ethics, working as a public health dentist.

**Contact hours and Assessment:**

Lectures, group work, self-study. Multiple choice and short essay assessment allowing the material covered during the course to be available during the exam.

**Course director:**

Senior lecturer Satu Lahti

## SEMINARS IN COMMUNITY DENTISTRY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	-	X	C9	1.5	2.25	Finnish

### Contents:

Oral health care now and in future, prevention strategies, health economics, quality in health care, health policy, management and leadership, obtaining and applying scientific knowledge, working as a private practitioner.

### Contact hours and Assessment:

Lectures, group work, self-study. Multiple choice and short essay assessment allowing the material covered during the course to be available during the exam.

### Course director:

Professor Hannu Hausen

### Strengths:

The teaching of the community dentistry curriculum is integrated with the teaching of public health at pre-clinical phase. Teachers of the department have been trained in learning methods and the knowledge gained through these studies has been successfully used throughout the courses. Each course is evaluated by the students for both of the content and learning methods used. Annual changes are made according to this evaluation. Students have found especially the problem based group work useful for integrating the theoretical knowledge into the daily practice. Having clinical specialist trainees attending the last year course stimulates the group work and discussion.

### Weaknesses:

The curriculum covers a wide field. Thus, time assigned for each topic is limited. Some issues can be covered rather superficially. The theoretical nature of some topics makes it challenging to integrate this knowledge to students' clinical practice. Good timing of each course is essential to obtain this integration but it has not always been possible.

### Innovations and Best Practices:

The department has actively taken part in the curriculum revision. Teaching of community dentistry will in the new curriculum be even more tightly integrated with other clinical subjects. Timing of the studies will then be more appropriate and problem based group work can be implemented together with other departments.

### **Plans for Future Changes:**

modern and varied learning methods are used within different courses.  
possibility to visit and work in the public health services.  
common course for undergraduates and clinical specialist trainees  
annual evaluation and tailoring of the courses

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### **VISITORS COMMENTS**

The professor and staff of the Department of Community Dentistry have designed a wide-ranging course, which interfaces with the students of the 1<sup>st</sup> to the 5<sup>th</sup> year. This course provides the elements of behaviour sciences, which enables self-development of the students in individual health (ergonomics) and attitude. It also supports students in their professional relationship with patients and the family. It develops their knowledge of community dentistry including prevention strategies and health education. Their approach to assessment is excellent and is compatible with the concept of deep learning.

# Section 11 Restorative Dentistry

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## 11.1 CONSERVATIVE DENTISTRY

### PEDODONTICS, CARIOLOGY AND ENDODONTICS

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
100 h	140 h	-	X	C5-C10	11.0	16.5	Finnish, English

This course consists of three parts: theoretical, practical exercises and clinical service.

#### **Aim of the course:**

To introduce students into pathological conditions of tooth tissue, their prevention, their treatment and complications of treatment.

#### **Contents:**

This course will be held in three parts; A: Theoretical part, B: Practical exercises and C: Clinical service

#### **Contact hours and Assessment:**

100 h of lectures and seminars, 140 h of practical exercises. After each theoretical section there will be intermediate examination and after the whole course there will be a final examination. In final grade the final examination and practical exercises are taken into account. Course also includes clinical service to be conducted through C5 to C10.

**Course director:** Professor Markku Larmas

#### **Literature:**

Hörsted-Blindslev P, Mjör IA: Modern concepts in operative dentistry, Munksgaard, Copenhagen 1988.

Maailman terveystieteen suunterveyden käsikirja. Hammastieto, Oulu 1992.

Larmas, M: Kliininen kariologia. Hammastieto, Oulu 1987.

Forsten L: Korjaavassa karieshoidossa käytettävät aineet, (newest edition), Institute of Dentistry, University of Turku.

Markus Haapasalo: Käytännön juurihoito, 1998.

### **A: THEORETICAL PART**

#### **CARIOLOGY I (C5)**

#### **Contents:**

The concept of cariology, prophylaxy: anatomy of a caries; histopathology; microbiology; saliva and caries; caries in light of vivisections; caries tests; caries indexes; epidemiology; factors effecting on resistance of a tooth; fluor, sugar and caries; antiseptic substances, antibiotics; cleansing actions.

**Course director:** Professor Markku Larmas

### **CARIOLOGY II (C5)**

**Contents:**

Clinical caries management: signs and symptoms of caries; clinical and radiographical diagnostics; treatment planning; cavity preparation; filling techniques and materials; fissure sealants.

**Course director:** Senior lecturer Liisa Seppä

### **CARIOLOGY III (C8)**

**Contents:**

Diagnosis and treatment aiming to causes of caries; diagnostics signs of caries caused by various factors; attrition, abrasion, erosion, dental effects of general diseases, hereditary disorders of dentition, treatment aimed to causes of caries. This course may be available partially in English as a part of an Erasmus-course.

**Course director:**

Professor Markku Larmas

## **11.2 ENDODONTICS**

### **ENDODONTICS I (C5)**

**Contents:**

Histology and morphology of pulp and root canals; diagnostics of pulp diseases; principles of endodontic treatment; root canal preparation and obturation.

**Course director:** Senior lecturer Liisa Seppä

### **ENDODONTICS II (C8)**

**Contents:**

Complications of endodontic treatment; microbiology of pulp infections; pulp resorptions; special techniques and special cases; treatment procedures.

**Course director:** Senior lecturer Liisa Seppä

## PEDODONTICS/PEDIATRICS (C7)

### Contents:

Meeting a child and his family; handling a child patient; treatment of a frightful child; recognition of risk factors of oral- and teeth diseases; early diagnosis and preventive treatment; special factors of preventive cariology and children; treatment of a deciduous dentition and permanent tooth pulpas; tooth traumas in permanent dentition; growth and development of a child; mother health care; nutrition of a child; allergies; hemostatic disturbances.

**Course director:** Senior lecturer Päivi Ollila

### B: PRACTICAL EXERCISES

140 h practical exercises in preventive and restorative cariological treatment and endodontics.

### C: CLINICAL SERVICE

Conducted through C5 to C10.

## 11.3 PROSTHETIC DENTISTRY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
110 h	112 h	X	-	C6-C9	10.5	15.75	Finnish

### Aim of the course:

To introduce student into biological, functional and prosthetical aspects of teeth loss; treatment of oral damage with applicable prosthetic solutions, to give the capability to diagnose patients needing special treatment and to introduce student into materials used in prosthetic dentistry.

### Contents:

The course will be held in three parts; A: Theoretical, B: Practical exercises and C: Clinical service. Theoretical course sub-parts are described below.

### Contact hours and Assessment:

110 h of lectures, 112 h of practical exercises and demonstrations concerning complete dentures, removable partial dentures, fixed prosthodontics and dental materials. After each theoretical part there will be an intermeditary examination and after all theoretical courses a final examination.

All examinations and merits from the practical exercises will be taken into account on final grade.

**Course director:** Senior lecturers

### Literature:

Schillingburg HT, Hobo S, Whittsett LD, Jakobi R, Brachett SE: Fundamentals of Fixed Prosthodontics, Quintessence Publishing Co 1997.

Karlsson S., Nilner K., Dahl BL.: A textbook of fixed prosthodontics. Gothia 2000.  
 Watt DM, Mac Gregor AR: Designing Complete Dentures, Wright (Bristol) 1986.  
 O'Brien WJ: Dental Materials and Their Selection (2<sup>nd</sup> ed). Quintessence 1997.  
 There will also be lecture handout material available.

## STOMATOGNATHIC PHYSIOLOGY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
35 h	-	5 h	X	C4, C6	2	3	Finnish

### Aim of the course:

To introduce student into normal function of the masticatory system (orthofunction), epidemiology and etiology of functional disorders and to diagnose and treatment of these diseases (pathofunction).

### Contents:

The course will be held in three parts: A: Theoretical part, B: Demonstrations and practical exercises, C: Clinical service. All sub-parts are described below.

### Contact hours and Assessment:

35 h of lectures, 5 h of demonstrations and practical exercises, clinical service

### Course director:

Professor Aune Raustia  
 Senior lecturer Kirsi Sipilä

### Literature:

Mohl ND, Zarb GA, Carlsson GE, Rugh JD: A Textbook on Occlusion, Quintessence, 1988 (pp. 1-175)

There will also be lecture handout material available.

## A: THEORETICAL PART

### STOMATOGNATHIC PHYSIOLOGY I (ORTHOFUNCTION)

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	-	X	X	C4	1	1.5	Finnish

### Contents:

Bony structure of the masticatory system; macro- and microanatomy of temporomandibular joint; structure and function of the masticatory muscles, function of the mandible, registration of the occlusion, examination of a patient.

## STOMATOGNATHIC PHYSIOLOGY II (PATHOFUNCTION)

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	-	X	X	C6	1	1.5	Finnish

### Contents:

The concept of pathofunction; etiology and epidemiology of temporomandibular disorders (pathofunction); functional disorders of the masticatory system: examination of a patient: radiological diagnosis, differential diagnosis and treatment procedures.

### Literature:

Mohl ND, Zarb GA, Carlsson GE, Rugh JD: A Textbook on Occlusion, Quintessence, 1988 (pp. 177-383)

There will also be lecture handout material available.

### B: DEMONSTRATIONS AND PRACTICAL EXERCISES

Examination of a patient, fabrication of the bite splint.

### C: CLINICAL SERVICE

## DENTAL MATERIALS

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
18 h	X	X	-	C6-C7	0.9	1.35	Finnish

### A. THEORETICAL PART

#### Contents:

a comparison of metal, ceramics and polymers  
 physical properties surface phenomena and adhesion to tooth structure  
 gypsum products polymers and polymerization  
 polymeric restorative materials  
 impression materials  
 waxes  
 dental cements  
 structure and properties metals and alloys  
 precious metal casting alloys  
 alloys for porcelain-fused-to-metal restorations  
 casting high temperature investments  
 dental porcelain soldering

### B. DEMONSTRATIONS AND PRACTICAL EXERCISES

**Course director:** Senior lecturer

#### Literature:

O'Brien WJ: Dental Materials and Their Selection (2<sup>nd</sup> ed). Quintessence 1997.  
 There will also be lecture handout material available.

## **FIXED PROSTHODONTICS**

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
21 h	48 h	X	X	C6	3.5	5.25	Finnish

### **A: THEORETICAL PART**

#### **Contents:**

Destruction of occlusion  
 Indications/contraindications  
 Adv./disadv.  
 Treatment planning  
 Principles of grinding the tooth  
 Biological aspects  
 Metal crowns, porcelain fused to metal  
 Post and core  
 All ceramic crowns/bridges  
 Impressions  
 Temporary crowns/bridges  
 Cementing  
 Problems  
 Complications/prognosis

### **B. DEMONSTRATIONS AND PRACTICAL EXERCISES**

**Course director:** Senior lecturer

#### **Literature:**

Schillingburg HT, Hobo S, Whittsett LD, Jakobi R, Brachett SE: Fundamentals of Fixed Prosthodontics, Quintessence Publishing Co 1997.  
 Karlsson S., Nilner K., Dahl BL.: A textbook of fixed prosthodontics. Gothia 2000.

### **C. CLINICAL SERVICE**

Treating patients (crowns, bridges)

## **REMOVABLE PARTIAL DENTURES**

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
14 h	24 h	X	X	C6-C7	1.9	2.9	Finnish

### **A. THEORETICAL PART**

#### **Contents:**

Destruction of occlusion  
 Indications of removable dentures  
 Patient examination/treatment planning  
 Pre-prosthetic treatment

Components of a partial denture  
 Design aspects of a partial denture  
 Path of insertion/undercut areas/survey lines  
 Impressions  
 Occlusion  
 Complications/problems/prognosis

## **B. DEMONSTRATIONS AND PRACTICAL EXERCISES**

**Course director:** Senior lecturer Kai-Jeri Koskinen

### **Literature:**

There will be lecture handout material available.

## **C. CLINICAL SERVICE**

Treating patients (removable partial dentures)

### **MINOR COURSES**

Immediate dentures	C7; Lectures: 4 h
Overdentures	C7; Lectures 2 h
Inlays-onlays	C7; Lectures 4 h; Practical exercises 6 h
Resin-bonded fixed partial dentures	C7; Lectures 4 h; Practical exercises 6 h
Denture repair	C7; Lectures 10 h
Maxillofacial prosthodontics	C9; Lectures 4 h
Precision attachments in prosthodontics	C9; Lectures 2 h
Prosthetic treatment of erosion/abrasion/attrition	C9; Lectures 4 h
Course for planning advanced prosthodontics	C9; Lectures 8 h; Practical exercises 8 h

## **COMPLETE DENTURES**

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
15 h	20 h	X	X	C6	1.75	2.6	Finnish

## **A: THEORETICAL PART**

### **Contents:**

Introduction to complete dentures  
 Anatomical landmarks  
 Changes in Stomatognathic system caused by education  
 Physiology of edentate mouth  
 Pre-prosthetic preparation of the mouth  
 Impressions (primary/secondary)  
 Relationship of edentate jaws (vertical/horizontal)  
 Selecting artificial teeth  
 Tooth arrangement  
 Shape of the dentures – retentive, phonetic and hygienic aspects  
 Occlusion in complete dentures  
 Controls and recall procedures  
 Problems in complete denture treatment

## **B. DEMONSTRATIONS AND PRACTICAL EXERCISES**

### **Course director:**

Senior lecturer Erkki Hujanen

### **Literature:**

Watt DM, Mac Gregor AR: Designing Complete Dentures, Wright (Bristol) 1986.  
There will also be lecture handout material available.

## **C. CLINICAL SERVICE**

Treating edentulous patients (complete dentures)

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## **VISITORS COMMENTS**

The courses Cariology, Endodontics and Paedodontics are part of the comprehensive and highly successful treatment concept of the Institute of Dentistry.

**Cariology:** In the 5<sup>th</sup> semester the students go through practical phantom training for 4 months. At the same time they go to integrated patient treatment in the Clinic Hall for observation and to engage in some restorative procedures.

From the 6<sup>th</sup> semester on, the main clinical training on patients begins. Every student completes circa 100 restorations during his/her practical training.

**Endodontics:** Similiar to the course of Cariology, the course Endodontics starts in the 5<sup>th</sup> semester with 2-3 weeks of phantom training. The students are expected to fill 3 root canals during his period. The students continue with work on patients. During this training the students are supposed to complete 20 root canal fillings.

**Paedodontics:** Only patients between the ages of 7 till 15 years are treated.

### **The visitors comments on strengths as:**

The Staff are highly motivated.

The number and range of patients available for treatment ensure very good clinical training. The number of treatments completed by the students is far in excess of most European dental schools.

The concept of integrated patient care and the multidisciplinary approach to clinical training sessions ensures that graduates will have a holistic approach to future patients.

Student/academic teacher ratio = 1:5.

### **Weaknesses**

Discussions with both staff and students indicate that additional staff is necessary in order to avoid the long delays which sometimes occur during a clinical session while a student waits for a supervisor to check work in progress.

Treatment units are old and despite being well maintained, will require replacement in the near future.

In the clinical training quantity seems to be more in focus than quality.

## Section 12 Periodontology

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### PERIODONTOLOGY AND GERIATRIC DENTISTRY

#### Aim of the course:

After taking course on periodontology and geriatric dentistry the student should:

Know the anatomy and physiology of periodontium, etiology, pathogenesis and epidemiology of diseases occurring in periodontium.

Be able to conduct diagnosis and treatment in context of basic health care.

Know the geriatric problems related to teeth and oral cavity and be able to treat them in context of basic health care.

#### Contents:

The course will be held in five parts: Periodontology I–IV and Geriatric dentistry. There will be clinical training in periodontology throughout C5 to C10.

#### Assessment:

The student must complete parts of the course in chronological order and passing a part will qualify student to take part into the next part. After completion of parts there will be a final examination. The results of partial examinations, the final examination and the conduction of clinical training will all be taken into account when assessing the grade of the course.

### PERIODONTOLOGY I

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	X	X	C5	3.5	5.25	Finnish

#### Contents:

The anatomy and the physiology of the periodontium; chronic gingivitis and periodontitis (clinical, radiological and biochemical signs and symptoms) and factors affecting periodontal diseases and treatment of those diseases. This period will give ability to conduct hygienic phase of periodontal treatment and is mandatory before starting clinical training.

#### Contact hours and Assessment:

Lectures, practical exercises, demonstrations, working in small groups, written examination.

**Course director:** Professor Matti Knuutila

#### Literature:

Carranza, Newman: Clinical Periodontology

## PERIODONTOLOGY II

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	-	-	-	C6	1.5	2.25	Finnish

### Contents:

Epidemiology of chronic gingivitis and periodontitis and connections to medical diseases; juvenile periodontitis; diagnosis and treatment of acute and specific inflammations of periodontium; occlusal and endodontic factors related to periodontal treatment, dentist-patient relationship and patient motivation, microbiological sampling and antimicrobial therapy.

### Contact hours and Assessment:

Lectures, written examination.

**Course director:** Professor Matti Knuuttila

## PERIODONTOLOGY III

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	X	X	C7	2	3	Finnish

### Contents:

Objectives of periodontal surgery, indications and management of the main surgical procedures including regenerative, esthetic and pre-prosthetic procedures. Results of surgical treatment and periodontal wound healing. Before starting this period the student must be able to carry out periodontal hygienic phase treatment.

### Contact hours and Assessment:

Lectures, practical exercises, demonstrations, working in small groups, written examination.

**Course director:** Senior lecturer Tellervo Tervonen

## PERIODONTOLOGY IV

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
-	-	-	X	C9	1.5	2.25	Finnish

### Contents:

A series of seminars conducted by students related to most recent research in periodontology.

**Contact hours and Assessment:** Seminar

**Course director:** Professor Matti Knuuttila

## GERIATRIC DENTISTRY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
X	X	-	X	C9	0.7	1.05	Finnish

### Contents:

Geriatric problems related to the oral cavity, and treatment and prevention of those.

### Contact hours and Assessment:

Lectures, small group working and visits to the geriatric nursing homes.

**Course director:** Senior lecturer Anna-Maija Syrjälä

### Strengths:

Three principal strategies for education and learning have been developed: positive learning environment and atmosphere, stepwise ascent in personal learning and responsibility and integration between theory and practice. In practice this means long teaching experience, personal guiding and tutoring arrangements, continuing analysis of core assessment, high quality hand and ultrasonic instruments.

### Weaknesses:

No information was given.

### Innovations and Best Practices:

Development of advanced surgical procedures

### Plan for Future Changes:

Participation in the planning of the new curriculum of the Institute of Dentistry

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## VISITORS COMMENTS

The teaching and learning in periodontology are based on 'three important principles': (1) a positive learning environment, (2) a stepwise increase in personal learning and responsibility, and (3) integration between theory and practice.

In general the contents are sufficient. The teaching in periodontal microbiology is a part of the content. In certain cases subgingival plaque samples are taken and sent to the Institute of Dentistry of the University of Helsinki to be analysed. The analysis confirms bacterial identification and antibiotic susceptibility testing.

As an advantage the clinical training is an integrated part of the "comprehensive dental care". In addition to the periodontology III course (periodontal surgery) every student has to follow at least one surgical operation and personal training in periodontal surgery is supported and encouraged.

There are four written examinations and a final examination. It may be considered to concentrate these exams.

## Section 13 Oral Surgery and Dental Radiography and Radiology

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### 13.1 ORAL SURGERY

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
146 h	-	X	-	C5-C9	7.8	11.7	Finnish

#### **Aim of the course:**

To give the student knowledge and skills in oral- and maxillofacial surgery that a dentist will need in clinical work.

#### **Contents:**

The course is in three parts; A: Theoretical, B: Practical and C: Clinical service. Surgical diseases, abnormalities and traumas of dentition, oral region, jaw bones, temporomandibular joints and salivary glands in preventive, diagnostic and therapeutical contexts. First part of the theoretical course will give basic knowledge about oral and maxillofacial surgery, and this knowledge will be expanded on following parts of the theoretical course.

#### **Contact hours and Assessment:**

146 h of lectures and demonstrations during C5 to C9.

There will be three different literary examinations during the course:

1. Preliminary examination in the beginning of Oral Surgery I
2. Intermediate examination after Oral Surgery I
3. Final examination at the end of the course.

**Course director:** Professor Kyösti Oikarinen

#### **Literature:**

Either: Hjorting-Hansen, Nordenram, Aas: Oral Kirurgi, Munksgaard, Kobenhavn, 1986, vol. 3

or Peterson, Ellis, Hupp, Tucker: Contemporary Oral and Maxillofacial Surgery, C.V. Mosby Company (newest edition) and additional information from "Oral Kirurgi" book.

Recommended: Andreasen JO: Essentials of Traumatic injuries to the teeth, Munksgaard, Kobenhavn 1991, 2.ed 1992.

There will be also lecture handout material available.

### A: THEORETICAL PART

#### **ORAL SURGERY I**

#### **Contents:**

Basic information on oral and maxillofacial surgical treatment, including surgical diseases and injuries of oral area, jaws and masticatory system. Emphasis is of patient examination, making diagnosis, evaluation for surgical procedures, local anaesthesia, normal extraction of a tooth, patient files.

## ORAL SURGERY II

### Contents:

Contents of Part I in-depth study: complicated extraction of a tooth, surgery of an unerupted tooth, surgery of benign lesions and odontogenic inflammations of the jaws. Teaching will be held in small groups.

## ORAL SURGERY III

### Contents:

Teaching will be based on introductorys made by students on following subjects: Tooth and jaw injuries, preprosthetic bony and soft tissue surgery, implant surgery. Jaw and cranium deformities, oral and jaw malignancies, diseases of temporomandibular joints.

## ORAL SURGERY IV

### Contents:

Special cases of oral and maxillofacial surgery.

## B: PRACTICAL EXERCISES

**Contents:** During part "Oral Surgery I" the students will be divided into three groups which will have practical exercises in examining patient, local anaesthesia, extraction of a tooth, sterile working, use of surgical instruments and surgical suturing techniques. During part "Oral Surgery III" the students will practise most typical teeth and jaw fractures on a dummy.

## C: CLINICAL SERVICE

### Contents:

For clinical service the students will be divided into six groups. During the course one group at a time will serve at the Department of Oral and Maxillofacial Surgery. Clinical teaching will take place during examination and treatment of a patient.

## 13.2 ORAL RADIOLOGY (SEE ALSO SECTION 14)

Lectures	Practical Exercises	Demonstrations	Seminars/ Small Groups	Period	Finnish Credits	ECTS Credits	Language of Instruction
80 h	30 h	-	X	C5-C9	4.5	6.75	Finnish

### Aim of the course:

After this course the students will:

Know the basics of radiation physics.

Know the basics and operating of x-ray equipment. Students must be able to produce x-ray pictures with equipment available to dentists. They must also know the usual errors of the radiography.

Recognize normal structures and their variations in radiographs.

Recognize pathological changes and must be able to diagnose most common of them.

Recognize most common teeth and facial traumas and select most suitable radiological techniques.

Understand the importance of x-ray referrals, radiological examination and diagnostics in dental treatment.

Know the risks assorted to radiological examination.

**Contents:**

There are three parts: Theoretical part, Periodical exercises and Clinical Service.

**Contact hours and Assessment:**

After each theoretical period there will be a written examination. After all course periods there will be a final examination. Final examination will include essays (4-6) and x-ray pictures (6-12). Final grade will be measured by final examination, periodical exams and clinical service.

**Course director:** Senior lecturers

A: THEORETICAL PART

**RADIOLOGY I**

**Contents:**

Radiation physics and biology. Projection geometry, films, oral radiological equipment, processing x-ray films, intraoral radiographic examinations, normal radiographic anatomy and anomalies. Pathology of a tooth and surrounding tissues.

**RADIOLOGY II**

**Contents:**

Panoramic examinations. Examination of children's teeth. Special groups such as CP-disabled, anaesthetic patients etc. Diagnostics of cysts, granulomas and inflammations distinct of teeth.

**RADIOLOGY III**

**Contents:**

Diagnostics of tumors of the jaws, cephalometrics, tomography, digitised pictures, ultrasound, computed tomography, magnetic resonance imaging, scintigraphy, contrast substances.

**RADIOLOGY IV**

**Contents:**

Teeth, jaw and facial injuries. Maxillary sinus and temporomandibular joints and skull projections.

## **RADIOLOGY V**

### **Contents:**

This period will be filled by those subjects, which students need additional teaching. Radiation safety lectures and the final examination of this course.

### **B: PERIODICAL EXERCISES**

#### **Contents:**

- a) Intraoral x-ray examination. Introduction to diagnostics.
- b) Occlusal technique, examination of special groups and dark room working.
- c) Panoramic radiography.

#### **Literature:**

Rosberg Jukka: Hammaslääketieteellinen Radiologia, Oulun yliopistopaino 1997.  
Goaz Paul & White Stuart: Oral Radiology, Mosby, third edition, 1994.

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## **VISITORS COMMENTS**

The Staff of the Radiology Department are commended for their efficient service component and the comprehensive undergraduate teaching programme. The proposals for increased integration with other disciplines in the future will make an important contribution to curricular integration.

There are some concerns that the development of the student teaching may be affected if the service demand increases without adequate staffing.

The Department of Oral and Maxillofacial Surgery serves as an important bridge between the University Hospital and the Institute of Dentistry. It covers a wide range of ambulant treatments, which enables the students to acquire skills which are essential for practice of dentistry in the unique geographical setting of Northern Finland. This department undoubtedly makes an important contribution to the unique ethos, which prevails in the Institute of Dentistry at Oulu.

## Section 14 Oral Medicine and Oral Pathology

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### NEW INFORMATION GIVEN DURING VISIT:

### DIAGNOSTICS AND ORAL MEDICINE

#### 1. Introduction

The Department of Diagnostics and Oral Medicine teaches the general oral diagnosis (containing anamnestic and clinical examination, diagnosis and primary treatment planning in all the disciplines excluding orthodontics), oral radiology, oral mucosal diseases, oral pathology, forensic dentistry, clinical nutrition and clinical physiology of saliva. (**Oral radiology is described as a separate entity. See below.**)

General oral diagnosis comprises clinical work in terms eight, nine and ten. Diseases of oral mucosa comprise lectures in term seven, clinical work in terms eight, nine and ten, and biopsy exercises in terms eight, nine and ten. Clinical physiology of saliva and clinical nutrition comprises lectures in term seven. Oral pathology comprises lectures and microscopy course in term nine and forensic dentistry lectures and demonstrations in term nine. (*See Appendix 4 about the total number of patients visiting departments yr. 2000*)

#### 2. Primary Aims

The first aim is for the students to learn to do anamnestic, clinical and individually determined appropriate radiological examinations, followed by determinations of main diagnoses (based on WHO classification) and possible causes of the conditions, and to suggest the initial plan for the comprehensive treatment of the patient. When necessary, the students may also suggest the division of the different aspects of treatment between the general practice and special care levels.

The second aim is to teach the students the pathogenesis, diagnosis and treatment of oral mucosal diseases, including the courses in oral pathology. Also, the students are taught the science and practise of oral radiology, partially in conjunction with other disciplines.

#### 3. Main Objectives

##### 3a. Main objectives in general oral diagnosis

- the anamnestic evaluation and the effect of anamnestic information to the diagnoses and treatment planning
- comprehensive clinical extra- and intraoral examination
- causal diagnosis and diagnostic classification according to the WHO guidelines
- initial comprehensive treatment planning, and determination of demands for special care

##### 3b. Main objectives in oral mucosal diseases and oral pathology

- anamnestic and clinical examination of patients with oral oral mucosal diseases
- theory and practise of biopsies
- aetiopathogenesis and relationship of oral mucosal diseases with general diseases
- treatment and follow-up of oral mucosal diseases
- the clinical and pathological manifestations of the following conditions:
  - oral mucosal vesiculo-bullous, ulcerative, white, red-blue, pigmented, verrucous and connective tissue lesions
  - premalignant lesions and conditions

oral carcinogenesis and cancer epidemiology  
 oral benign and malignant tumours, odontogenic tumours  
 odontogenic and non-odontogenic cysts  
 fibro-osseal lesions of the jaws  
 salivary gland diseases and tumours

3c. Main objectives in forensic dentistry

an overview of different possibilities of forensic dentistry as a part of forensic medicine

principles in dental identification, age and sex determination, bite marks  
 the role of forensic dentistry in mass disasters

3d. Main objectives in clinical physiology of saliva and clinical nutrition

physiology and secretion of saliva  
 the effect of medication and diseases on the secretion of saliva  
 caries and oral immunology  
 nutritional recommendations and special diets

**4. Hours in the Curriculum**

		Finnish Credits	ECTS Credits
4a. <u>General oral diagnosis</u>			
clinical work	1 h/week		
total	30-40 hours		
4b. <u>Diseases of oral mucosa C7</u>		1.375	2.0625
lectures	12 h		
individual tutoring (biopsy)	2 h		
clinical work	30-40 h		
independent studies	24 h		
total	68-78 hours		
4c. <u>Oral pathology C9</u>		2.0	3.0
lectures	24 h		
microscopy demonstration	16 h		
independent studies	40 h		
total	80 hours		
4d. <u>Forensic dentistry C9</u>		0.2	0.3
lectures and group work			
total	4 hours		
4e. <u>Clinical nutrition C9</u>		0.1	0.15
lectures	2 h		
individual studies	3 h		
total	5 hours		
4f. <u>Clinical physiology of saliva C8</u>		0.25	0.375
lectures	4 h		
individual studies	4 h		
total	8 hours		

**5. Methods of Learning/Teaching**

In the clinical work, the students examine three different groups of patients: the general practice patients seeking for comprehensive oral health care from the Institute of Dentistry; the patients referred from the community or private general practices, requiring specialist-level diagnosis, treatment planning and treatment in any oral health care discipline (excluding orthodontics); and referral patients with oral mucosal diseases.

**5a. General oral diagnosis:**

The students perform anamnesic and clinical examinations, determine the causal and classify the diagnoses, and suggest the initial treatment plan, which is then discussed with and approved by the staff. The specialists in different disciplines are consulted when necessary, before finalizing the initial treatment plan.

**5b. Oral mucosal diseases:**

The teaching methods include lectures, guided self-learning with multimedia and textbooks (for the titles, see Appendix 1), and clinical work with the patients. The clinical work includes the patient examination according to the general guidelines described above in 5a. In addition, the students perform or assist in the biopsies, participate to the treatment and follow-up procedures and to the consultations of other medical specialties. The students are required to assist at one and to take at least one mucosal biopsy. To ensure the practical experience in biopsies, the students are allowed and encouraged to take the biopsies from each other, under personal supervision of the teachers.

**5c. Oral pathology and forensic dentistry**

The teaching methods include lectures, microscopy course and Internet-based self studies using selected high-quality oral pathology web pages (for the addresses, see Appendix 1).

**5d. Clinical nutrition and clinical physiology of saliva**

The teaching method includes lectures and literature examination.

**6. Assessment Methods**

The performance of the students is evaluated during and immediately after each patient contact by the staff. The weaknesses and strengths of each examination or treatment procedure are discussed with the student and the instructions are given how to improve the work. The grades are recorded and they account for the final grades. For the oral mucosal diseases, the students are given a problem-based written exam, in which the students are shown clinical pictures of different oral mucosal lesions, and they are asked for the diagnosis and the treatment options.

**7. Strengths**

The main strength of the Department of Diagnostics and Oral Medicine is that the students are exposed to a large number of patients, including a high number of patients with advanced multi-discipline clinical problems. Therefore, in the Department of Diagnostics and Oral Medicine the students get a good overview of the problems encountered in the general practice, including the most common mucosal diseases. The close connection with the oral pathology ensures a comprehensive clinical-pathological overview to develop for the students. The work is clinically and practise-oriented, and all aspects of diagnostics, including all the necessary intra- and extraoral radiographs and salivary diagnostics, are taught in practise in a problem-

based fashion. The Department is the only one in which the students use the continuous computerised patient documentation, that is in practise in a growing number of community and private practises, and is aimed to be in use throughout the Institute of Dentistry in the future. The feedback from the students has been mostly positive, and the structured immediate feedback has been well accepted and appreciated by the staff as well as the students.

## **8. Weaknesses**

The Department of Diagnostics and Oral Pathology is understaffed. There is only one temporary professor covering the oral medicine and oral pathology; one senior lecturer and one assistant professor for the oral radiology; one assistant professor and two temporary teaching/research assistants for the clinical diagnosis, oral pathology and oral mucosal diseases. Even though the inclusion of patients with all aspects of clinical problems with different severity can be regarded as strength, it is also one of the weaknesses, since it is impossible for the present staff to master all the specialties. Therefore, consultation of specialists is often required, and waiting for the consultant may cause ineffective use of time. The limited human resources also possesses difficulties in dividing the time between effective research and developing teaching. The lack of personnel, as well as the temporary nature of several positions (including the professor and the Head of the Department: the position is temporary, lasting only until the end of year 2002, with no knowledge of the future thereafter) is seriously affecting the long-term development of the Department.

## **9. Innovations and Best Practices**

The Department of Diagnostics and Oral Pathology as today is three years old. At that time, the teaching of diagnosis and treatment of oral mucosal lesions (previously under the Department of Oral Surgery), oral pathology, Department of Oral Radiology, and the office for the patient selection for the undergraduate students were merged into one. This has lead into eq. the following advantages:

the patients can be transferred from the community health care system into special care system and *vice versa*, depending on the treatment needs. An individual patient can also be partially assigned to receive general practice-level treatment (non-complicated parts of the treatment, given by the undergraduate students) and the special care level treatment (the more difficult and demanding parts of the treatment, given by the graduate students or clinical staff). This ensures the optimal use of resources.

the teaching of oral mucosal diseases combines the clinical diagnosis, visual documentation of the lesions, the initial treatment planning, the biopsy practises, and the oral pathology of the lesions. The Department has very close connections to the general pathology, where the students are taught the basic steps of biopsy sample handling. All the biopsies from oral cavity are analysed by the oral pathologist at the general pathology department which has good up-to-date facilities for proper diagnostics. After the transfer of teaching the biopsies from the Department of Oral Surgery, it has been ensured that all the students gain clinical experience of the biopsies before graduation, and the teaching of biopsy has shifted from hospital-oriented approach towards the general practise-oriented. Taken together, the teaching of oral mucosal lesions currently covers all the aspects of pathogenesis, diagnosis and treatment.

the follow-up system has been organized for the oral mucosal disease patients, allowing individual follow-up schedules to be designed for all the patients, in collaboration with the referring dentist or the community health care centres in suitable cases.

the microscopy course through video monitoring at the Department of General Pathology ensures uniform learning environment for the entire group of students.

the Department is the only one to give the structured immediate feedback for the students during the clinical service in the Institute of Dentistry. It is based on the recommendations by professor from MacGill University (Canada), who lectured to the staff of Institute of Dentistry in August 2000 on the teaching methodology. The department has also strongly participated in the ongoing renewal of the undergraduate curriculum, since the assistant professor of the department was responsible for the initiation, organization and exerting the work yr. 1999-2000.

## **10. Plans for Future Changes**

As part of the ongoing renewal of the undergraduate curriculum, the oral pathology microscopy course will be offered as an optional course. The visual documentation of mucosal and other suitable oral conditions will be done digitally and added to the computerised patient documentation. Problem-based clinical-histopathological seminars will be given regularly if there will be more staff available in the Department. Also in the future more effort is used to improve the quality of the research done in the Department.

## **11. Clinical Postgraduate Training**

The Department has only one temporary position available for the postgraduate training. During the three years of existence, one specialist in clinical dentistry (radiology) has graduated (yr. 2001). The position (oral pathology) is currently open and will most likely be filled in 1<sup>st</sup> October. The curriculum will emphasize on the combination of oral medicine (oral mucosal diseases) and oral pathology. However, since oral medicine-pathology combination is not officially recognized specialty degree in Finland, the degree will be given in oral pathology. The model for the combination curriculum will be modified from the respective program in the University of Alberta, Canada.

## **12. Academic Postgraduate Training**

There have been four Ph.D. dissertations in the Department during the last 3 years: one in radiology-epidemiology, one in cariology, and two in biological sciences-oral pathology. In addition two PhD in biological sciences has been supervised in collaboration with University of Helsinki, Institute of Dentistry (see titles and abstracts of the Thesis in Appendix 5). Also, three M.Sc. degrees in biochemistry have been completed. Currently, nine postgraduate students are working on Ph.D. degree and one on M.Sc degree. During the last three years our Department has published (or articles have been accepted for publication) 56 original peer-reviewed research articles 11 other articles in national journals. The staff has four accepted or pending patents within last four years. (See Appendix 6. about the research activity as in "EVO-points", the list of publications of our Department staff yr. 1998-2001 and the most cited professor in Science in Our Dental School).

# **ORAL/DENTAL RADIOLOGY AND RADIOGRAPHY**

## **1. Introduction**

Oral radiology includes both lectures and personal teaching in small groups. Lectures are held during four clinical years, the third, fourth, fifth and sixth. Part of lectures are integrated in clinical courses of various other disciplines and in part they are theoretical basic radiology courses. The teaching starts in the 3rd study year with a course in

radiographic anatomy and basic imaging methods, and official radiation protection examination. The teaching continues through the 4th year with courses in diagnostics and advanced radiographic methodology. Teaching commences during the 5th year with possible advanced studies, and the final examination of this course in dental radiology.

Teaching of the dental radiology is integrated with oral surgery, cariology, and gerodontology.

Students' clinical patient work starts in 3rd study year, in radiography with a preliminary phantom practice, successful passing of which entitles them to take intraoral radiographs. Students' radiographic work on actual patients continues in the 4th year, including intraoral, panoramic and cephalometric radiology. The practical diagnostic analysing of radiographs begins also then. Both imaging and diagnostic teaching is done in groups of 1 to 4 students under the supervision of the teacher.

## **2. Primary Aims**

Students should understand principles and mechanisms of radiation physics, radiation risks, legislation concerning oral radiology. They should be able to perform the basic radiographic examinations used in dentistry: intraoral, panoramic and cephalometric. Students should know dental and maxillo-facial normal radiographic anatomy, anomalies, and be able to diagnose common pathologic conditions in this area.

## **3. Main objectives are to ensure that the students understand the current concepts of:**

- radiation physics and biology
- legislation concerning oral radiography
- basic radiographic equipment, films and processing
- basic radiographic methods used in dentistry
- causes of errors and failures in radiographs
- normal radiographic anatomy and its variations in the maxillofacial area
- recognize pathological findings and diagnose most common of them (e.g. caries, periodontitis, inflammations, cysts, odontogenic and non-odontogenic tumours, fibro-osseal lesions, tmj-changes etc.)
- differentiate benign and malignant tumours from each other
- understand when to remit the patient to a specialist, and to know the importance of the information needed in x-ray examination referral.

**4. Hours in the curriculum** are 80h for the theoretical part and 30h for clinical practice

## **5. Methods of learning/teaching**

The teaching is given mainly as lectures using slide demonstrations and digital presentations. Students work during curriculum in radiology unit with real patients. The small group teaching and demonstrations are also given in a separate radiology room.

## **6. Assessment Methods**

The skills of the students are assessed in three written examinations. The fourth examination is final examination, including actual patient cases with radiographs to be diagnosed. Students' clinical performance is assessed continuously during clinical practice.

## **7. Strengths**

expert specialist staff with long experience in dental radiology: teaching, imaging, diagnostics and scientific work.

close proximity and long co-operation with Oulu University Central Hospital provides us with a constant stream of interesting clinical cases: complex maxillofacial injuries, tumors, general diseases in which dental involvement is suspected, etc. This co-operation also enables us to use CT, MRI, isotope and ultrasound imaging services when necessary.

co-operation with the communal local health care organization provides the students an opportunity to familiarize themselves to the field in which most of them will work, as well as providing "normal" patient material to the clinic.

about 6300 radiographic examinations per year.

modern radiographic equipment, good and working relationships with equipment manufacturers.

good clinical teaching material collected for over 20 years

dental radiology textbook in finish including associated teaching material with complete copyrights (as the book is written by J. Rosberg).

close proximity to the surgical department enables the staff to make intraoral examinations of anesthetized patients during surgery.

demanding radiographic examinations centralised to the radiographic department.

additional five intraoral units in various departments for routine intraoral examinations.

## **8. Weaknesses**

no professorship in dental radiology, which may diminish the interest in scientific work or the will to specialise in this discipline.

the department is understaffed, especially in cases of staff member absence (due to sick-leave, education, conferences, meetings, holidays, etc.). This causes undue strain on the staff present, and results in slowing of scientific work and impairs development of teaching as only the most essential clinical work can be carried out.

cuts in funding, no long term budget planning possible.

## **9. Innovations and Best Practices**

Students learn to understand meaning of the radiographic examinations, but also the limits of these examinations. Integrated courses with surgery, caries and gerodontology help students to solve problems independently. In small groups students get personal help to their personal radiological problems. Experimentation with problem-based learning (PBL) have been started. Students can also use the original x-ray material that have included in their textbook, so the picture quality is excellent.

## **10. Plans for future changes**

Radiology unit hopes more cooperation with general medical radiology for better diagnostic skills of students. This means more lecturing time and more staff. Problem-based learning will probably be increased.

## **Appendix 1.**

## **TEXTBOOK IN ORAL PATHOLOGY AND MEDICINE**

Cawson & Odell: *Essentials of Oral Pathology and Medicine*. Churchill Livingstone  
1997

## **SUGGESTED SIDE READINGS**

Regezi, J.A., Sciubba, J.J. Oral Pathology. Clinical-pathologic correlations.  
W.B. Saunders, Philadelphia 1989  
Shafer, W.G., Hine, M.K., Levy, B.M. A textbook of oral pathology.  
W.B. Saunders, Philadelphia, 1989.  
Cawson, R.A., Eveson, J.W. Oral pathology and diagnosis. Colour Atlas with inte-  
grated text. William Heinemann Medical Books, London 1987  
Soames, J.V., Southam, J.C. Oral Pathology. Oxford Medical Publications.  
Therpia Odontologica: Suun limakalvotautien osuus  
En Encyklopedi om Munslemhinneförändringar. Tony Axell (CD-rom)  
Oral pathology Image database: <http://www.uiowa.edu/~oprml/AtlasHome.html>

## **TEXTBOOKS IN ORAL RADIOLOGY**

Rosberg J: *Hammaslääketieteellinen Radiologia. Tekniikka ja diagnostiikka*. Oulun  
Yliopistopaino, Oulu, 2000.  
Goaz and White: *Oral radiology. Principles and Interpretation*. Mosby-Year Book, Inc.  
1994.

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## **VISITORS COMMENTS**

The teaching of oral diagnosis, mucosal diseases, saliva, oral pathology and forensic dentistry to undergraduate students is carried out in this department. Clinical and academic post-graduate training and research are also carried out to a very high standard. The undergraduate students include those from years 4 and 5.

Among the many impressive aspects of the courses are:

The process of anamnesis, diagnosis and treatment planning prepares students for the challenges of General Dental Practice.

Multidisciplinary specialist cover is supplied as appropriate.

The immediate feedback and evaluation provide an invaluable learning opportunity.

The combination of the study of oral mucosal diseases with the practice of biopsy techniques and the study of the clinical and pathological manifestations of many important oral lesions enables consolidation and a deep approach to learning.

The range and organisation of the research projects in this department is very impressive.

The activities carried out in this department are central to the supply of appropriate patients for undergraduate clinical teaching and contribute significantly to student expertise in patient diagnosis and management.

The visitors recommend that the importance of this department and its staff should be recognised by confirmation its professor and staff members so that they are in a position to concentrate on future development.



## **Section 15 Integrated Dental Care, Dental Emergencies and Special Needs Pa- tients**

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These subjects are taught in different courses of clinical training period. Especially, the principle of comprehensive clinical treatment serves adequately the need for integrated dental care.

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### **VISITORS COMMENTS**

The visitors did not meet with members of these departments explicitly; the concept of comprehensive treatment is a strength of the clinical training of the students. It guaranties that implementation occurs as indicated by the Department of Oral Diagnosis.

## Section 16 Behavioural sciences

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### **Aims:**

Teaching of behavioural sciences is mainly undertaken by the Department of Community Dentistry. Some teaching of the subject is taking place during pre-clinical studies. For details of the subjects covered see Section 10.

### **16.2 COMMUNICATIONS**

Basics of dentist-patient (doctor-patient) relationship are covered in pre-clinical studies during the first year. Teachers from the institute of Dentistry take part in the teaching that includes meeting simulated patients in small groups. Meetings are discussed and evaluated immediately after.

Teaching on communications continues during the clinical phase in two phases. On third year before meeting the first patients issues related to dentist-patient relationship and professional development are covered. During the fifth year special issues including treatment of specific patient groups (for example handicapped and patients with dental anxiety or psychiatric problems) are covered.

### **16.3 ETHICS AND JURISPUNDENCE**

Basics of medical ethics are lectured in the beginning of first clinical year in the dentist-patient relationship course. Knowledge on ethics is deepened throughout the studies by discussing different cases during other courses on community dentistry.

During the first clinical year most essential legislation covering patient rights and duties of health professionals are lectured. Further legislation (including for example public health and insurance coverage) is covered during fourth and fifth years on Oral health, individual and community and Seminars on Community Dentistry courses. These courses include also group work on different legislation cases.

### **16.4 PRACTICE MANAGEMENT**

Teaching on practice management takes place in different phases throughout the clinical studies. Issues related to practice management are taught also by other departments and the Finnish Dental Association is giving a specific course on the issue during the final year.

***In general, the strengths, weaknesses, innovations, best practices and plans for future changes are mentioned in Section 10. In addition, following specific issues apply to the Section 16.***

### **Strengths:**

In behavioural sciences several learning methods are applied. Teaching has been currently integrated in issues related to dentist-patient-relationship with courses on pediatric dentistry and teachers from the Department of Psychiatry are involved in the teaching. Group work based on specific problems and patient cases are used to make issues related to legislation and ethics more attractive.

**Weaknesses:**

Topics of behavioural sciences are scattered throughout the five years and hours provided are limited. More tutorials should be given, preferably in close connection to the clinical work. Assessment of the students' behavioural skills is not taking place and needs some attention.

**Innovations and Best Practices:**

Demonstrations are efficiently used to help students to understand patient's feelings during dental treatment. These include being treated as a patient eyes blinded without much explanation what is being done. In monthly patient seminars issues related to behavioural sciences are discussed and the area is integrated on the seminars.

**Plans for Future Changes:**

In the new curriculum the integration in the teaching of these topic is deepened. Log-books and portfolios are used in assessment of knowledge and understanding in ethics, dentist-patient relationship and jurisprudence. Ethical issues are planned to brought into discussions during each course.

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**VISITORS COMMENTS**

These courses are covered mostly by the Department of Community Dentistry (see Section 10). The course of Practice Management is supplied by the Finnish Dental Association by agreement of the Department of Community Dentistry.

There appears to be an unstructured approach in ethics and jurisprudence.

## Section 17 Examinations, Assessments and Competences

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### The overall approach to assessments

For the final year (CURSUS 9 and CURSUS 10) the traditional teaching model is still applied, where the departments are responsible for their curricula and carry out evaluation of the students independently. The departments assess students' theoretical knowledge in different subjects with written 2 till 5 intermediate exams and a final written examination mostly.

About two years ago (since 1-1-2000) a project to develop the assessment of quantity and quality of teaching was launched. This project was initiated to reconsider the present curriculum as it was no longer possible to incorporate new information into the available credit unit volume and the curriculum had become very laborious.

A core analysis was performed, aiming at the definition of the skills that a newly graduated dentist should have. This 'skills list' was used as a basis for defining the level of theoretical knowledge, ethics, clinical and social skills that a newly graduated dentist needs in order to be able to implement comprehensive patient care.

The curriculum development project that was launched under the Teaching Development Unit a year ago moved away from a department-centred approach to theme-based teaching. This group includes senior lecturers from many departments and student representatives. It was agreed upon that the curriculum content should be arranged accordingly ten 'themes' (i.e. ('strands' or 'traits'), i.e. (1) Pre-clinical strand, (2) Basic Competence, (3) Dental and General Diseases, (4) Occlusal Rehabilitation, (5) Operative Dentistry, (6) Traumas and Pain, (7) Growth and Evolution, (8) Gerodontology, (9) Scientific Education, (10) Electives) and the assessment should be revised accordingly. There have not been significant changes in content.

Teachers from several departments are now involved in teaching the same theme. The philosophy behind this is to strengthen the students' understanding of comprehensive treatment concept.

Until now, assessment of students has been carried out independently by each of the departments. In the new model assessments will be mainly carried out on theme basis: Teachers will carry out the preparation of exams as well as their grading. This assessment system aims at importing the student's ability to see the patient's problems and their treatment as a comprehensive system.

The theme-based assessment model aims at diminishing the number of exams by combining areas covered by different departments within the same strand to one exam, without making the exams too extensive. One strand comprises 1-3 exams, depending on the scope of the strand. There is also a final departmental exam in each subject. This forms part of the final grades.

The intermediate exams are usually essay-type examinations lasting two hours and the finals last four hours. Some departments also use oral exams, and the questions can refer to slides or x-ray pictures shown at the examination. Some exams may have multiple-choice questions. Part of the theme-based teaching is given as tutorials and evaluation is based on the student's learning log or some other written document. Some courses can be accomplished by attending the teaching and group work involved in the course. Courses with phantom head exercises may include a demonstration by the student, which the teacher assesses.

Both summative and formative methods of evaluation are in use. The aim is to choose the method that is best suited for the needs of the subject taught.

### **How much does the school rely on exams to motivate students?**

Passing pre-clinical courses is a prerequisite for being admitted into clinical training. In the clinical phase students are required to pass an exam on the subject before starting the treatment of patients. Failure to pass an examination means that the student is not allowed to start patient treatment. Exams are mostly used in the assessment of learning. It is likely that students are more motivated on clinical work after having a passed examination, as the new knowledge can be applied in practice.

### **Strengths**

In the student assessment several methods are in use. Teachers have been trained in pedagogies by the Teaching Development Unit and this has enabled them to methods that best apply each learning entity. The strength in theoretical teaching is the new theme-based model, which supports the concept of comprehensive treatment. In clinical practice this is achieved by a patient-centred comprehensive treatment philosophy, flexible consulting that surpasses departmental boundaries as well as monthly patient case seminars for the entire Institution. Clinical teaching is based on authentic learning and individual tutoring that allows immediate evaluation of student's skills.

### **Weaknesses**

The 'old' teaching model had a lot of departmental exams. This did not always help the students to understand the comprehensive treatment model. The new theme-based teaching model enables cooperation between teachers both when planning the content of teaching, when drawing up schedules and when assessing students. This model is rather laborious in the beginning when most exams are renewed completely.

There is no systematic structured model to evaluate student's clinical skills. Actually, teachers, particularly senior teachers, give their evaluation individually.

### **Innovations/Best Practices**

Theme-based theoretical teaching aims at improving the student's ability to understand the comprehensive model of patient care. All assessment aims at emphasising and deepening this understanding. A new structured systematic model for clinical assessment is to be developed. After passing the maturity exam at the 4<sup>th</sup> year a student is allowed to work as a dentist during a summer.

## **Plans for future changes**

The theme-based teaching method and development of related exam systems, as well as improved cooperation between departments in planning the teaching contents is further developed. The new teaching model will be annually evaluated and changes made accordingly. Training of teachers in pedagogies will be continued. All these contribute to the development of assessment system.

## **External examiners**

So far there has been no external examiners at the basic degree education but in postgraduate scientific education external examiners are in use (referees and opponents).

## **What formal completion of an exam is required by the school/university for students to qualify and register as dentists?**

The student must complete all pre-clinical studies including all examinations of the first two years before starting clinical studies.

In the 'old' teaching model during the clinical phase each department arranged their corresponding exams, including finals. For the new teaching model assessment will be developed as described before.

Clinical studies have been completed when the student has passed all examinations including final and language examinations. The practical work required by different clinical department must also be satisfactorily completed, and the required amount of on-call duty must be fulfilled. The student also does advanced studies at the department of his or her choice – this usually includes writing a literature review and/or research on a given subject.

## **The extent to which the school seeks the competence recommended by the EU Advisory Committee on the training of Dental Practitioners**

A core analysis has been carried out at our university bearing in mind the recommendations of EU Advisory Committee.

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## **VISITORS COMMENTS**

The visitors are concerned at the excessive number, the narrow range of formats and the overlap of teaching in one discipline with assessment in another discipline which appear to be a feature of the curriculum as described in almost all of the Sections above. We welcome the proposed changes, in written assessments which mark the beginning of the development of a structured approach to and a reduction in the number of assessments. They also endorse the development of a transparent model to assess 'clinical competence' as these skills are the core of all the training. Wide sampling and variety of formats is strongly recommended, as the use of appropriate external examiners.

## SECTION 18 OTHER INFLUENCES

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An unique feature is the geographical situation of the Institute of Dentistry of the University of Oulu and its requirement to train dentists and specialized dentists in ten different fields of dental education (i.e. (1) Pre-clinical strand, (2) Basic Competence, (3) Dental and General Diseases, (4) Occlusal Rehabilitation, (5) Operative Dentistry, (6) Traumas and Pain, (7) Growth and Evolution, (8) Gerodontology, (9) Scientific Education, (10) Electives) who are capable to deliver comprehensive dental care to scattered populations in remote areas.

Also, its close relationship with the Medical Faculty and its integration as a University Dental Health Centre within the Public Health Service of the Municipality of Oulu is important for comprehensive dental education. The fact that the Institute of Dentistry and the Oulu University Hospital are located on the same campus has enabled cooperation between specialized medical care and dental education in Oulu in a way that is exemplary on a national scale.

In hindsight it is easy to be pleased with the solutions that led to the construction of an underground tunnel linking the university dental clinic with the hospital, and to connecting the entire Institute of Dentistry to the hospital as an open-care special treatment unit of oral diseases with the aid of a comprehensive agreement to purchase services. In this connection the farsighted work of professor Markku Larmas and emeritus professor Mikko Altonen should be mentioned in particular.

It is also very likely that the above-mentioned facts contributed for their part to the favorable outcome for Oulu five years ago when two dental institutions in Finland were to be closed.

Close cooperation has been a benefit to both parties. Recruiting the competence of the entire staff of the Institute of Dentistry for producing specialized care has enabled comprehensive and high-class treatment of oral diseases, and specialist education in dentistry would not have been possible in its present scope without close cooperation with the hospital.

The projects of integrating the treatment given in connection with dental education as part of a comprehensive service system projected for the turn of the millennium can most probably be carried out more smoothly in Oulu than at other dental education units.

### **Hospital care of dental and oral diseases**

As late as in 1973 it was for the first time decreed that dental diseases should also be treated in central hospitals. The decree referred to patients who had to be treated under anesthesia.

In the mid-1970s nationwide health care plans called for central hospitals to set up clinics for oral diseases by the year 1977. This deadline was later postponed, and it was not until 1990 that all 21 central hospitals in Finland had a clinic or outpatient clinic for oral diseases.

These units are usually lead by oral or maxillofacial surgeons. Treatments in other dental specialties are either carried out by the clinics own staff or they are purchased from other sources.

The Oulu University Hospital is an exception from other central hospitals in that it has bought almost all forms of open care of dental and oral diseases from the Institute of Dentistry.

## **Cooperation with other hospital units**

It has taken a long time for dental and oral diseases to gain their present status as a small but important unit of specialized health care. The high standard of treatment and flexible service have been the best methods of advertisement, and nowadays the Oral and Maxillofacial Department is cooperating with several departments at the hospital. The improvement of two-way channels of communication has thus contributed to setting up sensible treatment of patients suffering from problems in the facial area.

The Oral and Maxillofacial Department participates in many internal cooperation groups. In addition to the treatment of cleft lip/cleft palate and sleep apnea that were mentioned earlier dental expertise has also been represented in the treatment groups for patients receiving radiation therapy in the facial area and patients suffering from facial pain. As well as that, the Department of Psychiatry at the hospital has set up a group for treating psychosomatic symptoms, and the Oral and Maxillofacial Department is actively involved in its work.

## **Cooperation with hospital district municipalities**

Because specialized health care is one of the areas causing the highest costs in medical care. These costs have been under constant scrutiny and criticism for some time.

The Law on State Subsidies of 1992 gave municipalities a very independent position as far as medical care is concerned. Municipalities are required by law to arrange and cover the costs of basic and specialized medical care of their residents. It is not necessary for the municipalities to provide the services themselves, they can be purchased e.g. from private-sector service providers, from the municipality's own central hospital or some other hospital.

There has been a lot of criticism towards the system of compulsory membership of municipalities in central hospital districts, and some municipalities have been buying part of the services they need from the private sector. From a wider perspective this is very short-sighted, however. The system that includes university hospitals and central hospitals is necessary for the treatment of more complicated cases, and a low level of use of their services leads to an increase of the costs of other types of treatment.

Oulu University Hospital has during the past few years increasingly prioritized cooperation between basic medical care and specialized care. The Oral and Maxillofacial Department has also been involved in the development of this cooperation. In 1998 the university hospital published a "treatment chain folder", which in the case of dental and oral diseases presents the treatment chain between specialized care and basic care for 20 categories of diseases. The Oral and Maxillofacial Department has also drawn up an introduction and quality folder, which was distributed to the member municipalities in 1997. The folder includes current legislation, contact info of hospital administrators, other regulations governing the implementation of specialized care, information on malpractice issues, regulations concerning patient documents, as well as a section devoted to explaining how treatment chains are made up.

The treatment units of Oulu University Hospital, including the Oral and Maxillofacial Department, work together with their most important customer, the City of Oulu. This joint work means regular meetings between the Institute of Dentistry and representatives of the City of Oulu health center.

1998 marked the start of the distance outpatient clinic, which means that the specialized dentist employed by the hospital occasionally works in one of the member municipalities, which cuts down costs due to factors such as long distances.

Telemedicine is one of the development projects of the entire hospital district, and it is well suited as a project for a hospital district operating in a very widespread area. Experiments in telemedicine have been carried out by the Oral and Maxillofacial Department with the health center in the municipality of Pyhäjärvi.

### **Future prospects and challenges**

Dental and oral diseases constitute one of the most recent special fields at the hospital, and it is still looking for its proper place in the treatment spectrum. It has been shown conclusively in the past few years that significant sums of money can be saved in the care of other diseases by treating infections of dental and maxillofacial origin. Dental diseases have been thought of as self-inflicted diseases, and that may be one of the reasons why their treatment has not been arranged in the same manner as that of other diseases.

The major changes in the field of dental education in the late 1990s also had an impact on the operation of Oulu University Hospital. As of this year Oulu and Helsinki are the only places in Finland where basic education is given to future dentists, and all Departments are prepared to give increasing emphasis to the clinical training of dentists and specialized dentists working in northern and eastern Finland.

## Section 19 Student Affairs

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Student representatives (2 for each class) discussed with the visitors:

- Final (fifth) year (third clinical year)
- Fourth year (second clinical year)
- Third year (first clinical year)
- Second year (pre-clinical students)
- First year (pre-clinical students)

### **BASIC DATA FROM INSTITUTE OF DENTISTRY, UNIVERSITY OF OULU**

**Average number of dental students qualifying per year: 25**

**Present number of dental students admitted to the first year: 42**

**Length of course in years and/or semesters: 5 years/10 semesters**

**Is there a separate period of vocational training following graduation as a dentist in your country?**

Yes, there is an orientation period when the graduate doctors work for six months under supervision and guidance in health centres or private practitioners.

**If yes to d) above, is that organised by the University/Dental School:**

No, see d) above.

### **STUDENT COUNSELLING SERVICES**

Contact: Cand.med.dent. Kari Rantavuori [krantavu@paju oulu.fi](mailto:krantavu@paju oulu.fi)

All students of our dental school belong to *Oulun Hammaslääketieteen Kilta* (The Dental Student Society of the University of Oulu). Each year certain members are responsible (president, chairman etc.) for the activities and continuity of the society. There are 150 members in the student society. *Hammaslääketieteen Kilta* has its representatives in the Board of Faculty and The Board of the Institute of Dentistry. *Hammaslääketieteen Kilta* is also part of Finnish Dental Students' Association and consequently we have representatives in Finnish Dental Union and Finnish Dental Society Apollonia.

*Hammaslääketieteen Kilta* works constantly with the teachers of the dental school to improve our education. We also organize lot of activities and lectures after school hours with financial help of dental industry.

Some of the activities are organized annually: during the first weeks of the autumn semester we welcome the newcomers to the dental school and organize an information weekend with the Institute of Dentistry in Hailuoto island near Oulu. There the newcomers can get information about *Hammaslääketieteen Kilta*, dentistry and especially the dental school and education. In the evening we enjoy food, sauna and have a welcoming party.

In October we organize "Odontofiilikastajaiset" where the newcomers are "baptized" into *Hammaslääketieteen Kilta*. This is a fine and highly appreciated event. There are also former members of *Hammaslääketieteen Kilta* gathering in Oulu annually to recognize the newcomers as odontofils.

In November we make a trip to Helsinki where the Dental national annual fair is held each year. There will be lectures and lot of activities during the weekend and of course a grand party for every dental student in Finland.

In the spring we organize Spring opening weekend in Lapland with skiing opportunities in some skiing resort.

In April we organize a party for the official saint of *Hammaslääketieteen Kilta* and it is called Saint Marku's days party.

*Hammaslääketieteen Kilta* also organizes many other evening activities with lecturers and information to the students who are interested in dental education.

There are also lot of other activities done in *Hammaslääketieteen Kilta*, e.g. sport games, cultural events and Kilta business meetings.

Annually we elect the teacher of the year and give him/her a trophy.

Foreign exchange is organized mainly by the Institute of Dentistry but naturally *Hammaslääketieteen Kilta* plays a role in organizing the exchange to the coming exchange students and for the members going abroad as well (Erasmus exchange program).

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## **VISITORS COMMENTS**

A selection of students of all cohorts met with the visitors. Their general maturity, confidence in and loyalty to their teachers was impressive. They delivered their opinions with confidence, clarity and good humour.

An increase in the amount of positive feedback on clinical performance would be appreciated by them. They expressed frustration at participation in the medical programme in the preclinical years but added that this has been alleviated by the inclusion of dental topics.

## **POSTGRADUATE COURSES**

### **EDUCATION OF SPECIALIZED DENTISTS**

The education leading to the degree of specialized dentist is arranged as education programs in orthodontics, clinical dentistry, oral and maxillofacial surgery (oral surgery until the end of 2002) and community dentistry. In addition it is also possible for specialized dentists to get a degree in a program leading to administrative competence.

According to the statute, the degree of specialized dentist can be obtained by a person who has been granted the right to practice dentistry as a legalized dentist, or the permission to work as a dentist, and who has thereafter worked full-time as a clinical dentist for a minimum of two years.

Students to the training programs are selected among those applying for vacant education posts of hospital dentist/specialized dentist.

The objective of the specialized dental education is to give the trainee competence in diagnostic methodology and in planning and carrying out demanding dental care within his or her specialty on both individual and population level.

Specialized dental education takes three year of full-time study in the programs leading to a degree in clinical dentistry, orthodontics and community dentistry. The program leading to a degree in oral and maxillofacial surgery takes six years. After a completed specialized dentist's degree, administrative competence can be obtained after two years of study.

The education program includes practical work, which primarily involves monitored providing of dental care services, or in the case of community dentistry, work in different health care organizations. Practical work must make up at least half of the education program, and theoretical studies must be included in accordance with the curriculum. As well as that, a dentist who has participated in an education program for specialized dentists must show that he or she has attained the objectives of the degree by taking part in a national examination in his or her specialty.

## **THE ADMINISTRATIVE SYSTEM OF SPECIALIZED DENTAL EDUCATION**

The degree of specialized dentist can be obtained at the medical faculties of the universities of Helsinki, Oulu and Turku. Having received proposals from each university and having consulted the Ministry of Social Affairs and Health the Ministry of Education makes a decision as to which education programs leading to the degree of specialized dentist are offered at each unit. It is also the task of the Ministry of Education to give orders regarding the national examination.

After having obtained the degree of Specialized Dentist (in relevant area), he or she makes an application to the National Board of Medicolegal Affairs, which grants them the right to practice their profession as licensed dentists, and after they have completed the compulsory practical training period grants them the right to practice dentistry independently as licensed professionals. The National Board of Medicolegal Affairs also keeps a record of persons with a specialist's degree in dentistry, and gives out a certificate of dental specialist's competence by request. The right to practice as a specialized dentist is however based on obtaining the diploma of specialized dentist.

The education unit

admits dentists into specialized education programs

makes decisions as to which official posts, positions or duties can be used as education posts

approves curricula

appoints persons in charge of the programs as well as educators

appoints examiners

gives out diplomas

monitors the education given in its area of responsibility.

The task of the Professional Continuing Education Committee is to coordinate and to develop professional continuing education within its area of responsibility. The com-

mittee deals with issues pertaining to specialist education and guides the practical implementation of the education.

## **REGULATIONS CONCERNING PRACTICAL TRAINING**

### **Length of practical training period**

The shortest period accepted as practical training is one (1) month.

### **Validity**

Practical training that has been completed during the past eight (8) years is accepted for the degree of dental specialist. Theoretical courses are valid for a total of eight (8) years. In the case of parental leave, the period during which the student is entitled to maternity benefit (approximately 1 year) can be accepted to lengthen the validity period.

### **Extension of the duration of the education**

The student can be granted an extension of his or her specialized dental education, if there is a valid reason. An application for the extension must be addressed to the faculty at least three (3) months before the end of the education period. The application must include a statement from the person in charge.

### **The effect of interrupted practical training**

A leave of absence due to illness lasting no longer than a month, or maternity, paternity or parental leave does not shorten the time counted as education. In the case of maternity leave, one month/maternity leave can be counted in education time. A leave of absence lasting no longer than a month can be accepted as education, if the student engages in activities approved the faculty as compensatory special education, as proposed by the person in charge (e.g. course in the special field in question, study leave to prepare for an examination, practical training abroad in the field in question). Leave of absence for personal reasons lengthens the education time accordingly (also in cases where the student has saved leave days for a later date).

### **Training at specialization posts at different education units**

Any practical training in a university post in the same field is accepted as training for the education program in question.

### **Training abroad**

It is possible to do part of the practical training required for the degree of specialized dentist abroad. The faculty makes a decision on this after hearing the person in charge.

## **REGULATIONS CONCERNING THE EXAMINATION**

A national contact person working at the Educational Office of the Medical Faculty at the University of Helsinki takes care of the national coordination of examinations. It is also the contact person's duty to keep a register of the examinations, to collect data for statistical purposes and, whenever necessary, to assist the examiners in their cooperation.

### **Times and places of examination**

The national Examination of Specialized Dentists is arranged simultaneously at all training units three times per year: in February, May and September. The education units arrange the examination in their own cities. The students can participate in the examination in any of the three cities.

### **Signing up for the examination**

The students must sign up for the examination no later than four weeks before the examination takes place at the Faculty of Medicine Continuing Education Office, where application forms are available. Those taking part in the examination must also be registered as students at the University. In addition to the major subject, students taking part in the examination in clinical dentistry must also state in advance the two minor subjects in which they intend to answer questions. Students can take part in the examination in their third year of study at the earliest, except in the case of oral and maxillofacial surgery and administrative competence, in which the earliest examination opportunity comes during the fourth and the second year of study, respectively. The student's eligibility for the examination is verified in the faculty office.

### **Grading the examination**

The examination is graded on a pass/fail scale, except for clinical dentistry, in which each question is graded separately. The examination can be taken again for the part of major or minor subjects only, if the student fails in one of the two. The criteria used in the grading must be given in writing in case the student does not pass the examination.

### **Informing about examination results**

After having received the examination results, the contact person immediately conveys the information to the examinees personally. The results of the examination are made public six weeks after the examination at the latest. The education units receive a list with the results of their own students.

### **Validity of the examination**

The examination is valid for a period of three (3) years for attaining degree, except in the case of oral and maxillofacial surgery, in which the validity period is four (4) years.

### **Rectifying procedure**

The examinee can request a rectification of the examination result 14 days from the time when he or she was informed of the result. The contact person delivers the request for rectification to the two examiners who assessed the examination, who must provide a well-founded answer giving the motivation for the grade within a reasonable time. The examinee who is not satisfied with the rectifying decision can make an amendment application to the examination board seven (7) days after being informed of the decision. The examination board is appointed by the faculty.

## **APPLYING FOR STUDENT STATUS AT UNIVERSITY**

### **Admittance to university**

Application to be admitted as university student in the education program leading to the degree of specialized dentist must be made when the dentist seeking to specialize has been appointed to a training post either permanently or temporarily. Student

eligibility application forms as well as application forms concerning the approval of different courses of study are available at the Continuing Education Office. Applicants can only be admitted as specialized dental students at one university.

### **Changing education programs**

If a student must change his or her education program, he or she must first be appointed to a post in the new education program. For a university student admittance to a new education program follows the same procedure as in 5.1. The faculty makes decision as to whether the practical training and other studies already completed by the student can be accepted as fulfilling the requirements of the new education program. This decision is based on a statement from the person in charge of the education program in question.

### **Enrolment at university**

After having become eligible for studies the student must enrol at the university. The enrolment form is sent to the student together with the form for applying student eligibility, and it is returned to the Continuing Education Office. Enrolment must be renewed each year until the degree of specialized dentist is achieved. Membership in the student union is voluntary for continuing education students. If the mature student does not wish to become a student union member, no membership fee is charged. Those who do pay the fee are entitled to make use of e.g. the services of the Student Health Care Foundation, but discounts on train ticket prices and reduced-price meals due not apply for mature students. A student enrolled at university can also make use of the data services of the university, e.g. a personal e-mail address.

### **Change of education unit**

Applications to specialist education posts and to being admitted as a student are made in accordance with the standard procedure of the university in question.

## **THE DEGREE OF SPECIALIZED DENTIST AND DOCTOR OF ODONTOLOGY (Dr.Odont. equivalent to Ph.D.)**

A dentist working to achieve both the degree of specialized dentist and the degree of Doctor of Odontology can get credit from the same course of study for both degrees according to the discretion of the education unit, if this is expedient as far as the aims of the degrees are concerned.

### **APPLYING FOR A DIPLOMA**

Having completed his or her practical training and theoretical courses of study and having passed the national examination, the trainee applies for a diploma from the faculty using a form available at the Continuing Education Office. The diploma gives the person in question the right to practice as a specialized dentist, and no separate application for a specialist's licence is needed. A specialized dentist's rubber stamp and fee receipts can be ordered from the Health Insurance Department of the Social Insurance Institution.

## **INTERNATIONAL STUDENT AND TEACHER EXCHANGE (within EU-countries)**

On the basis of a survey it had conducted at the end of the year 1991 the newly appointed Internationalization work group of the University of Oulu medical faculty de-

cided to launch the planning of at least some study modules with future international student and teacher exchange in mind. The work group sent a letter dated on March 19, 1992 to departments and clinics, in which it expressed its wish of obtaining preliminary plans at the faculty office by April 16, 1992. The work group also asked that a contact person be appointed for each department and clinic, with whom practical study arrangements and contacts with foreign universities could be discussed. The letter emphasized particularly that departments should undertake practical measures to increase their international contacts, e.g. by getting in touch with possible partners abroad. Kauko Virtanen, professor at the Institute of Dentistry and Vice Dean of the faculty was chairman of the Internationalization work group. Professor Lassi Alvesalo was named as contact person and head coordinator of the Institute of Dentistry.

Representatives of different departments were appointed to the Institute's Internationalization work group: Lassi Alvesalo, future work group chairman from the Department of Oral Development and Orthodontics, Aune Raustia and Maarit Salonen from the Department of Prosthetic Dentistry and Stomatognathic Physiology, Markku Larmas from the Department of Pedodontics, Cariology and Endodontics, Tellervo Tervonen from the Department of Periontology and Geriatric Dentistry, Jukka Rosberg from the Department of Radiology and Hannu Pernu from the Department of Dental and Oral Surgery, who was later replaced by Kyösti Oikarinen, and Maire Ahopelto, Clinical Counselling Officer. As the Department of Community Dentistry was transferred to Oulu from Kuopio from the beginning of 1996, Satu Lahti was appointed representative of this department.

The first work group meeting was held on April 13, 1992. Lassi Alvesalo was chairman of the meeting, and Aune Raustia was elected secretary of the work group. A decision was made at the meeting that each department would submit lists of their areas of special competence to the chairman by May 18, 1992, which would then serve as the basis for starting teaching in other languages at the Institute. The departments were asked to give the precise number of hours of teaching in each special area, as well as to indicate whether it would be possible for foreign exchange students to do their advanced studies in these areas. The departments at the Institute were also asked to chart their existing contacts and their special wishes regarding new contacts with other European universities in their particular fields of competence.

On the basis of the above a decision was made at the work group meeting on November 3, 1992 to make inquiries as to whether it would be possible to join the following Erasmus exchange rings that were already established: University of Manchester and Università degli Studi di Siena-led, both of which gave their consent. Since it was not possible to join two exchange rings, the Siena alternative was the final choice. Their exchange ring included the universities of Siena, Thessalonica and Verona, as well as King's College in London. Also, participation in Nordplus exchange program was considered.

In the beginning of the year 1993 the Internationalization work group of the Institute was complemented by two student members, Minna Jussila and Aulis Uusitalo. At this stage there was already some hope of getting the student exchange started in the fall of 1993, or in the spring of 1994 at the latest. The students showed an interest in the exchange program that was truly pleasing. A total of 24 students were interested in an exchange of 3 to 12 months' duration. The first exchange sites were London (King's College) and Brussels (Université Libre de Bruxelles) and the universities of Siena, Verona, Ancona and l'Aquila in Italy, all members of the Siena-led exchange ring. There was also quite a lot of interest shown towards the teacher exchange that was only being planned for a later date. Because there were more can-

didates for the student exchange than there were vacancies, the work group decided which criteria would be used in choosing who should go. Students in the final stages of their studies were to be given preference. In the spring of 1994 10 6-month student exchange positions were confirmed – 4 in Brussels, 2 in London, 2 in Siena and 2 in Verona. The final decision concerning the exchange sites was made at a meeting of coordinators of the Siena Exchange ring held in Brussels in the fall. Professor Lassi Alvesalo participated in the meeting as Oulu's representative. Professor Luciano Fonzi of the University of Siena was head coordinator at the meeting. The next meeting of coordinators was held in Oulu in October 1995. This meeting was hosted by the Internationalization work group.

In October 1994 Kirsti Koivikko, the first exchange student from our Institute, left for Verona for 6 months, and in the spring of 1995 the rest of the total of ten students also went abroad. The first five exchange students from Italy came to our Institute in the beginning of March 1995 for a three-month stay. Years of work were starting to bear fruit, but there was still a lot to be learned, both for the people organizing the student exchange and the students planning to participate in it. The Internationalization work group decided to arrange a so-called Erasmus Evening once or twice a year where representatives of the university's internationalization unit, students about to participate in the exchange program, those who had already been abroad as well as foreign exchange students could tell about their plans and experiences. The plan was put into action, and the Erasmus Evening has now become something of a tradition. Up to now a total of 28 students from the Institute and 43 foreign students from Italy and Greece have participated in the student exchange within the framework of the Erasmus and Nordplus exchange programs (Table 1).

Teacher exchange started in March 1996 as Professor Barry Berkovitz of King's College, London visited Oulu. The exchange with Italy started in the autumn of 1996 as professor Lassi Alvesalo visited Siena, as did professor Aune Raustia in the spring of 1997. Later more openings became available for the teacher exchange, and thus a total of 15 teachers have participated in the exchange since 1996 (Table 2). The teacher exchanges, during which lectures have been the main method of teaching, have lasted 1-2 weeks.

The opinions of students and teachers who have taken part in the exchange program have generally been very positive, both from a professional and a cultural point of view, and particularly as far as the idea of internationalization is concerned. The students have come up with some criticism, mainly concerning the small amount/non-existence of clinical work at their exchange sites. The foreign exchange students who have visited in Oulu have, according to the feedback received, felt that their stay here has been a rewarding experience; the students have been especially pleased with the possibility to participate in clinical work, the guidance they have received and the consideration shown to them.

Despite the current reduction in the number of students going abroad from Oulu it can clearly be seen that international student exchange has become a permanent and enriching element in the operation of the Institute on many levels. The exchange programs will be developed further and made even more versatile in the future, which is one way of making the concept of a united Europe more concrete.

## THE COURSES GIVEN BY THE INSTITUTE OF DENTISTRY WITHIN THE ERASMUS-PROJECT

### Department of Oral Development and Orthodontics

#### **ORAL AND CRANIOFACIAL GROWTH AND DEVELOPMENT:**

genetic, epigenetic, clinical and experimental approach

**Course director:** Prof. Lassi Alvesalo

**Substance:** Within these lectures normal and abnormal development of the teeth, oral structures and occlusal morphology in humans is critically examined. Included are pre-, peri- and postnatal development of dentition and different oral structures, in specific the effect of disturbing factors during pregnancy and child's early development as well as genetic factors on the developing phenotype. Particular attention in genetics is devoted to the role of sex-chromosome (X and Y) in the development of sexual dimorphism. Further, guiding of mandibular growth, mechanism of regulation, influence of functional orthodontic appliances, growth of maxilla and neurocranium are lectured. The interaction between facial structures and breathing function, and the expression and etiology of asymmetric growth are also the topics of lectures

**Method:** Lectures 10 hours

**Language:** English

Advanced studies available

### Department of Preventive Dentistry and Cariology

#### **CAUSALLY DIRECTED CARIES DIAGNOSIS AND THERAPY**

**Course director:** Prof. Markku Larmas

**Substance:**

- Clinical features of dental caries due to different causes
- Intraoral epidemiology of dental caries
- Dental caries due to
  - wrong dietary habits
  - bad oral hygiene
  - weakened resistance of teeth
  - reduced salivary flow
- Attrition, abrasion, erosion
- Hereditary diseases of teeth
- Oral manifestations of general diseases

**Method:** Seminar 2 hours. Exercise in using diagnostic tests and evaluation of test results.

**Language:** English

## **Department of Prosthetic Dentistry and Stomatognathic Physiology**

### ***COURSE IN PROSTHETIC DENTISTRY***

**Course director:** Prof. Aune Raustia

**Substance:**

Implantology

1. Indication
2. Follow-up of overdenture and fixed partial denture treatment

**Method:** Lectures 4 hours

**Language:** English

### ***COURSE IN STOMATOGNATHIC PHYSIOLOGY***

**Course director:** Prof. Aune Raustia

**Substance:**

Temporomandibular joint (TMJ) dysfunction

- Epidemiology
- Etiology
- Diagnosis and treatment
  1. internal derangement of TMJ
  2. degenerative joint disease
  3. traumatic joint disease
  4. rheumatoid arthritis

**Method:** Lectures 4 hours, demonstration 2 hours

**Language:** English

### ***ESTHETICS IN PROSTHODONTICS***

**Course director:** Prof. Aune Raustia

**Substance:**

Esthetic aspects related to

- removable dentures
- fixed prosthodontics
- implantology

**Method:** Lectures 2 hours

**Language:** English

Advanced studies available

## Department of Periodontology and Geriatric Dentistry

### ***PERIODONTOLOGY - DIAGNOSIS AND THERAPY***

**Course director:** Prof. Matti Knuuttila

**Substance:**

- Curriculum of periodontal studies in University of Oulu
- Epidemiology of periodontal diseases in Finland
- Association of systemic diseases with periodontal disease (with special emphasis on renal diseases and diabetes mellitus)
- Use of xylitol in Finland
- Practice of oral hygiene measures
- Demonstrations of periodontal instrumentation (scaling and root planing)

**Method:** Lectures 2 hours, demonstrations 7 hours (9h)

**Language:** English

## Department of Oral and Maxillofacial Surgery

### ***Lecture and practical course on dental splinting in connection with dental traumas, tooth transplantations and maxillomandibular fractures***

**Course director:** Prof. Kai Sundquist

**Content:**

- history of dental splinting
- demands of dental splints
- splinting of luxated teeth
- splinting of root fractured teeth
- splinting of maxillomandibular fractures
- complications of splinting

**Practical part:**

- construction of flexible wire-composite splint
- construction of rigid wire-composite splint
- construction of arch bar splint a.m. Erich
- construction of wire fixation a.m. Ernst

**Method:** Lectures 4 hours, demonstrations 2 hours (6h)

**Language:** English

## Department of Diagnostics and Oral Medicine

### **DIAGNOSTIC RADIOLOGIC TECHNIQUES**

**Course director:** Clinical dentist Jukka Rosberg

**Substance:**

- Indications and contraindications
- Normal anatomy and anatomical variations
- Intraoral dental x-ray techniques (bisecting-angle technique, paralleling technique, bite-wing technique and occlusal techniques)
- Extraoral x-ray techniques (panoramic techniques, Scanora® techniques)
- Digital x-ray techniques

**Method:** Clinical guiding (3 x 3 hours)

**Language:** English

## Department of Community Dentistry

### **ORAL HEALTH CARE IN FINLAND**

**Course director:** Prof. Hannu Hausen

**Organisation of oral health care in Finland (10 hours)**

- implementation of public oral health care
- regulations of oral health care
- visit to municipal health centre and MCH clinic

**Optional courses (available on demand)**

**Epidemiology** (up to 20 hours)

- basics of epidemiology

**Prevention strategies** (up to 10 hours)

- different strategies of preventing oral diseases

**Dental anxiety** (up to 10 hours)

- causes and prevalence of dental anxiety
- treatment of anxious child and adult patients

**Methods:** lectures, practicals, reading assignments, on-site visits

**Literature:** Widström E, Hiiri A: Oral health care in Finland. National Research and Development Centre for Welfare and Health. Themes 1/1998.

**Language:** English

**Table 1.**

<b>Exchange students from the University of Oulu, Institute of Dentistry in 1994-2001</b>			
	<b>Exchange program or source of funding</b>	<b>Target country</b>	<b>Duration of ex- change in months</b>
<b>1994</b>			
Ahokas, Crista	ERASMUS	Italy, Verona	6 mo
<b>1995</b>			
Jussila, Minna	ERASMUS	Belgium, Brussels	6 mo
Kaleva, Salla	ERASMUS	Italy, Siena	6 mo
Koivikko, Kirsi (1994)	ERASMUS	Italy, Verona	6 mo
Lepola, Saara	ERASMUS	Belgium, Brussels	6 mo
Penttinen, Tanja	ERASMUS	Belgium, Brussels	6 mo
Pirilä, Kirsi	ERASMUS	England, London	6 mo
Ronkainen, Maarit	ERASMUS	Italy, Siena	6 mo
Rosenqvist, Sari	ERASMUS	England, London	6 mo
Uusitalo, Aulis	ERASMUS	Belgium, Brussels	6 mo
<b>1996</b>			
Jokinen, Riikka	ERASMUS	England, London	6 mo
Laaksoharju, Susanna	ERASMUS	Belgium, Brussels	6 mo
Mäkelä, Hanna	ERASMUS	Belgium, Brussels	6 mo
Oikarinen, Kristiina	ERASMUS	England, London	6 mo
<b>1997</b>			
Kupsu, Susanna	ERASMUS	Italy, Siena	3 mo
Sundblom, Eva	NORDPLUS	Sweden, Umeå	12 mo
<b>1998</b>			
Ikonen, Anna	ERASMUS	Germany, Tübingen	Academic year 1998-1999
<b>1999</b>			
Hjerppe, Jenni	NORDPLUS	Sweden, Karolinska In- stitute	Academic year 1999-2000
Kempainen, Heli	ERASMUS	Italy, Siena	3 mo
Kinnunen, Sini-Kaari	ERASMUS	Greece, Thessalonica	3 mo
Konsi, Katja	ERASMUS	Italy, Verona	3 mo
Lepojärvi, Hanna	ERASMUS	Italy, Siena	3 mo
Liljeqvist, Marika	ERASMUS	Germany, Tübingen	Academic year 1999-2000
Rantavuori, Kari	ERASMUS	Italy, Verona	3 mo
Salonen, Vesa	ERASMUS	Ireland, Dublin	3 mo
<b>2000</b>			
Kaarla, Antti	ERASMUS	Italy, Verona	3 mo
Kukkula, Hannemari	ERASMUS	Germany, Tübingen	3 mo
Åhlman, Miikka	ERASMUS	Italy, Verona	3 mo
<b>2001</b>			
-			

**Foreign exchange students to the University of Oulu, Institute of Dentistry  
 in 1995-2001**

	<b>Exchange program or source of funding</b>	<b>Country of origin</b>	<b>Duration of ex- change in months</b>
<b>1995</b>			
Cosci, Barbara	ERASMUS	Italy, Siena	3 mo
Frati, Marta	ERASMUS	Italy, Siena	3 mo
Giannini, Domenico	ERASMUS	Italy, L'Aquila	3 mo
Lambardi, Silvia	ERASMUS	Italy, Siena	3 mo
Mosca, Giovanna	ERASMUS	Italy, L'Aquila	3 mo
<b>1996</b>			
Bellemo, Lorenzo	ERASMUS	Italy, Siena	3 mo
Chatzistavrou, Evangelia	ERASMUS	Greece, Thessalonica	3 mo
Illiano, Bernardo	ERASMUS	Italy, Siena	3 mo
Magnolfi, Sandro	ERASMUS	Italy, Siena	3 mo
<b>1997</b>			
Cianci, Giuseppe	ERASMUS	Italy, Siena	3 mo
Pini, Paolo	ERASMUS	Italy, Siena	3 mo
<b>1998</b>			
Bernardo, Giuseppe	ERASMUS	Italy, Siena	3 mo
Caparossi, Paola	ERASMUS	Italy, Siena	3 mo
Della Monica, Vincenzo	ERASMUS	Italy, Siena	3 mo
<b>1999</b>			
Arena, Gilberto	ERASMUS	Italy, L'Aquila	3 mo
Di Palma, Elena	ERASMUS	Italy, L'Aquila	3 mo
Forchini, Federico	ERASMUS	Italy, L'Aquila	3 mo
Coppola, Antonello	ERASMUS	Italy, Siena	5 mo
Frazzingarò, Giuseppe	ERASMUS	Italy, Siena	5 mo
Sicuro, Stefano	ERASMUS	Italy, Siena	5 mo
Zanarotto, Andy	Free mover	Italy, Verona	6 mo
<b>2000</b>			
Bertoldi, Alex	ERASMUS	Italy, Verona	3 mo
Buscemi, Giuseppe	ERASMUS	Italy, L'Aquila	4 mo
Comes, Dario	ERASMUS	Italy, Siena	4 mo
Donadelli, Enea	ERASMUS	Italy, Verona	3 mo
Gelio, Andrea	ERASMUS	Italy, Verona	3 mo
Maceroni, Luigi	ERASMUS	Italy, L'Aquila	4 mo
Marra, Giuseppe	ERASMUS	Italy, L'Aquila	4 mo
Petroni, Pietro	ERASMUS	Italy, Siena	4 mo
Pomarico, Maria Amelia	ERASMUS	Italy, L'Aquila	4 mo
Porretti, Elisabetta	ERASMUS	Italy, Verona	3 mo
Valbusa, Alberto	ERASMUS	Italy, Verona	3 mo
Zaccaria, Giuseppe	ERASMUS	Italy, Siena	4 mo
Zati, Daniele	ERASMUS	Italy, Verona	3 mo
<b>2001</b>			
Batalocco, Guido	ERASMUS	Italy, Siena	3 mo
Catalfamo, Lorenza	ERASMUS	Italy, Siena	4 mo
Cerulli Mariani, Giovanna	ERASMUS	Italy, L'Aquila	3 mo
Corsi, Marco	ERASMUS	Italy, Siena	4 mo
D'Amario, Maurizio	ERASMUS	Italy, L'Aquila	4 mo
di Geronimo, Michele	ERASMUS	Italy, Verona	3 mo
Lachana, Chrisoula	ERASMUS	Greece, Thessalonica	3 mo
Neumann, Mareike	ERASMUS	Saksa, Witten/Herdecke	5 mo
Veltri, Mario	ERASMUS	Italy, Siena	4 mo
Zanarotto, Andy	ERASMUS	Italy, Verona	3 mo

Table 2.

<b>Teacher exchange from the University of Oulu, Institute of Dentistry in 1996-2000</b>			
		<b>Target country</b>	<b>Department</b>
<b>1996</b>			
Alvesalo, Lassi	Prof.	Italy, Siena	Oral development and orthodontics
<b>1997</b>			
Raustia, Aune	Prof.	Italy, Siena	Prosthetic dentistry and stomatognathic physiology
<b>1998</b>			
Pirttiniemi, Pertti	Docent	Greece, Thessalonica	Oral development and orthodontics
Salonen, Maarit	D.D.S., Ph.D.	Italy, L'Aquila	Prosthetic dentistry and stomatognathic physiology
Sundquist, Kai	Docent	Italy, Verona	Oral and maxillofacial surgery
Tervonen, Tellervo	Docent	Italy, Siena	Periodontology and geriatric dentistry
<b>1999</b>			
Hietala, Eeva-Liisa	D.D.S., Ph.D.	Italy, L'Aquila	Pedodontics, cariology and endodontics
Hujanen, Erkki	D.D.S., Ph.D.	Greece, Thessalonica	Prosthetic dentistry and stomatognathic physiology
Lahti, Satu	D.D.S., Ph.D.	Italy, Verona	Community dentistry, dental public health
<b>2000</b>			
Ahopelto, Maire	Clinical counselling officer	Greece, Thessalonica	Student affairs and counselling
Larmas, Markku	Prof.	Italy, L'Aquila	Pedodontics, cariology and endodontics
Oikarinen, Kyösti	Prof.	Germany, Tübingen	Oral and maxillofacial surgery
Tjäderhane, Leo	D.D.S., Ph.D.	Greece, Thessalonica	Pedodontics, cariology and endodontics
Ylikontiola, Leena	D.D.S.	Italy, Verona	Oral and maxillofacial surgery
<b>Foreign exchange teachers to the University of Oulu, Institute of Dentistry in 1996-2000</b>			
		<b>Home University</b>	<b>Lecture topics</b>
<b>1996</b>			
Berkovitz, Barry	Prof.	King's College, London	The applied anatomy of the mouth The applied anatomy of the infratemporal fossa The periodontal ligament The mechanism of tooth eruption
<b>1998</b>			
Fonzi, Luciano	Prof.	University of Siena, Italy	Interocclusal recording into the maximum intercuspal position: materials and techniques
Stamoulis, Kostas	Dr.	University of Thessalonica, Greece	

## Section 20 Research and Publications

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### RESEARCH

#### **Main themes of the research at the Institute of Dentistry**

The research carried out at the Institute concentrates on the following main interest areas within the Departments:

#### **Community Dentistry (Professor Hannu Hausen)**

- Oral health promotion

#### **Diagnostics and Oral Medicine (Professor Tuula Salo)**

- Oral premalignant and malignant lesions
- Matrix Metalloproteinases in Oral Diseases
- Health 2000 -study: (Radiographic part of this comprehensive nation-wide epidemiological study)
- Radiographic Oral Findings and Death risk

#### **Oral and Maxillofacial Surgery (Professor Kyösti Oikarinen)**

- Oral and maxillofacial traumatology
- Dental implants

#### **Oral Development and Orthodontics (Professor Lassi Alvesalo)**

- Oral and craniofacial growth and development
- Dental genetics

#### **Pedodontics, Cariology and Endodontics (Professor Markku Larmas)**

- Regulation of caries progression

#### **Periodontology and Geriatric Dentistry (Professor Matti Knuuttila)**

- Oral and general health
- Polyol effects on mineralized tissues

#### **Prosthetic Dentistry and Stomatognathic Physiology (Professor Aune Raustia)**

- Temporomandibular joint (TMJ) disorders

## PUBLICATIONS IN REFEREED JOURNALS

### 1998

- Anttila S, Knuutila M, Sakki T. Depressive symptoms as and underlying factor of the sensation of dry mouth. *Psychosomatic Medicine* 1998;60:215-218.
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- Raustia A, Oikarinen K, Pyhtinen J. Densities and sizes of main masticatory muscles in patients with internal derangements of temporomandibular joint obtained by computed tomography. *Journal of Oral Rehabilitation* 1998;25:59-63.
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## Dissertations

### 1998

Kainulainen Tiina: Epitelial adhesion molecules and matrix metalloproteinases in oral precancers and squamous cell carcinoma.

Vaahtoniemi Hannu: Bacterial attachment to oral epithelial cells *in vivo*

### 1999

Bäckman Tuula: Acid-base balance, dentinogenesis and dental caries. Experimental studies in rats.

Grön Johan: Effects of human X and Y chromosomes on oral and craniofacial morphology. Studies on 46,XY females, 47,XYY males and 45,X/46,XX females.

Huomonen Sisko: The effect of impaired dentin formation on dental caries. An experimental study in the molars of growing rats.

Kivelä Jyrki: Human salivary carbonic anhydrase isoenzyme VI. Physiology and association with the experience of dental caries.

Mattila Pauli: Dietary xylitol in the prevention experimental osteoporosis. Beneficial effects on bone resorption, structure and biomechanics.

Sakki Tero: Lifestyle and oral health of 55-year-olds.

### 2000

Kantola Saara: Cancer tongue in Finland. Incidence, detection, survival and prognostic features.

Karjalainen Kaisa: Periodontal diseases, dental caries and saliva in relation to clinical characteristics of type I diabetes.

Knect Mirka: Psychological features characterizing oral health behavior, diabetes self-care and health status among IDDM patients.

Poikela Aila: Effects of unilateral masticatory function on craniofacial and temporomandibular joint growth. An experimental study.

Soikkonen Kari: Radiographic oral findings and death risk in the elderly.

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## VISITORS COMMENTS

There was universal evidence of commitment to research.

**GRANTS RECEIVED 1998-2000 (FMK)**

<u>Department</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	
Community Dentistry	58,000	49,200	69,000	17,200
Diagnostics and Oral Medicine	473,000	666,000	835,000	1,974,00
Oral Development and Orthodontics	185,000	175,000	146,000	506,000
Oral and Maxillofacial Surgery	130,000	150,000	665,000	945,000
Pedodontics, Cariology and Endodontics	1,049,000	923,000	961,000	2,933,00
Periodontology and Geriatric Dentistry	200,000	200,000	220,000	620,000
Prosthetic Dentistry and Stomatognathic Physiology	154,000	130,000	180,000	464,000
<b>Total (FMK)</b>				<b><u>7,618,200</u></b>

## Section 21 Quality Development or Continuous Improvement Policies/ Schemes

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### Introduction

Quality development is based on continuous evaluation of all the components of the curriculum – the entire staff, the contents of the courses and the student progress. Quality development is focused on education, research and dental care.

### Aims

- To train academic and clinical personnel
- To teach modern dental technology, promote good practice and enable remedial action
- To identify strengths and weaknesses; to rectify weaknesses and reward strengths

### Implementation

- Lectures, seminars and courses with local and foreign teachers and lecturers are organized periodically for staff, postgraduates and undergraduates
- Local and international meetings, conferences and congresses are organized
- Teaching staff members attend the international scientific meetings, conferences, congresses and courses abroad
- A number of the staff have had postgraduate training abroad
- Teaching and research staff meet periodically to discuss curriculum, educational philosophy, teaching and assessment methods
- Staff members have a close collaboration with multiple Faculties of the University of Oulu, the Departments of Oulu University Hospital, health care centres in Finland, the Universities of Helsinki, Turku and Kuopio and the following foreign universities (mainly research):
  - Harvard Dental School
  - University of Toronto
  - SUNY at Stony Brook
  - University of British Columbia, Vancouver
  - Imperial College School of Medicine, London
  - Kuwait University
  - University of Adelaide
  - University of Wisconsin
  - Hebrew University, Jerusalem
- Participation in the dental educational organizations within European Union countries (e.g. ADEE)
- Participation in the European Union's Advisory Committee on Dental Education

### Evaluation

Every year teaching staff undergoes attestation carried out by the Educational Affairs Office of the University. Teaching activities are assessed.

A continuous evaluation of teaching staff is obtained by the student responses in special questionnaires. Once a year students fill the questionnaires evaluating different disciplines – lectures, literature, teaching methods, practical course etc. These questionnaires are anonymous and important source of information. This helps to

give better education for our students. Their judgements can influence the study programme.

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## **VISITORS COMMENTS**

The visitors recognized the many ways in which quality management and improvement has been implemented in the Institute of Dentistry. They recommend a more specific and structured approach to outcomes from courses and assessments. Attendance at international workshops would perhaps facilitate both the development of evaluation techniques and would also assist with faculty development and in-service training in education and curricular development.

## Section 22 Visitors Comments and Executive Summary

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### Aims and Objectives

Visitors' conceptions:

The Institute of Dentistry of the University of Oulu is dedicated to

Training of general and specialist dentists for Northern and Eastern Finland

Maintaining the existing co-operation with the Medical Faculty in the undergraduate training programme

Scientific postgraduate training

Maintaining research co-operation with other faculties of the University of Oulu

Maintaining the high international profile in dental research

International student exchange

Continuing dental education

These were confirmed by senior staff.

### Programme Characteristics

The educational programme consists of two parts: two year preclinical and 3 year clinical education and training. The number of hours devoted to basic biological sciences are the same for the medical and dental curriculum.

Current curriculum modifications will result in a change from segregated departmental approach to an integrated theme-based approach.

The method of delivery is by lectures, practical exercises and patient clinics.

The overall facilities are excellent but major items of equipment, e.g.dental units, are likely to need replacement in the near future.

### Educational Approaches (Teaching Methods)

The initiation of the core analysis and establishment the Teaching Development Unit are indications of commitment to continuous improvement.

The particular emphasis of the Department of Community Dentistry on small group teaching, active student participation, reduction of summative assessment and student evaluation of programmes and teachers are examples of good educational practice.

### Examinations

The concern about the number and timing of written assessments in the 'old' curriculum led to changes, which mark the beginning of a structured approach and reduction in overall frequency.

Assessment of 'clinical competence' in the past has lacked definition and standardization. It will be necessary to develop a transparent model to assess 'clinical competence'.

Wide sampling and variety of formats is strongly recommended, as is the use of appropriate external examiners. The organisation of the final postgraduate examination already incorporates external influences.

## **Students**

The proposed changes in presentation of theory in the new curriculum may not achieve gains in knowledge acquisition unless the concept of active student learning is actively facilitated by staff.

Skills training does not begin until the 3<sup>rd</sup> year. The availability of patients and the approach of 'comprehensive patient care' result in multiple professional clinical exposure which exceed that of other EU dental schools and is to the benefit of students' skills and professional development.

## **Staff**

Student/academic staff-ratio is approx. 5:1 and nursing assistance is readily available.

## **International exposure**

The Institute of Dentistry is part of the SOCRATES-ERASMUS programme with multiple exchanges, particularly with Italian dental schools. The staff have strong international contact and co-operation.

## **Quality assurance and development**

The many ways in which quality management and improvement have been implemented in the Institute of Dentistry is recognized. A more specific and structured approach to outcomes from courses and assessments is recommended. Attendance at international workshops would perhaps facilitate both the development of evaluation techniques and of the faculty.

## **Overall statement**

### **STRENGTHS**

The patient-centred comprehensive treatment philosophy with flexible availability of multidisciplinary consultants.

The availability of patients.

The oral diagnosis and patient screening initiative which ensures selection of patients and exposure of students to real life practice situations.

The enthusiasm of the staff and the trust, which exists between all those involved in the educational process.

The universal commitment to postgraduate training.

The strong support and interaction with the University Hospital, the Dean of the Medical Faculty and the Rector of the University.

The research co-operation with non-medical faculties within the University of Oulu and also the international co-operation.

The clear defined role within the Public Dental Health System which obviates conflicts with other members of the dental profession.

The adaptability in meeting the challenge of working with the University, the University Hospital and the Municipality of Oulu and succeeding in protecting the educational priorities.

The willingness to embark on curriculum modification in response to perceived need for change.

## **WEAKNESSES**

The close association to the Medical Faculty in relation to high drop-off rates and the compression of specific dental elements from 5 into 3 years.

The lack of a systematic structured model to evaluate student's clinical skills.

The lack of definitive quality management (monitoring, analysis, action).

The student access to computer-assisted learning seems to be limited.

Inadequate staffing in certain areas.

Library funding.

## **RECOMMENDATIONS**

Review of the preclinical programme with an agreed reduction of some elements of courses to allow room for an increase in dentally related **subject**

Continuation of curricular modification, intensification of review and evaluation procedures

Development of relationships with international educators (to prevent the repetition of old mistakes)

Complete but gradual restructuring of assessment practices

Reinforcements of the role of **oral diagnosis and treatment** in undergraduate training

Maintenance and development of the comprehensive patient care/multidisciplinary approach (additional staffing)

Fostering of the unique mixture of self confidence and determination to be the best which pervades the staff and students in Oulu at this time