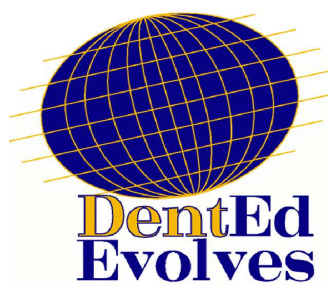




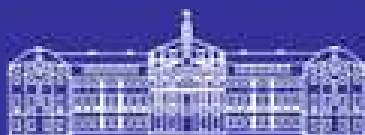
Medizinische
Einrichtungen
Münster

DentEdEvolves School Visit

25.- 29.11.2000



**Zentrum für Zahn-,
Mund- und Kieferheilkunde
Münster**



Westfälische
Wilhelms-Universität
Münster

DentEdEvolves Project No: 10059-CP-1-2001-1-IE-ERASMUS-

Financial Agreement: 28374-IC-4-1999-1-IE-ERASMUS-EPS-1

Acknowledgement

The report on hand, describing the present teaching situation at the Dental School in Muenster could only be realized with the help of many colleagues from our own faculty, the faculty of Sciences, the University administration office and last but not least our students.

In the name of the Dental Centre I would like to thank everybody for the trouble taken and the time spent.

An intensive discussion has already been initiated. The upcoming peer-evaluation will certainly help us to overcome our myopia and to expose the weaknesses in teaching and organization.

Prof. Dr. Dr. F. Bollmann

Visitors

Chairman	Jindrich Pazdera	Oral and Maxillofacial Surgery	Olomouc	pazderaj@fnol.cz
Rapporteur	Fons Plasschaert	Restorative & Education & Music	Nijmegen	A.Plasschaert@dent.kun.nl
Visitor 3	Roger Monteil	Oral pathology	Nice	monteil@unice.fr
Visitor 4	Gunnel Svensatter	Education	Malmo	gunnel.svensater@od.mah.se
Visitor 5	Jacinta McLoughlin	Public Dental Health	Dublin	JacintaMcLoughlin@dental.tcd.ie
Regional coordinator	Paul Dowling	Orthodontics	Dublin	paul Dowling@dental.tcd.ie
Contact person	Friedhelm Bollmann	Prosthodontics	Muenster	bolllmaf@uni-muenster.de

Table of Contents

Acknowledgement	2
Visitors	2
Table of Contents	3
Section 01 Introduction and General Description	6
1.1 Welcome to Muenster	6
1.2 The University of Muenster	6
1.2.1 History	6
1.2.2 Administrative Structure of the University	6
1.2.3 Study	9
1.2.4 International Contacts	10
1.2.5 Research	10
1.2.6 Facilities of the University	10
1.3 Faculty of Medicine / Clinics	11
1.3.1 Dental School	11
Section 02 Facilities	13
2.1 Site Plan of the Clinics	13
2.2 The Structure of the Dental School	14
2.2.1 Level 02 Installation	15
2.2.2 Level 03 Patient Treatment	16
2.2.3 Level 04 Installation	17
2.2.4 Level 05 Teaching and Research	18
2.2.5 Level 06 Installation	19
2.3 Central Facilities	20
2.3.1 Professional Dental Technician Lab (level 05)	20
2.3.2 Photographic Studio (level 03)	21
2.3.3 TV-Studio (level 05)	22
2.3.4 Graphic Studio (level 05)	22
2.3.5 Labs for Research (level 05)	23
2.3.6 Administration (level 03)	23
2.4 Teaching Facilities	24
2.4.1 Lecture Theatres (level 05)	24
2.4.2 Information Technology, Cip-Pool	26
2.4.3 Labs for Students (level 05)	28
2.4.4 Dental Chairs for Students (level 03)	28
2.4.4.1 Department of Conservative Dentistry	28
2.4.4.2 Department of Periodontics	28
2.4.4.3 Department of Prosthodontics	28
2.4.4.4 Department of Orthodontics	28
2.4.4.5 Department of Maxillo-Facial and Oral Surgery	28
2.4.4.6 Dental Radiology	28
2.5 Library	28
Section 03 Organisational and Administrative Structures	28
3.1 Capacity of Medical Education in Germany	28
3.2 Number of Graduates of German Universities (1980-1994) in Dental Medicine	28
3.3 The Structure of the Medical Faculty	28
3.4 Structure for Dental Care	28
3.5 The Dental Curriculum	28
3.5.1 Number of the Newcomers, Current Students and Graduates since 1995 to 1999	28

3.5.2	Present Schedules of the Dental School	28
Section 04	Staffing	28
4.1	List of Academic and Non-academic Staff	28
4.2	List of Chairpersons and Senior Assistents	28
4.3	Staff of Central Facilities	28
Section 05	The Biological Sciences	28
5.1	Biochemistry inclusive Molecular Biology	28
5.2	Genetics	28
Section 06	Preclinical Sciences	28
6.1	Physics	28
6.2	Chemistry	28
6.3	Anatomy incl. Histology	28
6.4	Physiology	28
Section 07	Para-Clinical Sciences	28
7.1	Pharmacology	28
7.2	Microbiology, Hygiene and Public Health Issues	28
7.2.1	Medical Microbiology	28
7.2.2	Hygiene	28
7.3	General Pathology	28
Section 08	Human Diseases	28
8.1	General Medicine	28
8.2	General Surgery	28
8.3	Dermatology	28
8.4	Otorhinolaryngology	28
Section 09	Orthodontics and Child Dental Health	28
9.1	Orthodontics	28
9.2	Child Dental Health	28
Section 10	Public Dental Health and Prevention	28
Section 11	Restorative Dentistry	28
11.1	Conservative Dentistry	28
11.2	Endodontics	28
11.3	Prosthodontics	28
11.3.1	Introduction	28
11.3.2	Preclinical Education	28
11.3.3	Clinical Education	28
11.3.4	Dental Material Science	28
11.3.5	Network of the Department of Prosthodontics	28
11.3.6	Postgraduate Education	28
11.3.6.1	"Specialist for Prosthodontics"	28
11.3.6.2	Training of foreign colleagues	28
11.4	Occlusion and Function of the Masticatory System.	28
Section 12	Periodontology	28
12.1	Undergraduate Student Program	28
12.2	Postgraduate Student Program	28
12.3	Dental Hygiene Program	28
Section 13	Oral Surgery and Dental Radiography and Radiology	28
13.1	Oral Surgery	28
13.2	Radiography and Radiology	28
Section 14	Oral Medicine and Oral Pathology	28
14.1	Oral Medicine	28
14.2	Oral Pathology	28
Section 15	Dental Emergencies and Special Needs Patients	28

15.1	Dental Emergencies	28
15.2	Care of Special Need Patients	28
Section 16 Behavioural Sciences		28
16.1	Behavioural Sciences	28
16.1.1	Psychosomatics in Dentistry	28
16.2	Communications	28
16.3	Ethics & Jurisprudence, Practice Management	28
Section 17 Examinations, Assessments and Competences		28
Section 18 Other Influences		28
18.1	Regional Oral Health Needs	28
18.2	Evidence Based Treatments	28
18.3 and 18.4	Involvement in other University Activities and Sports/Recreation	28
18.5	Student Selection Procedures	28
18.6	Labour Market Perspectives	28
Section 19 Student Affairs		28
19.1	Basic Data from Dental Schools	28
19.2	List of Different Postgraduate Courses	28
19.3	List of Different Auxillary/Technology/other Courses	28
19.4	Description of Student Counseling Services in the University	28
Section 20 Research and Publications		28
20.1–20.3	Publications / Textbooks / Chapters in Books (1995–1999)	28
20.4	Grants received (>1000 EURO, 1995–1999)	28
20.5	Higher Degrees Awarded (1995-1999)	28
20.6	Scientific Awards (1995 to 1999)	28
20.7	Innovative Diagnostic and Therapeutic Methods inaugurated by staff (1995 to 1999)	28
Section 21 Quality Development		28
Section 22 Visitors Comments and Executive Summary		28

Section 01

Introduction and General Description

1.1 Welcome to Muenster

Muenster, the 1200 year old Westfalian capital represents the economic heart of the Muensterland.

The city with a total population of 279.000 hosts about 45.000 students making the university the third largest in Germany. The university's facilities are spread out over more than 100 buildings in the city. With a staff of 9.000 including 3000 academics, the University is the regions's biggest employer and an important locational factor in the Muensterland.

Around the city "full of youth" a number of special sights are to be found. Among these there are highlights such as the baroque architecture by J. C. Schlaun, the famous Prinzipalmarkt, the cathedral and over one hundred water castles. A historical land mark was set in 1648 in the "Friedenssaal" when representatives from all over Europe terminated the thirty years war. In this way, Muenster was one of the godparents of the idea of a united Europe.

1.2 The University of Muenster

1.2.1 History

Compared to other classical German institutions of higher education, the University of Muenster is still relatively new.

Its foundation stone was laid in 1780 by Franz Wilhelm Freiherr von Fuerstenberg. He was canon and vicar-general, vested with papal and imperial foundation prerogatives. As was customary in those days, the Faculties of Theology, Philosophy, Law and Medicine constituted the nucleus of the University. 17 professors began lecturing on their respective subjects.

As a result of the union of Catholic Westphalia with Protestant Prussia, Muenster's highest educational institution forfeited its university status in 1818, when it was demoted to an academy of philosophy and theology.

Muenster's alma mater did not recover its university status until 1902, when the German Emperor William II gave orders for the institution to be founded anew. There was a rapid increase in the student's population. Teaching and research flourished until all university activities were brought to a standstill by the rise of National Socialism and the outbreak of World War II.

In 1945 the buildings of the University lay in ruins. The local inhabitants rapidly set about rebuilding their city, and teaching and research programmes were resumed shortly after the end of the war. From that time onwards, the University expanded continuously until it assumed its present dimensions.

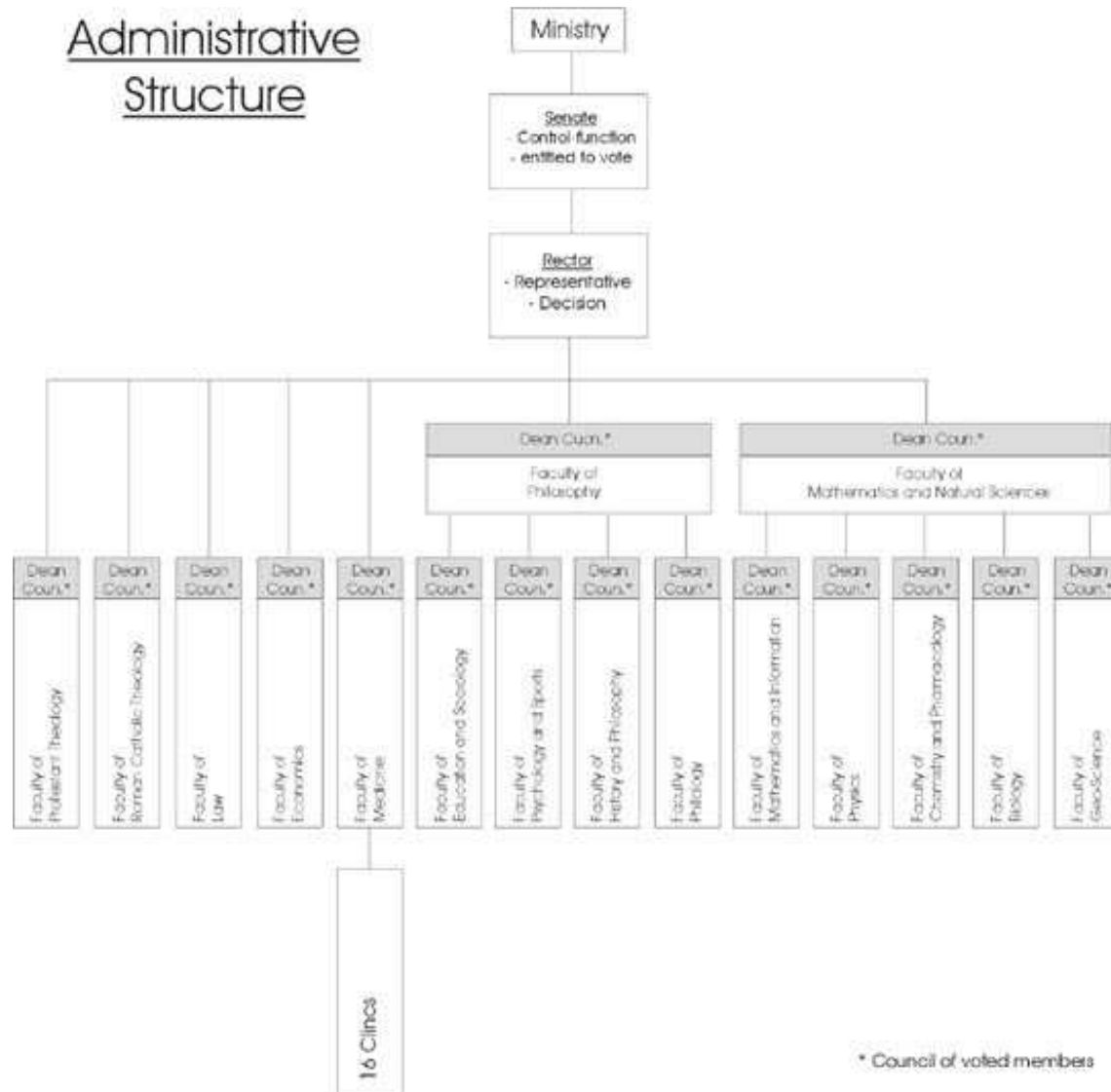
Now every year over 5000 successful graduates leave the alma mater. Pure and applied research is conducted at over 250 departments.

1.2.2 Administrative Structure of the University

The University has a central organisation including the Senate, the Rector, the Chancellor, Central Academic Facilities, the Administration, different departments and the Central Operating Units. The Senate is in charge of all matters concerning research and teaching, inasmuch as such matters are of fundamental importance or affect the University as a whole. The Rector (Rektorin/Rektor) is the external representative of the University. He/she is the chairman/chairwoman of the Rector's Office (Rektorat) and the Senate, which elects him/her for a four-year term. The Rector's Office manages the University. It prepares the meetings of the Senate and implements its decisions. The Chancellor (Kanzlerin/Kanzler) is in charge of the administration (Verwaltung). He/she is the budget commissioner and the employer of the entire non-academic staff.

The University is divided into departments known as Fachbereiche, which constitute the basic organisational units of the institution. The Zentrale Wissenschaftliche Einrichtungen (Central Academic Facilities), by contrast, are organised along interdisciplinary lines, and the Zentrale Betriebseinheiten (Central Operating Units) provide services for the entire University.

The student body is represented by the Student Parliament and the Allgemeine Studierendenausschuss (AstA). The University's Gleichstellungsbeauftragte (Commissioner for Equal Treatment) is elected by the women's conference. Her job is to ensure that men and women are placed on an equal footing in institutions of higher learning. The entire staff of the institutions of higher learning is represented by academic and non-academic staff councils known as Personalräte.



1.2.3 Study

The University of Muenster offers an exceptionally wide range of subjects and combinations of subjects. There are almost 100 different courses of study in the humanities, medicine, and the social and natural sciences.

The following list illustrates the great variety of subjects:

Protestant Theology

Roman Catholic Theology

Law

Economics

Business Studies
Economics

Information
Management

Musicology

Philosophy
Ancient and Early
History

European Ethnology

Mathematics and Information

Technology
Information Technology

Mathematics

Medicine

Medicine
Dental Medicine

Psychology

Education

Physics

Geophysics
Physics
Craft, Design and
Technology

Social Studies

Music
Political Science
Journalism and
Communication-Studies
Sociology
Textile Design
Political Economy

Languages and Literature

Egyptology
General Linguistics
Ancient Oriental Studies
English
Arabic Studies
Baltic Studies
German
Indo-European
Linguistics

Chemistry

Chemistry
Home Economics
Food Chemistry
Mineralogy
Pharmacy

Biology

History/Philosophy

Applied Cultural Studies
Archaeology
Byzantine Studies
Ethnology
History
Classics
Art History
Medieval Latin

Indian Studies
Coptology
Dutch
Nordic Studies
Latin American Studies
Roman Languages
Slavonic Studies
Sinology

Earth Sciences

Geography
Geology/Paleontology
Landscape Ecology

Physical Education

Sport Studies
Physical Education

Muenster provides also a certain number of specialities. There has been a tradition of long standing at the University of Muenster to maintain good relations to the nearby Netherlands. Scholars have therefore organised an interdisciplinary, binational course of study known as 'Netherlands-Germany Studies.' Furthermore there is a project called 'Science and Practice' which enables undergraduates – especially arts students – to acquire additional practical qualifications. This project

has also originated an autonomous subsidiary subject course known as 'Applied Cultural Studies'.

Law students can take a four-term course in English or French. This course, which is known as 'Subject-Specific Foreign Language Training for Law Students' runs parallel to regular courses in law. Students reading other subjects can benefit from subject-specific foreign language courses offered by the University's Language Centre.

1.2.4 International Contacts

Muenster's academics have contacts that extend to every continent. There are official cooperation agreements with over 400 universities and scientific bodies all over the world.

At present, some 3000 foreign students from over 100 countries are enrolled at the University. There is also a steady increase in the number of people who study for a limited period in Muenster as a part of various European exchange programmes. An increasing number of Muenster's students spend some time studying abroad.

The European Union's exchange programmes and the numerous twinning arrangements between universities offer a wide range of opportunities to students who are interested in a sojourn abroad. 'Die Bruecke' (the bridge) is the university's International Community Centre. Here students from all over the world have a chance for regular rendez-vous. The programme includes counselling as well as international educational work and cultural activities.

In 1995, a follow-up bureau was set up in the 'Bruecke' in order to ensure that graduates can keep in touch with Germany after returning to their home countries.

1.2.5 Research

In addition to a wide range of subjects, the university of Muenster can offer an equally wide variety of research programmes. Almost 600 professors and over 2000 other academics are engaged in pure and applied research.

Many branches of knowledge are highly developed in Muenster.

Examples of inquiry are basic research in chemistry, biomedical cell and membrane research, surface analysis, nanotechnology and reproductive medicine.

Knowledge transfer from the University into economy plays a key-rôle.

Medical and dental technology or the development of chemo- and biosensors are only a few examples of the effective co-operation between academic researchers and the business community. More and more graduates are setting up firms, some of which are located in a science park in the immediate vicinity of the university's natural science institutes.

1.2.6 Facilities of the University

Muenster's University and Regional Library (ULR) houses more than 2.2 million volumes of scientific literature, including 9,600 journals (over 1,400 in digital form), and more than 400 electronic databases. Every year, over one million volumes are borrowed, not only by members of the University, but also by ordinary citizens from the city of Muenster and its environs. As the regional library for Westphalia, the ULR collects and files all the literature published in or about this part of Germany.

The Centre for Informations Processing is in charge of the University's information technology infrastructure and advises students and staff on all matters relating to data processing.

Several thousand computers are connected to the University's internal data and communications network. The people who use these computers can choose from a wide variety of services. Searching worldwide for information in the Internet is just as much a matter of course as the evaluation of readings on high-performance computers.

1.3 Faculty of Medicine / Clinics

Muenster's university clinic is one of the big German hospitals which offer the full range of medical services. The history of the Medical Faculty began more than 200 years ago with the appointment of just one single professor.

Every year, over 70 clinics provide several hundred thousand people with out-patient and in-patient treatment. Sophisticated medical technology and topflight specialists ensure that patients get the best possible diagnostic and therapeutic treatment in many domains.

Medical services are closely interlinked with clinical research, a domain in which the University has acquired an outstanding international reputation. Celebrated scientists such as Gerhard Domagk, who received the Nobel Prize in 1939 for the discovery of sulphonamides, have in the past played an important part in establishing the reputation of the Medical Faculty. Today specialists co-operating across subject boundaries are gaining fresh insights into strokes, inflammatory processes, and cardiovascular diseases. They are also pushing ahead with research in the field of transplant medicine.

The academics who work at the clinic are helping to enhance the prospects of finding a cure for children suffering from leukaemia. The new Bone Marrow Transplant Centre enables doctors to provide better treatment for bone marrow cancer and other types of cancerous growths. Many research activities are combined at the Interdisciplinary Clinical Research Centre, one of eight establishments of this kind in Germany.

Of course the approximate 140 professors and 850 other academics in the faculty of medicine also train prospective doctors. At present some 3,500 future doctors are studying in the faculty of medicine, which is one of the biggest in Germany.

1.3.1 Dental School

The Dental School was founded by the private dental practitioner Max Apfelstaedt in 1906. The first schedule included the subjects anatomy and pathology of the teeth, diseases of the teeth and the mouth, dental technologies, conservative dentistry and oral surgery.

In 1909, the Dental Curriculum was extended from 4 to 7 terms by the Prussian Minister of Education and Medical Affairs. There was also a separation into two parts: the preclinical and the clinical part. There were 95 students of dentistry at the time. In 1920, the department of orthodontics was introduced, an innovation in Germany. In 1924, the department of dental care for children and youth was established. In 1941, the continuing extension of the Dental School was interrupted by the bombs of World War II. In 1944, the clinic was partially rebuilt, but only to be destructed again a few months later. The whole medical faculty was evacuated to Bad Salzuflen. In 1948, rebuilding of the Dental School was started. At that time only students who

helped to rebuild the Dental School were allowed to study. In 1962, clinical work and education were fully functioning again with 150 preclinical students and 110 clinical students.

In 1980, the Dental School moved into a new building of 13,200 m² with 227 dentist's chairs (150 for students) and 450 laboratory workplaces. It was intended to enroll 150 students per year. In fact more than 200 students/year registered with the result that there were times with more than 1,200 students registered in dentistry. To manage all the tasks two chairs of conservative and prosthetic dentistry each were established. In addition, there were chairs of oral and maxillofacial surgery, periodontology, orthodontics, and dental materials. Moreover, independent institutes for dental radiology and experimental dentistry were founded as well as a research programme for psychopathology and psychosomatic dentistry.

With the intention of reducing the number of students as well as costs new structures were introduced in conjunction with drastic job slashes in all disciplines. Today there are only five chairs: conservative dentistry, periodontology, oral and maxillofacial surgery, orthodontics, and prosthetic dentistry. The institutes for experimental dentistry and dental radiology have been subordinated to the chair of oral and maxillofacial surgery, the institute for dental materials has come under the direction of prosthetic dentistry. Nowadays, 96 new students register each year (2 x 48).

In 1986, the German University Law required the restructuring of the medical faculty into centres. Since then a board has been running the "Zentrum für Zahn-, Mund- und Kieferheilkunde" (Dental Care Centre). All chairpersons, two officers of the residents and one representative of the non-medical staff are members of the board. The Head is elected by the members for a period of three years.

Currently, there are political considerations on further reductions concerning university training in the six Dental Schools in North Rhine-Westphalia (NRW). Therefore, further changes in the Muenster Dental Care Centre are conceivable.

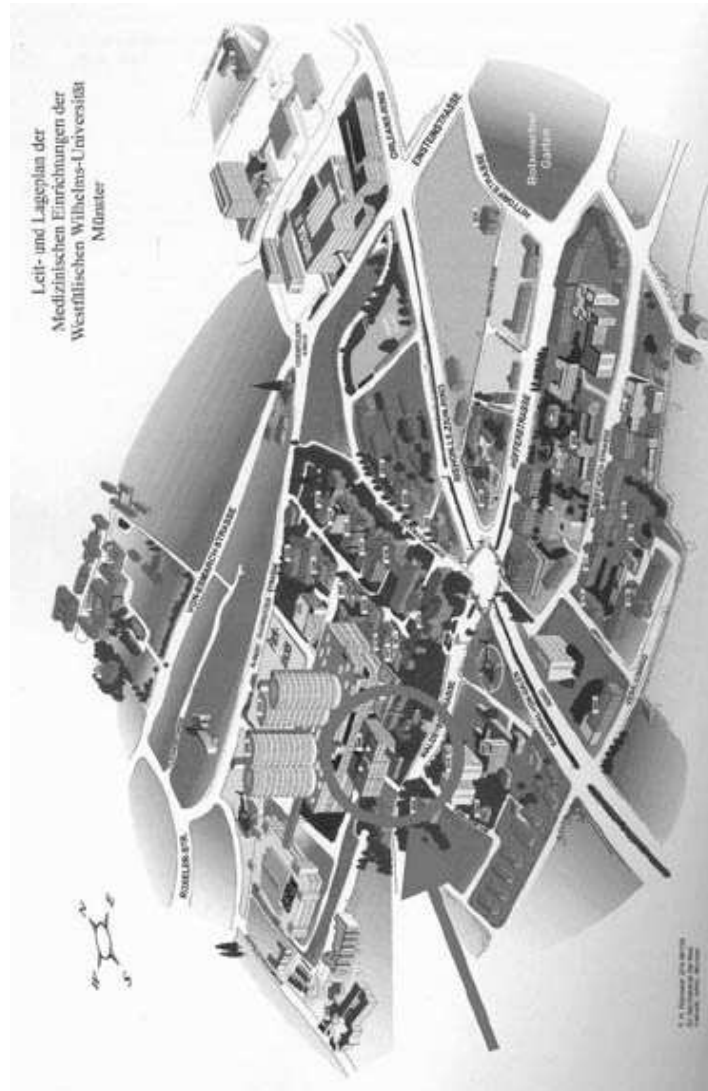
Visitors comments

The Dental School in Münster is very favourably located, in the centre of the university campus as one of the 16 centres of the Medical Faculty next to the main academic hospital and Library of the Medical Faculty. This fosters integration with, instead of separation from the Medical Faculty.

Section 02

Facilities

2.1 Site Plan of the Clinics



Site Plan of the Centre

2.2 The Structure of the Dental School

The Dental School is divided into five departments:

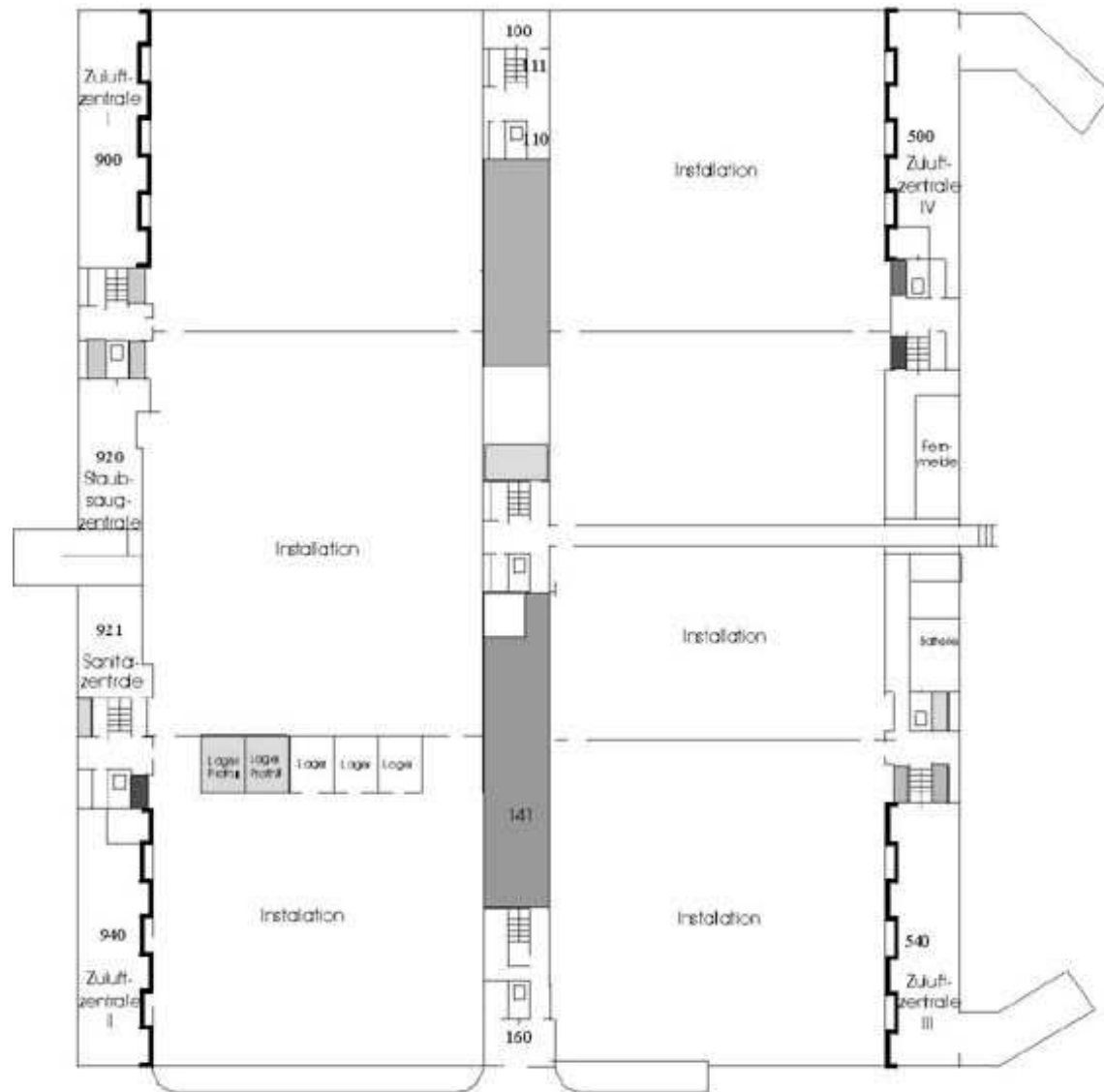
- Department of Maxillo-Facial and Oral Surgery
- Department of Conservative Dentistry
- Department of Periodontology
- Department of Prosthodontics
- Department of Orthodontics

The Dental School has direct connections to the Central Clinic for interdisciplinary examination of patients and for the in-patients of the Department of Maxillo-Facial and Oral Surgery.

The building of the Dental School has five levels.

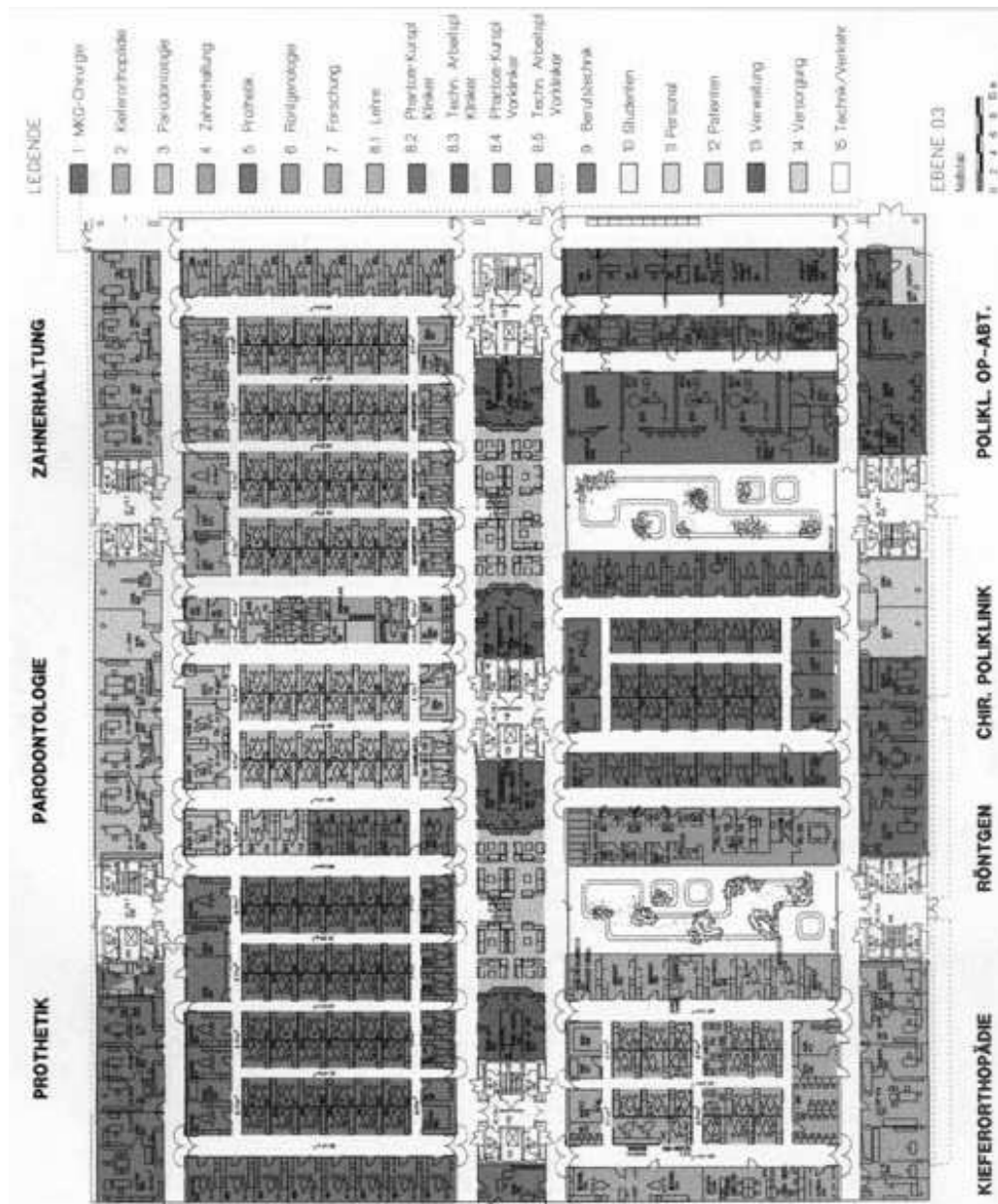


2.2.1 Level 02 Installation



2.2.2 Level 03 Patient Treatment

On level 03 there are situated: five departments (policlinics) for treating out-patients, the photographic studio and the administration office for patient's acceptance

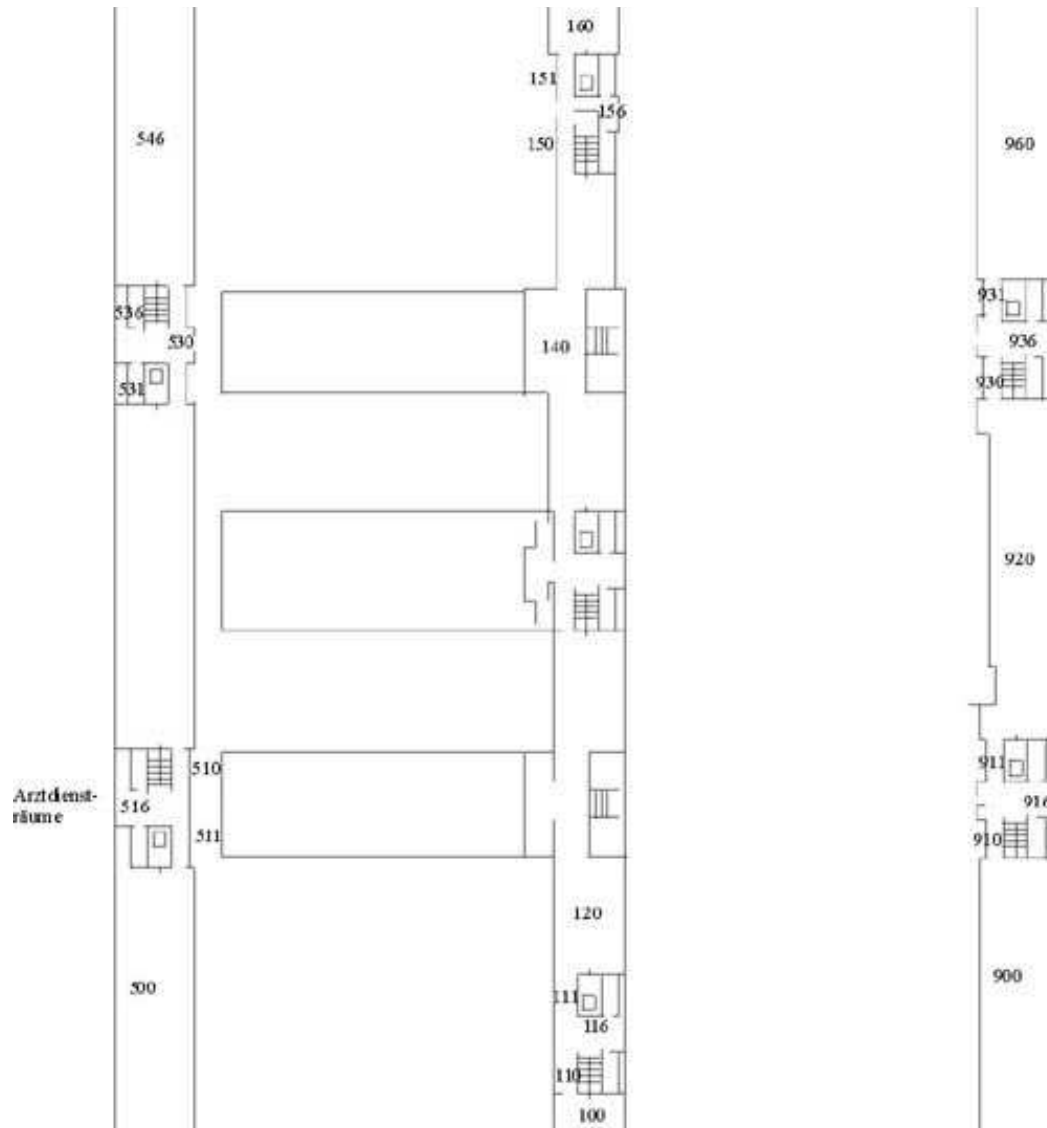


Level 03

Each department has a waiting area and its own front desk. On the whole 227 dental chairs are available for ambulatory dental care. 122 of these are used exclusively for student treatment.

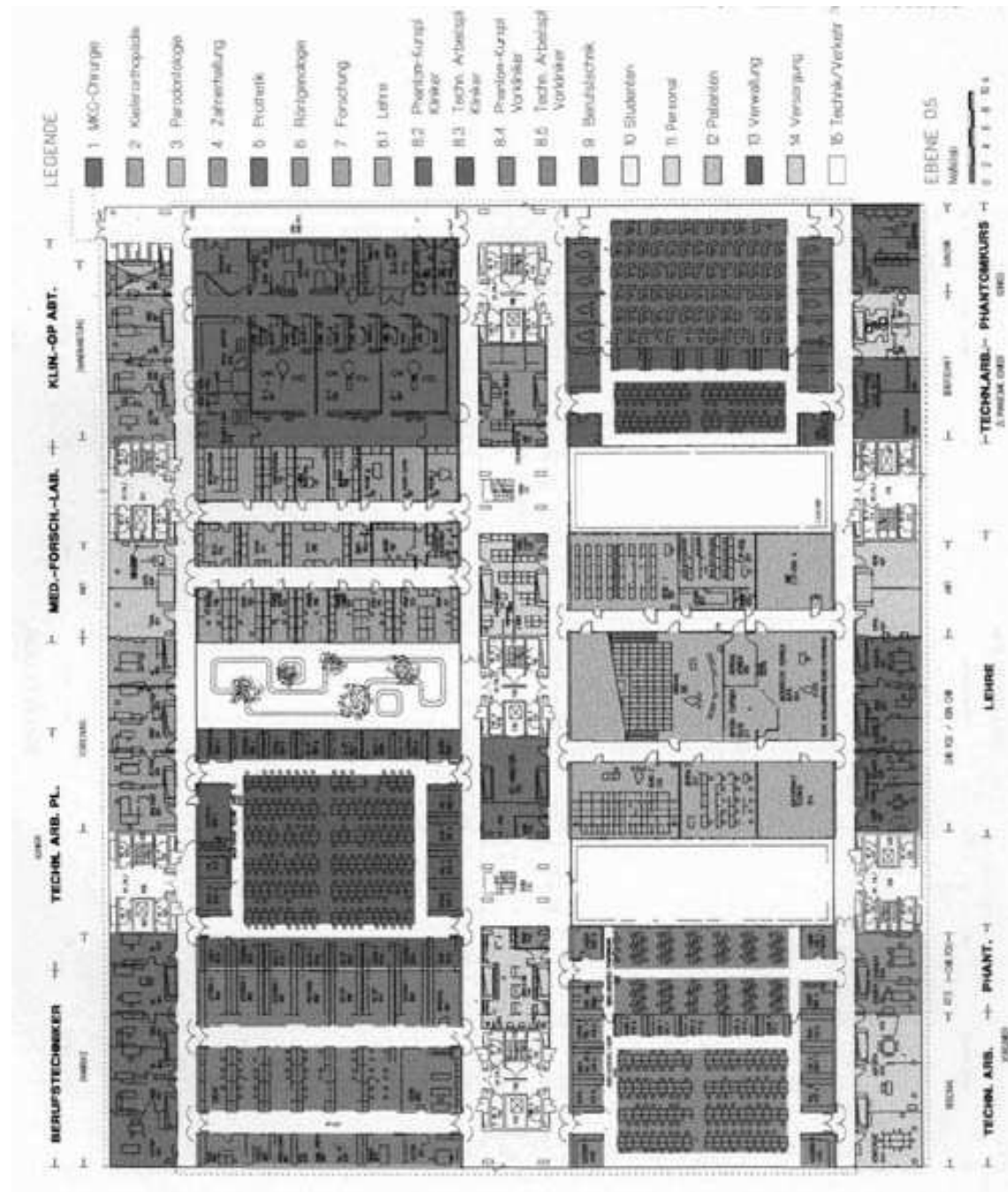
2.2.3 Level 04 Installation

On level 04 the offices for the junior assistants and the day-rooms for the nursing staff are situated.



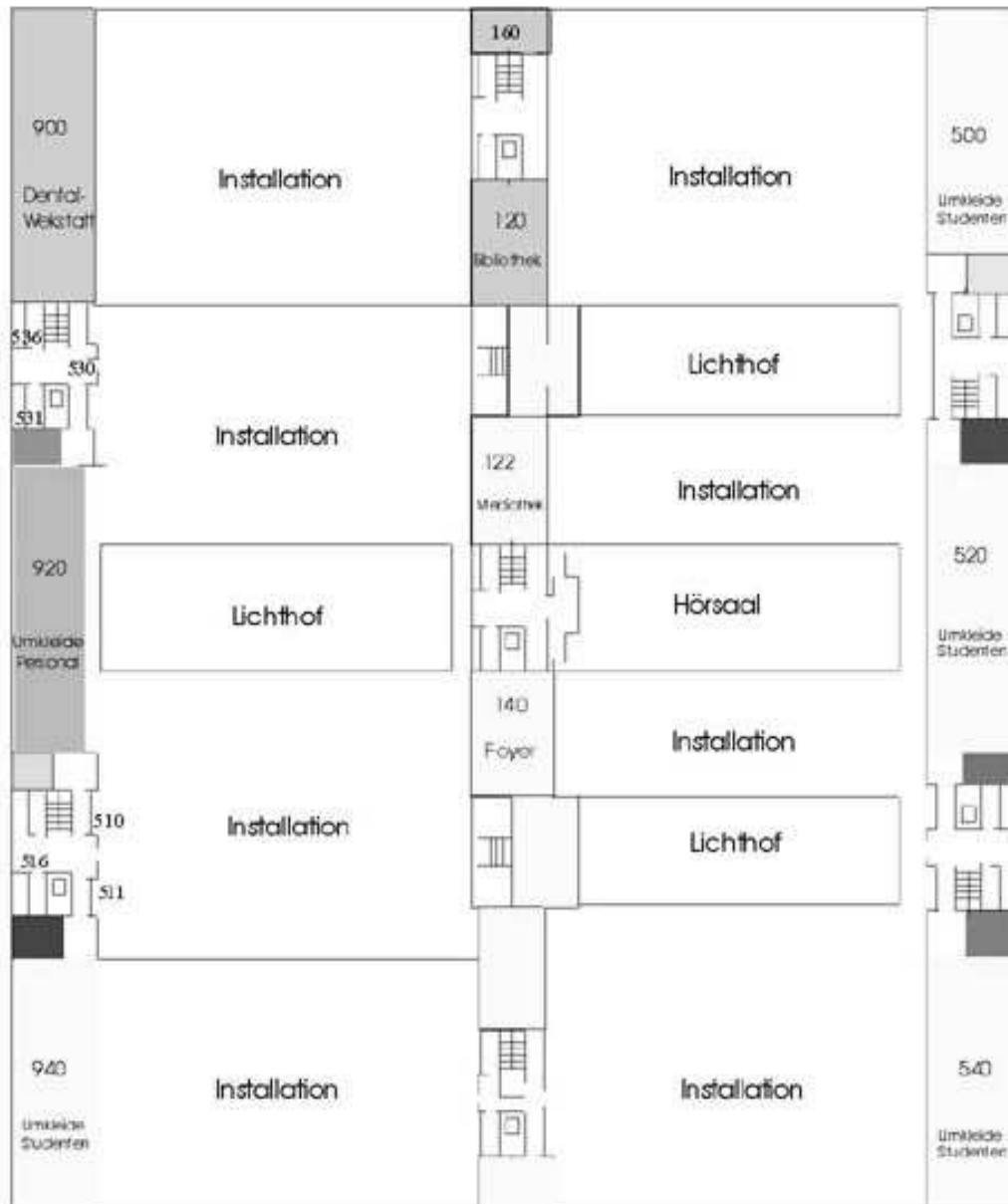
2.2.4 Level 05 Teaching and Research

The level 05 is the teaching and research floor.



Level 05

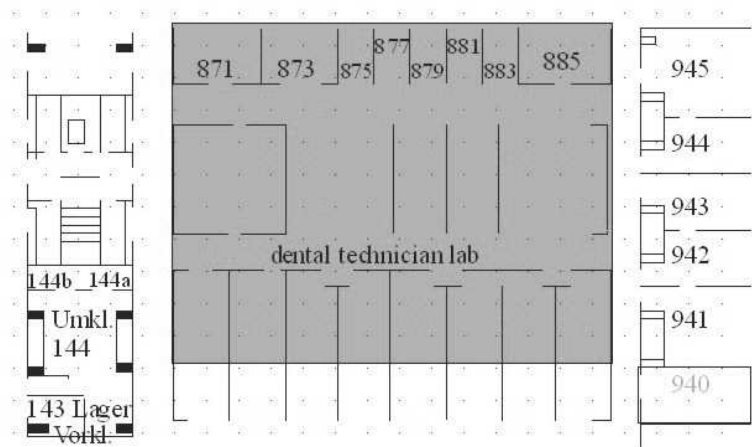
2.2.5 Level 06 Installation



2.3 Central Facilities

Central facilities are the photographic studio, the TV-studio, a graphic design studio, the dental technician lab, a Cip-pool (CIP-Computer Investment Program), the central organisation for material order and for patients administration. These central facilities can be used by all staff.

2.3.1 Professional Dental Technician Lab (level 05)



Number of rooms: 19

Number of working places:
30 fixed prosthodontic
25 removable prosthodontic

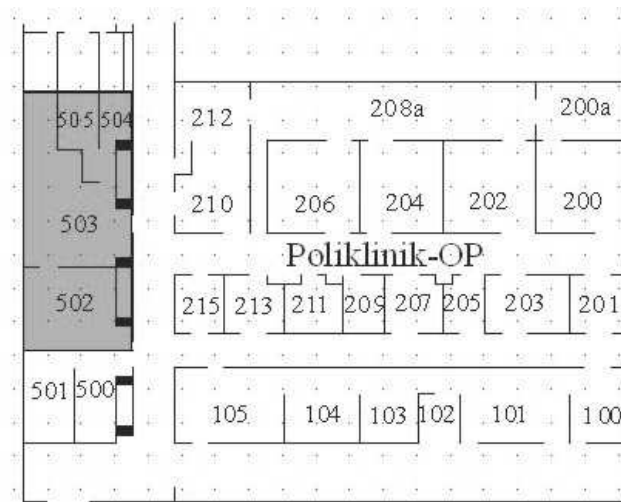
The dental technicians work for the academic staff and some of the dental technicians work for students.

Tasks:

Full and partial denture prosthetics
Maxillo-facial prosthodontics
Model casting
Epithesis
All variations of splints
Instruction of students and apprentices

Crowns and bridges
Inlays
Implant dentistry
All variations of telescopic attachments
Orthodontics equipment
All variations of ceramics and dental plastics

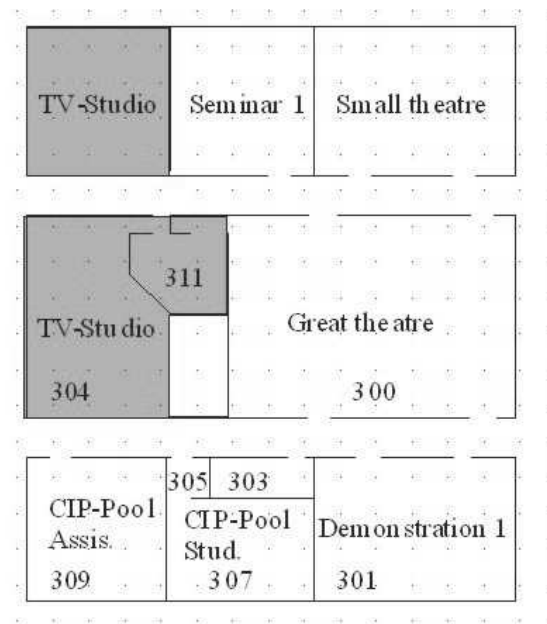
2.3.2 Photographic Studio (level 03)



Tasks:

- Documentation of orofacial pathological changes and abnormal development such like :
 - orthodontic profile and frontal photos
 - intraoral photos of the dentition and the mucosa
 - all kinds of fractures
 - disfiguring diseases
 - prosthetic work
- Documentation of operative procedures
- Reproduction of special copies (coloured and black and white)
- Making slides of x-rays
- Slides for lectures, publications etc.
- All kind of darkroom-work

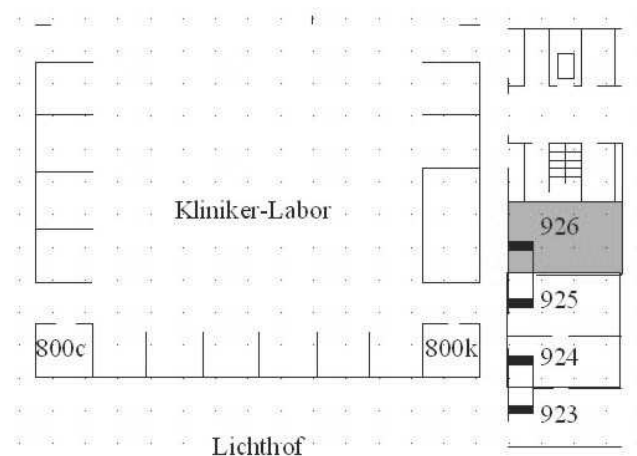
2.3.3 TV-Studio (level 05)



Tasks:

- Live-transfer of surgeries or dental treatments to the lecture theatres
- Production of videos
- Care for the equipment

2.3.4 Graphic Studio (level 05)

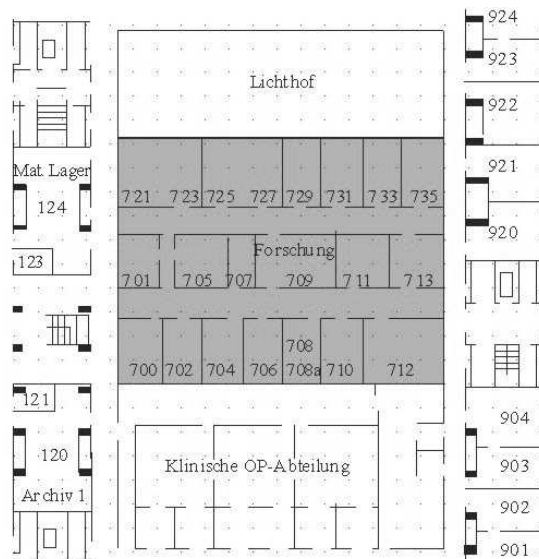


Tasks:

- Graphical illustration for lectures, seminars, publications and videos

2.3.5 Labs for Research (level 05)

The research area covers over 470 m²

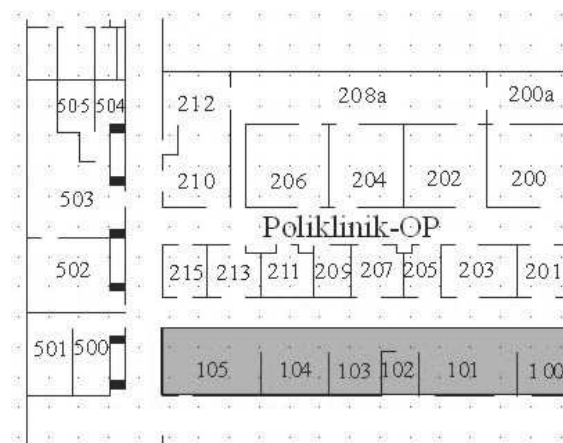


Tasks:

- Analysis
- Microscopy
- Histology
- Microbiology
- Caries-research
- Laser-technic
- Preparation of samples
- scanning electron microscope
- Testing of material
- Myography

2.3.6 Administration (level 03)

For the patients` adminstration there is a separated Ethernet Network on the base of the administration of the Central Clinic.

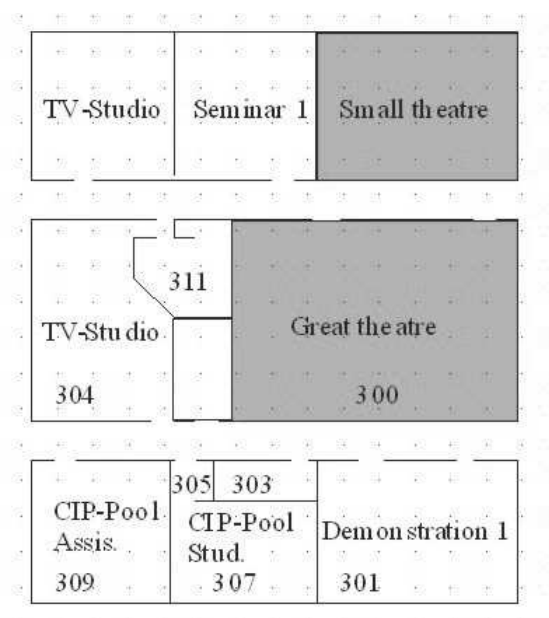


Tasks:

Central registration and administration of all patient`s datas of the Dental School.

2.4 Teaching Facilities

2.4.1 Lecture Theatres (level 05)



There are 4 lecture theatres.

Room	Seats	size in m ²
Great Theatre	168	200
Small Theatre	80	100
Seminar 1	20	60
Seminar 2	80	100

The great theatre is equipped with a computer working station with internet-connection and the possibility of computer-supported demonstrations.

Visitors comments

The visitors were really impressed by the abundant facilities within the building, including central facilities, number of laboratory places and dental chairs for students, laboratories for research and chairs for staff, etc. At the same time it is recognised that the building was intended to have an annual enrolment of 150 students a year, whereas the actual intake is at present 96 students a year (2 x 48), and that the equipment (clinical and pre-clinical dental units and lab facilities) has not been renewed in the last 20 years. In this period a lot of innovations have been introduced in clinical dentistry as in other areas of medicine.

The clinical facilities were found to be satisfactory. The systems for central sterilisation of dental instruments as well as the infection prevention measures throughout the clinics are up to present standards. The pre-clinical facilities, although adequate, are outdated and should be renewed. Proposals for comprehensive upgrading and refurbishment of the facilities were provided to the visitors, these proposals await regional government funding, which is dependent on decisions about other dental schools.

It is recommended that changes to computer based administration systems, both for patient records (treatment planning and treatment progress) as well as for student records (ratings and progress) should be initiated.

2.4.2 Information Technology, Cip-Pool

There is no complete network which covers the whole Dental School. Each department has its own network working by itself without reciprocal connection .

In construction is a network for the whole building with optical cables maintained by the University. This will be finished in spring 2001. The hardware environment is inhomogeneous depending on the time of the purchase. There are different types of PC's like 486, 386, Pentium, Pentium II and Pentium III. Most of the PC's are running windows 95, 98 and NT. Apple Computers are of no importance.

IT in dental education












- The dental school has its own facilities for the academic staff. Each department has its own services like computers for graphic design and slide exposure or professional scanning of photographs and slides.
- The main lecture hall is equipped with a PC and a beamer that allows computerized data and TV-camera projection.
- Students can use the CIP-pool of the Dental School to train with learning systems or to search the internet for further resources.

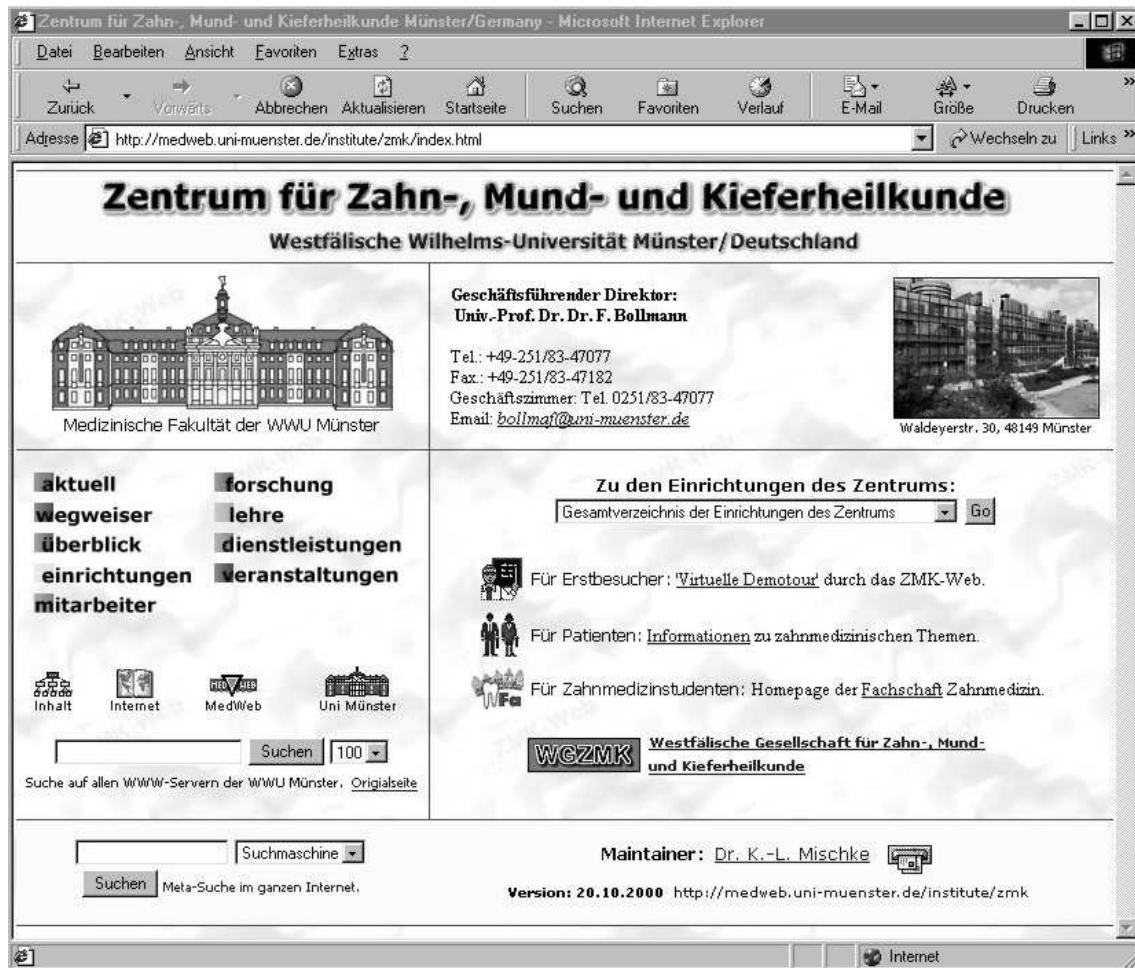
Since autumn 1997 there exists a Cip-pool, which provides in total 25 working places for students and staff.

Room	Seats	size in m2
CIP-pool for students	22	49
CIP-pool for staff	3	40

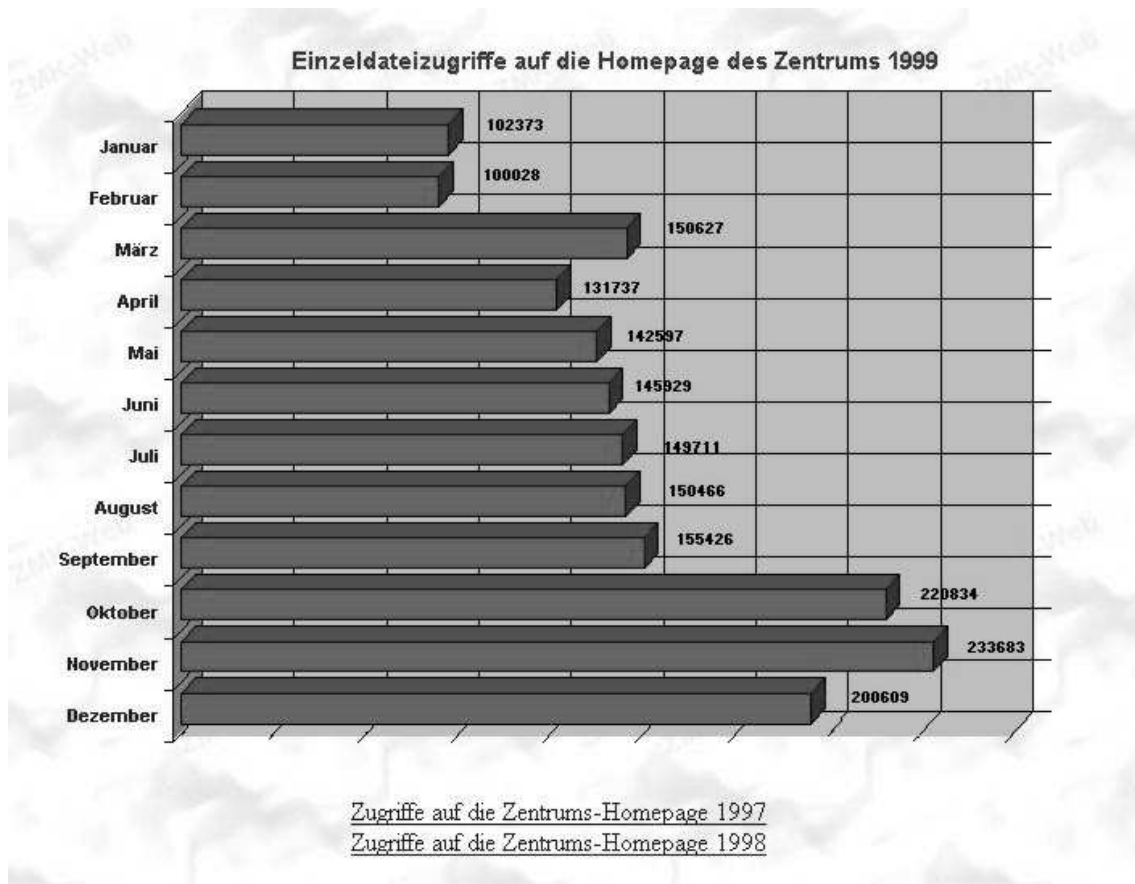
Students will acquire a basic understanding of computer and internet utilisation during the Introductory Course of Clinical and Lab Procedures (CCLP) in the first semester. This should enable them to conduct research via internet independently. Furthermore students as well as staff members can profit from supplementary courses on a weekly basis. Likewise the Medical Institute of Informatics makes use of our facilities to train the clinic's personnel. There is an assistant lecturer assigned to supervise and guide individual use of the CIP-Pool. Outside working hours specially trained students are in attendance.

Courses in the winter semester 2000/2001:

Nr.		Course	Termin
1		Introduction to PC-Hardware and operating system windows NT workstation	Di. 24. Oktober 2000 17:15-19:00
2		Introduction to MS-Word 2000 (part I)	Di. 31. Oktober 2000 17:15-19:00
3		Introduction to MS-Word 2000 (part II)	Di. 7. November 2000 17:15-19:00
4		Introduction to MS-Excel 2000 (part I)	Di. 14. November 2000 17:15-19:00
5		Introduction to MS-Excel 2000 (part II)	Di. 21. November 2000 17:15-19:00
6		Introduction to MS-Powerpoint 2000 (part I)	Di. 28. November 2000 17:15-19:00
7		Introduction to MS-Access 2000	Di. 05. Dezember 2000 17:15-19:00
8		Introduction to MS-Outlook 2000	Di. 12. Dezember 2000 17:15-19:00
9		Introduction to Corel Draw 8	Di. 09. Januar 2001 17:15-19:00
10		Introduction to the Internet	Di. 16. Januar 2001 17:15-19:00
11		Searching in Medline/Pubmed / Informationretrieval in the Internet	Di. 23. Januar 2001 17:15-19:00



The ZMK-Centre is accessible via internet ever since 1997. During the following three years this web-site increased to 2.200 html-pages. A database has been installed/developed for the administration and care of these websites, which ensures a standardized layout and a systematic navigation system for its presentation. The original database expanded to over 800 mainly dental internet addresses. The e-mail addressbook of both staff and students recently passes 500 entries.



The utility of this service is proven by more than 200.000 single file accesses a month. As soon as the network for the whole Dental School is established the password-protected intranet can be realized. This should promote the communication within the school.

Visitors comments

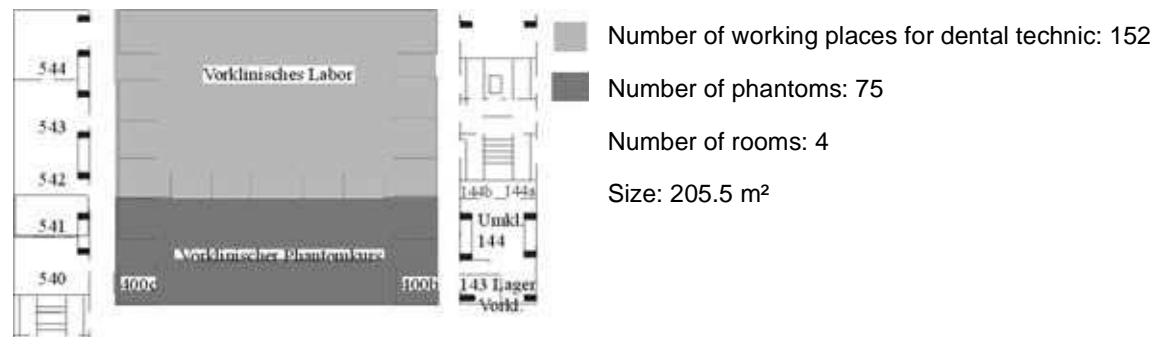
The Cip-Pool is viewed as a valuable facility for students and staff, as is the construction of a computer network for the whole building, to be finished in the spring of 2001. However in view of the potential number of students increasingly in need of these facilities, the number of PCs seems to be too limited. It is recommended that more computer-based learning programmes be provided by developing them in the school or by obtaining them from other schools in Germany, if available. It will be necessary to expand the capacity of IT expertise in this respect.

2.4.3 Labs for Students (level 05)

There are three labs for the students' education on level 05.

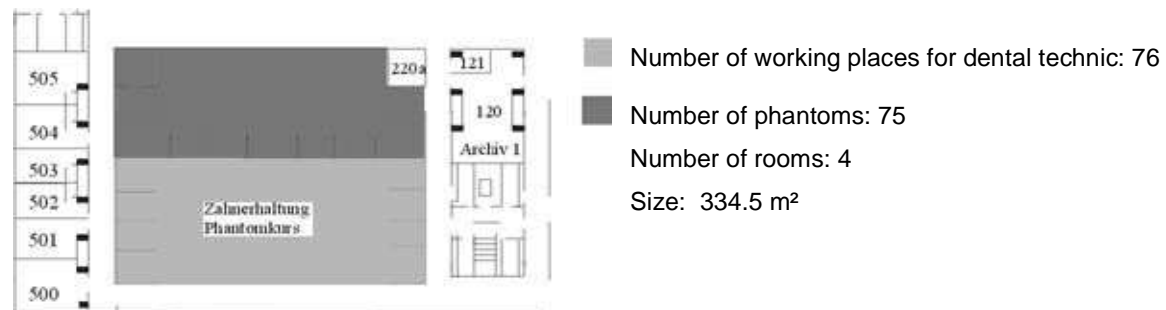
The Preclinical Education

The introductory course of clinical and lab procedures, the preclinical phantom course I, the preclinical phantom course II and the practical part of the "Physicum" take place in the preclinical lab and preclinical phantom hall.



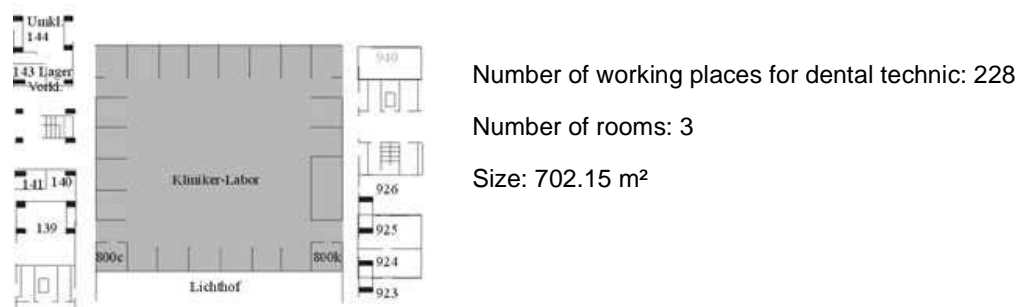
Clinical Education in Conservative Dentistry

During the first semester after the "Physikum" the students have to complete a phantom course of conservative dentistry.



Clinical Education

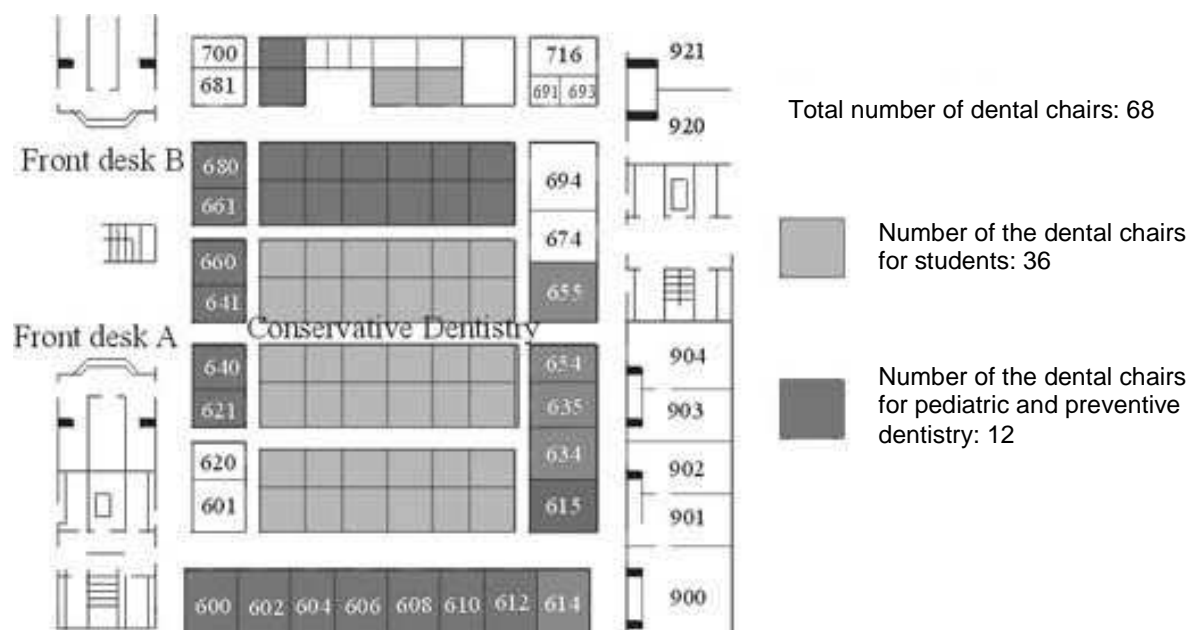
During the last four semesters the students treat patients. The necessary dental technician work like plastic work and cast gold crowns as well as complete cast bridges for this purpose they have to do by themselves.



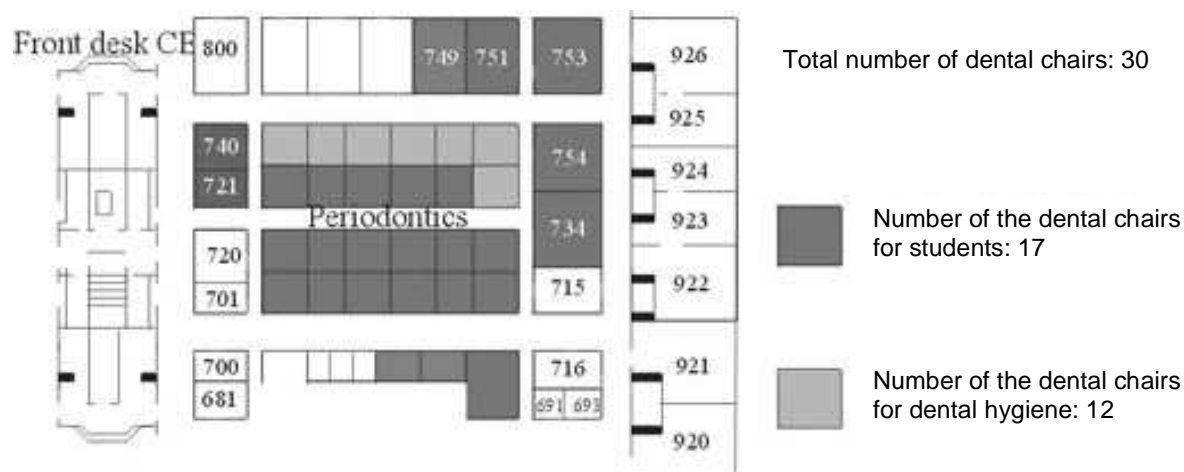
2.4.4 Dental Chairs for Students (level 03)

The following graphics give an overview of the dental equipment of each department.

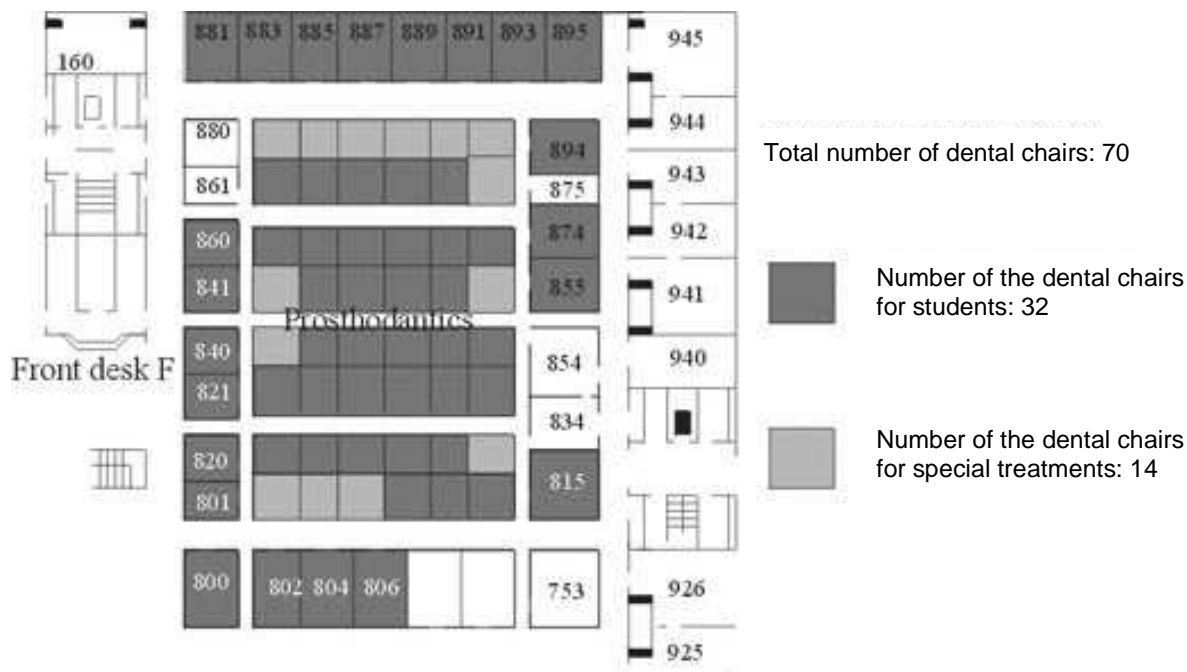
2.4.4.1 Department of Conservative Dentistry



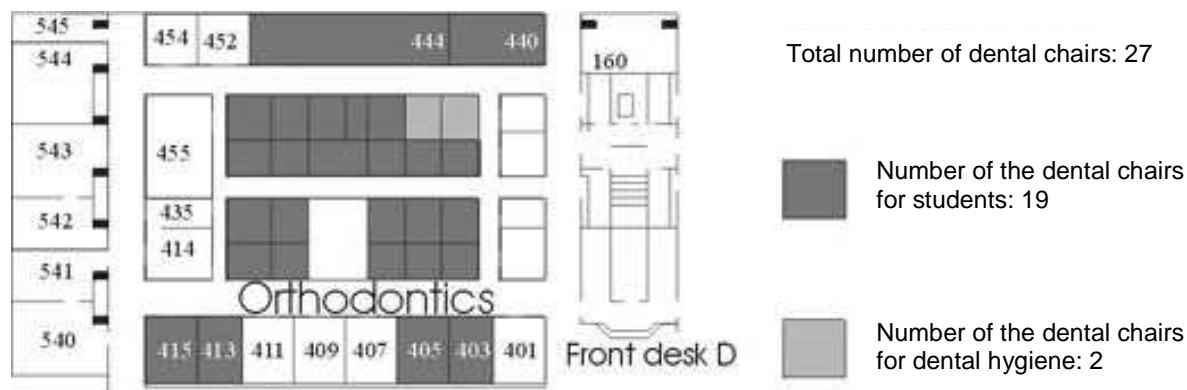
2.4.4.2 Department of Periodontics



2.4.4.3 Department of Prosthodontics

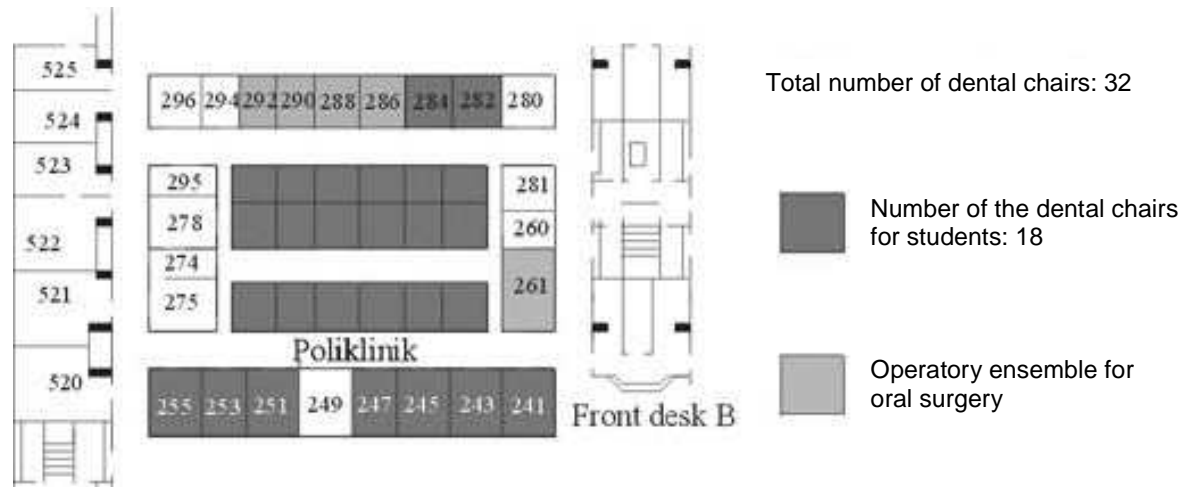


2.4.4.4 Department of Orthodontics



There is also a separate room with 20 working places for analysing teleradiographs. This room is used by staff as well as by students.

2.4.4.5 Department of Maxillo-Facial and Oral Surgery

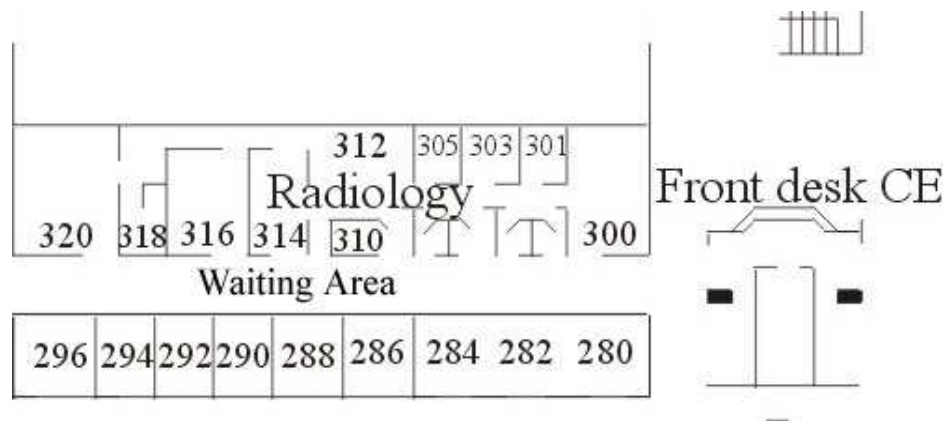


Furthermore, there are well-equipped surgery ensembles, which are used for oral surgery such like implantology, extraction of third molars and oral rehabilitation under insufflation anaesthesia. There are also patients treated who are handicapped or those with great fear of dental treatment. The students are asked to assist at all kinds of surgery treatment.

The in-patient ward is situated in the central building (towers) of the clinic. There are 39 beds. This offers the possibility of bedside-teaching for students.

2.4.4.6 Dental Radiology

The rooms for Dental Radiology are situated in the centre of the ground floor 03 and are used by all departments.



2.5 Library

The Medical Library was founded in 1993 as a central institution of the University Hospital. It is a department of the Muenster University and Regional Library and primarily used by faculty, students, and staff of the University. The consultation of library material is free of charge. The Library is open 83 hours per week from Monday to Sunday.

The Library's goal as an information service centre is to meet the informational needs of academic, research and patient care activities of the Medical Centre and University community. Of course, the available resources are used in the most economic and efficient way. The Medical Library being as well a regional library can be used by all citizens of Westphalia searching for medical information.

The Medical Library makes 50,000 volumes of medical literature and 80,000 periodicals, (with an increase of ca. 5,000 volumes each year) available to its users. In particular, the Library holds ca. 150 dental journals and ca. 10,000 volumes of dental literature. There are encyclopedias, biographies, dictionaries, manuals, statute books, bibliographies, journals in print, and electronic journals over the Internet. In 1997 and 1998, 32 - 38 DM per student were spent on textbooks, ca. 750 DM per member of the academic staff on journals. The Library subscribes to 930 journals in print and to 1,700 on-line-journals.

By purchase or interlibrary loan service in cooperation with all libraries in Germany, Europe and the whole world, the Library provides the users with articles and books not available in Muenster. In this context traditional and electronic order and delivery systems are used, allowing delivery within 24 hours.

Digital resources are available on the local University network and can be accessed from each workplace. These resources include databases such as MEDLINE, BIOSIS and PsycLit, Cochrane Library for evidence-based medicine, thousands of electronic fulltext journals and books. There is also an e-mail information service. As to electronic services, the Muenster Medical Library is among the leading medical libraries in Germany. It also offers classes on the use of information resources. There is a trend to more electronic use which becomes obvious in the decreasing numbers of users in the building.

The Library regularly informs its users on its offers and the latest news in medicine, librarianship, and internet by issuing brochures, flyers, the weekly *Newsletter*, and the journal *med info* which appears every two months. These information products are available in print as well as over the Internet. In 1999, a total of 50,000 copies circulated.

In 1999, a new catalogue and borrowing system was introduced which informs the user whether the book he/she is looking for is available, borrowed or reserved. Moreover, more than 60 databases of various disciplines have been made available throughout the University over the University network.

Use of Library services in 1999		
users	171,135	+ 0.9%
acquired books	2,283	- 26.5%
borrowed books	53,462	- 5.3%
journals in print	722	- 6.5%
e-journals	1,012	+ 24.6%
use of journals (print + on-line)	108,550	not known
copied articles/books	766,166	- 4.5%
interlibrary loan service	31,561	+ 15.9%
inquiries	17,459	+ 2.0%
instruction seminars	534	- 22.5%
participants in classes	1,100	- 15.4%
Internet service (new count)	668,586	+ 82%

The increasing number of users shows the great acceptance of the Library. Since 1994 the number of users has increased by 53%, the use of Internet services has already increased twenty-fold during this period. The use of e-journals has doubled each year since 1997.

Visitors comments

The main library, containing all dental titles (books and journals) is a well-organised facility having the advantage that dentistry is fully integrated with the medical books and journals. However the fact that this facility is not located within the facilities of the dental school might also limit easy access. The visitors noted a satisfactory number and range of national and international dental journals in the library. No actual figures were available on the use of these facilities by dental students, as there is very little study time available within the curriculum in the later semesters. It appears that the number of study-booths in the library is limited for the entire Medical Faculty.

Section 03

Organisational and Administrative Structures

Name: Prof. Dr. Dr. Bollmann
e-mail: bollmaf@uni-muenster.de
fax: +49-251-8347182

3.1 Capacity of Medical Education in Germany

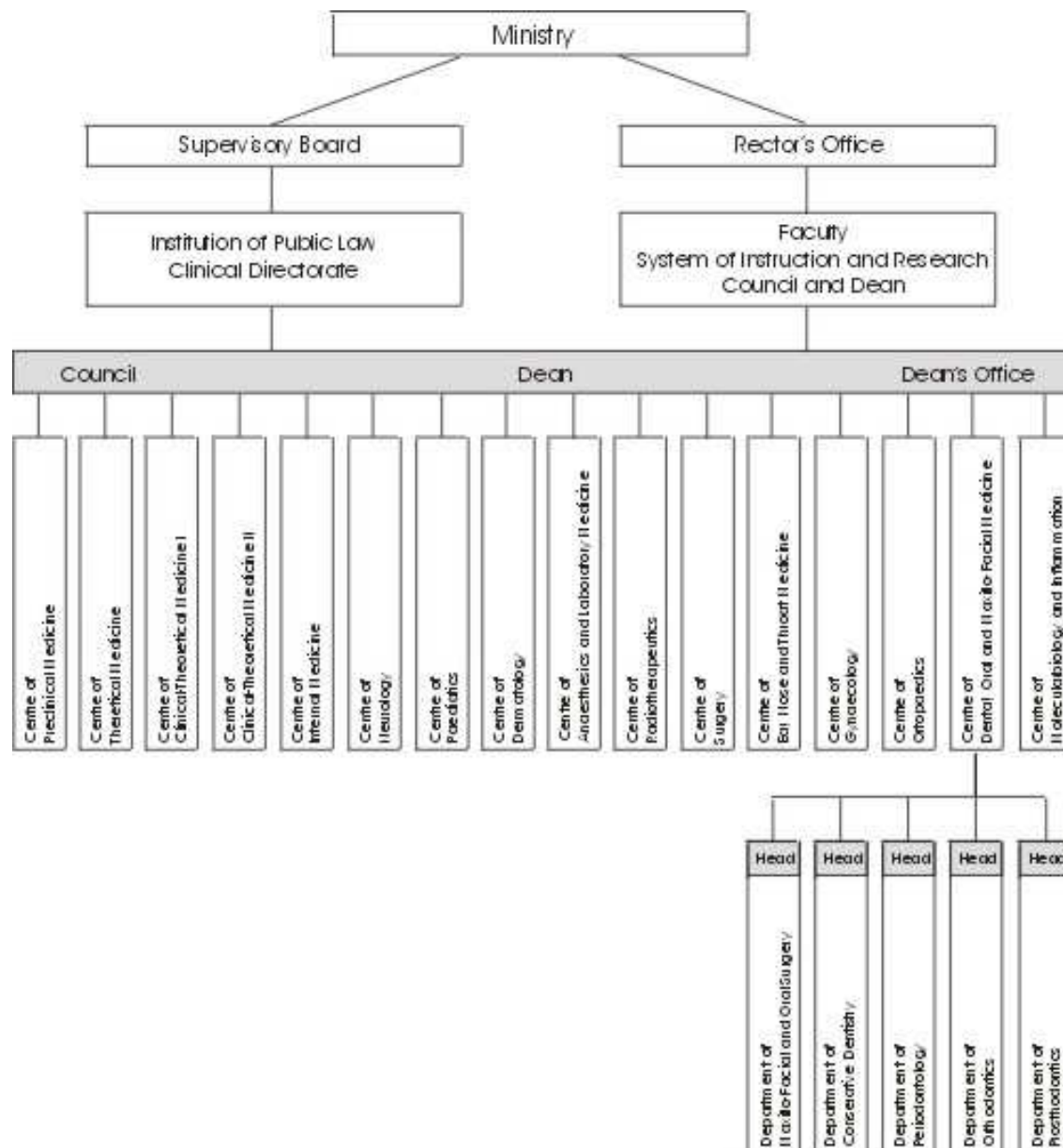
Country	Inhabitants Dec., 31th 1996 in thousand	In-patient possibilities 1996 per 100.000 inhabitants	Students per 100 000 inhabitants	
			Medicine	Dentistry
Baden-Württemberg	10375	60	12,9	2,5
Bayern	12044	64	11,7	2,7
Berlin	3459	120	26,6	4,8
Brandenburg	2554	0	0,0	0,0
Bremen	678	0	0,0	0,0
Hamburg	1708	109	24,9	5,7
Hessen	6027	67	16,6	3,7
Mecklenburg-Vorpommern	1817	125	20,5	5,3
Niedersachsen	7815	36	9,3	2,0
Nordrhein-Westfalen	17948	50	11,1	1,6
Rheinland-Pfalz	4001	43	10,3	2,9
Saarland	1084	142	24,0	2,1
Sachsen	4546	65	10,8	2,2
Sachsen-Anhalt	2724	95	15,0	1,5
Schleswig-Holstein	2742	94	16,1	2,8
Thüringen	2491	60	9,7	2,2
Deutschland	82012	62	12,7	2,5

3.2 Number of Graduates of German Universities (1980-1994) in Dental Medicine

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Aachen	0	0	0	0	0	0	0	25	56	56	65	54	69	66	66
Berlin FU	80	85	100	125	118	125	126	135	128	128	149	148	177	145	130
Berlin Charité	0	0	0	0	58	72	78	62	62	75	71	85	89	98	75
Bonn	80	82	105	114	111	80	80	96	66	97	81	92	93	82	72
Dresden	107	105	115	112	105	95	107	95	70	113	89	80	62	61	46
Düsseldorf	47	40	53	47	38	50	50	38	54	38	44	33	34	41	55
Erfurt	82	89	102	92	90	85	88	85	82	70	61	75	62	63	40
Erlangen														71	80
Frankfurt/M.	53	61	95	83	85	101	93	84	103	113	85	109	97	100	73
Freiburg	0	0	81	96	82	72	91	87	76	93	78	84	81	74	75
Gießen	58	63	48	43	53	60	56	56	62	51	46	54	45	60	47
Göttingen	63	90	85	90	108	87	98	84	86	70	89	88	103	72	81
Greifswald	36	31	43	37	36	36	36	35	35	33	31	31	23	24	17
Halle	42	40	43	37	42	39	39	38	33	42	39	38	36	24	27
Hamburg						91	88	97	82	102	89	113	85	76	75
Hannover	46	69	84	71	73	71	83	67	64	73	64	52	69	62	55
Heidelberg												39	68	60	72
Homburg (S.)	0	0	0	26	7	20	18	7	22	19	20	7	13	25	16
Jena	47	47	42	44	51	45	46	43	41	43	37	38	36	30	38
Kiel	31	37	43	78	75	72	72	72	59	66	76	68	67	77	79
Köln	27	27	37	28	31	51	47	45	52	56	48	34	38	34	34
Leipzig	99	49	54	59	103	121	99	72	73	62	65	74	51	42	59
Mainz	69	81	96	88	95	92	87	90	64	87	94	76	86	87	94
Marburg	60	59	52	58	57	55	66	57	61	58	46	56	48	48	48
München		79	83	78	77	85	111	91	105	99	85	120	108	96	85
Muenster	69	76	94	141	157	110	159	140	147	136	141	131	131	144	120
Regensburg	0	0	0	0	0	0	0	0	0	6	28	52	90	67	65
Rostock	50	71	68	63	44	72	46	56	54	47	50	54	33	43	35
Tübingen	101	79	83	86	78	75	83	76	72	83	70	76	77	77	68
Ulm	0	0	0	0	0	0	0	24	47	63	34	60	57	45	31
Witten-Herdecke	0	0	0	0	0	0	0	0	0	0	19	0	9	41	20
Würzburg	47	40	57	55	55	67	69	83	66	51	64	72	67	81	65
Total	1249	1400	1663	1751	1829	1929	2016	1940	1922	2030	1958	2093	2104	2116	1943

3.3 The Structure of the Medical Faculty

The Dental School (Centre of Dental, Oral and Maxillo-Facial Medicine) is one of 16 centres of the medical faculty. For the entire faculty there is one Dean and a council with voted members. In January this year, the legal status of the whole hospital concerning the patient treatment changed. It was converted into an institution of public law. As before, education and research continue to remain within the responsibility of the University.



3.4 Structure for Dental Care

Today the school is divided into five departments:

1. Department of Maxillo-Facial and Oral Surgery (including the Institute of Dental Radiology)

tasks: early identification, prevention and treatment of oral and maxillo-facial disorders; treatment of head and neck deformities; accidents; tumors; dysgnathia; pre-prosthetic surgery; implantology

2. Department of Conservative Dentistry

tasks: ambulant conservative treatment; prevention, pediatric treatment; endodontics; fillings

3. Department of Periodontology

tasks: early diagnosis, prevention and treatment of oral infections and periodontal diseases; periodontal surgical treatment, systematic periodontal treatment

4. Department of Prosthodontics (including the Institute of Dental Materials)

tasks: restoration of the fully dentulous, partially edentulous, and edentulous patient with fixed and removable prosthodontics, inclusive implant-supported prosthodontics, adhesive prosthodontics, and maxillo-facial prosthodontics; prevention and treatment of temporomandibular joint and masticatory muscle disorders; prosthetic rehabilitation in the elderly, and in the psychosomatic in patient

5. Department of Orthodontics

tasks: early diagnosis, prevention and treatment of malocclusion (fixed and removable appliances); combined orthodontic-surgical treatment; early stimulation of orofacially handicapped infants; consultation in speech therapy

6. Special Interdisciplinary Consultation Hours

In addition to the regular daily ambulatory consultation hours, special consultation hours for the following problems are offered by the Centre:

- psychosomatics
- dysgnathia
- tumors
- cleft-patients and patients with syndromes
- oro-facial surgery
- oro-facial prosthetics
- pre-prosthetic surgery and implantology
- implant prosthodontics
- malfunction of the masticatory system (surgery, prosthodontics)
- surgical orthodontics
- early stimulation of handicapped infants

From 1995 to 1999 more than 456,000 patients were treated, more than 25% of these by students.

Number of patients 1995 to 1999

Number of Patients	1995	1996	1997	1998	1999
Total	94.325	99.460	94.810	92.545	84.855
• First consulting	36.760	42.696	42.532	42.408	38.965
• Follow-up consulting	53.198	52.121	47.168	45.640	41.574
• Treatment by students	16.968	27.403	25.124	24.341	25.520
• emergency treatment	4.367	4.643	5.110	4.497	4.316

Department of Prosthodontics					
• Total	24.258	27.550	24.493	25.085	24.406
• First consulting	8.775	9.867	9.592	9.865	9.575
• Follow-up consulting	15.483	17.683	14.901	15.220	14.831
• Treatment by students	5.336	8.223	7.357	7.518	7.297
Department of Orthodontics					
• Total	9.132	9.060	9.400	9.422	9.772
• First consulting	4.655	4.426	4.545	4.576	4.710
• Follow-up consulting	4.477	4.634	4.855	4.846	5.062
• Treatment by students	-	-	-	-	-
Department of Conservative Dentistry					
• Total	22.700	22.710	21.643	19.996	19.909
• First consulting	7.179	8.469	8.282	8.058	8.082
• Follow-up consulting	15.521	14.241	13.361	11.938	11.827
• Treatment by students	9.384	16.126	14.833	13.876	13.934
Department of Periodontics					
• Total	16.769	15.181	14.794	14.594	10.750
• First consulting	9.410	9.254	9.403	9.107	6.427
• Follow-up consulting	7.359	5.927	5.391	5.487	4.323
• Treatment by students	2.248	3.044	2.934	2.947	4.289
Department of Maxillo-Facial and Oral Surgery					
• Total	17.099	20.316	19.370	18.951	15.702
• First consulting	6.741	10.680	10.710	10.802	10.171
• Follow-up consulting	10.358	9.636	8.660	8.149	5.531
• Treatment by students	-	-	-	-	-

Ref.: - Verwaltung ZMK, Dez. 2.32- WWU-Verwaltung Med. Einrichtung, Dez. 5.2

Visitors comments

The subdivision of the school into five departments is similar to the typical structure of dental schools in Europe. Although the management of the central facilities is under the responsibility of the „Zentrumvorstand“ it was not quite clear to the visitors who is responsible for the day to day management of these facilities. Likewise the report does not give information on the structure of the non-academic departments serving the school and the curriculum as far as student scheduling, curriculum management, central sterilisation and disinfection, supply unit for instruments and materials, etc. is concerned.

The patients` administration is part of the administration of the whole Medical Center with its 16 centres.

The visitors noticed with concern that since the Dental School is one of the 16 Centres of the medical faculty there is no chance for members of the Dental School to be voted into the council of the medical faculty, although 25% of the students of the medical faculty are dental students.

3.5 The Dental Curriculum

Dentistry is an independent course of studies within the studies of medical science. The training is scientifically based and practice orientated. The standard period of study should not exceed 10 semesters (5 years). These are split into a pre-clinical and a clinical part of 5 semester each (total of 5,000 hs)

	1st Part	Physics: Chemistry: Biology Introductory Course of Clinical and Lab Procedures Preclinical Phantom Course I Preclinical Phantom Course II (in the lecture-free period between 2 semesters) Dental Materials:	2 semester-lecture, 1 semester-course 2 semester-lecture, 1 semester-course 1 semester-lecture 2 semester lecture
	2nd Part	Physiology: Biochemistry: Anatomy: Histology	2 semester-lecture, 1 semester-course 2 semester-lecture, 2 semester-course 3 semester-lecture, 1 semester-course 1 semester-lecture
	3rd Part	Introduction into Dentistry: General Pathology: Special Pathology: General Surgery: Otorhinolaryngology: Hygienics, Medical Microbiology and Health Care: Introduction into Orthodontics: Forensic Medicine (including legal aspects) Pharmacology: Internal Medicine: Oral Medicine: Oral and Maxillofacial Surgery: Conservative Dentistry (Including: Preventive Dentistry, Cariology, Endodontics, Pediatric Dentistry): Periodontology: Prosthodontics: Orthodontics: Histopathology: Clinical Chemistry:	1 semester-lecture 1 semester-lecture 1 semester-lecture 1 semester-lecture 1 semester-lecture 1 semester-lecture and course 1 semester lecture and course 2 semester-lecture- and course 2 semester-lecture 2 semester-lecture and treatment 2 semester-lecture and assistance in treatment 3 semester-lecture and treatment 3 semester-lecture and treatment 2 semester-lecture and treatment 3 semester-lecture and treatment 1 semester-course 1 semester-course

Examinations will have to be passed as follows:

Naturwissenschaftliche Vorprüfung	is taken at the end of the 2 nd semester; subjects of examination are: physics, chemistry, biology
Zahnärztliche Vorprüfung	is taken at the end of the 5 th semester; subjects of examination are: anatomy and histology, physiology, physiological chemistry, prosthodontics and dental materials
Zahnärztliche Prüfung	is taken at the end of the 10 th semester; Subjects of examination are <ul style="list-style-type: none"> - general pathology and pathological anatomy (1 day) - pharmacology (1 day) - hygienics, medical microbiology and public health (1 day) - internal medicine (1 day) - dermatology and venereal diseases (1 day) - otorhinolaryngology (1 day) - oral and maxillo-facial disturbances (2 days) - oral and maxillo-facial surgery (3x2 days) - conservative dentistry (including preventive dentistry, cariology, endodontics, pediatric dentistry, periodontology) (5 days) - prosthodontics (10 days) - orthodontics (4 days)

The responsible regulatory authority of NRW will certify licensure as dentist to graduates of the "Zahnärztliche Prüfung" (State Board Examination). The current licensure regulations for dentists exists since 1955 with only slight alterations made over the years. Since 1993, however, the need for changes has urged on the efforts to introduce new regulations to the curriculum of dental studies.

3.5.1 Number of the Newcomers, Current Students and Graduates since 1995 to 1999

	WS 95/96	SS 96	WS 96/97	SS 97	WS 97/98	SS 98	WS 98/99	SS 99	WS 99/00
Newcomer	41	43	49	45	49	46	51	47	47
Female	20	20	22	17	24	26	31	28	26
EU-Foreigner	0	1	1	1	0	3	1	1	0
Non EU-Foreigner	5	3	6	5	0	7	2	7	4
Current Students	854	824	815	798	783	762	751	746	731
Female	337	332	337	332	328	333	341	349	345
EU-Foreigner	4	5	7	8	9	12	13	14	15
Non EU-Foreigner	64	63	69	77	77	77	76	79	75
Graduates	43	58	78	61	56	55	40	37	43
Female	12	20	28	25	21	24	16	20	18

Ref.: Amtliche Statistik, Studentensekretariat, Dezernat 2.2, WWU Muenster (09.05.00)

At present each semester 48 students are newly admitted, which makes a total of 96 students each year. However, since students also enter the school by way of action and judicial decree we had to accept another 7 students for the summer-semester 2000.

We are at the moment looking forward to new board decisions of the government regarding the teaching capacity of the dental schools in Northrhine Westphalia (NRW).

3.5.2 Present Schedules of the Dental School

1st Semester

= practical course

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Introductory Course of Clinical and Lab Procedures (CCLP)				
09 – 10					
10 – 11					
11 – 12					
12 – 13	General Anatomy				
13 – 14		EDV-Intro		Biology	Biology
14 – 15	CCLP	Anatomical Demonstrations		CCLP	
15 – 16					
16 – 17					
17 – 18	Terminology and/or Embryology				
18 – 19					

2nd Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Chemistry		Chemistry	Chemistry	
09 – 10	Physics			Physics	
10 – 11	Lecture and Course of Macroscopic Anatomy				
11 – 12					
12 – 13					
13 – 14					
14 – 15		Chemistry		Anatomical Demonstrations	
15 – 16					
16 – 17			Physics		
17 – 18	Terminology and/or Embryology				
18 – 19					

3rd Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Physiology I				
09 – 10	Biochemistry I				
10 – 11	Course of Histology and Microscopic Anatomy Group A				
11 – 12					
12 – 13	Course of Histology and Microscopic Anatomy Group B				
13 – 14					
14 – 15					
15 – 16					
16 – 17					
17 – 18					
18 – 19					

4th Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Physiology II				
09 – 10	Biochemistry II				
10 – 11		Phantom-I		Phantom-I	
11 – 12					
12 – 13	Phantom-I-Course			Phantom-I- Course	
13 – 14					
14 – 15			Physiology		
15 – 16					
16 – 17					
17 – 18					
18 – 19					

During holidays: practical course “Phantom 2” (all day course of a five weeks span)

5th Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09			Anatomy III		
09 – 10					
10 – 11					
11 – 12					
12 – 13					
13 – 14					
14 – 15		Funct. Occl.	Biochemistry		Biochemistry
15 – 16		Dental Materials			
16 – 17					
17 – 18					
18 – 19					

6th Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Orthodontical Technics	General Pathology	General Pathology		Orthodontical Technics
09 – 10	General Aspects of Dentistry	Gen. Aspects of Orthodontics	Periodontology II	Demonstr. in Orthodont.Tech.	
10 – 11	Radiology	Orthodontical Technics	Preclinical Course of Periodontology	Conservative Dentistry	
11 – 12				Conservative Dentistry	
12 – 13	Conservative Dentistry			Conservative Dentistry	
13 – 14	Preclinical Course of Conservative Dentistry	Anaesthesia	Clin. Chem. Meth. of Examination	Preclinical Course of Conservative Dentistry	
14 – 15			Internal Medicine		
15 – 16		Preclinical Course of Conservative Dentistry			
16 – 17	General Aspects of Periodontology				
17 – 18	General Surgery			Dermatology (every 2 weeks)	
18 – 19					

7th Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Maxillo-Facial Surgery	Conservative Dentistry I	Cons. Dentistry I	Practicando I	Conservative Dentistry I
09 – 10	Orthodontics		Periodontology II		
10 – 11	Periodontology I		Practicando I	Cons.Dentistry	
11 – 12				Cons. Dentistry I	
12 – 13			Conservative Dentistry		Otorhinolarygol.
13 – 14	Conservative Dentistry I	Periodontology I	General Surgery	Conservative Dentistry I	Periodontology
14 – 15			Internal Medicine		
15 – 16					
16 – 17		Orthodontics	Patho-Histology		
17 – 18				Maxillo-Facial Surgery (lecture)	
18 – 19					

8th Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday	
08 – 09	Maxillo-Facial Surgery			Psychosomatics, Pat. Manag.	Prosthetic Dentistry	
09 – 10	Orthodontics	Special Prosth.Course	Prosthetic Dentistry I	Prosthetic Dentistry I		Prosth.Dent. I
10 – 11	Prosthetic Dentistry I					
11 – 12						
12 – 13	Practicando II	Practicando II			Practicando II	
13 – 14		Prosthetic Dentistry I		Prosthetic Dentistry I	of Prosthetic Dentistry I	
14 – 15	Special Prosth.Course					
15 – 16			Patho-Histology			
16 – 17		Orthodontics				
17 – 18	Pharmacology	Practice management		Maxillo-Facial Surgery		
18 – 19						

9th Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Maxillo-Facial Surgery	Prosthetic Dentistry II		Psychosomatic Psychagogic	Prosthetic Dentistry
09 – 10	Prosthetic Dentistry II				Special Themes of Prosthodontics
10 – 11					
11 – 12					
12 – 13	Practicando II	Practicando II			Practicando II
13 – 14	Prosthetic Dentistry II		Dental Surgery II	Prosthetic Dentistry II	
14 – 15					
15 – 16					
16 – 17					
17 – 18	Pharmacology			Maxillo-Facial Surgery	
18 – 19		Deseases of Mast. System			

Orthodontic treatment course I
(students must attend 3 weeks of block course to which they are signed)

10th Semester

Time	Monday	Tuesday	Wednesday	Thursday	Friday
08 – 09	Periodontology III	Periodontology II	Conservative Dentistry II	Conservative Dentistry II	Periodontology II
09 – 10	Conservative Dentistry II				
10 – 11					
11 – 12					
12 – 13			Clinical Periodontology	Cons. Dent. II	
13 – 14	Periodontology II	Conservative Dentistry II		Periodontology II	Conservative Dentistry II
14 – 15			Hygiene		
15 – 16			Microbiology		
16 – 17		Pediatric Dent.			
17 – 18		Ethics, Jurispr., pract. Manag.			

Orthodontic treatment course II
(students must attend 3 weeks of block course to which they are signed)

Section 04

Staffing

Name: Prof. Dr. Dr. Bollmann
e-mail: bollmaf@uni-muenster.de
fax: +49-251-8347182

4.1 List of Academic and Non-academic Staff

Department	Clinical Academic Staff	C 4/C3	Nursing Staff
Department of Maxillo-Facial and Oral Surgery	18	2	19
Department of Orthodontics	13	1	10.5
Department of Periodontology	9	1	15
Department of Conservative Dentistry	22	1	20
Department of Prosthodontics	32	2	26.5
Institute of Dental Radiology	2	0	5
Institute of Dental Materials	1	1 (until June this year)	0.5

4.2 List of Chairpersons and Senior Assistents

Department of Maxillo-Facial and Oral Surgery		
chairperson	Prof. Dr. Dr. Dr. h. c. U. K. Joos	e-mail adress: joos@uni-muenster.de
senior assistant	OA Dr. Dr. J. Kleinheinz	e-mail adress: joklein@uni-muenster.de
	OA PD Dr. Dr. J. Piffkó	e-mail adress:
	OA PD Dr. Dr. R. Werkmeister	e-mail adress: werkmei@uni-muenster.de
Department of Orthodontics		
chairperson	Prof. Dr. U. Ehmer	e-mail adress: ehmer@uni-muenster.de
senior assistant	OA Dr. K. Dörr-Neudeck	e-mail adress: kadoe@uni-muenster.de
	OA Dr. Th. Stamm	e-mail adress: stammt@uni-muenster.de
	OÄ Dr. A. Hohoff	e-mail adress: hohoffa@uni-muenster.de
Department of Periodontology		
chairperson	Prof. Dr. Th. F. Flemmig	e-mail adress: flemmig@uni-muenster.de
senior assistant	OA Dr. B. Ehmke	e-mail adress: ehmke@uni-muenster.de
Department of Conservative Dentistry		
chairperson	Prof. Dr. K. Ott	e-mail adress: ottk@uni-muenster.de
senior assistant	OA Dr. Buhe	e-mail adress
	OA Dr. Dammaschke	e-mail adress: tillda@uni-muenster.de
	OA Dr. Kaup	e-mail adress: kaupm@uni-muenster.de
	OA PD Dr. E. Schäfer	e-mail adress: eschaef@uni-muenster.de
Department of Prosthodontics		
Chairperson	Prof. Dr. Dr. F. Bollmann	e-mail adress: bollmaf@uni-muenster.de
senior assistant	OA Prof. Dr. Dr. L. Figgner	e-mail adress: figgenl@uni-muenster.de
	OA Dr. D. Pingel	e-mail adress: pingel@uni-muenster.de
	OA Dr. K. R. Rasche	e-mail adress:
	OA Dr. Chr. Runte	e-mail adress: crunte@uni-muenster.de
	OÄ PD Dr. P. Scheutzel	e-mail adress: scheutz@uni-muenster.de
	OÄ PD Dr. A. Wolowski	e-mail adress: wolowsk@uni-muenster.de

4.3 Staff of Central Facilities

Facility	Number of Staff
Photographic studio	3
TV-Studio	3
Graphic Design	1
CIP-Pool	1
Dental Technicians	37
Technicians for Students` lab	4
Patients` Administration	14
Dental Research	6 Physicists, 1 Chemist, 2 Biologists, 8 Medical laboratory assistants

Section 05

The Biological Sciences

5.1 – Biochemistry

5.2 – Genetics

5.1 Biochemistry inclusive Molecular Biology

Name: Prof. Dr. med. Hans Kresse
e-mail: kresse@uni-muenster.de
fax: +49-251-8355596

Name: Prof. Dr. rer. nat. Günther Mersmann
e-mail: mersman@uni-muenster.de
fax: +49-251-8355596

1. Introduction

The lessons and courses of biochemistry for dentistry students are based on a one-semester lesson and a one-semester practical course each dealing with general, inorganic and organic chemistry. Starting in the third semester the biochemistry curriculum comprises two lessons of biochemistry (5 hours per week) followed by a practical course of biochemistry (6 hours per week) accompanied by a coordinated introductory lesson (2 hours per week). As there is no special teaching staff for biochemistry for dentistry students, the lessons and the course are identical for students of medicine and dentistry. The course includes a number of laboratory experiments from the field of general biochemistry and clinical chemistry as well as the discussion of some topics in seminar form in groups of about 15 students.

2. Primary aims

- To provide students with a basic understanding of biochemical processes, of their regulation and coordination and of their cellular and molecular bases.
- To enable students to follow the advances in the field and to solve problems and questions arising.

3. Main objectives

Principles of energy supply including nutrition, digestion, resorption, synthesis of ATP by degradation of carbohydrates, fatty and amino acids. Hormonal regulation of energy supply and substrate storage.

Structure, functions and modifications of proteins and their role as catalysts, receptors, transporters, signal molecules, antibodies etc.

The role of lipids for energy supply and storage, as membrane constituents and signaling molecules.

Cellular membranes and their possibilities for substrate transport and signal transduction.

Cell organelles and their contribution to metabolism.

Molecular basis of genetic information and its expression and replication.

Hierarchy of the hormonal system, concepts of hormone action: receptor binding, signal transduction, second messengers, signal cascades and nuclear effects.

Components and organisation of the extracellular matrix including formation and maintenance of hard tissues.

Distribution of calcium and phosphate and regulation of their intra- and extracellular concentration.

pH-regulation and transport and disposal of CO₂ and ammonia.

Unspecific and immunologic response and survey.

4. Hours in the curriculum

155 hours of lectures and 60 hours of practical courses / seminar teaching, respectively

5. Methods of learning/teaching

The lectures are held in a lecture hall for an audience of about 200 students with visual aids as appropriate. The practical courses take place in labs for groups of 10 – 15 students.

6. Assessment methods

No assessment takes place during the lectures. Participants of the practical course have to pass two written multiple choice tests and an oral examination for each of the ten practical topics. At the end of the preclinical phase there is a formal oral examination of biochemistry. The subjects of this examination can be found at: <http://medweb.uni-Muenster.de/institute/pcpb/lehre/zmphys.html>.

7. Strengths

Due to the identical biochemical courses for students of medicine and dentistry, the latter get a profound and broad knowledge of many aspects of biochemistry.

8. Weaknesses

Due to the identical biochemical courses for students of medicine and dentistry, special biochemical topics with relevance for dentistry, e.g. biochemistry of saliva, dental care, oral microorganisms, are not treated with sufficient emphasis during the regular courses.

9. Innovations and best practices

Novel seminar on hard tissue including teeth for students of medicine and dentistry as part of the practical course.

Block course preparing for the formal examination of dentistry students on a voluntary basis (provided by a former lecturer of the institute)

10. Plans for future changes

In case of additional teaching personnel, at least one special lecture or seminar (of about 2 h per week) designed especially for the dental curriculum should be provided and could lead to a marked improvement.

Persons of this institute in charge of this paper and of the DENTED visitors:

11. Visitors comments

The visitors recognise the quality and the scientific approach of teachers in both Biochemistry and Physiology. The constraint, which relates the number of staff assigned to departments in proportion to the number of students, represents a considerable difficulty. The programme that is being taught in Biochemistry and Physiology is fixed by the Approbationsordnung für Zahnärzte, in terms of lecture hours and courses. The dental students do not appear to benefit sufficiently from these courses due to the fact that they are combined with the medical students. The result is that the courses are good as far as general metabolic issues are concerned but there are too few oral health related topics in the course and too much general medicine. In Physiology medical students have seminars as well as lectures; dental students have lectures only. If Biochemistry were taught to dental students separately, they could be provided with the opportunity to learn more about dental hard tissues and inflammation. In Physiology pain could be dealt with more than is the case now. Both Biochemistry and Physiology should be much more problem oriented towards clinical dentistry.

5.2 Genetics

This area is covered by different disciplines like biology, biochemistry, microbiology and histology.

Section 06

Preclinical Sciences

- 6.1 – Physics
- 6.2 – Chemistry
- 6.3 – Anatomy
- 6.4 – Physiology

6.1 Physics

Name: Prof. Dr. H. Kohl
e-mail: Kohl@nwz.uni-Muenster.de
fax: +49-251-8333602

1. Introduction

This course is composed of a lecture with demonstrations and weekly lab sessions. It is attended by students of medicine, dentistry and pharmacy.

2. Primary aims

The course provides a basic knowledge of physics with particular emphasis on applications in the medical sciences.

3. Main objectives

The aim of the course is to provide an overview over the basic laws of physics and the application of physical principles to medical problems. The lectures include:

- mechanics
- liquids and gases
- thermodynamics
- electricity and magnetism
- vibrations and waves
- optics
- atomic and nuclear physics

In the lab sessions the students perform experiments related to the following subjects:

- statistical processes
- deformations, vibrations
- density of liquids
- surface tension
- Viscosity
- Calorimetry
- geometrical optics
- electrical resistance and current-voltage relationship
- Electrolysis
- RLC circuits and oscilloscopes

photometry
absorption of γ -rays and radiation protection
optical spectroscopy
polarimetry

4. Hours in the curriculum

Lectures: 4 hours per week in the second semester

Lab courses: 3 hours per week in the second semester

5. Methods of learning/teaching

The lectures are primarily composed of explanations given on the overhead and a large number of live demonstrations, which can be video-projected. Several experiments are computer controlled allowing for a quick evaluation of the results. During the lab courses the students perform experiments themselves under the supervision and guidance of experienced graduate students in physics.

6. Assessment methods

The successful performance of the experiment, including a short oral examination, is certified by the supervisor at the end of every lab session. At the end of the semester the students have to pass a written exam to be eligible for the oral exam (Vorphysikum).

7. Strengths

The live demonstrations and the lab sessions are particularly useful to illustrate the concepts of physics.

8. Weaknesses

A large majority of students has not selected physics in their final years of school. The limited time does not permit to adapt the level of the course to the level of knowledge of these students.

6.2 Chemistry

Name: Prof. Werner Klaffke
e-mail: werner.klaffke@uni-muenster.de
fax: +49-251-8336501

1. Introduction

The chemistry course is split into three activities: lecture, laboratory course and a seminar. The laboratory course is paralleled by three written exams.

During the course of the lecture (4 hours per week) held for first year students of both medical and dental faculties (200 participants) students are confronted with a general overview on inorganic (Prof. Wiemhöfer) and organic chemistry (Prof. Klaffke). The lecture cycle is rounded off by a voluntary written exam of 75mins.

The laboratory course has five days each of inorganic and organic chemistry, with small groups of eight students under the supervision of a graduate or PhD chemistry

student. The material in this course is based on the book "*Chemisches Praktikum für Mediziner*" by H.G. Aurich/P. Rinze. Four additional experiments demonstrate general analytical techniques (e.g. distillation, chromatography, gel-electrophoresis or enzymatic reactions), which are separately explained and carried out under special dedicated supervision. Each day in the laboratory has to be protocolled by a written report, mentioning the theoretical background, the way the data have been obtained, and the conclusion drawn on the basis of the observations. Prior to experimentation, during a one hour seminar, the students prove their knowledge on the respective theories dwelled on. Additionally, in discussing the topics with their supervisor, the understanding can be considerably improved through mutual discussions.

The attendance of the complete course is checked and acknowledged, three written exams of 75 mins each are given at which a maximum of 3 x 25 points can be achieved. The course is passed on attendance of all course days and a minimum sum of 38 points.

The seminar accompanying the lab course comprises 90 min per week is held in small groups of approx. 25 students and includes explanations of methods and topics closely related to the experimental work, including instructive experiments and examples relevant for medical students.

2. Primary aims

The aim of the chemistry course is to level out individual differences in knowledge on chemistry and to familiarise all students with the basic concepts of chemistry. The course should help students understand the theory of chemical behaviour of the matter, the methods of analysis and in general to foster a solid understanding of chemical processes in living systems, relevant to various disciplines amongst which are pharmacology, biochemistry and nutrition.

3. Main objectives

- security in the safe handling and estimation of the potential dangers of chemicals
- acids and bases (concepts, titration, buffer)
- salts, equilibria, qualitative analysis
- complexes, photometric methods
- redox reactions, electrochemistry
- reactive groups in org. chemistry (aldehydes, carboxylic acids, alcohols)
- carbonyl compounds
- amino acids and derivatives, chromatography (TLC)
- carbohydrates, stereochemistry
- proteins, lipids, polymerisation

4. Hours in the curriculum

The complete course is a first year lecture (one hour, four days per week, 4 SWS). Medical students start the lecture in the first semester, dental students in the second semester. The lab course is given during the second semester, ten course days, 3.5 hours each (4.5 SWS) and is accompanied by the seminar (2 SWS).

5. Methods of learning/teaching

The topics of the lecture are selected by the responsible professor, and are presented using real experimentation, computerised animation and video beaming, overhead-projector, blackboard, handouts; a internet web-site is presently in preparation. During the lab course 8 students are supervised by one instructor (graduate chemistry students, PhD students), supported by technical personnel. The practical work is broken down into groups of two. During the lab course students are instructed in the correct way of handling chemicals, glassware and instruments, with ongoing supervision. Questions can be discussed any time.

6. Assessment methods

Attendance of all ten days lab course and seminar is mandatory and acknowledged. A minimum amount of points has to be reached during the written exams. Attendance of the lecture in general chemistry is not obligatory, however, highly recommended.

7. Strengths

There is a sound ratio of supervisors and students to ensure a fruitful interaction. Students learn to interpret and to discuss experimental results. Experiments are carried out on own responsibility, by which the knowledge transfer from theoretical to practical aspects is fostered.

8. Weaknesses

Students of the dental schools observe difficulties in attending the lecture due to overlap with the timeframe of the lab course; the situation would drastically improve if these students were given the chance to hear the lecture in the semester prior to the laboratory course.

9. Plans for future changes

There is a clear plan to change experimental material in a direction that it can be more easily related to medical questions. This will be a major step forward in increasing both the motivation and the success of this course.

10. Visitors comments

A good grounding in Basic Sciences is essential to understanding the biological processes that underpin oral health and disease. Therefore the teaching of these subjects should be more integrated and clinically related which would encourage students to synthesise basic science knowledge into clinical situations.

6.3 Anatomy incl. Histology

Name: Prof. Dr. R. Hildebrand
e-mail: hildebra@uni-muenster.de
fax: +49-251-8352369

I. Anatomische Präparierübungen (Course of macroscopic anatomy, Dissection course)

1. Introduction

Students dissect a human corpse. The course takes place only during the winter semester and is intended for the second and third preclinical semester respectively.

2. Primary aims

Theoretical and, above all, practical knowledge about the anatomy of the human corpse, especially of the head and neck.

3. Main objectives

- Threedimensional understanding of the human body structure
- Biological principles of the structure of the human body
- Applied anatomy (clinical aspects)

4. Hours in the curriculum

10 hours per week during 1 winter semester (16 weeks)

5. Methods of learning / teaching

- Learning by doing
- Theoretical reports by student teachers
- Supplementing tutorial classes
- Lectures (2hours/week)

6. Assessment methods

Five oral examinations

7. Strengths

Intensive team-work of teachers and students

8. Weaknesses

Too many participants at the corpse

9. Innovations and best practices

Accompanying advanced tutorial classes in clinical anatomy in collaboration with physicians from hospitals and departments of radiology

10. Plans for future changes

Supplementary clinical-anatomical tutorials, especially with dentistry teachers.

II. Mikroskopisch-anatomischer Kursus (Course of microscopic anatomy)

1. Introduction

Students achieve knowledge in cytology, histology and microscopic anatomy using a microscope. The course takes place only during the summer semester and is intended for the second and third preclinical semester respectively.

2. Primary aims

Knowledge of the micro- and ultrastructure of cells, tissues and organs as basis for understanding of normal and pathological functions.

3. Main objectives

Microscopic and ultrastructural organization of cells, Cellular biochemistry and physiology, Tissue organization, Cytological and histological basis of organ function, Clinical applications

4. Hours in the curriculum

8 hours per week during one summer semester (12 weeks)

5. Method of learning/teaching

Individual microscopy of 100 microscopical preparations study of EM images, drawing of all microscopic specimens

6. Assessment methods

Two oral examinations using microscopy

7. Strengths

Good results

8. Weaknesses

Too many participants

9. Innovations and best practices

Video projection of the sections during the course, first Video-Online-Course via Internet in Germany

10. Plans for future changes

Improvement of the new data transfer technics.

Institut für Anatomie

Professoren

Prof. Dr. med. Reinhard Hildebrand (hildebra@uni-muenster.de) 0251/83-- 55230/ - 55231

Prof. Dr. rer. nat. Karl-Hermann Korfsmeier (korfsk@uni-muenster.de) 0251/83-- 55251

Prof. Dr. med. Franz Pera (peraf@uni-muenster.de) 0251/83-- 55210/ -55211

Prof. Dr. med. Werner Wittkowski (werwitt@uni-muenster.de) 0251/83-- 55220/ - 55221

Hochschuldozenten

Doz. Dr. med. dent. Udo Stratmann (stratmu@uni-muenster.de) 0251/83-- 55217

Wissenschaftliche Mitarbeiter

PD Dr. rer.nat. Jürgen Bockmann (bockmaj@uni-muenster.de) 0251/83-- 55201/ - 56498

PD Dr. med. Tobias Böckers (bockers@uni-muenster.de) 0251/83-- 56498

PD Dr. med. Timm Filler (filler@uni-muenster.de) 0251/83-- 55226/ -55254

Dr. med. Ulrich Fassnacht (fassnach@uni-muenster.de) 0251/83-- 55225

Dr. med. Gerhard Fischer, AOR 0251/83-- 55219

Dr. med. Ulrich Gräwe (graewe@uni-muenster.de) 0251/83-- 55223

Dr. rer. nat. Uwe Hiller (hiller@uni-muenster.de) 0251/83-- 55258/ -55282

Dr. med. Schide Nedjat 0251/83-- 55228

Dr. med. Elmar Peuker (peuker@uni-muenster.de) 0251/83-- 55212/ -55254

Dr. med. Eike Sauerbrey 0251/83-- 55227

Dr. rer. nat. Thomas Szuwart (szuwart@uni-muenster.de) 0251/83-- 55214

Visitors comments

There is no question again that the quality of teaching is high and that the facilities are very good. It is recommended that the excessively detailed Anatomy course should be more focussed on problems of topographic (clinical) anatomy of the Head and Neck. The fact that the courses in the 1st, 2nd and 3rd semester are given together for medical and dental students results in too much curriculum time being spent on general anatomy and histology. However the students do not get enough opportunity to study anatomy and histology in relation to dental clinical subjects.

The 100 microscopic preparations provided to the students contain only a few samples related to oral structures. There appears to be some overlap with Biochemistry and Physiology as far as teaching in cellular biochemistry and physiology is concerned. The visitors would like to encourage the department to further continue the use of multimedia.

6.4 Physiology

Name : PD Dr. Rüdiger Köhling
e-mail: kohling@uni-muenster.de
fax: +49-251-8355551

1. Introduction

The physiology course in the dental undergraduate curriculum (together with the main lecture in physiology) introduces the students to the mechanisms of body function. The main lecture gives the principles and basic mechanisms of physiology, whereas the physiology course is intended to give a deeper understanding of the subject. Thus, the students can increase their knowledge with the principle "learning-by-doing" and have the chance to see the clinical consequences by combining the physiological experiments with simple clinical trials given with the instructions. The course is not specialized for dental students, but introduces to all the functions of the body.

2. Primary aims

The students shall get an understanding of the normal function of the human organism (learning by doing) and shall understand that physiological mechanisms and techniques are related to clinical work.

3. Main objectives

The course is divided in 8 parts. The first four parts cover the nervous system, the last four the vegetative functions

- Sensory System I (somatosensory, auditory and vestibular system)
- Sensory System II (visual system)
- Motor System
- integrative functions of the Central Nervous System
- Respiration
- Circulation and Cardiac Function
- Blood
- Kidney Function and Electrocardiogram

4. Hours in the curriculum

The hours of the course (without the main lecture) are 54.

5. Methods of learning/teaching

The students are performing experiments in small groups (around 3 - 4 students each). The experiments are either common techniques in clinical everyday routine or are specially suitable to understand physiological principles. Animal experiments and computer simulations are avoided. The students practice on themselves or on other students.

The establishment of this special practical course of physiology was supported by a grant from the country Nordrhein-Westfalen and was evaluated by students and professionals.

6. Assessment methods

Three different methods are used:

Minutes kept by the students are controlled the week following the practical day. At each day of the course around 10 % of the students are chosen at random and are examined during a break.

At four days all students (in groups of 6 to 8 students each) are examined during a colloquy with one of the teachers.

If a student has inadequate results in one of the three methods he can compensate his failure in a special examination during the holidays. If his knowledge is still insufficient, he has to repeat the course.

7. Strengths

The students learn physiological principles with the method "learning-by-doing". They see that physiology is fun and important for clinical work. On top of that they understand that the human organism is not only a set of teeth.

8. Weaknesses

The course is not specially performed for dental students, but is identical for all students of medicine. Although this has the advantage of flexibility (changing of practical days, acceptance of certificate for change or extension of the dental study) some topics have little relevance for dental students.

9. Innovations and best practices

Continuously weak experiments are replaced by (hopefully) better ones in a modular system.

10. Plans for future changes

11. Visitors comments

see section 5.1

Section 07

Para-Clinical Sciences

- 7.1 - Pharmacology
- 7.2 - Microbiology, Hygiene and Public Health issues
- 7.3 - General Pathology

7.1 Pharmacology

Name: Prof.Dr. H. Winterhoff
e-mail: winterh@uni-muenster.de
fax: +49-251-8355501

1. Introduction

The students are first provided with basic facts of pharmacokinetics as well as pharmacodynamics to get the fundamentals of pharmacotherapy. Drug treatment in dentistry as well as that of common diseases is considered of special interest for these students.

The course is taught at the end of the curriculum (8./9. semester) during one year.

2. Primary aims

With special stress on the requirements of dental practice the students shall get an insight into the principles of general and clinical pharmacotherapy, as well as on special aspects of pharmacotherapy in children and in gestation.

3. Main Objectives

-pharmacokinetics/ pharmacodynamics	2 x 90 min
-analgesics/ antiinflammatory drugs	2 x 90 min
-opiates/drugs of abuse	1 x 90 min
-local anaesthetic drugs	2 x 90 min
-antiinfective drugs incl. antiseptics	3 x 90 min
-drug prescription	1 x 90 min
-drugs in pregnancy and lactation	1 x 90 min
-pharmacotherapy of the autonomic nervous system	2 x 90 min
-psychotropic agents	2 x 90 min
-treatment of cardiovascular diseases	2 x 90 min
-blood and blood forming products	1 x 90 min
-anesthetics	1 x 90 min
-chemotherapeutic agents	1 x 90 min
-diuretics	1 x 90 min
-muscle relaxants	1 x 90 min
-treatment of endocrine disorders	1 x 90 min
-intoxications	1 x 90 min

4. Hours in the curriculum

-25 x 90 minutes in one year

5. Method of learning/teaching

Lectures

6. Assessment methods

Only an oral examination during the State Board Examination

7. Strengths

Systematic proceeding, possible interaction with the students by questioning

8. Weaknesses

-Lack of time of the students to visit the lectures

-poor coordination with other courses

9. Innovations and best practices

Distribution of hand-outs

10. Plans for future changes

Improvement of the problems shown in 8

11. Visitors comments

The visitors appreciate the sound approach towards the teaching of pharmacology to dental students. General principles of pharmacology are taught as well as specific aspects related to clinical dentistry, the emphasis is on developing a sound thinking process, rather than learning mere facts. The timing in the curriculum is not good since on one hand it is scheduled at the end of the day, when students tend to spend time in the laboratory for prosthetic dentistry, and on the other hand the curriculum in that semester seems to be overcrowded anyway. In order to overcome these problems it may be advisable to look for more co-operation with the Oral Surgery department.

7.2 Microbiology, Hygiene and Public Health Issues

7.2.1 Medical Microbiology

Names: Prof Dr.med.Georg Peters, Priv.-Doz.Dr.med. Wolfgang Fegeler,
Priv.-Doz.Dr.Med. Christof von Eiff
e-mail: peterge@uni-muenster.de
fax: +49-251-8355350

According to the German "Approbationsordnung für Zahnärzte" the contents of the Section 7.2 include Medical Microbiology, Hygiene and Public Health Issues, and are taught for students in the fifth year by three institutions at the University of Muenster Hospital, *i. e.* the Institute of Medical Microbiology, the Institute of Hygiene, and the Institute of Occupational Medicine.

During the 3rd year, periodonto-pathogenic microbiology (4 hours, Department of Periodontology, Prof. Dr. T. Flemmig), and the microbial pathogenesis of plaque formation and cariogenesis (4 hours, Department of Conservative Dentistry, Prof. Dr. K. Ott) are taught.

Lectures and practical courses in Medical Microbiology are taught in 15 lecture hours and 12 practical course hours. Issues in Hygiene and Occupational Medicine are taught in additional 15 lecture hours (*cf* respective curricula)

1+2. Aims and Contents of Lectures and Courses in Medical Microbiology

Morphology, pathogenic mechanisms and clinical presentation as well as diagnostic methods, therapy and prevention of pathogens relevant in Dental Medicine are presented to the dental students and thoroughly discussed, including particular implications for their future practical work in Dental Medicine, Periodontology and Prosthetic Dentistry.

Another important aspect of the curriculum is the importance of infectious diseases and the pathogens originating from the oral cavity and adjacent structures for systemic infectious illnesses of humans.

3a. Objectives: Lectures

Basic introduction of principles in infection and host/parasite interaction; classification of the microorganisms according to phylogenetic, morphological, pathogenic, diagnostic, clinical and therapeutical aspects.

Normal and pathogenic flora of the oral cavity as a function of host determinants; important clinical infections of the oral cavity and the respective role of causative agents

Principles of diagnostic oral microbiology with emphasis on commensal oral microflora

Pathogenic principles, clinical presentation, and therapy of oral infections (I): Streptococci

Pathogenic principles, clinical presentation, and therapy of infections (II): Enterobacteriaceae

Pathogenic principles, clinical presentation, and therapy of infections (III): Tuberculosis and infections due to grampositive rods (*Actinomyces* sp, *Nocardia* sp.)

Pathogenic principles, clinical presentation, and therapy of infections (IV): pathogenic fungi

General principles of antimicrobial/antifungal therapy; presentation of selected groups of antimicrobial compounds and their mode of action; principles of antimicrobial resistance

Basic principles in innate and acquired host immunity; emphasis on immune mechanisms used in diagnostic microbiology

Principles of systemic disease (I): Infections caused by staphylococci with emphasis on osteomyelitis

Principles of systemic disease (II): Sepsis and bacterial endocarditis; aspects of disease in compromised hosts; emphasis of preventive measures relevant for dental medicine

Principles of systemic disease (III): Toxin-mediated infectious disease: diphtheria, botulism, tetanus, gas gangrene

Parasitology

Virology (I): general virology

Virology (II): specific virology with relevance in dental medicine

3b. Objectives: Courses

Training in microscopy and in interpretation of native preparation and Gram's staining; collection, handling and processing of specimens; Processing (culture, Gram's staining) of students' own oral swab.

Training in diagnostics of Gram-positive and Gram-negative cocci, differentiation of the different species by the key reactions (Gram staining, catalase, coagulase, oxidase), interpretation of the culture of the own oral swab. Microscopy of mycobacteria.

Training in diagnostics of Enterobacteriaceae and Pseudomonaceae, identification by biochemical reactions and specific antibodies (slide agglutination tests e.g. according to Gruber); susceptibility testing by agar diffusion method.

Evaluation of biochemical identification (Enterobacteriaceae) and of the susceptibility testing and interpretation of the results. Demonstration of anaerobic diagnostic.

Training in diagnostics of opportunistic fungi: Candida spp. by micromorphology, e.g. chlamydospores, germ tube testing and biochemical reactions (fermentation, assimilation); Aspergillus spp, Penicillium spp by colony morphology and micromorphology (ITO-Refai-culture). Methods for differentiation of bacteria and fungi.

4. Hours in the curriculum

Lectures (15 h) and laboratory courses (12 h).

5. Methods of learning/teaching

Laboratory courses are offered in student group sizes of 6 to 10 students. Integrative learning approaches are favored due to the combined lecture/course structure which is closely intercalated in order to promote basic understanding of clinical microbiologic techniques and enhanced perception of pathogenesis and treatment of dental infectious disease.

6. Assessment methods

Formal assessment of achievement of course objectives is not scheduled; informal assessment is continuously performed during course contact hours.

Mandatory assessment of the contents of the Section 7.2 is part of the oral final exam ('Staatsexamen').

7. Strengths

The close connection between practical microbiology and basics in understanding of oral infectious diseases, timely positioned at the end of the clinical studies of dental students.

8. Weaknesses

Limited time to address special scientific aspects.

9. Innovations

none

10. Plans for the future

It is planned to more closely coordinate issues and aims with clinical lecturers and course organizers to address novel scientific aspects important for dental students.

11. Visitors comments

The visitors understand that the present teachers in charge of medical microbiology for dental students are very interested in the specific aspects of oral ecology and disease. It was perceived as very refreshing that the teachers are looking for further improvements by trying to integrate the course with other dental clinical courses. There was agreement that teaching this subject in the 10th semester is too late. It should be taught at the beginning of the clinical activities as a basic course and thereafter applied and integrated in the clinical courses. The microbiology teachers agree that basic immunology should be taught before microbiology is commenced.

7.2.2 Hygiene

Name: Prof. Dr. H. Bösenberg
e-mail: -
fax: +49-251-8355341

1. Introduction

The valid test specification for dental medicine prescribes the student's participation in the following two separated courses (from this plan most of the Universities illegally deviate):

- Hygiene including health care for dentists
- Medical microbiology with practical studies (separate report!)

The course of hygiene is placed in the 6th semester. Lectures 1 hour per week.

2. Primary aims

The Primary aims are to teach hygiene as preventive medicine, i. e. the prevention of infectious diseases and non-transmittable diseases (e. g. due to environmental and life style factors) as well as clinical environmental medicine, occupational medicine and touristic medicine.

3. Main objectives

Topics: Sterilisation, disinfection, vaccination and touristic medicine, food hygiene, environmental hygiene (drinking water, bathing water, sewage, garbage, air hygiene) clinical environmental medicine, toxicology of amalgam, occupational medicine.

4. Hours in curriculum

One hour per week during one semester.

5. Methods of learning/teaching

Lectures only

6. Assessment methods

Oral Examination as part of the State Board Examination.

7. Strengths

A good overview of potential, preventable diseases factors is given, which is not restricted to dental hygiene problems.

8. Weakness

It is a purely theoretical course.

7.3 General Pathology

Name: Prof. Dr. W. Böcker
email: boeckew@uni-muenster.de
fax: +49-251-8355481

1. Introduction

The subject "Pathology" is divided into two parts, "General Pathology" and "Systematic Pathology" are taught in the 6th semester by means of a lecture and a practical microscopy course of 25 hours each.

2. Primary aims

To get students to see the importance of Pathology, e. g. in the diagnosis and treatment of malignant tumors, diseases of the cardiovascular system and general mechanisms of acute and chronic inflammations and their clinical appearances.

3. Main objectives

Systemic diseases as lymphoma and common cancers, causes of diseases, pathogenesis, general pathology of the cardiovascular system, inflammation, neoplasia (with a special emphasis on pathological changes of the oral mucosa, teeth and other tumors of the head, neck and surrounding organs).

4. Hours in curriculum

Lecture of 25 Hours

Microscopy Course of 25 Hours

Section 08

Human Diseases

- 8.1 - General medicine
- 8.2 - General surgery
- 8.3 – Dermatologie
- 8.4 – Otorhinolaryngology

8.1 General Medicine

Name: Prof. Dr. Th. Büchner
e-mail: buechnr@uni-muenster.de
fax: +49-251-8359667

1. Introduction and 2. Primary aims

This course is held during two consecutive semesters with the entire programme of the course being divided into part I and II for each different field in internal medicine.

3. Main objectives

- Introduction into internal medicine
- Cardiology (heart failure, coronary heart disease, coronary infarction, cardiac arrhythmias, fundamental diagnostics)
- Pneumology (chronic obstructive lung disease, emphysema, pneumonia, tuberculosis, lung cancer, X-Ray, pulmonary function test)
- Nephrology (glomerulo-nephritis, pyelo-nephritis, renal failure, renal hypertension)
- Vascular disorders (arteriopathies, venopathies, circulation failures, arterial hypertension)
- Gastroenterology (gastritis, gastric ulcer, Crohn's disease, colitis, hepatic disorders, biliary and pancreatic diseases, basis diagnostics)
- Metabolic diseases, endocrinology (thyroid disorders, diabetes mellitus)
- Infectiology, immunology (common infections and pathogens, antimicrobials and vaccination, allergy, transfusiology, histocompatibility)
- Hematology and hemostasiology (anemia, neutropenia, thrombocytopenia, coagulation defects, thrombosis, antocoagulants)

4. Hours in the curriculum

1.5 hours per week

5. Methods of learning/teaching

Lectures with presentation of patients, communication and dialogue with the students. The course is exclusively given by advanced university teaching staff including full professor, associate professors (Privat-Dozent), assistant professors.

6. Assessment methods

Multiple choice question test at the end of each semester. Final oral examination in the State Board Examination.

7. Strengths

The course provides an interesting, vivid and communicative education in basic internal medicine.

8. Weaknesses

Unknown

9. Innovations and best practices

Up to date theoretical and patient orientated teaching.

8.2 General Surgery

Department of General Surgery

Names: Univ.-Prof. Dr. med. N. Senninger, Dr. med. B. Marschall (contact)
e-mail: e-mail: marschb@uni-muenster.de
fax: +49-251-8356414

Department of Trauma- and Hand Surgery

Names: Univ.-Prof. Dr. med. E. Brug; OA Dr. med. R. Meffert (contact)
e-mail: rmeffert@uni-muenster.de
fax: +49-251-8356318

1. Introduction

This course contains two major topics: First, a brief overview on clinical appearance, diagnosis and treatment of selected surgical diseases is presented. On the other hand students are introduced to an extract of basic surgical skills with practical training.

The theoretical part is taught on a weekly base during the 6th semester in lectures, the practical part takes place during the 7th semester.

Teaching in the field of Trauma- and Hand Surgery is a subdivision of general surgical education. In addition to the theoretical course, we offer a practical education in our outpatient-department to allow students to experience taking history and examining.

2. Primary aims

The primary aim of the theoretical part is to refresh the understanding of biological-surgical mechanisms in order to create a basis for the understanding of surgical therapy. Likewise, the students are enabled to recognise signs and symptoms of surgical diseases, which potentially implement prophylactic measures. In the practical part the students obtain manual skills required in surgical procedures. Furthermore a sensation for the technical challenge and the main complications implicated to invasive methods shall be developed.

3. Main objectives

The main objectives of this courses are to develop skills in communication with the patient, taking history and learning basic techniques in physical examination. To get an overview in current techniques and possibilities in operative and non-operative treatment of injuries and diseases. To observe and experience the management of acute maxillofacial injuries in polytrauma victims.

The following selected surgical topics are discussed within this lecture:

- principals of normal wound healing and bone healing.
- principals of disorders of wound healing and bone healing
- recognise and treatment of wound infection
- acute abdomen
- oesophageal surgery
- thoracic surgery
- surgery of the stomach and duodenum
- surgery of the liver and gallbladder
- pancreatic surgery
- surgery of the small bowel and colon
- vascular surgery
- transplantation surgery
- trauma- and hand surgery

4. Hours in the curriculum

In collaboration with the department of trauma and hand surgery we offer one hour lectures (theoretical teaching) on a weekly base during the 6th semester and there is a practical course in the 7th semester.

5. Method of learning/teaching

The theoretical lectures are hold for the auditorium of the semester through slide presentations and case presentations. Depending on the interest of the students we offer clinical teaching in the outpatient-department mainly in a one-to-one teacher-to-student correlation. This offers the student a direct discussion on diagnosis and treatment with the teacher. The practical exercises are performed on models of the human body in small groups of students.

6. Assessment methods

As a part of the lectures, orderly classroom assessments take place. Regular attendance is certified at the end of the semester.

7. Strengths

The theoretical lectures are well organised and hold by a specifically trained teaching team, which is as well involved in daily patient care and thus is familiar with the current state of the art.

A clear and easy access to the time tables of the lectures is provided by the internet.

8. Weaknesses

Through the dense number of courses offered by the school of dentistry, the lectures of general surgery as well as trauma and hand surgery are not appreciated by all students from the medical school.

9. Innovations and best practices

Improved methods of Medical Education should provide a better understanding of surgical patient management. Therefore, we put tremendous efforts in training our teaching staff.

10. Plans for future changes

Considering the diversity of the medical challenges, interdisciplinary teaching units using "Problem Based Learning" – tutorials should be introduced in the near future.

11. Visitors comments

The computer based interactive learning programme as presented by the department is an excellent example of a best practice. The teaching in this department is highly commended as being well organised and based on good educational principles. The visitors got the impression that there is not enough staff to fulfil all the tasks adequately. As with other lectures the course in general surgery is not well attended by the students, mainly due to the overloaded programme in the 6th and 7th semester.

8.3 Dermatology

Name: Prof. Dr. med. S. Nolting
e-mail: -
fax: +49-251-8356522

1. Introduction

The course „Dermatology for students of dental medicine“ is held in the 6th semester.

2. Primary aims

Since the doctor of dental medicine sees the human skin of the face and the mucosa of the mouth for a longer time and more intensively than any other doctor, we point out to the students the importance of a sound knowledge of the physiology and biochemistry of the skin as well as immunological processes. The students have to know the difference between infective and contagious diseases. They are also informed about the risk features of cosmetics and enabled to give their opinion on essential questions

3. Main objectives

The Main objectives are

- diagnosis, differential diagnosis and clinical manifestation of various diseases
- comments of therapy
- psoriasis, eczemas, special atopic eczema, and lichen planus.
- consequence of UV-radiation in the skin subsequently a concentration in recognition of frequent skin tumors, especially basal cell carcinomas, squamous cell carcinomas and melanomas.
- allergies, immediate and delayed hypersensitivity
- anaphylactic shock as complication in the treatment of dental diseases
- urticaria, angioma
- autoimmune diseases, bullous dermatoses.
- diseases of the seborrhic glands as acne, rosacea, perioral dermatitis, especially seborrhic dermatitis.

- infections of the skin by bacteria including sexually transmitted diseases
- viral infections, especially herpes and human papilloma virus infections
- mycoses of the skin, the mucosa and the nails

4. Hours in the curriculum

The course will take at least 2 hours a week during one semester.

5. Method of learning/teaching

Lectures with presentation of patients, whenever possible
other methods of presentations, if needed

6. Plans for future changes

In the future an improvement can be achieved by interactive courses, using electronic media (interactive cd-rom courses for PC). Besides, more interdisciplinary courses (general medicine, general surgery, otorhinolaryngology and dermatology) in connection with dental medicine can help to provide students with sound background knowledge and deepen their understanding of physiological interaction. This is essential for the work of a dental practitioner, as he/she is very often responsible to refer the patient to another specialist.

8.4 Otorhinolaryngology

Name: Prof. Dr. Stoll
e-mail: -
fax: +49-251-8356804

1. Introduction

The lecture in otorhinolaryngology presents the main aspects of anatomical, physiological, and clinical basics of disorders in ENT.

2. Primary aims

- giving an overview on symptoms, diagnostics, and treatment of ENT-diseases as well as presenting cases which could be expected in a dental practice
- to get students to read up on different topics of interest by themselves

3. Main objectives

- anatomy of the head and neck
- physiology of ENT
- basic examination techniques in ENT-treatment
- benign and malignant lesions of the oral cavity, pharynx and larynx, inflammation, tumors, malformation
- diseases of the nose and sinuses (rhinitis, sinusitis, tumors, allergies)

4. Hours in the curriculum

The lecture is held for one semester, one hour/week.

5. Method of learning/teaching

Slide presentation

6. Assessment methods

Oral Examination in the State Board Examination

7. Strengths

Well organized lecture

8. Weaknesses

The place in the schedule is not optimal. Therefore the lectures are visited regularly only by a small number of students.

9. Innovations and best practices

None

10. Plans for future changes

None

Section 09

Orthodontics and Child Dental Health

9.1 Orthodontics

9.2 Child Dental Health

9.1 Orthodontics

Name: Prof. Dr. Ulrike Ehmer
e-mail: ehmer@uni-muenster.de
fax: +49-251-8347187

1. Introduction

Undergraduate training is based on lectures, seminars, laboratory work, preclinical and clinical courses with different main topics in each of the courses.

Undergraduate students are introduced to orthodontics in the 6th semester with lectures and supervised laboratory work in small groups.

The students of the 7th and 8th semester attend lectures with clinical demonstrations and a problem oriented block lecture of Dentofacial Orthopedics. The clinical courses I and II are scheduled for the 9th and 10th semester.

2. Primary aims

The students should be able to diagnose all forms of malocclusion and define the degree of orthodontic treatment need and be able to prognosis simple and complicated treatments. The students are trained according to the Muenster functional appliances systems. They should be familiar with the procedures used by orthodontists and be able to recognize the development of orthodontic problems at an early stage in order to apply interceptive treatment modalities. They should be able to select patients properly for treatment or referral (orthodontic specialists) in terms of malocclusion severity and timing.

3. Main objectives

Theoretical instructions (lectures and seminars)

- Physiology and pathophysiology of postnatal dentofacial growth and development
- Classification of Malocclusions according to the international and Muenster classification
- Etiology and prevention of malocclusion
- Knowledge of abnormal development of the dentition
- Orthodontic diagnosis data based on
- Medical history and patient interview
- Clinical data
- Standard documents with analyses: dental casts, lat. Ceph WWU- Muenster Analysis, OPG diagnosis and photographs

- Knowledge of indication for additional diagnostic documents: Hand radiographs, FRF, CT, MRT
- TMJ function and diagnosis of TMD
- Biological and mechanical principles of fixed, removable and functional appliances
- Orthodontic early treatment and interception at different developmental stages of the dentition including the "serial extraction" according Hotz and Kjellgren
- Characteristic principles of treatment approaching for different malocclusion types (Class I, Class II and Class III) in relation to age.
- Early simulating treatment in handicapped infants and orthodontic treatment indications for handicapped
- Orthodontic retention
- Practical exercises
- Analysis of dental casts, lateral headfilms, hand radiographs and orthopantogramms
- Impressions, production and trimming of orthodontic casts
- Wire bending
- Fabrication of different removable appliances
- Clinic
- Observe and assisting postgraduate students
- Oral hygiene instructions of orthodontic patients
- Diagnostic training on clinical patients
- Supervised treatment of patients with removable appliances
- Orthodontic treatment sequence
- Treatment planning with case presentation
- Taking initial records
- Fabrication of removable appliances (for clinical patients and student to student clinical exercises)

4. Hours of the curriculum

The lectures (6th, 7th and 8th Semesters) are held on a weekly two hour base. The preclinical course (6th Semester), scheduled for 6-8 hours weekly includes seminars and supervised laboratory work.

The clinical courses, divided in small groups (2-3 students), with a total of 30 hours, contains one week of clinical work and seminars. The two following weeks include case presentations and laboratory work. Practical exercises including impressions, 3-dimensional analysis, dental cast fabrication and construction bites for functional appliances (U-bow activator and FR3) are done in larger groups (8-10 students) and contents totally 30 hours.

The special laboratory time is scheduled 20 hours.

The total number of hours in orthodontics including lectures, seminars and three courses, are in the present curriculum 320 hours.

5. Method of learning/teaching

Lectures, seminars, video presentations, practical exercises, case analysis and treatment planning, clinical work, e-learning program, POL sequences and laboratory work.

6. Assessment methods

Theoretical knowledge of the preclinical 6th semester course is assessed by an oral examination, which is taken by an associate prof. and a post graduate student as co-examiner. A group of 4 students are judged after demonstrating their dental casts and fabricated functional appliances, as passed/not passed. In case of not passing the complete course has to be repeated.

At the end of the 1st clinical course (9th semester), the knowledge is assessed using a written exam. These exams comprise of short answer questions and multiple choice questions. The student must achieve 2/3 of the max. possible points to pass. In case of not passing the complete course must be repeated.

The practical exercises and clinical sequences are stepwisely controlled by the instructors and signed in special forms. Furthermore the diagnostic and therapeutic case planning is controlled with all analyses during the case presentation. The passing grade is 4 and better, otherwise the test will have to be repeated.

7. Strengths

- Clinical work in very small groups
- POL adjusted part in lecture "Kieferorthopädie 1"
- Systematic diagnostic data analysis
- State examination with clinical patients. These patients are freely treated thanks to the University financial aid.
- Good treatment and teaching conditions in the courses

8. Weaknesses

- Not enough suitable patients for similar treatment exercises
- Frequently changing academic staff
- No computerized diagnostic system for the students

9. Innovations and best practices

- Increased emphasis on orthodontic prevention and interception
- Systematic diagnostic education to learn the difference between cases of different degrees of severity in treatment and prognosis. This is an important point because orthodontic treatment is practiced regularly in general dental practices in Germany.
- Opening minds for referrals of handicapped and early intervention in handicapped infants
- Many clinical studies are open for dissertations

10. Plans for future changes

- Part of the teaching programs should be substituted with interdisciplinary subjects regarding to problem oriented learning
- Better treatment and practice possibilities for fixed appliances (eg. development of an European orthodontic simulating model system)

11. Visitors comments

The Orthodontic staff demonstrated considerable enthusiasm and interest in undergraduate education. The visitors were made aware of the difficulty in providing child patients for orthodontic treatment due to the insurance regulations. It is desirable that students would be exposed to the developing dentition (including the

normal) as well as providing simple interceptive orthodontic treatment. The students would appreciate if they could carry out more orthodontic treatment themselves; they now mainly assist members of staff carrying out treatment. The visitors share these concerns although they understand and accept the philosophy that it is most important for students to learn about analysis and diagnosis. In general practice the key skill is to be able to differentiate between the simple orthodontic cases to be treated by the dental practitioner and the more complex cases to be seen by the specialist orthodontist.

9.2 Child Dental Health

Name: Prof. Dr. Klaus Ott
e-mail: ottk@uni-muenster.de
fax: +49-251-8347037

1. Introduction

- 5th clinical semester: Lecture/seminar about pediatric dentistry, and, whenever possible treatment of children within the clinical course of Operative Dentistry and Periodontology, visitation programs in kindergarten.

2. Primary aims

To teach/to learn in theory and in practice the treatment of children with emphasis on prophylaxis.

3. Main objectives

Tooth development, special needs for children, prophylaxis, premedication, anesthesia, sedation, patient supervising, fissure sealants, restorative dentistry, endodontics.

4. Hours in the curriculum

A 5th clinical semester: 16 hours theoretical education

B 5th clinical semester: approximately 40 hours practical work with patients, three hours in kindergarten, 40 hours assistance while children are treated.

5. Method of learning/teaching

Lecture, Hands-on-courses, practical treating of patients under supervision, teaching in kindergarten

6. Assessment methods

Theoretical examination as part of the State Board Examination in Operative Dentistry and Periodontology.

7. Strengths

Students are treating children in small groups being instructed by post-graduate staff members. Clinically orientated diagnosing and treatment according to the problem arising from the clinical situation. Contact with kindergarten and other group prophylaxis situations.

8. Weaknesses

not enough children suitable for treatment by students. Most of the children that are being treated at the Dental School are handicapped or non willing children.

9. Plans for future changes

To recruit more children suitable for the treatment by students.

10. Visitors comments

The students are not happy about the fact that clinical practice in Paediatric Dentistry is not well covered in the curriculum. They do not carry out pulpotomies nor do they provide any other restorative treatment in deciduous/primary teeth. They receive no exposure to patient management issues for children. The visitors encourage the school to search for a way to overcome these problems.

Section 10

Public Dental Health and Prevention

Name: Prof. Dr. Klaus Ott
e-mail: ottk@uni-muenster.de
fax: +49-251-8347037

Public Dental Health and Prevention is not a separate subject of the dental curriculum in Germany but an integrated part of different courses. In the region of Muenster Public oral health is maintained by health administration („Gesundheitsamt“ or „Schulzahnklinik“).

Preventive dentistry is regarded as the basic concept of education in our school. The education starts with the dental undergraduate program by theoretical lectures given to the first year students. Preclinical students are also integrated in preventive exercises by clinical students.

Public oral health and preventive dentistry (including epidemiology) is mainly taught in the lectures and courses of Operative Dentistry and Periodontology. However, treatment concepts in Prosthetic Dentistry, Orthodontics as well as all Maxillofacial Surgery are strongly based on preventive aspects. This includes prevention of diseases in the oral cavity as well as infection control in general.

Education in classical preventive dentistry (caries, periodontology) intensively starts during the first clinical semester. A special preventive course is part of the phantom course in Operative Dentistry and Periodontology and the students practice in preventive dentistry on each other. Within the first and second course of Operative Dentistry and Periodontology (2nd and 5th clinical semester) students are required to perform individual preventive measures. These include different indexes, diagnosing and removing plaque and supra- and subgingival calculus. It is the duty of the students to inform the patients on preventive measures. For some years the students have taken part in an education/cooperation program provided to the kindergarten of the University of Muenster by the Department of Operative Dentistry. Within this program, the students are informed about means of prevention in groups.

Primary prevention is an obligatory part of an oral examination during the State Board Examination at the end of the undergraduate education.

Visitors comments

Although it is recognised that prevention is integrated in the various clinical disciplines, the visitors are of the opinion that Public Dental Health and Hygiene, as sub-discipline deserves more specific attention in the curriculum.

Section 11

Restorative Dentistry

- 11.1 - Conservative dentistry
- 11.2 - Endodontics
- 11.3 - Prosthodontics
- 11.4 - Dental occlusion and function

11.1 Conservative Dentistry

Name: Prof. Dr. Klaus Ott
e-mail: ottk@uni-muenster.de
fax: +49-251-8347037

1. Introduction

According to the given "Approbationsordnung" (requirement in the final State Board Examination), which is valid throughout Germany, in Muenster we present three courses in Operative Dentistry in combination with Periodontology. There are also different lectures and seminars accompanying these courses.

The lectures differ very much from the type we could see 20 years ago. Nowadays a lecture is rarely held in the classical manner. The character of the lectures has changed: usually a dialogue takes place between teacher and undergraduates who to some extent have to prepare themselves by books. Questions are normal (nobody should be ashamed of asking questions; in any case it would be wrong not to have asked)

6th semester: Phantom Course (20 hours per week, 240 or 280 hours per semester*)

7th semester: Clinical Course I (20 hours per week, 240 or 280 hours per semester*)

10th semester: Clinical Course II (20 hours per week, 240 or 280 hours per semester*)

*) depending on the length of summer semester and winter semester

The practical courses are accompanied by 6 hours of lecture per week during the 6th semester (72 or 84 hours per semester) and 4 hours of lecture per week during the 7th and also the 10th semester (48 or 56 hours per semester*).

2. Primary aims

Getting acquainted with physiology (variety) and pathology of hard tissues, diagnosis and prevention, treatment of caries and lesions of hard tissues

3. Main objectives

Etiology and epidemiology of caries and non-carious tooth lesions

Methods and strategies in caries prevention on an individual and on a group basis (including psychological aspects, especially anamnestic techniques)

Different diagnostic methods for caries detection

Treatment of caries with restorative materials (Amalgam, Composite, Glass Ionomer Cements, Cast Gold Restorations, Ceramics)

Indication of the different restorative materials and their toxicity

Adhesive dentistry and aesthetic aspects

4. Hours in the curriculum

see above

5. Methods of learning/teaching

The course in the 6th semester is a training course at the phantom working unit (manikin). The students learn and practice cavity preparation, the handling of instruments and different filling materials. In lectures, which are parallel to the courses, the students are informed about theoretical background for their practical work (12 students for 1 postgraduate instructor, usually 10:1). First step: They start on acrylic teeth in a phantom model on the table (hand-held). Next step is acrylic teeth in a phantom model in the phantom head. Next step is extracted teeth in a phantom model in the phantom head. Parallel are endodontic practises in 6 extracted and embedded teeth (anterior/posterior).

The final examination in this course includes preparation of 2 x 3 cavities within 2 x 2 hours.

One part of the course in the 6th semester is also a written test to prove the theoretical knowledge.

In the two clinical courses (7th and 10th semester) the students treat patients under a very stringent supervision by dental instructors (a maximum of 8 students for 1 postgraduate instructor, usually 6:1). Before the beginning of each treatment period (=half day), they have to report about the planned program for this day. Problems/questions will be discussed before. In the lectures and seminars parallel to the courses the students give reports based on their literature survey (subject is handed out by the senior lecturer).

6. Assessment methods

Every single step during the treatment of patients must be checked by a clinical instructor. If the treatment is correct, the student will receive points. At the end of the whole course the student must have fulfilled a program of various restorative treatments and she/he must have reached a certain score of points. At the beginning of every semester the students are informed about the scheme: There are basic requirements for each kind of material or endodontic treatment and some additional points to reach the minimum amount of all points (this provides more flexibility). One part of the course in the 6th, the 7th and the 10th semester is also a written test to prove the theoretical knowledge. Theoretical knowledge and practical skills are furthermore examined during the State Board Examination at the end of the undergraduate education (after the 10th semester). The examination takes 5 days (hours) including Operative Dentistry, Periodontology, Pedodontics and Primary prevention, and Endodontology.

7. Strengths

In the 6th semester we have a step by step programme which leads the student to the treatment of patients. There are some repetitions of preparations or fillings, so that they learn by iterative doing.

In the 7th and the 10th semester the students treat patients. Thereby, they learn and practice what they will later need for their professional life. In the seminars the students gain knowledge on new techniques and learn to evaluate and compile current literature.

8. Weaknesses

Before the students treat patients there is only one semester for training all the different treatment procedures on the phantom head. The students very often complain about this fact. The students have to learn the techniques, instruments, theoretical background on treatment procedures and the materials used during that semester (1st clinical semester). As there has been an increase in materials and treatment procedures in recent years, the data to be studied expanded considerably. The number of patients in the clinical courses suitable for treatment by students is limited. Therefore, the students can often practice only a very small number of the different treatment methods with a limited training effect.

If any student presents a very excellent work on his patient, this cannot lead to a higher number of points; the criteria are: „acceptable and better“ or „non-acceptable (must be corrected)“. If any student had to treat a „difficult patient“, this cannot lead to a higher number of points; it is not possible to define the criteria for „difficult patient“ or „difficult situation“.

9. Innovations and best practices

Prevention based concept of Operative Dentistry including minimal invasive dentistry

„Learning in dialogue“ (training for verbal communication with postgraduates, teachers)

Communication via e-mail: some parts of the lecture, which are available through internet (WinWord/PowerPoint-Presentations) can be sent to the students;

questions can be asked this way.

Anonymous Evaluation (students give their comment on course, lecture, seminar at the end of the semester)

Semester Speakers' Evaluation (On the last monday evening in the semester there is a meeting with all semester speakers and the heads of the departments and the senior lecturers: comments and proposals are discussed in a constructive manner)

Working with new technology (e.g. ceramics, sonic preparation)

10. Plans for future changes

Presentation of additional courses (if special request: „lecture on demand“)

11. Visitors comments

The visitors were impressed with the pre-clinical and clinical programmes and especially the good relationship between staff and students, which is probably due to the age profile of the junior staff (Assistant Doctors). The main comment about the teaching of Conservative Dentistry is that this important part of the curriculum starts too late and the phantom head course appears to be too short to adequately prepare

the students. Patient contact should start earlier in the curriculum in order to motivate students and allow them discover the complexity of patient care. It is strongly recommended that the German dental curricula, including Münster, should be brought into line with the modern general European approach where students start in the first or second semester with phantom head cavity preparation and restoration, then enter the clinic in the 4th or 5th semester. Periods of assisting more senior students in the clinics would provide valuable exposure to clinical situations, such as caries prevention.

There is a major concern which must be brought to the attention of the Department with respect to the pass/fail rate for the phantom course. It is understood that the failure rate for the phantom course in Conservative Dentistry is very high (up to 33%). The reasons for this high failure rate should be explored and remedial action taken.

Ergonomics and four-handed dentistry are only taught for one lecture hour. Students should learn about the occupational health risks of poor posture. The visitors endorse the students wish to be educated to work as a member or leader of the dental team rather than an individual dental worker.

11.2 Endodontics

Name: Prof. Dr. Klaus Ott
e-mail: ottk@uni-muenster.de
fax: +49-251-8347037

1. Introduction

Endodontology is an integrated subject of Operative Dentistry

Endodontology is an integral part of

- a) Phantom course of Operative Dentistry 6th semester
- b) Clinical Course of Operative Dentistry I 7th semester
- c) Clinical Course of Operative Dentistry II 10th semester

2. Primary aims

The students should be able to diagnose and treat sound pulp (profound caries), reversible and irreversible pulpitis, pulp necrosis and periapical inflammation. The students should learn how to solve distinct endodontic problems.

3. Main objectives

Anatomy, Biology, Physiology and Development of pulp and periapical tissue

Pathologic reactions of the pulp tissues and the periapical region including pathology of inflammation

Diagnosis of endodontic diseases

Therapy for vital pulp

Root canal treatment procedures

Endodontics and Pedodontics

Failures of endodontic therapy

Endodontic emergency treatment

Postendodontic treatment (e.g. restoration of the endodontically treated tooth).

4. Hours in the curriculum

Endodontology is an integral part of the courses of Operative Dentistry; exact time required for treatment of patients with endodontic problems cannot be given. During the 6th semester (phantom courses of operative dentistry) there is a special section for „Endodontology“, where the students perform endodontic treatment (Step 1: working in at least one acrylic block; step 2: treatment on 6 extracted and embedded teeth).

Each summer semester the lecture is about „Endodontology“

In the course of Operative Dentistry I and II respectively the students have to perform endodontic treatment of at least nine root channels.

5. Methods of learning/teaching

(compare with operative dentistry)

The course in the 6th semester is a training course at the phantom working unit (manikin). The students learn and practice cavity preparation and the handling of instruments and different filling materials. In the lectures Parallel to the course the students are informed about the theoretical background for their practical work (a maximum of 12 students for 1 postgraduate instructor, usually 10:1).

During the 6th semester (phantom courses of operative dentistry) there is a special

section for „Endodontology“, where the students perform endodontic treatment (Step 1: working in at least one acrylic block; step 2: treatment on 6 extracted and embedded teeth).

The final examination in this course includes preparation of 2 x 3 cavities within 2 x 2 hours.

One part of the course in the 6th semester is also a written test to prove the theoretical knowledge.

In the two clinical courses (7th and 10th semester) the students treat patients under a very stringent supervision by dental instructors (a maximum of 8 students for 1 postgraduate instructor, usually 6:1). Before the beginning of each treatment period (=half day), they have to report about the planned program for this day. Problems/questions will be discussed before. In the lectures and seminars parallel to the courses the students give reports based on their literature survey (subject is handed out by the senior lecturer).

6. Assessment methods

Every single step during the treatment of patients must be checked by a clinical instructor. If the treatment is correct, the student will receive points. At the end of the whole course the student must have fulfilled a programme of various restorative treatments and she/he must have reached a certain score of points. At the beginning of every semester the students are informed about the scheme: There are basic requirements for each kind of material or endodontic treatment and some additional points to reach the minimum amount of all points (this provides more flexibility) One part of the course in the 6th, the 7th and the 10th semester is also a written test to prove the theoretical knowledge.

Theoretical knowledge and practical skills are furthermore examined during the State Board Examination at the end of the undergraduate education (after the 10th semester). The examination takes 5 days (hours) including Operative Dentistry, Periodontology, Pedodontics and Primary prevention, and Endodontology.

7. Strengths

In the 6th semester we have a step by step programme which leads the student to the treatment of patients. There are some repetitions of preparations or fillings, so that they learn by iterative doing.

In the 7th and the 10th semester the students treat patients. Thereby, they learn and practice what they will later need for their professional life. In the seminars the students gain knowledge on new techniques, and they learn to evaluate and compile current literature.

8. Weaknesses

Before the students treat patients there is only one semester for training all the different treatment procedures on the phantom head. The students very often complain about this fact. The students have to learn the techniques, instruments, theoretical background on treatment procedures and the materials used during that semester (1st clinical semester). As there has been an increase in materials and treatment procedures in recent years, the data to be studied expanded considerably. The number of patients in the clinical courses suitable for the student is limited. Therefore, the students can often practice only a very small number of the different treatment methods with a limited training effect.

9. Innovations and best practices

Prevention based concept of Operative Dentistry including minimal invasive dentistry

„Learning in dialogue“ (training for verbal communication with postgraduates, teachers)

Anonymous Evaluation (students give there comment on course, lecture, seminar at the end of the semester)

Semester Speakers Evaluation (On the last Monday Evening in the semester there is a meeting with all semester speakers and the heads of the departments and the senior lecturers: comments and proposals are discussed in a constructive manner)

Working with new technology (e.g. ceramics, sonic preparation)

10. Plans for future changes

Presentation of additional courses (if special request: „lecture on demand“)

Integration of rotary instrument assisted root channel treatment.

11.3 Prosthodontics

Name: Prof. Dr. Dr. Friedhelm Bollmann
e-mail: bollmaf@uni-muenster.de
fax: +49-251-8347182

11.3.1 Introduction

The undergraduate education in restorative-prosthetic dentistry is divided into a preclinical and a clinical part. The preclinical education, which is carried out in several courses on realistic simulation models ("phantom patient") and in the laboratory during the 1st or 2nd, the 3rd and 4th semester, prepares the student for the clinical part of education, which takes place in the 8th and 9th semester. During the clinical education in prosthodontics students train the diagnostic and therapeutic procedure of prosthetic rehabilitation on assigned patients under the supervision of specialist teachers. The following table gives an overview of the different lectures and practical courses in the field of prosthetic dentistry and their place in the curriculum.

Section	Semester	Course / Lecture	hrs/week	
			Practical Exercise	Lecture / Demonstration
pre-clinical	1 th or 2 nd	Introductory Course of Clinical and Laboratory Dental Procedures	20	4
		Dental Materials I (Part 1)		1
		IT-Introduction	1	1
	4 th	Phantom Course I of Restorative-Prosthetic Dentistry	20	6
		Dental Materials I (Part 2)		1
		Phantom Course II of Restorative-Prosthetic Dentistry	40 hrs (5 weeks)	8 (5 weeks)
		Dental Materials I (Part 3)		1 (5 weeks)
	5 th	Dental Materials II		2
		Function of the Masticatory System		1
clinical	8 th	Course I of Prosthetic Dentistry	20	
		Prosthodontics I (fixed prosthodontics)		2
		Treatment Planning in Prosthodontics		1
		TMJ and Masticatory Muscle Disorders		1
	9 th	Course II of Prosthetic Dentistry	20	
		Prosthodontics II (removable prosthodontics)		2
		Treatment Planning in Prosthodontics		1
		TMJ and Masticatory Muscle Disorders		1
		Special Fields of Prosthodontics		2

11.3.2 Preclinical Education

1. Introduction

Determined by a government regulated curriculum, the preclinical training in restorative-prosthetic dentistry comprises 3 practical courses with hands-on experience in the laboratory and on phantom patients (*introductory course of clinical and laboratory dental procedures* in the 1st or 2nd semester, *phantom course I of restorative-prosthetic dentistry* in the 4th semester, and *phantom course II of restorative-prosthetic dentistry* during the lecture-free period between the 4th and 5th semesters) plus accompanying lectures and/or seminars with practical demonstrations and hands-on work in small groups (see table under 11.3.1).

2. Primary aims

The preclinical training serves to give the student a theoretical and practical background that will enable him to perform restorative-prosthetic treatment. With aspects of epidemiology, etiology, pathogenetics, materials technology and prophylactics taken into account, the student is trained in diagnostic and therapeutic procedure in standard prosthetic-restorative situations under conditions complying as far as possible the clinical treatment situation.

3. Main objectives

Introductory course of clinical and laboratory dental procedures

basic knowledge about

- epidemiology, etiology and pathogenesis of caries and periodontal diseases, and how to prevent these,
- dental materials, their chemical and physical characteristics and their correct processing,

respectable knowledge of

- anatomy, morphology, and function of the teeth, the stomatognathic system and adjacent craniomandibular structures,

practical experience in

- impression taking for diagnostic and working casts,
- handling of a facebow and semiadjustable articulator on a phantom patient,
- waxing techniques, and the „lost wax“ casting technique,
- wire and brace bending techniques,
- acrylic resin repairs of complete dentures in cases of fracture of the base or broken teeth,
- computerized functions (introduction to word processing, statistics, graphic production, literature searching, Internet application).

Phantom course I of restorative-prosthetic dentistry

basic knowledge of

- diagnosis, treatment planning and prognosis of fixed and removable partial dentures,
- treatment procedures for the edentulous patient,
- dental materials used in the fabrication of fixed and removable partial dentures and of complete dentures,

respectable knowledge about

- principles of tooth preparation for complete cast crowns and bridges,

- clinical and laboratory procedure for fabricating complete cast crowns and pontics, complete dentures, and fixed and removable partial dentures.

practical experience in

- preparation of teeth for crowns and bridges under realistic conditions, using a phantom head,
- handling of a facebow and semi-adjustable articulator on a phantom patient,
- clinical and laboratory procedure for fabricating complete cast crowns and pontics (tooth preparation, impression taking, provisional restoration, working cast, wax pattern, investing and casting, try-in and cementation in the phantom patient's mouth),
- clinical and laboratory procedure for fabricating an upper and a lower complete denture for the edentulous patient, and a partial acrylic immediate replacement denture for the partially edentulous patient.

Phantom course II of restorative-prosthetic dentistry

Basic knowledge of

- extraoral and intraoral examination,
- diagnosis, treatment planning and prognosis of different contemporary fixed prosthodontics and craniomandibular disorders,
- mandibular movements and positions; common features of and differences between various types of articulator; centric relation recording techniques; techniques for programming semi- and fully adjustable articulators,
- dental materials (chemical and physical characteristics and correct processing) in conjunction with the fabrication of posts for restoring endodontically treated teeth, provisional restorations, complete cast crowns and bridges, metal-ceramic crowns and bridges, complete resin and resin-veneered cast metal crowns and pontics.

Respectable knowledge about

- principles of tooth preparation for different types of restorations (e.g. complete cast crown and bridge, metal-ceramic crown and bridge, partial veneer crown, complete ceramic crown),
- restoration techniques of the endodontically treated tooth,
- techniques and materials for provisional restorations,
- clinical and laboratory procedure for fabricating resin-veneered cast metal, metal-ceramic, and complete resin crowns and pontics.

Practical experience in

- impression taking for diagnostic casts in situ (reciprocal),
- handling of a facebow and semiadjustable articulator in situ including programming of the articulator by eccentric interocclusal records (reciprocal),
- fabrication of occlusal rims from acrylic resin for McGrane registration of maxillo-mandibular relationship, centric relation recording by different techniques in situ (reciprocal),
- restoring endodontically treated teeth with prefabricated and custom-made posts,
- preparation of teeth for crowns and bridges under realistic conditions in a phantom head,
- making provisional restorations for prepared teeth,
- clinical and laboratory procedure for fabricating complete resin and resin-veneered cast metal crowns and pontics (tooth preparation, impression taking, provisional restoration, working cast, wax pattern, investing and casting, veneering, try-in and cementation).

4. Hours in the curriculum

Introductory course of clinical and laboratory dental procedures (1st or 2nd semester):

- practical work in the laboratory: 20 hrs per week,
- accompanying lectures and practical demonstrations in the laboratory: 4 hrs per week,
- lectures on *dental materials I (part 1)*: 1 hr per week,
- practical exercises and lectures in the CIP pool: 1 hr per week.

Phantom course I of restorative-prosthetic dentistry (3rd or 4th semester):

- practical work on the phantom patient and in the laboratory: 20 hrs per week,
- accompanying lectures with demonstration of practical procedures, both on the phantom patient and on the „real“ patient and in the laboratory: 6 hrs per week,
- lectures on *dental materials I (part 2)*: 1 hr per week.

Phantom course II of restorative-prosthetic dentistry (3rd or 4th semester):

- practical work on the phantom patient and in the laboratory: 45 hrs per week (5 weeks),
- reciprocal diagnostic practice: 12 hrs (within 5 weeks),
- accompanying lectures with demonstration of practical procedures, both on the phantom patient and on the „real“ patient and in the laboratory: 8 hrs per week,
- lectures on *dental materials I (part 3)*: 1 hr per week.

Dental materials I (during „Introductory course of clinical and laboratory dental procedures“ and „Phantom course I+II of restorative-prosthetic dentistry“ – see above):

Lectures: 1 hr per week for 3 semesters.

Dental materials II (5th semester):

Lectures: 2 hrs per week.

Function of the masticatory system (5th semester):

Lectures: 1 hr per week.

5. Methods of teaching / learning

- Lectures backed up by color slides, video films and live demonstrations of selected cases, aimed at providing theoretical background knowledge.
- All individual steps of the dental and prosthodontic laboratory work to be produced by the student on the phantom patient or in the laboratory are shown on phantom patients and on casts, using video-assisted live demonstrations.
- Realistic simulation of the entire sequence of dental and laboratory work in the prosthetic rehabilitation of standard cases, with the student fabricating and inserting prosthodontic restorations himself for given situations in a phantom patient under the supervision of specialist teachers. Each student has his own treatment area with phantom head, dental instrumentarium and video system as well as his own place in the adjoining preclinical dental laboratory.
- Reciprocal extra- and intraoral examination practice, impression taking, centric relation recording and articulator programming in the clinical training room.
- Case-based learning in small groups with practical exercises.
- CD-ROM based learning system for selected topics.

6. Assessment methods

- Each step of the practical exercises is assessed by an instructor. On completion, each work is rated with an overall grade between „1“ = excellent and „5“ = failed. The average grade awarded for all practical exercises must be 4.0 or better. If this is not the case, the course has been failed and has to be repeated.
- At the end of each course section, the practical skills and theoretical knowledge acquired by the student in each individual field (e.g. contemporary fixed prosthodontics, removable partial dentures, complete dentures etc.) are assessed by means of multiple choice exams and practical tests. If the minimum number of points required is not attained, the section can be repeated. In the event of a renewed failure, the entire course must be repeated. There is no opportunity for poor theoretical knowledge to be offset by good practical results and vice versa.

7. Strengths

- The fairly realistic simulation of the clinical treatment situation in the phantom patient, the accompanying demonstrations on the „real“ patient, and the reciprocal practical exercises in the clinical training room give the student a good preparatory grounding for his subsequent clinical work.
- The intensive practical work scheduled at an early stage helps perfect the student's manual skills while showing him from the very outset of the degree course whether he is suited to this profession

8. Weaknesses

- The high numbers of students (46-60 per course) and the instructor/student ratio of 1:20 stipulated in the capacity regulations preclude individual tutoring, in particular for weaker students.
- The equipment provided in the phantom course training room and the preclinical laboratory has remained unchanged since the Department was opened in 1980 and is in urgent need of updating. There are thus, for example, no suction devices at the laboratory places nor any computers at the phantom training places.

9. Innovation and best practices

- Preclinical education is closely clinically oriented.
- Early introduction to computer work, opportunity to work independently on Department-owned computers with Internet access and connection to the university network in the CIP pool, use of interactive learning programs.

10. Plans for future changes

More attention is to be paid in the preclinical education to health promotion and prophylactic aspects as well as to minimally invasive forms of restoration, in cooperation with the Departments of Restorative Dentistry and Periodontology.

11.3.3 Clinical Education

1. Introduction

Determined by a government regulated curriculum, the clinical training in prosthetic dentistry comprises 2 practical courses (*courses I + II of prosthetic dentistry*). In both courses, the student fabricates and inserts prosthodontic restorations for the patients assigned to him after comprehensive clinical examination and treatment planning. The practical work in situ and in the laboratory is accompanied by lectures, seminars, practical demonstrations, and exercises in small groups (see table under 11.3.1).

2. Primary aims

The diagnostic and therapeutic procedure for the production of prosthodontic restorations for the fully dentulous, partially edentulous and edentulous patient is practised under real-life conditions. Using fundamental evidence-based knowledge with biological and functional aspects taken into account, the aim is to enable the student to plan and fabricate prosthodontic restorations to deal with all possible findings.

3. Main objectives

Respectable knowledge of

- anatomy, physiology, pathology and function of the entire masticatory system,
- treatment planning for single-tooth restorations, and replacement of missing teeth, based on patients' needs and state-of-the-art evidence-based knowledge,
- all dental procedures that need to be accomplished before prosthodontics can be undertaken,
- possibilities and limitations of the restorative materials and techniques most frequently used in prosthetic dentistry,
- dental and laboratory procedure for the production of crowns and bridges, fixed and removable partial dentures, and complete dentures,
- follow-up care after prosthetic rehabilitation.

Basic knowledge of

- maxillo-facial prosthodontics (principles of presurgical, preradiotherapeutic, and postsurgical dental treatment for patients with head and neck cancer; principles of prosthetic rehabilitation in cases of cheilognathopalatoschisis and after traumatic injury)
- geriodontics (ageing-induced systemic disorders and changes in the oral cavity, principles of prosthetic rehabilitation in the elderly),
- implant-supported prosthodontics (indications, advantages and disadvantages, treatment planning, cooperation between prosthodontist and surgeon, practical procedure in situ and in the laboratory),
- adhesive prosthodontics (indications, advantages and disadvantages, special tooth preparation techniques, practical procedure in situ and in the laboratory).

Practical experience in

- examination, mouth preparation, and treatment planning for single-tooth restorations, replacement of missing teeth, and in cases of temporomandibular joint and masticatory muscle disorders,
- treatment with contemporary fixed prosthodontics (complete cast crowns and bridges, metal-ceramic crowns and bridges, partial veneer crowns, complete ceramic crowns, complete resin crowns, retainers for removable partial dentures),

- treatment with removable partial dentures, using various retainers (clasps, crowns with intra- or extracoronary attachments, and telescope crowns),
- rehabilitation of the edentulous patient with complete dentures,
- communicating with the dental laboratory,
- follow-up care after prosthetic rehabilitation, using a systematic recall system.

4. Hours in the curriculum

Introductory course of clinical prosthodontics (8th semester - as part of the Course I of prosthetic dentistry):

- practical work on each another, hired edentulous patients, and in the laboratory: 3 hrs per week,
- accompanying lectures and practical demonstrations in small groups: 2.5 hrs per week.

Course I of prosthetic dentistry (8th semester):

- practical work on assigned patients and in the laboratory: 20 hrs per week,
- follow-up care within the scope of a recall program for patients fitted with prosthetic appliances: 20 hrs per semester,
- accompanying lectures: 1 hr per week.

Course II of prosthetic dentistry (3rd or 4th semester):

- practical work on assigned patients and in the laboratory: 20 hrs per week,
- follow-up care within the scope of a recall program for patients fitted with prosthetic appliances: 20 hrs per semester,
- accompanying lectures: 2 hrs per week.

Prosthodontics I (fixed prosthodontics) (8th semester):

Lectures: 2 hrs per week.

Prosthodontics II (removable prosthodontics) (9th semester):

Lectures: 2 hrs per week.

Treatment planning in prosthodontics (8th and 9th semesters):

Case-based and problem-based learning in small groups: 2 hrs per week.

Special fields of prosthodontics (9th semester):

Lectures, case demonstrations, and practical work in small groups using a phantom patient: 2 hrs per week.

TMJ and masticatory muscle disorders (9th semester):

Lectures: 1 hr per week.

5. Methods of teaching / learning

- Lectures backed up by color slides, video films and live demonstrations of selected cases, aimed at providing theoretical background knowledge.
- Supervised independent practical work in situ and in the laboratory (under the supervision of specialist teachers, the student himself fabricates and inserts prosthodontic restorations for the patients assigned to him after comprehensive clinical examination and treatment planning).
- Case-based and problem-based learning in small groups with practical exercises.
- CD-ROM based learning system for selected topics.
- Search and evaluation of the literature with the aim of dealing with selected clinical issues arising within the framework of prosthetic treatment in situ (access to the

international scientific literature through Internet and university-owned network at the computers in the CIP pool).

6. Assessment methods

- Supervision of the clinical and laboratory work by an instructor; in order to pass the practical course, the student must have fabricated and inserted a specific number of fixed and removable prosthetic restorations.
- Multiple choice exam at the end of the course for assessment of the theoretical knowledge acquired by the student. If the minimum number of points required is not attained, the section can be repeated. In the event of a renewed failure, the entire course must be repeated.

7. Strengths

- The students have the opportunity to become familiar with the entire field of prosthetic dentistry, inclusive of less frequently encountered special cases.
- All standard procedures used in prosthodontic treatment are practised systematically in situ.

8. Weaknesses

- Lack of patients requiring simple treatment. As a result, even the novice often has to treat patients who have been referred to the Department by their own dentist on account of special problems.
- Unfavorable supervisor/student ratio: as a result of the statutorily reduced staffing levels, too few assistant dentists are available to supervise the students.
- As a result of the crowded curriculum in the 8th and 9th semesters, very little time is left after the compulsory activities for additional training in the form of case-based and problem-based learning in small groups.

9. Innovations and best practices

- The wide range of special prosthetic cases treated at the Department of Prosthetic Dentistry at the University of Münster means that the student can be introduced to less frequently encountered symptoms and treatment methods.
- Practice in acquiring and evaluation the scientific literature in order to deal with clinical issues.
- Introduction of an interactive CD-ROM based learning system.

10. Plans for future changes

- Expansion of the multimedia-based learning system and teaching in the form of case-based and problem-based learning in small groups.

11. Visitors comments

The courses in Prosthetic Dentistry comprise a substantial part of the curriculum and the students achieve a very high standard in technical excellence. According to the Approbationsordnung the pre-clinical training is given within the first five semesters. The visitors understand the importance of building up psychomotor skills from early on in the curriculum. It is also understood that the expertise of the instructors from the Prosthodontic Department is valued by the students. However there is a major concern about the vast amount of technical laboratory work carried out by the students, which must be brought to the attention of the Department.

- The visitors are of the opinion that the training of dentists in this school is too technically oriented both in the pre-clinical and clinical periods. The students are educated to carry out most of their laboratory work themselves, whereas in practice, these procedures will be carried out by the dental technician. The supervision of dental technicians does not require such a high level of technical proficiency. The students also expressed their frustration that both in the pre-clinical years as well as in the clinical years they spend far too much time on technical laboratory procedures. The visitors share this opinion, it would appear that valuable clinical time is used to carry out laboratory work more appropriate to a dental technician.
- Patient-student contact should start earlier in the curriculum and laboratory work by the dental student should be restricted to chair-side procedures that would be carried out in practice (e.g. repair work and adjustment of denture settings, etc.). There is an argument that practical work early in the curriculum is necessary to build up manual skills and to contribute to selection procedures.
- The visitors support the Department plans for future changes and appreciate the initiatives to expose students to the use of computers and multimedia learning programmes.
- In the clinical setting it is strongly recommended to introduce integrated total patient care which provides a more patient-centred approach. This contrasts with the present situation where a patient can rotate between various departments and students, each making treatment plans and keeping their own records.

11.3.4 Dental Material Science

Name: Prof. Dr. rer. nat. Meiners
e-mail: meinerh@uni-muenster.de
fax: +49-251-8347182

At the Dental School of Muenster dental material science is a field of high significance. For this task a physicist was specially enroled in the team of the newly established Clinic of Prosthodontics as early as 1971. An independent department (Institut für Zahnärztliche Werkstoffkunde) was founded in 1982.

Teaching dental material science is done principally in the main lecture in the 5th semester (2 hs/ week). By then it has been taught preliminarily as part of the three pre-clinical phantom-courses (Introductory Course of Clinical and Laboratory Dental Procedures, Phantom course I and II of Restorative-Prosthetic Dentistry). The final pre-clinical examination (Zahnärztliche Vorprüfung) includes a special oral examination on dental materials.

Since the head of the Dental Material Science Department Prof. Dr. rer. nat. H. Meiners has retired (August 2000) this office has not yet been reoccupied. In the meantime Prof. Meiners continues lecturing.

11.3.5 Network of the Department of Prosthodontics

Name: Joachim Schneider
e-mail: schnejo@uni-muenster.de
fax: +49-251-8347182

The Department of Prosthodontics has a network, which is protected by a firewall from the University Network. This network was set up over three building levels (Level 5, 4, and 3). With this network the members of the Department of Prosthodontics can share datas and peripheral devices. The network is connected with the Internet.

Programs for Patients` Administration in the Department of Prosthodontics

For organizing the patient datas there is a small DOS-program that manages the time and visit. A database containing the recall times of the patients manages the weeks, where the students can serve the patients with recall services.

PILS - Prosthodontics-Interactive-Learning-System

From 1998 till now there is a development of a multimedial learning system for the use in all courses of dental education. In the winter semester of 2000/2001 this learning system will be introduced, evaluated and corrected. This learning system is tested in the courses complete prosthodontics and phantom I. The learning system is optimized for students and authors. This means that authors like dentists need not to learn an authoringsystem for producing a learning program. Authors can produce their teaching stuff directly in the learning system. The learning system is CD-ROM based, so that students can use it at home.

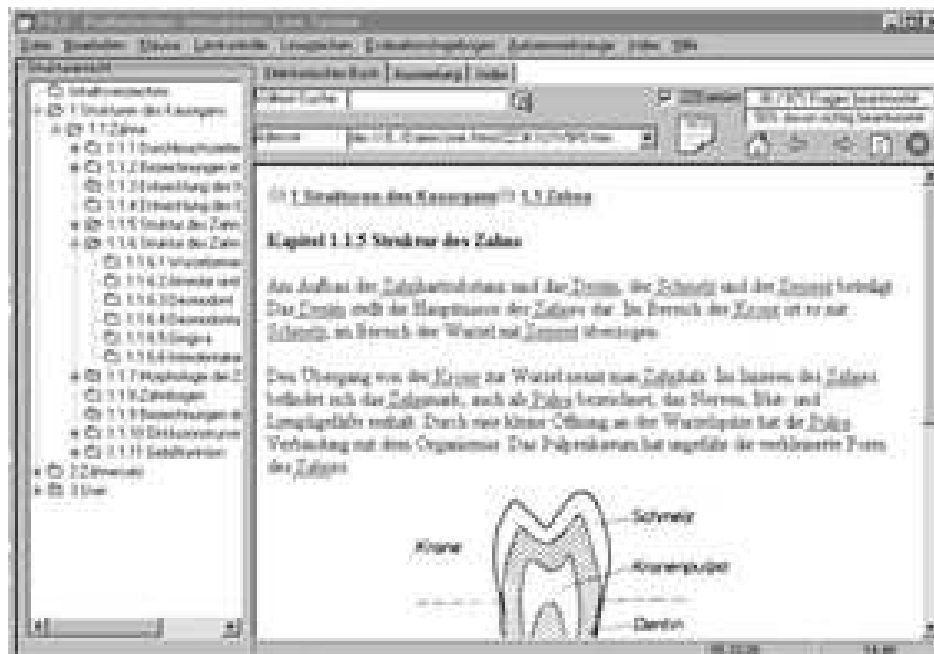


Fig.: Desktop of the learning system PILS for students
The Desktop for authors show services to generate the learning stuff, questions and answers and links to other sites.

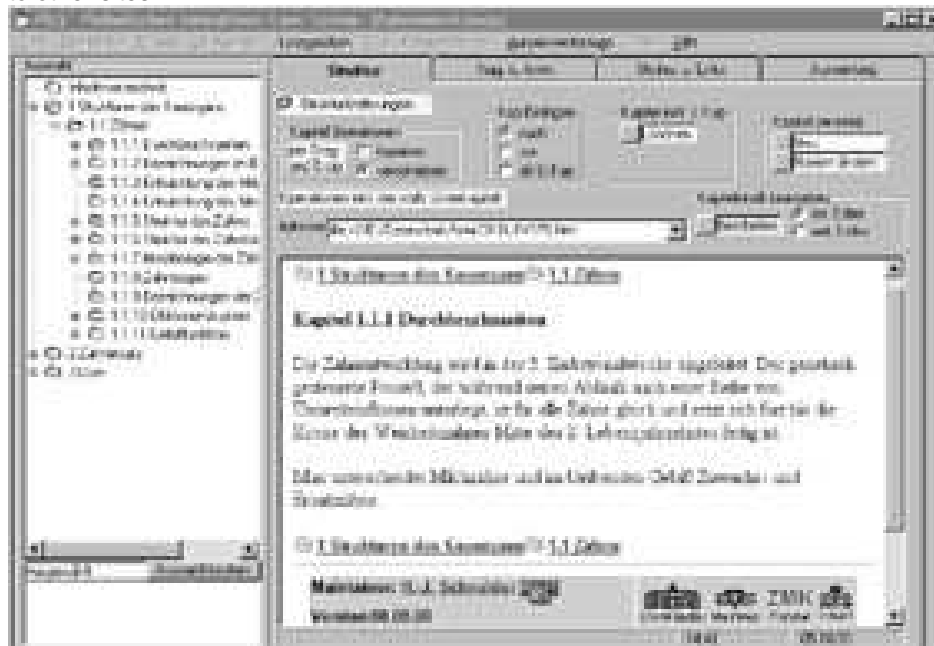


Fig: Desktop of the learning system PILS for authors

11.3.6 Postgraduate Education

11.3.6.1 “Specialist for Prosthodontics”

1. Introduction

The German Association for Prosthodontics and Dental Materials (DGZPW) offers a postgraduate education program „Qualified Specialist of Prosthetics of the DGZPW“. Muenster is one of the training centres in this program.

The conditions for admission are in brief:

- At least three years at one of the training centres.
- Complete Documentation of prosthodontic treatment of eight patients.
- Colloquium on the submitted case documentations.
- Submission of two scientific articles published in peer-reviewed journals.
- DGZPW Membership

Admission is applied for at the Board of the DGZPW.

Detailed information on the „Qualified Specialist of Prosthetics of the DGZPW“ can be found via Internet: „<http://www.dental.uni-greifswald.de/dgzpw/richtlinien.html>“.

2. Primary aims

Employees in our clinic have the chance to take part in the Specialist for prosthodontics program.

3. Main objectives

- Treatment and documentation of the recommended patients.
- Advanced prosthodontic therapy.

4. Hours in the curriculum

The employees of our clinic have to take part in different services, some of which are part of the postgraduate training, e. g. the treatment of patients and students education. During the semester, employees are involved in examination and treatment planning of newly introduced patients or in student's supervision about 18 hours / week.

5. Methods of teaching/learning

Problem based learning (PBL), Case-based learning. Every senior registrar is assigned as a tutor to three staff members. The staff members can use the medical library next to our clinic and have access to the Medline and Internet from the Computer network.

Postgraduate training also involves regular weekly staff meetings where lectures on selected topics from Prosthodontics and related Sciences are given by specialists from our department and from other clinics and discussed with the staff members.

In regular meetings with the department of Periodontology, every staff member has to introduce documented cases and different Prosthodontic treatment plans are discussed as a PBL-approach to train clinical decision making.

A thesis may be part of the postgraduate training program and lead to one of the recommended scientific publications.

We offer photographic equipment and Photos can also be taken by a Photographer in our clinic for case documentation.

6. Assessment methods

The Assessment Centre of the DGZPW for applicants from Muenster is the „Commission north“ at the University of Aachen. There the submitted documents are examined and the applicant is invited to the Colloquium.

7. Strengths

The size of our clinic and department allows a large number and variety of treatments. Co-operation with other departments makes dentists aware of general medical problems, e. g. oral symptoms of different diseases and drug interactions.

8. Weaknesses

Different to a state approved specialist (e. g. of Orthodontics), the Qualified Specialist of Prosthetics has no economical advantage to the general dentist but still he is supposed to treat more difficult patients. Therefore, the request to take the examination is low. Specialisation of our senior staff members may lead to a concentration of patient groups on these senior registrars with the consequence that junior staff members sometimes have difficulties to participate e. g. in Implant Prosthodontics.

9. Innovations and best practices

The clinical environment with different specialists and scientific laboratories, the computer network with internet access and the medical library next door allow advanced scientific activities.

10. Plans for future changes

Most of the employees activities are treatment of patients and students supervision. In the future, more emphasis on scientific activities is planned.

11.3.6.2 Training of foreign colleagues

Long lasting contacts to foreign clinics and institutes have brought about subsequent visits of young colleagues from different countries, for the purpose of advanced training in prosthodontic disciplines, no matter whether these should last weeks, months or years. This can especially be said for dentists of Arabian and eastern European states, as well as of colleagues from South America.

Moreover, lectures are given and practical courses are run abroad at regular intervals.

11.4 Occlusion and Function of the Masticatory System.

Name: Prof. Dr. Dr. Bollmann
e-mail: bollmaf@uni-muenster.d
fax: +49-251-8347182

1. Introduction

Lectures about occlusion and function of the masticatory system and practical exercises start during the preclinical courses. The students are able to handle the facebow and individual articulators before starting the clinical courses.

In the clinical part lectures are given about the TMJ disorders and the diagnostic and therapeutic procedures. An appliance has to be performed and inserted.

2. Primary aims

Students should be able to diagnose TMJ disorders and to draft and perform a treatment plan.

3. Main objectives

Preclinic:

knowledge about: function of the masticatory system, occlusion, articulators

Clinic:

knowledge about: disorders of the masticatory system, diagnostic and therapeutic procedures, sensitivity to function.

4. Hours in the curriculum

Preclinic:

lectures and demonstrations within the three preclinical courses , special lecture during 5th semester (1h/week)

Clinic:

lectures and demonstrations within the 2 clinical courses, special lecture during the 8th and 9th semester. (1 h/week)

5. Methods of learning/teaching

Preclinic:

lectures and practical courses about masticatory system, wax up training, facebow and articulator (manikins and students mutually)

Clinic:

lectures and practical courses about TMJ disorders, diagnostic and therapeutic procedures, axiography in small groups, appliances have to be inserted (patients or students mutually), chairside learning in special consulting hours (standing offer)

6. Assessment methods

Special questions in the written examinations at the end of all preclinical and clinical courses. Chair-side-control.

7. Strength

Early and intensive introductions to function and dysfunction. Possibility to treat patients with low grade TMJ-disorders.

8. Weakness

No time for demonstration of patients.

9. Innovations and best practice

Intensive introduction to function and dysfunction

10. Plans for future changes

- demonstration of patients
- lectures in physiotherapy

Section 12

Periodontology

Name: Prof. Dr. T.F. Flemmig, OA Dr. B. Ehmke, Dr. G. Petersilka
email: flemmig@uni-muenster.de
fax: +49-251-8347134

12.1 Undergraduate Student Program

1. Introduction

In this undergraduate program, periodontology is taught to students according to the guidelines of the European Federation of Periodontology as an integral part of overall medical care. Undergraduate students are introduced to periodontology in the first, second and fifth clinical semester. This sequence is determined by a government regulated curriculum. Learning of periodontology commences with basic concepts, examples of which are the histology and anatomy of periodontal structures and basic elements of clinical diagnosis and mechanical therapy. The learning continues with oral microbiology, pathogenesis of periodontitis, impact of periodontitis on general health, and basics in surgical treatment. Under the supervision of clinical instructors, students treat their assigned patients non-surgically. Treatment planning is performed on each individual case. The students are trained in some aspects of periodontal surgery on a realistic simulation model, they assist in advanced surgical therapy and render post-surgical care.

2. Primary aims

The students' awareness of the etiology, pathogenesis and epidemiology of periodontal diseases should be developed on the biological basis for periodontal and general health. The students learn clinical skills and procedures of diagnosis and periodontal disease therapy in an evidence based manner. With respect to the required dental care of individuals and groups of people an integrated realistic approach is aimed at.

3. Main objective

Students should have respectable knowledge of:

- periodontal diseases and general mechanisms of its pathogenesis
- oral microflora and its implication on periodontal diseases and therapy
- host response, systemic implications and risk factors for periodontal diseases
- diagnosis, treatment planning, and non-surgical treatment of periodontal diseases
- instruction and application based on evidence based medicine to periodontal diseases
- basic periodontal surgery to perform minor periodontal surgical procedures
- integration of periodontal therapy in the overall treatment plan
- treatment of medically compromised patients.
- infection control in dental practice.

4. Hours in the curriculum

The theoretical and practical education of students in periodontics extends over a three semester period.

1st clinical semester: 26 hrs of realistic practical simulations and 26 hrs of lectures

2nd clinical semester: 42 hrs of clinical practice, 24 hrs assistance in non-surgical treatment and 13 hrs of lectures

5th clinical semester: 66 hrs of clinical practice, 4 hrs of surgical simulations, 8 hrs assistance in surgical treatment and 26 hrs of lectures.

The total time students spend in clinical practice or lectures corresponds to 235 hours of learning and patient treatment experience in at least 16 cases.

5. Methods of learning/teaching

Learning in the 1st clinical semester consists of lectures, clinical simulations and to a smaller part of clinical practice in which students perform periodontal examination on another. During the 2nd clinical semester students attend lectures, assist in non-surgical periodontal treatment, and are introduced to patient treatment on a case-based teaching level. Patients are selected in accordance to the students' knowledge. In the 5th clinical semester the students are given the opportunity to apply their previously acquired knowledge to solve problems in routine patient treatment. The patient cases selected are multi-facetted and the majority of patients requires surgical intervention. Fifth semester students assist in surgical procedures in patients in which they had performed initial therapy. In accompanying problem-based lectures theoretical and clinical knowledge is combined.

6. Assessment methods

Assessment of the student's theoretical knowledge is carried out by multiple choice exams. Additionally, both the student's acquired skills and theoretical knowledge are assessed during clinical activity, clinical simulations and treatment planning. Especially in the first semester, the student's skills and practical performance are assessed in several tests. A competence test is carried out at the beginning of the 2nd and 5th semester. If the participant's competence is judged unsatisfactory, the student is excluded from the semester.

7. Strengths

The program lectures cover the basic topics of periodontal science backed up by the current state of research and allows the participants to acquire solid theoretical knowledge. Additionally, the early integration of patient treatment in clinical practice enables the students to make active use of their knowledge base.

8. Weaknesses

Due to limitation by terms and breaks some students only see the short-term results of periodontal treatment and not the final results when the overall treatment, also in various other departments, has been completed, especially in patients with complex oral diseases. In addition, there is by far too little time allocated to periodontology due to the current dental curriculum.

9. Innovations and best practices

The students are guided to evidence-based dentistry and are encouraged to rely on primary sources of knowledge as much as possible. Additionally, new therapeutic methods are demonstrated to the students in clinical practice.

10. Plans for future changes

The special demands for treating handicapped patients will also be part of the clinical practice. Furthermore, students should be guided for research, i.e. doctoral thesis, and encouraged to enter competitions for student prizes.

11. Visitors comments

The strong and competent leadership in the Periodontology Department is highly commendable. As with the other clinical disciplines earlier introduction into the programme is recommended, this would overcome the difficulty of students not being able to evaluate the care provided for their patients.

12.2 Postgraduate Student Program

1. Introduction

The Clinic of Periodontology offers a special postgraduate training in periodontology established in 1982, which is recognized nation wide. The postgraduate program is in accord with the guidelines of the European Federation of Periodontology (EFP). Applicants must have acquired a qualification in dentistry (i.e., passed the final dental exam) and should have at least one year of experience in dentistry. The three year comprehensive program offers advanced clinical training in periodontology including oral implantology, as well as an intensive review of those sciences basic to periodontology. The training leads to a specialist degree in periodontology (i.e., "Fachzahnarzt für Parodontologie").

2. Primary aims

By the end of the program candidates will be expected to demonstrate extensive knowledge of clinical periodontics and of sciences basic to periodontology. The participants will have also advanced skills in periodontal research.

3. Main objectives

- Clinical expertise in the presentation, diagnosis and management of all known disease and disorders of the periodontium
- Broad knowledge and experience in the management of the medically compromised patient
- Clinical expertise in oral implantology in the periodontally compromised patient
- Skills in evaluating scientific literature, in posing pertinent research questions and hypothesis, in experimental design, and in the prosecution and communication of a research project.

4. Hours in the curriculum

The postgraduate program extends over a three year period.

1st year: 275 hrs of seminar/tutorials, 320 hrs research, 1225 hrs of patient treatment/teaching

2nd year: 275 hrs of seminar/tutorials, 320 hrs research, 1225 hrs of patient treatment/teaching

3rd year: 275 hrs of seminar/tutorials, 545 hrs research, 1000 hrs of patient treatment/teaching

The total time students spend in clinical or theoretical learning corresponds to 5460 hrs (1820 hrs/year) and in patient treatment experience of at least 250 cases.

5. Methods of learning/teaching

Learning in the three years of the postgraduate periodontology program consist of lectures, literature seminars, clinical problem based seminars. These lectures and literature seminars are performed by clinic faculty only, whereas clinical problem based seminars are performed by clinic faculty and specialists of periodontology from private practice. A group of 2-4 postgraduate students is assigned to one tutor who is contact person for treatment planning and clinical instructions. In the first year, mainly non-surgical therapy and minor resective surgical procedures are performed, and the program participants get experience in laboratory routine. First year students collaborate in existing research programs. In the second year, non-surgical and more extend resective and regenerative surgical procedures, including mucogingival surgery, are performed. The participants are also involved in the teaching of dental students at undergraduate level in patient treatment. Second year students are responsible for their own research project. Third year students get broad experience and routine in all non-surgical and extend surgical procedures, including oral implantology. The third year students give lectures to undergraduate students and are expected to complete their research project, which should be submitted to an international journal with a peer review system for publication.

6. Assessment methods

Among the preselected students a first theoretical competence test is carried out after six weeks. If the participant's competence is judged unsatisfactory, the student is excluded from the program. Further theoretical and practical competence tests are carried out at the end of the 1st and 2nd year. During the three years, the students have to complete a list of various clinical surgical and non-surgical procedures. After the 3rd year, the final competence test is carried out and a meticulous documentation of 12 cases, extending the EFP's directive for case documentation, is required.

7. Strengths

Tightly organized program, the participants get broad in comprehensive patient care, research, and teaching.

8. Weaknesses

The treatment of advanced periodontal cases is sometimes restricted and limited by insurance regulations.

9. Innovations and best practices

The strongly emphasized clinical training adheres stringently to evidence based medicine. The students learn to critically appraise current and evolving treatment regimes. Periodontology is taught as an integral part of comprehensive interdisziplinäre patient care.

10. Plans for future changes

Future aims are the accreditation of the program by the European Federation of Periodontology.

12.3 Dental Hygiene Program

1. Introduction

The dental hygiene program is taught according to the “Guidelines in Dental Hygiene Education” provided and recommended by the European Federation of Periodontology and according to the guidelines provided by the German Dental Association (Bundeszahnärztekammer). It is performed as a six month fulltime practical and theoretical course for certified dental nurses having at least three years of clinical practice and a board certificate in the field of dental prophylaxis. Thus, the same amount of hours of education can be realized as in other international certified en-bloc education programs. The admission of students to the course is based on proven clinical experience and a written examination.

The theoretical and preclinical practical education is carried out in cooperation with the Dental Association of Westfalen-Lippe, whereas the clinical education is performed in the Clinic for Periodontology under the supervision of both a periodontist and an international board certified dental hygienist.

2. Primary aims

The dental hygiene program primarily aims at developing a thorough understanding of the biomedical, dental and dental hygiene science.

After graduation dental hygienists will be able and allowed to plan and perform initial and supportive periodontal therapy under the supervision of a dentist.

3. Main objectives

Graduated dental hygienist students must be competent in providing comprehensive dental hygiene care for all age groups and medically compromised patients.

This includes:

- assessment of medical and dental histories
- extra- and intraoral examination
- radiographic examination and interpretation of radiographs
- risk assessment for caries and periodontal disease
- development of a detailed dental hygiene treatment plan including conservative periodontal therapy

- supra- and subgingival periodontal debridement
- application of chemotherapeutic agents
- understanding and application of infection control measures
- periodontal treatment of patients with special needs, e.g., medically compromised or disabled patients

The hygienist should be able to carry out these procedures based on scientific evidence and to use and interpret primary sources of scientific knowledge.

4. Hours in the curriculum

The theoretical and practical courses extend over a six month period on a full time basis. 600 hours are spent on teaching theoretical knowledge, 130 hours on preclinical practical training and 230 hours on clinical practice resulting in a total number of 960 hours. Dental hygiene students will treat a minimum of 20 patients for supportive periodontal therapy and will carry out a minimum of five initial periodontal treatments. They will also carry out practical work in institutions such as nursery homes.

5. Methods of learning/teaching

The main program administrators are a certified dental hygienist and a periodontist with a strong educational background and a good deal of experience necessary to respond to the aims of the program. Lectures at undergraduate student level are given by several lecturers of the Medical and Dental Faculty of the University of Muenster.

Preclinical practical training is given by international board certified dental hygienists. The dental hygiene students are introduced to practical clinical work on a case-based teaching level according to the methods used for the undergraduate dental student education. Patient selection is multi-faceted with a majority of advanced periodontal cases and special patient categories.

6. Assessment methods

The assessment of the students' theoretical knowledge is carried out by multiple choice exams in analogy to the health board exam for US-American dental hygiene students. Furthermore, the hygienists' clinical skills and knowledge are assessed during the clinical work and treatment planning by the administrators.

7. Strengths

Considering the high level of technical skills gathered in a minimum of three years of previous clinical experience, hygiene students can achieve an excellent standard of technique in periodontal debridement within a short time. As the contents of the theoretical topics are monitored by the program administrators, an effective learning process is assessed.

8. Weaknesses

So far this is the first dental hygiene program in Germany carried out according to the standards recommended by the European Federation of Periodontology. Therefore, possible weaknesses will be discovered during the course.

9. Innovations and best practices

The tight cooperation between the Dental Association of Westfalen-Lippe and the Clinic for Periodontology is unique among existing dental hygienist programs in Germany. The hygiene students will be guided to evidence-based treatment and will be taught just as well to rely on primary sources of knowledge.

10. Plans for future changes

The application and use of analgesics and local anesthetics should be incorporated into the education program once this directive has been approved by federal law. It is also planned to achieve full accreditation of the program by the International Dental Hygienist Federation and the European Federation of Periodontology.

Section 13

Oral Surgery and Dental Radiography and Radiology

13.1 Oral Surgery

13.2 Radiography and Radiology

13.1 Oral Surgery

Names: Prof. Dr. Dr. Dr. h. c. U. Joos, Priv.-Doz. Dr. Dr. J. Piffko,
Dr. Dr. J. Kleinheinz, Priv.-Doz. Dr. Dr. R. Werkmeister
email: joos@uni-muenster.de
fax: +49-251-8347184

1. Introduction

- A. Oral and maxillofacial surgery is introduced into the curriculum in the 3rd year with the Local Anaesthesia Course. A lecture series is scheduled 2 hours/week. The lectures are voluntary, whereas the course is obligatory, including theory of local anaesthesia, dental extraction, cardiopulmonary reanimation and general health problems relevant in dental practice. During the course the students apply local anaesthesia, take peripheral venous blood, measure blood pressure and perform intramuscular injections. At the end of the course there is a theoretical and practical examination.
- B. The lecture series on Oral Medicine is scheduled in the 7th and 8th semester for 2 hours per week.
- C. The lecture series of Oral and Maxillofacial Surgery is introduced into the curriculum in the 9th semester and continues throughout the 10th semester. Parallel to Oral Medicine and Oral and Maxillofacial Surgery lectures, practical courses are given:
Practical Course I is scheduled in the 7th semester teaching the students to perform accurate patient examination. Practical Courses II and III are scheduled in the 8th and 9th semester. In these courses students report patients' histories and perform extra and intraoral examinations.
Patient-related oral medicine and surgical aspects are explained by staff members. There is a theoretical examination at the end of each practical course. Assistance in the practical courses is mandatory.
- D. Operation Course I is scheduled in the 8th semester. Students are supervised by residents on a 1 - 3 basis. During 2 weeks students work in the outpatient section, perform local anaesthesia and basic surgical procedures, such as extractions, incisions, simple osteotomies and suturing.
- E. Operation Course II is scheduled in the 9th semester. Students are supervised on a 1 - 3 basis. During 2 weeks students assist to major maxillofacial surgery in the operating theatre. Students participate in consultations of implant patients,

tumour patients, cleft patients and postoperative examinations in the outpatient clinic. Bedside teaching is scheduled for 4 days during the 2-week course.

2. Primary aims

Basic knowledge and skills in oral surgery, training in examinations of patients and reporting diagnoses. To develop in the student an awareness of diseases, trauma and symptoms in the craniomaxillofacial region and their treatment.

3. Main objectives

Anaesthesia
Emergency treatment
Dental emergency treatment
Diagnosis of intraoral diseases
Dental traumatology
Oral surgery
Trans- and reimplantation of teeth
Implantation
Traumatology
Tumour diagnosis and therapy
Infections
Orthognathic surgery
Temporomandibular joint diseases
Salivary gland disease
Craniofacial surgery
Cleft lip and palate surgery

4. Hours in the curriculum

The lectures are held during the semester for students in the 6th - 10th semester. The Oral Medicine Course is split into two parts: part I in the 7th semester (90 min/week), part II in the 8th semester (90 min/week).

The Oral and Maxillofacial Surgery Course is split into two parts: the 1st part is in the 9th semester (90 min/week), the 2nd part is in the 10th semester (90 min/week).

Practical Course I: 7th semester (3 h/week).

Practical Course II: 8th semester (3 h/week).

Practical Course III: 9th semester (3 h/week).

Operation Course I: 8th semester (2 weeks)

Operation Course II: 9th semester (2 weeks)

5. Methods of learning/teaching

- A. Local Anaesthesia Course: slides, video, overhead projection of x-rays and CT scans, practical hands-on local anaesthesia, intravenous and intramuscular injections
- B. Oral Medicine Lectures: slides, video, overhead projections of x-rays.
- C. Oral and Maxillofacial Surgery Lectures: slides, video, overhead projection of x-rays.
- D. Practical Course I: introduction to examination of patients and interview methods. Theories of examination and interviews are presented and students present patients' histories to the auditorium.

- E. Practical Courses II and III: students interview and examine patients under the supervision of staff members and present the results to the auditorium. Patients' histories are reported, diagnoses proposed and treatment plans established by students. Methods of diagnosis, differential diagnosis and treatment modalities are discussed.
- F. Operation Course I: practical hands-on oral surgery is provided in the outpatient clinic devoted to minor oral surgery, dental extractions and dental trauma. Students are exposed to surgical treatment of impacted wisdom teeth, apisectomies and implant treatment. A tutorial system provides the possibility of discussing different diseases and surgical methods during the two-week course. The second week might also be spent at another medical centre in Germany or abroad. For this reason, an exchange programme was established with various hospitals: Klinikum Minden, Germany, Städtische Klinikum Osnabrück, Germany, Knappschaftskrankenhaus Recklinghausen, Germany, Städtische Kliniken Dortmund, Germany, Knappschaftskrankenhaus Bochum, Germany, University Hospital Porto Alegre, Brazil, Marine Hospital Vina del Mar, Chile, German Clinic Santiago de Chile, Hospital Clinico Regional Concepcion, Chile, Day Hospital Guguletu, South Africa.
- G. Operation Course II: Bedside teaching under supervision. Students are also involved in daily practice (taking patients' histories, changing dressings, intravenous and intramuscular injections). Students attend general anaesthetic sessions at the department's operating theatre. In this section 1800 interventions under general anaesthesia are performed each year. For each intervention a student is assigned as assistant. Same tutorial system as in Operation Course I. Under the guidance of tutors students spend the morning in the operating theatre and the afternoon in the outpatient clinic where they participate in follow ups of tumour patients, cleft patients, planning of implant treatment, and head and neck sonography.

6. Assessment methods

Topics of the lectures and of the practical courses are part of multiple-choice questionnaires for the Local Anaesthesia Course, the Practical Courses I - III and the Operation Course I. Attendance to lectures on Oral Medicine and Oral and Maxillofacial Surgery is not controlled. Attendance to Practical Courses I, II and III and Operation Courses I and II is mandatory and controlled. There are clinical competency tests in local anaesthesia.

7. Strengths

During the Local Anaesthesia Course, Oral Medicine Lectures, Oral and Maxillofacial Surgery Lectures, Practical Courses and Operation Courses there are many opportunities for students to get broad theoretical knowledge of all subjects related to cranio-maxillofacial surgery and oral medicine. Because of the tutorial system the relationship between teachers and students has become very close. The high number of patients treated on outpatient and inpatient bases are of benefit for the students because of intensive clinical involvement with diagnostic procedures and treatment planning.

8. Weaknesses

Practice management is not taught. There is a lack of minor oral surgery cases. Because of the heavy clinical workload students do not attend pharmacology lectures.

9. Innovations and best practices

The introduction of a tutorial system allows a close guidance of the students by the residents of the department during surgery courses. On this way a problem oriented learning in addition to lectures was established.

10. Plans for future changes

Students will be able to get access to an interactive learning system in the internet where established and well accepted diagnostic procedures and treatment concepts in oral surgery and oral medicine will be presented.

11. Visitors comments

The visitors were impressed by the high quality of theoretical teaching provided by this department. The students have expressed the view that they were highly qualified in this area of dentistry as far as the theory is concerned. The visitors endorse their wish to have the opportunity to build up more practical skills in minor oral surgery procedures such as extractions, suturing, apicectomies, etc.

13.2 Radiography and Radiology

Name: Dr. Irmela Reuter
e-mail: ireuter@uni-muenster.de
fax: +49-251-8347184

1. Introduction

Radiology forms an integral part of the diagnostic process and its study is of equal importance to other aspects of diagnosis. Beyond knowledge in radiologic interpretation dentists must have a solid grasp of the principles that underlie the physics of radiology, if they are to produce images of consistently good diagnostic quality. Because of the possibility of tissue injury by ionizing radiation dentists have to consider carefully the potential risks in relation to the potential benefits of making a radiograph.

2. Primary aims

The primary aim is to provide students with fundamental knowledge in order to prepare them for becoming good practitioners.

3. Main objectives

Production of x-rays, interaction of x-rays, radiation biology, radiation protection, techniques on production of radiographs, x-ray equipment, quality control, radiologic interpretation, governmental regulations.

4. Hours in the curriculum:

72 hours

Dental and Maxillofacial Radiology is taught in the 6th (first clinical semester) and 10th (last semester before final examination).

6th semester: two lessons per week, practical exercises with a head phantom, demonstrations in our department of radiology

10th semester: two lessons per week, seminars on interpretation, practical exercise in our department of radiology.

7th to 10th semester: indication and performing radiological procedures within the clinical courses in the different departments under supervision of assistant doctors with expert knowledge.

5. Methods of learning/teaching

Lectures, seminars, practical exercise

6. Assessment methods

A written test is performed at the end of 6th semester according to governmental administration concerning required and certified knowledge for persons performing radiologic procedures under supervision.

Within the State Board Examination expert knowledge has to be proved theoretically and practically. Having passed, dentists are allowed to indicate and perform radiologic procedures without supervision.

7. Strengths

Practically orientated education with stress on interpretation, technical knowledge and radiation protection.

The consisting of two educational parts is of great value. Basic knowledge is imparted before first patient contact. After having achieved clinical experience and knowledge of maxillofacial pathology, competence in interpretation of radiological findings is extended and deepened.

8. Weaknesses

Possibilities of practical education in digital imaging should be given.

9. Innovations and best practices

For education in radiographic diagnosis radiographic plates containing copies of up to 40 dental films or parts of panoramic views have been arranged. Each plate covers different thematic fields (e.g. periapical opacities: normal findings and different types of pathology). Every student of the seminars is given a plate and learns to interpret under practical conditions (including use of magnifying glass) The arranged films allow a simultaneous visual judgement of possible differential diagnoses.

10. Plans for future changes

Expansion of education in alternative and far-reaching diagnostic methods.

11. Visitors comments

This course is given by devoted teachers and covers the total range of theoretical and practical skills. The facilities are satisfactory and the visitors endorse the plans to innovate in the direction of digital imaging.

Section 14

Oral Medicine and Oral Pathology

14.1 Oral Medicine

see Chapter 13.1

14.2 Oral Pathology

see Chapter 13.1

Visitors comments

It is recognised that the Department of Oral Surgery provides satisfactory teaching and competence in Oral Surgery. The teaching of Oral Medicine & Oral Pathology would be greatly improved if the Dental School could develop a specialised unit with people devoted only to these fields (as it is for example in Scandinavia, Ireland, England) and not involved in the work load of surgery.

Section 15

Dental Emergencies and Special Needs Patients

15.1 Dental Emergencies

15.2 Care of Special Need Patients

15.1 Dental Emergencies

Name: Prof. Dr. Dr. Dr. h. c. U. Joos
e-mail: joos@uni-muenster.de
fax: +49-251-8347184

The treatment of dental emergencies is an essential part of dental teaching. Students are provided with the necessary theoretical basics within the lectures on general and oral medicine and on oral surgery. Practical application and exercises are supervised during the Anaesthesia Course and the Operation Courses I and II. Here the students have to realize different tasks (e.g. blood pressure measuring, first aid, injections, taking peripheral venous blood, reanimation) either on a manikin or on each other.

Outside working hours there is a fulltime emergency presence in the centre (dentist, surgeon, nurse) and the students have to take their turns in taking shifts as members of the emergency team.

15.2 Care of Special Need Patients

Name: Prof. Dr. Dr. F. Bollmann
e-mail: bollmaf@uni-muenster.de
fax: +49-251-8347182

Each department has dedicated units for treatment of infective patients only. The department of Oral Surgery provides a special theatre for patients needing specific care. For this purpose special measures in terms of technical equipment as well as personnel have been undertaken. In this way an interdisciplinary treatment plan can be carried out for the following groups:

- cardiac patients
- patients with blood-thinning medication or hemorrhagic patients
- patients suffering from multiple allergies
- mentally handicapped patients
- non willing and traumatic patients

The department of prosthodontics has a functional area where dentures and epithesis for tumor patients, who have been undergoing surgical interventions are being adjusted.

The functional area of psychosomatics takes care of those patients, who – because of their psychological problems – have difficulties in adapting to received dental treatment.

As far as the functional area of dental surgery is concerned, students are required to assist during the practical courses. On the other areas students are given the chance to sit in on consultations.

Visitors comments

The students receive experience in treatment of dental emergencies but appear to have little opportunity to provide care for patients with disabilities or medical conditions.

Section 16

Behavioural Sciences

- 16.1 Behavioural Sciences
- 16.2 Communications
- 16.3 Ethics & Jurisprudence; Practice Management

16.1 Behavioural Sciences

Name: PD Dr. Anne Wolowski
e-mail: wolowsk@uni-muenster.de
fax: +49-251-8347083

16.1.1 Psychosomatics in Dentistry

1. Introduction

At the Dental School of Muenster psychosomatic medicine has a tradition of long standing. As early as 1972 the understanding that individuals with undifferentiated multiple orofacial disorders of several years duration (e.g. burning-mouth-syndrom, pain, hairy feeling etc.) are frequently receiving from a number of practitioners dental and medical care unsuccessfully, led an interdisciplinary group of doctors (a prosthodontist, an allergist, a neurologist, a psychiatrist and a specialist of internal medicine) to start a large scale research programme. The outcome of it was that the tentative diagnosis of allergic responses to dental materials or any other somatic causes could not be confirmed in any of the cases. Most of the so-called problem patients had a psychological problem. This discovery was the beginning of an innovation: In 1979 a research centre of psychosomatics and psychopathology in dentistry was established. It is part of the department of prosthodontics and up to now over 4649 patients have been treated, providing the background for clinical studies. Furthermore a valuable assistance to identify patients with psychosomatic disorders, screening-tests, treatment concepts and possibilities to prevent such a disease were developed.

On this special basis a fundamental teaching about the management of such „difficult" patients is possible.

2. Primary aims

- To enable students to identify, manage and differentiate psychological from somatic disorders.
- To enable students to become reliable dental practitioners, committed to the bio-psychosocial model of health care delivery and secure in their ability to assess and accept own strengths and weaknesses.

3. Main objectives

- Definition of psychosomatic disorders
- Classification systems
- Treatment possibilities, the importance of an interdisciplinary point of view
- Typical, very often undiscovered, somatic findings as a reason for undifferentiated disorders
- Characteristic attributes of psychosomatic diseased patients in dentistry (key for diagnosis)
- Methods of questioning
- Function of communication for a diagnosis, treatment and prevention
- Tasks of the dentist regarding orofacial somatization.

4. Hours in curriculum

During the 7th or 8th semester 1 hours/week, additional optional seminars

5. Methods of learning/teaching

The main method of teaching is lecturing. Video recording and analysis of patient interviews are used.

During the additional seminars patients are interviewed by the students. Possibilities to take part in the psychosomatic consulting hour are given.

6. Assessment methods

Case presentation and life interview

7. Strengths

The students get to learn a differentiated point of view in contrast to the traditional mechanically orientated education.

8. Weakness

As psychosomatics isn't part of the curriculum, the time for patient presentation is limited.

9. Visitors comments

The visitors were very impressed by the innovative approach adopted in setting up the Psychosomatic Clinic. This initiative should be encouraged and developed to encompass all training in the Behavioural Sciences.

16.2 Communications

Name: PD Dr. Anne Wolowski
e-mail: wolowsk@uni-muenster.de
fax: +49-251-8347083

1. Introduction

The patient's dental and complete medical history including some details of his/her family history as well as social history are important aspects of making a diagnosis. The dentist's task is to encourage accurate responses to sensitive questions. Additionally he himself must be able to communicate a bad diagnosis to a patient. Successful outcomes in patient care and risk management when measured in terms of patient satisfaction or litigation may also depend heavily on the interpersonal and communication skills of the clinician dealing with the problem.

While the benefits of good communications with patients is acknowledged the importance of discussions with members of the dental team receives less emphasis. Therefore this aspect is also trained with the students.

2. Primary aims

- Introduction to useful questioning techniques
- Enable students to recognize and to manage different types of patients
- Offering keys to successful practice management with the help of communication (staff training etc.)

3. Main objectives

- Function of conversation, effective verbal action and reaction
- Questioning techniques
- Psychological aspects of malignant diseases, management of such a diagnose
- Body language
- The „appearance of the patient“
- How to teach the practice team and how to manage the team

4. Hours in the curriculum

8th or 9th semester: 1 hour/week

5. Methods of learning/teaching

Lectures, analysis of communication, practical training together with patients who like to work together with the students, feedback concerning situation in patient treatment reported by the students.

6. Assessment methods

The students are given the chance of critical feedback about the daily patient treatment and management.

7. Weakness

There is not enough time to deepen the main objects or special problems.

8. Innovations and best practices

presentation of patients

possibility for students to determine objects of interest.

9. Plans for future changes

- Video recording
- Computer-assisted training of special situations and training of questioning

16.3 Ethics & Jurisprudence, Practice Management

Name: Prof. Dr. Dr. Figgner
e-mail: figgenl@uni-muenster.de
fax: +49-251-8347083

1. Introduction

Ethics, Jurisprudence and Practice Management are taught in the lecture „Berufskunde“ (professional instruction) in the 10th semester.

2. Primary aims

The aim is to point out the ethical and forensic basis for the medical profession. As the „Juristification“ has got more and more importance over the last years the students must be prepared for their own professional practice. Beyond this every dentist should be able to give an expert's opinion in case to be appointed in a litigation.

3. Main objectives

Liability Medical confidentiality, State of the art (lege-artis-treatment), Informed consent, Duty to take records, Quality-assurance, Expert's opinion, Social-insurance-law, Behaviour in case of litigation.

4. Hours in the curriculum

2-hours-lecture/week in the 10th semester.

5. Methods of learning/teaching

Presentation, Question-Answer, Role-Play

6. Assessment methods

No tests; as the lecture deals with important aspects of the future practice, there is a great interest in the topics.

7. Strengths

Topics of current importance; the lecturer is jurist and dentist in one person.

8. Weaknesses

The lecture takes place at the end of the day, when warriors are tired.

9. and 10. Innovations and best practices, Plans for future changes

Case reports and current jurisdiction shall be integrated in the lecture.

Section 17

Examinations, Assessments and Competences

Name: Prof. Dr. Dr. Figgener
e-mail: figgenl@uni-muenster.de
fax: +49-251-8347083

1. Introduction

In Germany dental education and examination are ruled by nation-wide law in the „Approbationsordnung für Zahnärzte“. The contents of the education as well as official examination follow a rigid scheme.

2. Exams

The law exactly describes which practical and theoretical courses a student has to complete to get the application to enter the final examination (Dental Examination).

Within these rules the student has to absolve three official examinations:

1. *Natural Sciences Examination* (Subjects: Biology, Chemistry, Physics)
2. *Preliminary Dental Examination* (Subjects: Anatomy, Biochemistry, Physiology, Science of Dental Technics and Dental Materials)
3. *Final Dental Examination* (Subjects: General and Oral Pathology; Pharmacology; Hygiene, Microbiology and Health Care; General and Internal Medicine; Dermatology and Veneral Diseases; Otolaryngology; Oral Medicine and Oral Surgery – including: Dental Radiology and Radiography, General Surgery, Maxillofacial Surgery - ; Operative Dentistry – including Paediatric Dentistry, Preventive and Conservative Dentistry, Endodontics, Periodontology; Prosthodontics; Orthodontics).

All the theoretical exams are oral. There are no external examiners involved.

The examinations have to be absolved in the above sequence. After the *Final Dental Examination* the student can apply to the state authorities for the certificate enabling him/her to practise as a dentist.

3. Lectures and Courses

The following lectures and courses are required to get the permission to enter the *Natural Sciences Examination*:

- Lectures: One semester Biology, two semesters Chemistry and Physics
- Practical Courses: One semester Physics, one semester Chemistry

The following lectures and courses are required to get the permission to enter the *Preliminary Dental Examination*:

- Lectures: One semester Histology and Embryology, two semesters Physiology, two semesters Biochemistry, two semesters Dental Materials, three semesters Anatomy.
- Practical Courses: One semester Anatomy, one semester Biochemistry, one semester Physiology, one semester Histology, three semesters Science of Dental Techniques and Dental Materials.

The following lectures and courses are required to get the permission to enter the *Final Dental Examination*:

- Lectures: One semester General Oral Medicine, one semester General Pathology, one semester Oral Pathology, one Semester General Surgery, one semester Otolaryngology, one semester Hygiene, one semester Microbiology and Health Care, one semester History of Medicine, two semesters Pharmacology, two semesters General and Internal Medicine, two semesters Oral Medicine, two semesters Oral and Maxillofacial Surgery, two semesters Preventive Dentistry, Paediatric Dentistry, Conservative Dentistry, Endodontics and Periodontology, two semesters Prosthodontics, three semesters Orthodontics.
- Practical Courses: One semester Histopathology, one semester Clinical Chemistry, one semester Radiology and Radiography, one semester General Surgery, one semester Dermatology, one semester Preclinical Restorative Dentistry, one semester Preclinical Orthodontics, two semesters Oral and Maxillofacial Surgery, two semesters Clinical Orthodontics, two semesters Clinical Restorative Dentistry (including Preventive Dentistry, Paediatric Dentistry, Conservative Dentistry, Endodontics and Periodontology), two semesters Clinical Prosthodontics, three semesters Oral Medicine.

For each of the above mentioned lectures and courses the student receives a certificate. In this certificate the lecturer or the head of the department has to certify that the student attended the lectures or the courses regularly and successfully. Usually the student has a written or oral test to prove this theoretical knowledge. In the practical courses the student has to prove his ability and knowledge to solve certain exercises and problems.

4. Strengths

The nation-wide regulations aim at an equal standard of education in dentistry throughout Germany with its 30 Schools of Dentistry. Furthermore, the education is clearly focussed on patient treatment.

5. Weaknesses

The regulations are not flexible enough to react to current developments. Due to a lack of time, there is no possibility of teaching additional subjects.

The unlimited opportunity to repeat courses consumes personnel, temporal and financial resources. A limitation on two or utmost three attempts would lead to a better and more reasonable outcome of the resources.

6. Plans for the Future

Since a long time a new „Approbationsordnung für Zahnärzte“ is intended. However, a bill is not yet in view.

7. Visitors comments

The visitors understand the impact of the Approbationsordnung für Zahnärzte on the assessment and examination system in the school. The rigidity of this system prohibits important curriculum innovations of which the school is aware. The Dental School is strongly urged to initiate changes in this system and take on the responsibility to start now on curriculum reform in order to overcome the weaknesses as have been addressed in this report.

Section 18

Other Influences

Name: Prof. Dr. Dr. Figgenger
e-mail: figgenl@uni-muenster.de
fax: +49-251-8347083

- 18.1 Regional oral health needs
- 18.2 Evidence based treatments
- 18.3 Involvement in other university activities and sport
- 18.4 Recreation
- 18.5 Student selection procedures
- 18.6 Labour Market Perspectives

18.1 Regional Oral Health Needs

The regional dental health care covers all types of dental treatment including oral and maxillofacial surgery. In contrast to most other chamber-regions in Germany the „Specialist in Periodontics“ (postgraduate specialised Dentist in Periodontics) is established in Westfalen-Lippe.

18.2 Evidence Based Treatments

Evidence-based diagnosis and treatment is taught in all clinical courses as far as possible in respect of the current state of the art. Nevertheless the diagnostic and therapeutic possibilities are limited by the regulation of the health insurance companies with their criterions: sufficient, reasonable, economical.

18.3 and 18.4 Involvement in other University Activities and Sports/Recreation

The University provides a great offer of cultural, sportive and social activities. These possibilities are open for the students of all faculties.

Visitors comments

It is recommended that more time should be created in the later years of the curriculum to allow the students to participate in more extracurricular activities.

18.5 Student Selection Procedures

The student selection procedure is regulated in Germany by a federal administrated central office (ZVS-Dortmund). The majority (94 %) of our students are selected by this central office. 60 % of these students are assigned on the basis of their average high school grades („Abitur“); the remaining 40 % are assigned on the basis of their

waiting time after a successful graduation from high school. The university assigns 6 % of the places for non-EU citizens.

18.6 Labour Market Perspectives

The number of job opportunities in dental professions decreases in respect to the decrease of oral diseases, especially caries, in Germany.

The number of practices in the particular regions are limited according to law.

Visitors comments

More mobility of staff and students as can be realised by participation in the Socrates Programme which will help to create more options for students after graduation to practise in any country within the EU.

Section 19

Student Affairs

- 19.1 Basic Data from Dental Schools
- 19.2 List of different postgraduate courses
- 19.3 List of different auxiliary/technology/other courses
- 19.4 Description of student counseling services in the University / Dental

Visitors should meet full class together of final year together with the class representatives of earlier years

Name of Student representatives (2 for each class) who will discuss this:

1st year:

Volcan Korkmaz vkorkmaz@uni-muenster.de

2nd year:

Inga Schäfer schaferi@uni-muenster.de

Moritz Bleibtreu

Anna Lisa Schulze schulzea@uni-muenster.de

3rd year:

Ayla Ulu ayla@uni-muenster.de

Ulrich Sauerland ulis@uni-muenster.de

Nicola Welp welpn@uni-muenster.de

Joung-Min Yoo joungmin.yoo@uni-muenster.de

4th year

Alexander Doumat doumata@uni-muenster.de

Joseph Massis massis@uni-muenster.de

Annika Speckmann aspeckm@uni-muenster.de

Claus Westerberg space12@uni-muenster.de

José Castro Laza laza@uni-muenster.de

5th year

Tobias Schütte tobis@uni-muenster.de

Ludger Kötter

Ulrich Zimmer

Carsten Fischer fischca@uni-muenster.de

Clemens Schymocha schymoc@uni-muenster.de

Frauke Katsch katsch@uni-muenster.de

Fawad Kamawal

Gorden Bertelsbeck gcberti@uni-muenster.de

This will be the basis of a discussion with visitors.

19.1 Basic Data from Dental Schools

- a. Average number of dental students qualifying per year: 80 - 90
- b. Average number of dental students admitted to the first year: 90 - 100
- c. Length of course in semesters: 10 semesters and 1 for exam
- d. Is there a separate period of vocational training following graduation as a dentist in your country? Yes
- e. Is that organized by the University / Dental School? No. The vocational training as a dentist is required by the General Dental Council of Westfalen-Lippe (Zahnärztekammer Westfalen-Lippe).

Visitors comments

The meetings with the final year students and the representatives of the various years were highly valued by the visitors. In general the students expressed themselves openly in good English. There are good relationships between students and the members of staff of the different departments and they value their education. There is no doubt that at graduation they feel competent to work as a dentist in Germany, especially since they know that there are at least another two years in which they can further improve their clinical skills and expand experiences. Nevertheless practice management issues should be addressed more in the curriculum.

One major point of concern is the amount of stress among the students created by the semester examination and the clinical points system. It is perceived that it is unfair that for reasons out of control of the student (patient not showing up, illness of the student) a full semester has to be retaken if only a few points (2-4) of the total number of 320 points have not been reached. As students exclaimed „this system is inhumane, one can not be sick“. The visitors took notice of the teachers reaction that the number of 320 points are considered as minimal requirements, leaving some leeway.

The visitors recommend strongly to find a way out for this serious problem, for instance by creating a back up of one or two weeks where procedures can be finished. This also will save time of staff who otherwise have to supervise students for an entire semester, who have already shown competence but could not finish for other reasons out of their control.

The visitors were concerned about the high number of students repeating many semesters. This was seen as reflecting badly on the programme as well as being a waste of valuable time and resources. It is understood from the students that the average time students need to complete the programme is more than 13 semesters. This is surely influenced by the fact that all courses in the curriculum can be repeated endlessly, since given law does not allow for limited admission into the courses. Nevertheless this problem should be addressed.

The visitors were made aware of considerable expenses incurred by the students particularly in respect of dental materials and instruments.

The visitors recommend that the existing use of tutors/mentors for students should be strengthened to support students in both their study programmes and other difficulties such as health problems.

19.2 List of Different Postgraduate Courses

Subject/Speciality	Degree Awarded	Length of Course
Periodontist*	Specialist	3 years
Orthodontist	Specialist	3 years
Specialist Prosthodontics	Specialist	3 years
Maxillo-facial surgeon	Specialist	4 years
Plastic surgeon	Specialist	3 years

*Only available in General Dental Council of Westfalen-Lippe

Visitors comments

The visitors appreciate highly the existence of the different postgraduate courses. These make a valuable contribution to the academic and professional reputation of the school as well as providing a fresh input from other dental schools in and outside Germany. As there are also postgraduate-courses outside the universities, it is recommended that these should be affiliated to the university clinic for reasons mentioned above.

The visitors are of the opinion that the Dental School in general and the students specifically would benefit from participation in the Dental Socrates programme for exchange of students and staff within the EU. Too few students have the possibility to expose themselves to other countries within the EU.

19.3 List of Different Auxillary/Technology/other Courses

- Dental hygienists: 14 apprentices
- Dental technicians: 6 apprentices
- Dental nurses 15 apprentices

19.4 Description of Student Counseling Services in the University

Name: Cand. med. dent. Gorden Christopher Bertelsbeck
Dr. med. Carsten Fischer
e-mail: zmkfs@uni-muenster.de
Phone: +49-251-8347149
Fax: +49-251-8349890
+49-251-8349891

All students of our dental school elect the "Fachschaftsvertretung" (Student representation) of eleven members, who again, elect the chairman, vice-chairman and financial officer. This team is called "Fachschaftsrat", its election takes place once a year.

The chairman of the student's representatives is a member of the faculty board and works on a lot of different commissions. He represents the interests of all dental students at the faculty.

Different topics in the student work:

During the first days of each semester an introduction for newcomers take place. In small groups we offer information about studying and living in Muenster.

We are responsible for the inscription of the newcomers into their first courses as well as their time tables.

For new students in the clinical part we are having a special introduction as well.

We offer support for people with interest in the Dental School, e. g. classes of grammar schools etc.

Publication and Information:

Our "First-year-Magazine" (Erstsemesterinfo) contains a lot of hints for the first steps in the dental school. We produce 18 scripts for the student courses in different departments.

Our "Dent-Info"-magazine, which is produced twice a year contains: all time tables and index numbers for all courses in the school, book reviews and announcements, reports from foreign elective periods, critical reports and discussions about courses, evaluation reports, information about current issues we are working on.

Our website offers information about studying and events in the school. Our guestbook contains offers of used lab equipment, books, accommodation etc.

We offer a great variety of low price prophylaxis products for students and staff.

Foreign exchange:

The local exchange officer is responsible for foreign student affairs. There is a vivid student exchange supported by the department of maxillo-facial-surgery with South Africa, Chile, Brazil. In the past there were intensive contacts to Hungary and Thailand as well.

Activities:

In the summer of 1999 we organized a conference ("Bundesfachschaftstagung") for all student representatives of German dental schools. About 200 people took part. There were a lot of special workshops done by political guests. Additionally we introduced our dental school and the City of Muenster and had a nice party in the garden of the Schlaun'-Castle of Muenster.

We organize a soccer tournament twice a year 12 – 16 teams (2 female teams as well!) participate. In the summer it is called “Dent-Info-Pokal” and in winter “Dent-Indoor-Cup”. The occasion brings together students and professors “fighting for the same goal”. Last but not least we have a lot of work organizing several partys all over the year.

Section 20

Research and Publications

20.1–20.3 Publications / Textbooks / Chapters in Books (1995–1999)

Department	Publication	Total
Conservative Dentistry	in refereed journals	46
	Textbooks published by staff	1
	Chapters in Books	10
Periodontology	in refereed journals	40
	Textbooks published by staff	2
	Chapters in Books	2
Prosthodontics	in refereed journals	52
	Textbooks published by staff	4
	Chapters in Books	17
Orthodontics	in refereed journals	14
	Textbooks published by staff	-
	Chapters in Books	3
Maxillofacial and Oral Surgery	in refereed journals	96
	Textbooks published by staff	-
	Chapters in Books	7
Dental Material Sciences	in refereed journals	2
	Textbooks published by staff	-
	Chapters in Books	6
Total	in refereed journals	250
	Textbooks published by staff	7
	Chapters in Books	45

Department of Conservative Dentistry

20.1 Publications in Refereed Journals

M. Bose und K.H.R. Ott: Zur Abschätzung des Kariesrisikos mit Speicheltests. Dtsch Zahnärztl. Z. 49, 867 - 872 (1994)

W. Strickling und K.H.R. Ott: Klinische Untersuchung des Wurzelkanallängen-Meßgeräts „Root ZX“. Zahnärztl. Welt/Reform 104, 155 - 160 (1995)

M. Bose, Th. Wygold, K. Olbing, S. Gallego, K. Ott, H. Jürgens: Optimierung der Mundpflege bei Kindern und Jugendlichen unter zytostatischer Behandlung. Monatsschr. Kinderheilkunde Band 142, Suppl 1, S. 99, P441 (1994). Oralprophylaxe 17, 135 (1995).

M. Bose, K. H. R. Ott: Glättung von (Füllungs-)Werkstoffen, Zahnschmelz und Dentin durch Prophylaxepasten in vitro. Dtsch Zahnärztl. Z 50, 840 (1995).

M. Bose, K. H. R. Ott: Abrieb, Aufrauung und Glättung von Komposits durch Prophylaxepasten in vitro. Dtsch Zahnärztl Z 51, 690-693 (1996).

- Schäfer, E.: Auswirkungen verschiedener Sterilisationsverfahren auf die Schneidleistung von Wurzelkanalinstrumenten. Dtsch Zahnärztl Z 50, 150 - 153 (1995).
- Tepel, J., Schäfer, E.: Schneidleistung von Hedströmfeilen bei linearer Arbeitsweise. Dtsch Zahnärztl Z 50, 109 - 111 (1995).
- Tepel, J., Schäfer, E., Hoppe, W.: Root canal instruments for manual use: Cutting efficiency and instrumentation of curved canals in a combined rotary and linear motion. Int Endod J 28, 68 - 76 (1995).
- Tepel, J., Schäfer, E., Hoppe, W.: Properties of endodontic hand instruments used in rotary motion. Part 1. Cutting efficiency. J Endod 21, 418 - 421 (1995).
- Schäfer, E., Tepel, J., Hoppe, W.: Properties of endodontic hand instruments used in rotary motion. Part 2. Instrumentation of curved canals. J Endod 21, 493 - 497 (1995).
- Schäfer, E., Hoppe, W.: Wurzelkanalinstrumente aus Titan-Aluminium, Nickel-Titan oder Edelstahl. Zahnärztl Welt 104, 612 - 616 (1995).
- Schäfer, E.: Das Instrumentarium zur manuellen Wurzelkanalaufbereitung. Teil 1: Wurzelkanalinstrumente aus Edelstahl-Legierungen. Endodontie 4, 205 - 221 (1995).
- Schäfer, E.: Das Instrumentarium zur manuellen Wurzelkanalaufbereitung. Teil 2: Wurzelkanalinstrumente aus Titanlegierungen. Endodontie 4, 305 - 312 (1995).
- Schäfer, E.: Das Instrumentarium zur manuellen Wurzelkanalaufbereitung. Teil 3: Spezielle Wurzelkanalinstrumente. Endodontie 5, 39 - 49 (1996).
- Schäfer, E.: Zur Anwendung der transkutanen elektrischen Nervenstimulation (TENS) in der Zahnmedizin. Dtsch Zahnärztl Z 51, 494 - 500 (1996).
- Tepel, J., Schäfer, E.: Schneidleistung von Hedströmfeilen, S- und U-Feilen aus unterschiedlichen Legierungen bei feilender Arbeitsweise. Endodontie 5, 219 - 226 (1996).
- Schäfer, E., Tepel, J.: Cutting efficiency of Hedstrom, S and U files made of various alloys in filing motion. Int Endod J 29, 302 - 308 (1996).
- Schäfer, E.: Effects of four instrumentation techniques on curved canals: a comparison study. J Endod 22, 685 - 689 (1996).
- Schäfer, E.: Erhebungen über die Gebißsanierung von behandlungsunwilligen sowie von behinderten Kindern und Jugendlichen in Intubationsnarkose. Oralprophylaxe 18, 150 - 159 (1996).
- T. Dammaschke, K. H. R. Ott: Geschichte der röntgenologischen Zahnlangenbestimmung mit praktischen Hinweisen in bezug auf Instrumentenmarkierungshilfen. Endodontie 2, 145 - 154 (1997).
- Tepel, J., Schäfer, E., Hoppe, W.: Properties of endodontic hand instruments used in rotary motion. Part 3. Resistance to bending and fracture. J Endod 23, 141 - 145 (1997).
- Schäfer, E.: Root canal instruments for manual use: a review. Endod Dent Traumatol 13, 51 - 64 (1997).
- Schäfer, E., Göhring, C.: Untersuchungen zur Paßgenauigkeit von normierten Guttaperchastiften in Abhängigkeit von der geometrischen Form der aufbereiteten apikalen Stufe. Zahnärztl Welt 106, 361 - 372 (1997).
- Tepel, J., Schäfer, E.: Endodontic hand instruments: cutting efficiency, instrumentation of curved canals, bending and torsional properties. Endod Dent Traumatol 13, 201 - 210 (1997).
- M. Kaup, K. Ott: Veränderungen der Kanalform nach standardisierter Bearbeitung mit Wurzelkanalfeilen. Dtsch Zahnärztl Z 53, 49 - 52 (1998).
- Steinmann, F. und K. Ott: Studie über die Beschwerdebilder von Patienten mit Verdacht auf eine Amalgam-Verträglichkeit. Dtsch. Zahnärztl. Z. 53, 152 - 155 (1998).
- Omland, A., K. Olbing, K. Ott und E. Schäfer: Zum kariogenen Potential von Pharmaka in der Pädiatrie. Der Kinderarzt 29, 468 - 472 (1998).
- Ott, K.: Hypoplasien. Zahnärztl. Gesundheitsdienst 28, 4 - 6 (1998).
- Schäfer, E.: Über die Auswirkungen verschiedener Konstruktionsmerkmale auf die Eigenschaften von Wurzelkanalinstrumenten. Teil 1: Schneidleistung. Dtsch Zahnärztl Z 53, 187 - 192 (1998).
- Schäfer, E.: Über die Auswirkungen verschiedener Konstruktionsmerkmale auf die Eigenschaften von Wurzelkanalinstrumenten. Teil 2: Aufbereitung gekrümmter Kanäle. Dtsch Zahnärztl Z 53, 247 - 250 (1998).
- Omland, A., Olbing, K., Ott, K., Schäfer, E.: Zum kariogenen Potential von Pharmaka in der Pädiatrie. Der Kinderarzt 29, 468 - 472 (1998).

- Schäfer, E., Finkensiep, H.: Die transkutane elektrische Nervenstimulation TENS - Eine Alternative zur Lokalanästhesie ? Zahnärztl Welt 107, 186 - 190 (1998).
- Schäfer, E., Finkensiep, H.: Experimentelle Untersuchungen zur analgesierenden Wirkung zweier TENS-Geräte. Dtsch Zahnärztl Z 53, 690 - 693 (1998).
- Schäfer, E.: Metallurgie und Eigenschaften von Nickel-Titan-Handinstrumenten. Endodontie 7, 323 - 335 (1998).
- M. Kaup, J. Niermann, K.Ott: Reinigungsfähigkeit elektrischer Zahnbürsten bei nicht-eugnather Zahnstellung. Dtsch. Zahnärztl. Z. 54, 103 - 106 (1999)
- Schäfer, E.: Relationship between design features of endodontic instruments and their properties. Part 1. Cutting efficiency. J Endod 25, 52 - 55 (1999).
- Schäfer, E.: Relationship between design features of endodontic instruments and their properties. Part 2. Instrumentation of curved canals. J Endod 25, 56 - 59 (1999).
- Schäfer, E., Bößmann, K.: Untersuchungen über die antimikrobielle Wirksamkeit von ED 84 zur Behandlung infizierter Wurzelkanäle. Dtsch Zahnärztl Z 54, 83 - 88 (1999).
- Schäfer, E.: Geschichtliche Entwicklung, Klassifizierung und Haftungsmechanismen der Dentinadhäsive. Teil 1: Grundlagen der Dentinadhäsion und Adhäsive der 1. bis zur 3. Generation. Zahnärztl Welt 108, 218 - 225 (1999).
- Schäfer, E.: Geschichtliche Entwicklung, Klassifizierung und Haftungsmechanismen der Dentinadhäsive. Teil 2: Von der Einführung der 4. Generation bis zu den sogenannten Ein-Schicht-Adhäsiven. Zahnärztl Welt 108, 306 - 311 (1999).
- Schäfer, E.: Zur Generationsfolge der Dentinadhäsive: Geschichtliche Entwicklung, Klassifizierung und Haftungsmechanismen. Teil 3: Aktuelle Konzepte der Dentinadhäsion. Zahnärztl Welt 108, 390 - 396 (1999).
- Schäfer, E., Lau, R.: Comparison of cutting efficiency and instrumentation of curved canals with nickel-titanium and stainless steel-instruments. J Endod 25, 427 - 430 (1999).
- Schäfer, E., Fritzenschaft, B.: Vergleichende Untersuchung zweier permanent rotierender Wurzelkanalaufbereitungssysteme auf Nickel-Titan-Basis. Endodontie 8, 213 - 226 (1999).
- Schäfer, E., Bößmann, K.: Antimicrobial effect of camphorated chloroxylenol (ED 84) in the treatment of infected root canals. J Endod 25, 547 - 551 (1999).
- Schäfer, E., Zapke, K.: Vergleichende rasterelektronenmikroskopische Untersuchung manuell und maschinell aufbereiteter Wurzelkanäle. Dtsch Zahnärztl Z 54, 551 - 558 (1999).
- Schäfer, E., Al Behaissi, A.: Alkalisierende Wirkung von kalziumhydroxid-haltigen Guttaperchastiften auf das Wurzelkanalentin. Dtsch Zahnärztl Z 54, 614 - 618 (1999).

20.2 Textbooks published by staff

Schäfer, E.: Wurzelkanalinstrumente für den manuellen Einsatz: Schneidleistung und Formgebung gekrümmter Kanalabschnitte. Quintessenz-Verlag, Berlin, 1998.

20.3 Chapters in Books

- Ott, K.: Die Kriterien zur Auswahl eines Füllungsmaterials. Schriftenreihe der Zahnärztekammer Westfalen-Lippe, Band. 1995
- Ott, K.: Anamnese. In: G.K. Siebert (Hrsg.): Atlas der zahnärztlichen Funktionsdiagnostik Carl Hanser Verlag, München 1995
- Ott, K.: Criteria for the selection of a restorative. In: W.H. Mörmann (ed.): CAD/CIM in Aesthetic Dentistry. Quintessenz books, Chicago, Berlin 1996. Reprint: in: Dental News of the Lebanon 3, 9-13 (1996)
- Ott, K.: Karies und parodontale Erkrankungen. In: M.J. Müller und H.FG. Erbersdobler: Prävention ernährungsabhängiger Erkrankungen Wiss. Verl. Ges. Stuttgart 1996
- Tepel, J., Schäfer, E.: Effizienz von Wurzelkanalinstrumenten für die manuelle Wurzelkanalaufbereitung. In: Heidemann, D. (Hrsg.): Deutscher Zahnärztekalendar 1996. Hanser, München – Wien, 1996.
- Ott, K.: Epidemiologie der Karies und der Parodontopathien. Quintessenz „Bonusausgabe“ A 7 - 17 (1997).

- Ott, K.: Quellenvergleich (zahnärztlicher Literatur vornehmlich zum Aspekt der Korrosion von Amalgam) - Gegenüberstellung „Kieler Amalgam-Gutachten“ und Originalzitate. In: Halbach et al. (Hrsg.: IDZ): Amalgam im Spiegel kritischer Auseinandersetzungen. Dtsch. Ärzteverlag, 1999.
- Ott, K.: Möglichkeiten der computer-unterstützten Ausbildung in der Zahnmedizin. In: H. Hüthig (Hrsg.) Computer in Zahnarztpraxis und Dentallabor. Hüthig Verlag, Heidelberg (1999).
- Ott, K.: Karies und parodontale Erkrankungen. In: P. Schauder - G. Ollenschläger (Hrsg.) Ernährungsmedizin - Prävention und Therapie. Urban & Fischer, München, 1999.
- Schäfer, E.: Evaluation des Lernverhaltens der Praktikanten in den klinischen Kursen der Zahnerhaltungskunde. In: Fuchs, U. (Hrsg.): Internationaler Kongreß und Proceedings „Qualität der Lehre“. Lit Verlag, Münster, 1999.

Department of Periodontology

20.1 Publications in Refereed Journals

- Müller, H.-P., Eickholz, P., Heinecke, A., Pohl, S., Müller, R.F., Lange, D. E.: Simultaneous isolation of *Actinobacillus actinomycetemcomitans* from subgingival and extracrevicular locations of the mouth. *J Clin Periodontol* 22, 413-419 (1995)
- Buchmann, R., Müller, R.F., Hasilik, A., Heinecke, A., Lange, D.E.: Klinisch-immunologische Diagnose der Progression entzündlicher Parodontalerkrankungen. *Dtsch Zahnärztl Z* 50, 308-312 (1995)
- Kleinfelder, J.W., Lange, D.E., Topoll, H., Böcker, W.: Pathogenesis of periodontitis in patients with Papillon-Lefèvre-Syndrome. *J Dent Res* 74, 933, Abstract No. 177 (1995)
- Buchmann, R., Grosch, H.-W., Hasilik, A., Lange, D.E.: GCT: Cathepsin D ELISA in progressive periodontitis and therapy refractory patients. *J Dent Res* 74, 933, Abstract No. 178 (1995)
- Müller, H.-P., Eger, T., Lange, D. E.: Management of furcation-involved teeth. *J Clin Periodontol* 22, 911-917 (1995)
- Kleinfelder, J.W., Lange, D.E., Böcker, W.: Das lokale Immungeschehen bei progressiv verlaufenden Formen profunder marginaler Parodontitiden. *Stomatologie* 9, 445-450 (1995)
- Kleinfelder, J.W., Lange, D.E., Böcker, W.: Effects of periodontal therapy on local immune response. *J Dent Res* 74, 470, Abstract No. 558 (1995)
- Buchmann, R., Müller, R.F., Grosch, H.-W., Müller, Ch., Heinecke, A., Lange, D.E.: Selected periodontal predictors for detection of high risk periodontitis patients. *J Dent Res* 74, 542, Abstract No. 1136 (1995)
- Buchmann, R., Müller, R. F., Kesper, M., Müller, Ch., Heinecke, A., Lange, D.E.: Gewebeintegration resorbierbarer Membranen. *Dtsch Zahnärztl Z* 51, 283-285 (1996)
- Buchmann, R., Müller, R.F., Heinecke, A. und Lange, D.E.: Quantitative Analyse parodontalpathogener Keime bei progressiver marginaler Parodontitis. *Stomatologie* 93, 179-185, (1996)
- Lange, D.E.: Erkrankungen der Gingiva und des Parodontiums in Morgenroth, K., Bremerich, A., Lange, D.E.: Pathologie der Mundhöhle, 3. überarbeitete Auflage, Thieme Verlag, Stuttgart New York 1996, pp. 96-159
- Kleinfelder, J. W., Lange, D.E.: Zur Frage der Chemoprophylaxe beim Einsatz regenerativer Techniken in der Parodontologie. *Dtsch Zahnärztl Z* 51, 6, 360-362 (1996)
- Buchmann, R., Khoury, F., Hesse, Th., Müller, R. F., Lange, D. E.: Antimikrobielle Therapie der peri-implantären Erkrankung. *Z Zahnärztl Implantol* 12, 152-157 (1996)
- Kleinfelder, J. W., Lange, D. E., Böcker, W.: Alterations of antibody-mediated immune response following treatment in patients with Aa-associated periodontitis. *J Dent Res* 75, 1223 (1996)
- Kleinfelder, J. W., Topoll, H. H., Preus, H. R., Müller, R. F., Lange, D. E. and Böcker, W.: Microbiological and immunohistological findings in a patient with Papillon-Lefèvre syndrome. *J Clin Periodontol* 23, 1032-1038 (1996)
- Kleinfelder, J. W., Lange, D. E., Müller, R. F., Böcker, W.: Mikrobiologische und immunhistologische Aspekte der präpubertären Parodontitis beim Papillon-Lefèvre-Syndrom. *Dtsch Z Mund Kiefer Gesichtschir* 20, 303-306 (1996)

- Sculean, A., Kleinfelder, J.W., Gürpinar, Y., Lange, D.E., Böcker, W.: Immunhistologische Untersuchungen des entzündlichen Infiltrats parodontaler Läsionen bei Patienten mit Actinobacillusactinomycetem-comitans-assoziierten Formen der tiefen marginalen Parodontitis. Parodontologie 4, 323-328 (1996)
- Kleinfelder, J. W.: Die antimikrobielle Therapie der A. actinomycetemcomitans-assoziierten marginalen Parodontitis. Österr Z Stomatol 94, 171-174 (1997)
- Buchmann, R., Hasilik, A., Grosch, H. W., Heinecke, A., Lange, D. E.: Decreased GCF host response in progressive periodontitis. J Clinical Periodontol 24, 847 (1997)
- Eschmann-Speer, C., Lange, D. E., Müller, R. F.: Reduktion des Keimgehalts behandlungsbedingter zahnärztlicher Aerosole. Dtsch Zahnärztl Z 52, 436-438 (1997)
- Buchmann, R., Khoury, F., Müller, R. F., Lange, D.E.: Die Therapie der progressiven marginalen Parodontitis und Periimplantitis. Dtsch Zahnärztl Z 52, 421-426 (1997)
- Kleinfelder, J.W., Gürpinar, Y., Sculean, A., Lange, D.E., Böcker, W.: Die therapeutische Beeinflussung der lokalen Immunreaktion bei aggressiv verlaufenden Parodontalerkrankungen. Dtsch Zahnärztl Z 52, 467-472 (1997)
- Kleinfelder, J.W., Müller, R.F., Gürpinar, Y., Lange, D.E.: Mikrobiologische Diagnostik und gezielte Antibiose bei parodontalen Problempatienten. Dtsch Zahnärztl Z 52, 477-479 (1997)
- Steinmann, D., Büchter, A., Lange, D.E.: Biological and medical effects of powered toothbrushes on human gingiva. J Dent Res 77, Special Issue A, 211 (1998)
- Kleinfelder, J.W., Müller, R.F., Lange, D.E.: Gyrase inhibitors in the treatment of Actinobacillus actinomycetem-comitans associated periodontal disease. J Dent Res 77, Special Issue A, 251 (1998)
- Kleinfelder, J. W., Müller, R. F., Lange, D.E.: Ofloxacin as adjunct to conventional therapy in A. actinomycetemcomitans associated periodontitis. J Dent Res 77, 796 (1998), Abstract
- Buchmann, R., Müller, R.F., Heinecke, A., Lange, D.E.: Actinobacillus actinomycetemcomitans bei adulter Parodontitis. Dtsch Zahnärztl Z 53, 6, 403-406 (1998)
- Gürpinar, Y., Frie, G., Lange D.E.: Einzeitige Rezessionsdeckung mittels resorbierbarer Membranen an oberen Eckzähnen. Dtsch Zahnärztl Z 53, 6, 412-414 (1998)
- Clausnitzer, C.E., Lange, D.E., Hefti, A.F.: Parodontale Aspekte bei der Entwicklung und dem Verlauf der Ciclosporin-induzierten Gingivavergrößerung. Dtsch Zahnärztl Z 53, 6, 415-418 (1998)
- Buchmann, R., Hasilik, A., Heinecke, A., Lange, D.E.: Differential GCF Host Responses in Chronic Adult and Destructive Periodontal Disease. J dent Res 78, 556, Abstract 3603 (1999)
- Kleinfelder, J.W., Müller, R.F., Lange, D.E.: Intraoral persistence of A. actinomycetemcomitans in periodontally healthy subjects. J dent Res 78, 431, Abstract 2607 (1999)
- Buchmann, R., Khoury, F., Faust, Ch., Lange, D.E.: Periimplant conditions in periodontally compromised patients following maxillary sinus augmentation. Clin Oral Impl Res 10, 103-110 (1999)
- Kleinfelder, J.W., Müller, R.F., Lange, D.E.: Intraoral persistence of Actinobacillus actinomycetemcomitans in periodontally healthy subjects following treatment of diseased family members. J Clin Periodontol 26, 583-589 (1999)
- Clausnitzer, C.E., Hahne, G., Lange, D.E.: Nachuntersuchung bei einzeitiger Rezessionsdeckung oberer Eckzähne mit resorbierbaren Membranen. Dtsch Zahnärztl Z 54, 503-505 (1999)
- Kleinfelder, J.W., Müller, R.F., Lange, D.E.: Antibiotic susceptibility of putative periodontal pathogens in advanced periodontitis patients. J Clin Periodontol 26, 347-351 (1999)
- Conrads G, Flemmig TF, Seyfarth I, Lampert F, Lüticken R: Simultaneous detection of Bacteroides forsythus and Prevotella intermedia by 16S rDNA directed multiplex PCR. J Clin Microbiol 1999, 37:1621-1624.
- Ehmke B, Schmidt H, Beikler T, Kopp C, Karch H, Klaiber B., Flemmig, T.F.: Clonal infection with Actinobacillus actinomycetemcomitans following periodontal therapy. J Dent Res, 1999 78:1518-1523.
- Beikler T, Karch H, Ehmke B, Klaiber B, Flemmig TF: Protective effect of serum antibodies against a 110-kilodalton protein of Actinobacillus actinomycetemcomitans following periodontal therapy. Oral Microbiol Immunol 1999, 14:281-287.
- Ehmke B, Kreß W, Karch H, Grimm T, Klaiber B, Flemmig TF: Interleukin-1 haplotype and periodontal disease progression following therapy. J Clin Periodontol 1999, 26:810-813.
- Rüdiger S, Petersilka G, Flemmig TF: Combined systemic and local antimicrobial therapy of periodontal disease in Papillon-Lefèvre syndrome. A report of 4 cases. J Clin Periodontol 1999, 26: 847-854.

20.2 Textbooks published by staff

Flemmig TF. Periodontia, un Compendio (Translated in Spanish). Ediciones Scientificas y Tecnicas, Barcelona, 1995.

Lange, D.E.: Zahnpasten in: Klinische Materialkunde Ed.: H. Meiners, K.M. Lehmann. Carl Hanser Verlag München, Wien 1998.

20.3 Chapters in Books

Flemmig TF and Ehmke B. Plastische und mukogingivale Chirurgie . In: Heidemann D. (ed). Praxis der Zahnheilkunde. Parodontologie. München: Urban & Schwarzenberg. 1997;227-250.

Flemmig TF and Renvert S: Consensus report of Session D. In: Lang NP, Karring T, Lindhe J (ed.): Proceedings of the 3rd European Workshop on Periodontology: Implant Dentistry. Berlin: Quintessenz Verlags-GmbH, 1999; 347-351.

Department of Prostodontics

20.1 Publications in Refereed Journals

Figgner, L.: Die zahnärztliche Pflicht zur Dokumentation. Stellungnahme der DGZMK. Dtsch Zahnärztl Z 50, 175 (1995).

Figgner, L.: Behandlung von Minderjährigen. Stellungnahme der DGZMK. Dtsch Zahnärztl Z 50, 177 (1995).

Figgner, L.: Kann es in der Zahnheilkunde Garantien geben? Dtsch Zahnärztl Z 50, 105 - 108 (1995).

Figgner, L.: "Ästhetische Zahnmedizin" im Blickpunkt des Rechts. Dtsch Zahnärztl Z 50, 435 - 436 (1995).

Figgner, L.: Prothesenintoleranz im Blickpunkt forensischer Konsequenzen. Dtsch Zahnärztl Z 50, 746 - 747 (1995).

Figgner, L.: Forensic Aspects of Esthetic Dentistry Legal Assessment of the Treatment Result and Damage to Healthy Structures . Journal of Forensic Odonto Stomatology 13, 41 - 42 (1995).

Marxkors, R.: Ursachen und Therapie von Prothesen - Intoleranz. Dtsch Zahnärztl Z 50, 704 - 707 (1995).

Marxkors, R.: Zur Entwicklung diamantierter PAR-Küretten. Zahnärztl Welt 104, 770 - 772 (1995).

Scheutzel, P.: Befunde im Zahn-Mund-Kiefer-Gesichtsbereich bei Anorexia und Bulimia nervosa. Z Allg Med 71, 1039 - 1046 (1995).

Scheutzel, P.: Parodontalbefunde bei Patienten mit psychogenen Eßstörungen. Österr Z Stomatol 92, 179 - 186 (1995).

Scheutzel, P.: Geschmacksstörungen und orale Mißempfindungen als Symptom einer psychosomatischen Störung. Dtsch Zahnärztl Z 50, 736 - 738 (1995).

Scheutzel, P., Gerlach, U.: Sialadenosis as the cause of elevated salivary (α -amylase levels in serum and saliva of anorexic and bulimic patients. Eur J Oral Sci 103, S 57 (1995).

Wolf, R., Diederichs, S., Bollmann, F.: Untersuchung zur Normierbarkeit thermographischer Darstellungsverfahren bei Belastung des Kausystems. Dtsch Zahnärztl Z 50, 525 - 528 (1995).

Wolowski, A.: Diagnosehilfen zur Identifizierung psychisch erkrankter Patienten. Dtsch Zahnärztl Z 50, 729 - 732 (1995).

Wöstmann, B., Wegener, H., Cousin, J., Balkenhol, M.: Zur Meßgenauigkeit elektronischer Registrierungssysteme. Dtsch Zahnärztl Z 50, 544 - 546 (1995).

Wöstmann, B., Vehring, A.: Die Eignung elastomerer Bißregistrierungsmaterialien zur Verschlüsselung von Stützstiftregistraten. Dtsch Zahnärztl Z 50, 496 - 498 (1995).

Figgner, L.: Über die haftungsrechtliche Verantwortlichkeit bei der Verwendung zahnärztlicher Materialien. Zahnärztl Welt 105, 269 - 272 (1996).

Figgner, L.: Non-acceptance of prosthetic appliances at the focus of forensic consequences. Journal of Forensic Odonto-Stomatology 14, 28 - 29 (1996).

Marxkors, R.: Teleskopy w protetyce. Protetyka Stomatologiczna 46, 175 - 180 (1996).

- Marxkors, R., Wolowski, A.: Funktion und Ästhetik in der Totalprothetik. *Protetyka Stomatologiczna* 45, 2 (1996).
- Saulin, V., Hidding, J., Bollmann, F.: Mg-Iontophorese bei fazialer Dystonie mit Kondylusluxation. *Dtsch Zahnärztl Z* 51, 163 - 165 (1996).
- Scheutzel, P., Ordelheide, K.: Erosion of dental filling materials by acidic beverages in vitro. *Acad Dent Mater Trans* 9, 263 (1996).
- Scheutzel, P.: Etiology of dental erosion - intrinsic factors. *Eur J Oral Sci* 104, 178-190 (1996).
- Stamm, Th., Brinkhaus, H.A., Lenzen, H., Bollmann, F.: Computergestützte Weichteilprofilerkennung im Fernröntgenseitenbild. *Dtsch Zahnärztl Z* 51, 482 - 484 (1996).
- Stamm, Th., Wöstmann, B.: Zur Genauigkeit der computerunterstützten elektronischen Scharnierachsenbestimmung. *Dtsch Zahnärztl Z* 51, 413 - 415 (1996).
- Weingart, D., Werkmeister, R., Joos, U., Röckel, J., Pingel, H.H.: Korrektur der sagittalen Diskrepanz bei starker Atrophie des Oberkieferalveolarkamms. *Dtsch Zahnärztl Z* 51, 46 - 48 (1996).
- Bollmann, F., Dirksen, D., Saulin, V., von Bally, G.: 3D- Koordinatenerfassung mittels computerunterstützter Profilometrie für zahnmedizinische Modellanalysen. *Dtsch Zahnärztl Z* 52, 105 - 108 (1997).
- Diederichs, S., Wolf, R., Dirksen, D., Lechler, B., Bollmann, F.: Vergleich des klinischen Resilienztestes nach Gerber mit entsprechenden Messungen durch den String Condylcomp LR 3. *Dtsch Zahnärztl Z* 52, 246 - 251 (1997).
- Marxkors, R.: Mastering the Removable. Partial Denture Part One: Basis Reflections about construction. *J Dent Technology* 14, 34 - 39 (1997).
- Marxkors, R. Mastering the Precision Removable Partial Denture, Part Two: Connection of partial dentures to the abutment teeth. *J Dent Technology* 14, 24 - 30 (1997).
- Runte, Ch.: Rechtwinkel- und Paralleltechnik für axiale Röntgenaufnahmen bei der Implantatplanung für zahnlose Unterkiefer. *Z Zahnärztl Implantol* 13, 123 - 127 (1997).
- Scheutzel, P.: Acid conditionability of the enamel surface in Amelogenesis imperfecta. *J Dent Res* 76, 114 (1997).
- Seifert, E., Runte, Ch., Lamprecht-Dinnesen, A.: Zahnheilkunde und Sprachlautbildung – Zusammenhang zwischen der Morphologie der Artikulationszone und der Akustik am Beispiel der /s/-Lautbildung. *J Orofac Orthop / Fortschr* 58, 224 - 231 (1997).
- Scheutzel, P., Terpelle, T., Marega, V.: Corrosion resistance of dental alloys to acidic beverages. *J Dent Res* 77, 1240 (1998).
- Scheutzel, P., Terpelle, T., Marega, V.: Zur Korrosionsbeständigkeit zahnärztlich verwendeter Legierungen gegenüber säurehaltigen Getränken. *Dtsch Zahnärztl Z* 53, 204-210 (1998).
- Scheutzel, P.: Radiographic findings in the maxillofacial area of acromegalic patients. *Dentomaxillofac Radiol* 27, 35 (1998).
- Scheutzel, P., Reuter, I., Becker, D.: Accuracy of radiographic assessment of the marginal fit of cast crowns. *Dentomaxillofac Radiol* 27, 35 (1998).
- Stamm, Th., Brinkhaus, H.A., Ehmer, U., Meier, N., Bollmann, F.: Computer-aided automated landmarking of cephalograms. *J Orofac Orthop* 59 (2), 73 – 81 (1998).
- Stamm, Th., Vehring, A., Ehmer, U., Bollmann, F.: Axiography of Asymptomatic Individuals with Class II/2. *J Orofac Orthop* 59, 237 – 245 (1998).
- Wolowski, A.: Symptoms six month before the appearance of a malignant or psychosomatic illness. *J Fac Som Prosth* 4, 23 – 28 (1998) .
- Wolowski, A., Marxkors, R., Wloch, S.: Unklare Kiefer-Gesichts-Beschwerden, psychosomatisch oder somatopsychisch? *Prot Stom* 3, 160 – 168 (1999).
- Dirksen, D., Diederichs, St., Runte, C., von Bally, G., Bollmann, F.: Three-dimensional acquisition and visualization of dental arch features from optically digitized models. *J Orofac Orthop* 60, 152-159 (1999).
- Dirksen, D., Stratmann, U., Kleinheinz, J., von Bally G., Bollmann, F.: Three-dimensional visualization and quantification of the mandibular articular surface by optical profilometry. *Cell Tiss Org* 164, 212-229 (1999).
- Seifert, E., Runte, C., Riebandt, M., Lamprecht-Dinnesen, A., Bollmann, F.: Can dental prostheses influence vocal parameters? *J Prosthet Dent* 81, 579-585 (1999).
- Seifert, E., Runte, C., Selders, D., Lamprecht-Dinnesen, A., Bollmann, F.: Der Einfluß der Zahnprothe-

se auf die Stimme. HNO 47, 485-489 (1999).

Seifert, E., Runte, C., Lamprecht-Dinnesen, A., Bollmann, F.: Die Veränderbarkeit von Sprache und Stimme durch dentogene Faktoren. HNO 47, 851-858 (1999).

Scheutzel, P., Gerlach, U., Hengst, K.: Befunde im Mund-, Kiefer-, Gesichtsbereich bei Akromegalie. Dtsch Zahnärztl Z 54 Supplement, 22 (1999).

Scheutzel, P.: Dental development, skeletal maturity and height growth in Amelogenesis imperfecta. J Dent Res 78, 361 (1999).

Figgenger, L.: Wenn es zum Streit mit dem Patienten kommt... Haftungsrechtlich wichtige Aspekte im zahnärztlichen Praxisalltag. ZMK 15, Nr. 11, 746 - 751 (1999).

Marxkors, R.: Stellenwert der klammerverankerten Modellgußprothese. Dtsch Zahnärztl Z 53, 3 - 4 (1998).

Marxkors, R.: Gebißfunktion bei implantatgestützter unterer Totalprothese. Journal of Multidisciplinary Collaboration in Prothodontics 2, 180 - 186 (1999).

Marxkors, R.: Ursachen, Auswirkungen und Behebungen von Mißerfolgen. Dtsch Zahnärztl Z 54, 600 - 610 (1999)

20.2 Textbooks published by staff

Scheutzel, P.: Wilhelm-Conrad Röntgen - Unsichtbares wird sichtbar. Quintessenz Verlag, Berlin 1995.

Marxkors, R.: Lehrbuch der Zahnärztlichen Prothetik. 2. überarbeitete und erweiterte Auflage. Deutscher Zahnärzte Verlag, DÄV - Hanser, Köln - München 1997

Marxkors, R., Danger, K.-H.: Form- und funktionsgerechtes Präparieren. Carl Hanser Verlag München - Wien 1998.

Marxkors, R., Wolowski, A.: Unklare Kiefer-Gesichtsbeschwerden. Deutscher Zahnärzte-Verlag, Köln 1999.

20.3 Chapters in Books

Figgenger, L.: The Dentist's Duty of Documented Report Importance and Significance According to German Law. In: Jacob, B., Bonte, W. (Hrsg.): Advances in Forensic Sciences. Volume 7, Forensic Odontology & Anthropology. Verlag Dr. Köster, Berlin 1995, S. 211

Figgenger, L.: Typische Mängel in gerichtlichen Beweisbeschlüssen. In: Arbeitsgemeinschaft Rechtsanwältinnen im Medizinrecht e. V. (Hrsg.): Der medizinische Sachverständige - Richter in Weiß?. Carl Heymanns Verlag, Köln - Berlin - Bonn - München 1995, S. 101

Figgenger, L.: Verhalten bei Ausbleiben des Erfolges. In: Referate 8. Schriftenreihe der Zahnärztekammer Westfalen - Lippe. Verlag Manfred Wessels, Greven 1995, S. 179

Figgenger, L.: Ionen, Ströme, Allergien als Erklärung unklarer Beschwerden. In: Referate 8. Schriftenreihe der Zahnärztekammer Westfalen - Lippe. Verlag Manfred Wessels, Greven 1995, S. 187

Figgenger, L.: Der Problempatient. In: Referate 8. Schriftenreihe der Zahnärztekammer Westfalen - Lippe. Verlag Manfred Wessels, Greven 1995, S. 113

Marxkors, R.: Quality Assurance in Prosthetic Dentistry. In: 'Advances in forensic sciences' . Verlag Dr. Köster, Berlin 7, 205 - 207 (1995).

Scheutzel, P.: Zahnhartsubstanzverlust durch Erosion. In: Heinenberg, J. (Hrsg.): Innovationen für die Zahnheilkunde. Spitta Verlag, Balingen 1995.

Wolowski, A.: Die Diagnose "Psychosomatische Störung" vor dem Hintergrund somatischer Befunde. In: Heinenberg, J. (Hrsg.): Innovationen für die Zahnheilkunde. Spitta Verlag, Balingen 1995.

Figgenger, L.: Rechtliche Aspekte bei der zahnärztlichen Behandlung minderjähriger Patienten. In: Staehle, H.J., Koch, M.J. (Hrsg.): Kinder- und Jugendzahnheilkunde. Deutscher Ärzte - Verlag, Köln 1996, S. 148

Figgenger, L.: Das Erscheinungsbild der Myoarthropathie ein diagnostisches Problem. In: Referate 9. Schriftenreihe der Zahnärztekammer Westfalen-Lippe. WWF Verlag, Greven 1996, S. 23

Runte, C., Seifert, E., Diederichs, St., Bollmann, F., Lamprecht-Dinnesen, A.: Die Rolle des Zahnarztes bei der Diagnose und Therapie von /s/-Lautbildungsstörungen. In: Gross, R., Gross, M.: Aktuelle phoniatrisch-pädaudiologische Aspekte 1997/1998, Bd.5, 188-192.

Runte, C., Figgenger, L.: Totalprothetik. In: Heinenberg, B. (Hrsg.): Innovationen für die Zahnheilkunde. Spitta Verlag, Balingen 1998.

Dirksen, D., von Bally, G, Bollmann, F.: Automatic acquisition and evaluation of optically achieved range data of medical and archaeological samples. In: Fotakis, C., Papazoglou, T., Kalpouzos, C. (Eds): Optics within life sciences (Proc. OWLS V 1998): Biomedicine and culture in the era of modern Optics and lasers. Springer, Heidelberg 1999.

Runte, C., Figgener, L.: Totalprothetik, Teil I. In: Stemman, H (Hrsg.): Die richtige Abrechnung des Zahntechnikers. Spitta Verlag, Balingen 1999.

Scheutzel, P.: Einflüsse von Eßstörungen auf das Kauorgan. In: Zahnersatz in der Diskussion – Experten nehmen Stellung. Kilian, Marburg 1999.

Wolowski, A.: Funktionsstörungen des Kauorgans durch psychische Konflikte. In: Zahnersatz in der Diskussion – Experten nehmen Stellung. Kilian, Marburg 1999.

Wolowski, A.: Psychisches Wohlbefinden und Zahnersatz. In: Zahnersatz in der Diskussion – Experten nehmen Stellung. Kilian, Marburg 1999.

Institute of Dental Material Sciences

20.1 Publications in Refereed Journals

Meiners, H.: Alternative Methoden in der Medizin, Einige Anmerkungen aus physikalischer Sicht. Dtsch Zahnärztl Z 52, 318-322 (1997)

E. Habermann, H. Meiners, G.-M. Ostendorf, H.-J. Staehle: „Komplementäre Verfahren“ in der Zahnheilkunde. (Stellungnahme der DGZMK, Stand 2.6.1997). Dtsch Zahnärztl Z 52, 564-566 (1997)

20.2 Textbooks published by staff

20.3 Chapters in Books

H. Meiners: Elektrische Erscheinungen an metallischem Zahnersatz (Oraler Galvanismus). In: St. Halbach, R. Hickel, H. Meiners, K. Ott, FX Reichl, R. Schiele, G. Schmalz, H.J. Staehle: " Stellungnahme zum Kieler Amalgam-Gutachten". Hrsg: Bundeszahnärztekammer, Köln 1997

H.Meiners: Alternative Diagnoseverfahren. In: St. Halbach, R. Hickel, H. Meiners, K. Ott, F.X. Reichl, R. Schiele, G. Schmalz, H.J. Staehle. " Stellungnahme zum Kieler Amalgam-Gutachten. Hrsg: Bundeszahnärztekammer, Köln 1997

Meiners, H., K.M. Lehmann (Hrsg.): Klinische Materialkunde für Zahnärzte. Hanser Verlag, München Wien 1998

K. Hertrampf, H. Meiners, K. M. Lehmann, H. H. Cesar, K. Uphoff: Zahnersatz individuell. Hrsg.: Kuratorium perfekter Zahnersatz, Marburg 1998

St. Halbach, R. Hickel, H. Meiners, K. Ott, F.X. Reichl, R. Schiele, G. Schmalz, H.J. Staehle: Amalgam im Spiegel kritischer Auseinandersetzungen – Interdisziplinäre Stellungnahme zum „Kieler Amalgam-gutachten“. (Materialienreihe Band 20). Hrsg.: Institut der Deutschen Zahnärzte (IDZ) Deutscher Ärzte Verlag, Köln 1999.

Meiners, H: Füllungswerkstoffe. Werkstoffe für den Zahnersatz. Palladiumhaltige Dentallegierungen aus werkstoffkundlicher Sicht. In: Zahnersatz in der Diskussion. Hrsg.: Lehmann, K.: VERLAG im KILIAN, Marburg 1999

Department of Orthodontics

20.1 Publications in Refereed Journals

Ehmer U., Wegener H., Kloos R.: Therapieeffekte nach dentoalveolärer Kompensation des skelettal offenen Bisses bei Erwachsenen. Skelettale und dentale Parameter. Fortschr. Kieferorthop. 56 (1995) 309 – 317.

Stratmann U., Schaarschmidt K., Schürenberg, M., Ehmer U.: The effect of ArtF-Eximer Laser irradiation of the human enamel surface on the bond strength of orthodontic appliances. Scanning Microscopy, Vol. 9, No. 2 (1995) 469 – 478.

Wöstmann B., Wegener H., Cousin J., Balkenhol M: Zur Meßgenauigkeit elektronischer Registriersysteme (ID:1326). Dtsch Zahnärztl. Z 50 (1995) 544-546.

Stratmann U., Schaarschmidt K., Wegener H., Ehmer U.: The extent of enamel surface fractures. A

- quantitative comparison of thermally debonded ceramic and mechanically debonded metal brackets by energy dispersive micro- and image-analysis (ID:1054). *Europ J of Orthod* 18 (1996) 655-662.
- Hohoff A., Ehmer U.: Die Effekte der Stimulationsplattentherapie nach Castillo-Morales auf die Sprachentwicklung von Kindern mit Trisomie 21. (ID:1059). *Orofac Orthop / Fortschr Kieferorthop* 58 (1997) 330-339.
- Wiechmann D., Ehmer U., Joos U., Dörr-Neudeck K.: Le procede de double socle calibre prefabrique - KDMMS. Pour simulation et planification tridimensionnelle dand i´ articulateur en chirurgie orthognathique. (ID:1058) *Rev Stomatol Chir maxillofac* 98 (1997) 91-95.
- Ehmer U.: El activador con ass en U. *Quintessence tecnica* 6 (1998) 320-328.
- Hohoff A., Seifert E., Ehmer U., Lamprecht-Dinnesen A.: Die Sprachlautbildung von Kindern mit Morbus Down. Eine Pilotstudie (ID:1207) *J Orofac Orthop / Fortschr Kieferorthop* 59 (1998) 220-228.
- Stamm Th., Vehring A., Ehmer U., Bollmann F.: Axiography of Asymptomatic Individuals with Class II/2 (ID:1063) *J Orofac Orthop / Fortschr Kieferorthop* 59 (1998) 237-245.
- Stamm Th., Brinkhaus HA., Ehmer U., Meier N., Bollmann F.: Computergestützte, automatisierte Auswertung von Fernröntgenseitenaufnahmen (ID:1061) *J Orofac Orthop* 1998; 59 (2): 73-81.
- Ehmer U., Tulloch CJF., Proffit WR., Phillips C.: Ein internationaler Vergleich zur Frühbehandlung von Angle-Klasse II/1-Dysgnathien (ID:1) *J Orofac Orthop / Fortschr Kieferorthop* 1999;60:392-408 (Nr.6).
- Hohoff A., Ehmer U.: Kurzzeit- und Spätergebnisse nach Frühbehandlung mit der Stimulationsplatte nach Castillo Morales (ID:1343) *J Orofac Orthop / Fortschr Kieferorthop* 60 (1999) 2-23.
- Wiechmann D.: Lingualtechnik (Teil 1): Laborprozeß (ID:2) *J Orofac Orthop / Fortschr Kieferorthop* 1999; 60: 371-9 (Nr. 5).

20.2 Textbooks published by staff

20.3 Chapters in Books

- Mischke K-L., Cousin J., Ehmer U., Bierweller F.: Analysen von Fernröntgenaufnahmen (ID:598). *Die Qualität der Lehre in der Medizin*. Urban & Schwarzenberg, 1996
- Ehmer U.: U-Bügelaktivator (ID:1052). In: Miethke, R.-R. und Drescher, D.: *Kleines Lehrbuch der Angle-Klasse II, 1 unter besonderer Berücksichtigung der Behandlung* Quintessenz Verlag. Berlin, 1996.
- Wegener H.: Kieferorthopädische Hilfsmittel. In: Meiners, H. und Lehmannm K.M.: *Klinische Materialkunde für Zahnärzte*; Hanser-Verlag München-Wien 1998

Department of Oral and Maxillofacial Surgery

20.1 Publications in Refereed Journals

- Bankfalvi, A., Piffko, J., Joos, U., Böcker, W., Schmidt, K.W.: p53 Immunostaining in oral carcinomas suggests a pronounced heterogeneity of altered p 53 Protein. *J Cancer Res Clin Oncol* 121 (1995)
- Brandt, B., Vogt, U., Schlotter, C.M., Jakisch, C., Werkmeister, R., Thomas, M., von Eiff, M., Boose, U., Assmann, G. , Zänker, K.S.: Prognostic relevance of aberrations in the erbB oncogenes from breast, ovarian, oral and lung cancers: double-differential polymerase chain reaction (ddPCR) for clinical diagnosis. *Gene* 159, 35 - 42 (1995)
- Höhling, H.J., Arnold, S., Barchhaus, R.H., Plate U., Wiesmann, H.P.: Structural relationship between the primary crystal formations and the matrix macromolecules in different hard tissues. Discussion of a general principle. *Connect Tissue Res* 33, 171-178 (1995)
- Joos, U.: Skeletal growth after muscular reconstruction for cleft lip, alveolus, and palate. *Br J Oral Maxfac Surg* 33, 139-144 (1995)
- Joos, U.: Die Behandlung cranio-facialer Anomalien. *Dtsch Z Mund Kiefer GesichtsChir* 19, 118-119 (1995)
- Kleinheinz, J., Weingart, D., Joos, U.: Darstellung der zirkumoralen und paranasalen mimischen Muskulatur mit der Kernspintomographie. *Dtsch Z Mund Kiefer GesichtsChir* 19, 95-97 (1995)

- Knöde, H., Bendorf, G., Weingart, D., Joos, U.: Fabrication of all-ceramic implant-supported bridges. *Pract Periodont Aesthet Dent* 7, 39 (1995)
- Meyer, U., Szulczewski, D.H., Möller, K., Jones, D., Weingart, D., Joos, U.: Einfluß physikalischer Parameter von Implantatoberflächen auf Osteoblasten. *Z Zahnärztl Implantol* 11, 235-240 (1995)
- Piffkò, J., Bånkfalvi, A., Öfner, D., Berens, A., Tkotz, T., Joos, U., Böcker, W., Schmid, K.W.: Expression of p53 protein in oral squamous cell carcinomas and adjacent non-tumorous mucosa of the floor of the mouth. *J Oral Path Med* 24, 337-342 (1995)
- Piffkò, J., Bånkfalvi, A., Öfner, D., Joos, U., Böcker, W., Schmidt, K.W.: The effect of wet autoclave pretreatment on silver staining of nucleolar-organizer-region-associated proteins (AgNORs) in archival oral squamous cell carcinomas. *J Cancer Res Clin Oncol* 121 (1995)
- Piffkò, J., Bånkfalvi, A., Öfner, D., Joos, U., Böcker, W., Schmidt, K.W.: Immunohistochemical detection of p53 protein in archival tissues from squamous cell carcinomas of the oral cavity using wet autoclave antigen retrieval. *J Pathology* 176, 69-75 (1995)
- Romanos, G. E., Schröter-Kermani, C., Weingart, D., Strub, J.R.: Healthy human periodontal versus peri-implant gingival tissue. An immunohistochemical differentiation of the extracellular matrix. *Int J Oral Maxfac Implants* 10, 750 (1995)
- Szulczewski, D.H., Meyer, U., Jones, D., Weingart, D., Joos, U. : Cellular behaviour of primary bovine osteoclasts on ionomeric cement. *Dtsch Z Mund Kiefer GesichtsChir* 19, 281-283 (1995)
- Weingart, D.: Surgical procedures in standard indications: edentulous patients and free end situations. *Implantology (Japanese)* 3, 76 (1995)
- Weingart, D., Schilli, W.: Surgical techniques for prevention of membrane collapse in guided bone regeneration. *Implantology (Japanese)* 4, 46 (1995)
- Weingart, D., Kleinheinz, J., Schenk, R., Strub, J.R.: Perforation der knöchernen Begrenzung des Oberkiefers bei Insertion enossaler Implantate - Tierexperimentelle Ergebnisse. *Dtsch Z Mund Kiefer GesichtsChir* 19, 311 (1995)
- Werkmeister, R., Brandt, B., Vogt, U., Joos, U.: Oncogene Amplification in Oral Squamous Cell Carcinomas (OSCC). *Dtsch Z Mund Kiefer GesichtsChir* 19, 118 - 119 (1995)
- Wiesmann, H.P., Höhling, H.J., Zierold, K., Barckhaus, R.: Elemental distribution in predentine associated with dentine mineralization in rat incisor. *Connect Tissue Res* 33, 179-184 (1995)
- Bånkfalvi, Å., Piffkò, J., Öfner, D., Dreier, R., Böcker, W., Schmid, K.W.: Significance of wet autoclave protein tretreatment in immunohistochemistry. *Pathol Oncol Res* 2, 71-77 (1996)
- Kleinheinz, J., Meyer, U., Büchner, W., Weingart, D., Joos, U.: Orale Manifestationen bei Patienten mit akuten Leukämien. *Dtsch Z Mund Kiefer GesichtsChir*, 12, 50-53 (1996)
- Meyer, U., Szulczewski, D.H., Möller, K., Jones, D.B., Wiesmann, P.: Untersuchungen zur Biokompatibilität eines neuen ionomeren Knochenzernentes in der Endoprothetik. *Z Orthopädie* 134, 117-124 (1996)
- Piffkò, J., Bånkfalvi, A., Klauke, K., Joos, U., Böcker, W., Schmid K.W.: CD 44 v6 spielt keine Rolle bei der Tumorprogrerssion von Platten- epithelkarzinomen der Mundhöhle. *Verh Dtsch Ges Path* 80, 507 (1996)
- Piffkò, J., Bånkfalvi, Å., Öfner, D., Tötsch, M., Berens, A., Joos, U., Böcker, W., Schmid, K.W.: Proliferative (MIB1, mdm2) versus anti-proliferative (p53) markers in head and neck cancer. An immunohistochemical study. *Pathol Oncol Res* 2, 39-42 (1996)
- Piffkò, J., Bånkfalvi, Å., Klauke, K., Dreier, R., Joos, U., Böcker, W., Schmid, K.W.: Unaltered strong expression of CD44-v6 and -v 5 isoforms during oral squamous cell carcinoma genesis and progression; lack of prognostic relevance. *J Oral Path Med* 25, 502-506 (1996)
- Piffkò, J., Bånkfalvi, Å., Öfner, D., Kusch, F., Böcker, W., Joos, U., Schmid, K.W.: In situ assessment of cell proliferation at the invasive front of oral squamous cell carcinomas. *Virchows Arch* 429, 229-234 (1996)
- Plate, U., Tkotz, T., Wiesmann H.P., Stratmann, U., Joos, U., Höhling, H.J.: Early mineralization of matrix vesicles in the epiphyseal growth plate. *J Microsc* 183, 102-107 (1996)
- Stratmann, U., Schaarschmidt, K., Wiesmann, H.P., Plate, U., Höhling, H.J.: Mineralization during matrix-vesicle mediated mantel dentine formantion in molars of albino rats: A microanalytical and ultrastructural study. *Cell Tissue Res* 284, 223-230 (1996)
- Stratmann, U., Scharschmidt, K., Wiesmann, H.P., Plate, U., Szuwart T., Höhling H.J.: A comparison between the mineralization of mantel dentine and circumpulpal dentine in rat: An ultrastructural and

- element analytica study. *Anat Embryology* 195, 289-297 (1996)
- Szulczewski, D.H., Stratmann, U., Meyer, U., Joos, U.: Klinisch anatomische Bedeutung des unteren Bauches des M. pterygoideus lateralis in der Funktionsdiagnostik von Myoarthropathien. *Dtsch Zahnärztl Z* (1996)
- Szulczewski, D.H., Meyer, U., Jones, D.B., Weingart, D., Joos, U.: Cellular behaviour of primary bovine osteoblasts on ionomeric cement. *Dtsch Z Mund Kiefer GesichtsChir* 19, 281-283 (1996)
- Weingart, D., Meyer, U., Röder, N., Scheld, H., Joos, U.: Zahnärztliche Sanierung von Patienten mit Operationen am offenen Herzen. *Dtsch Zahnärztl Z* (1996)
- Weingart, D., Werkmeister, R., Röckel, J., Joos, U., Pingel, D.: Korrektur der sagittalen Diskrepanz beim zahnlosen Patienten. *Dtsch Zahnärztl Z* 51, 46 (1996)
- Werkmeister, R., Brandt, B., Joos, U.: The erb Oncogenes as Prognostic Markers in Oral Squamous Cell Carcinomas. *Am J Surg* 172, 681-683 (1996)
- Weingart, D., Joos, U.: Differentialindikation verschiedener osteosynthetischer Therapiekonzepte bei Unterkieferfrakturen. *Fortschr Kiefer GesichtsChir* 41, 71 (1996)
- Wiesmann, P., Höhling, H.J., Tkotz, T., Weingart, D., Joos, U.: Vergleich der Frühstadien der Mineralisation von Zahndentin und Schädelkalotte bei Wistar-Ratten. *Dtsch Z Mund Kiefer GesichtsChir* 20, 43 - 46 (1996)
- Arnold, S., Plate U., Kohl, H., Höhling, H.J., Wiesmann, H.P.: Quantitative electron spectroscopic diffraction (ESD) and electron spectroscopic imaging (ESI) analyses of dentine mineralization in rat incisors. *Cell and Tissue Res* 288, 185-190 (1997)
- Handschel, J., Kleinheinz, J., Ahrberg, W., Joos, U.: Chronische Unterkieferosteomyelitis nach Zahnextraktion. *Quintessenz* 48, 921-927 (1997)
- Höhling, H.J., Arnold, S., Plate, U., Stratmann, U., Wiesmann, H.P.: Analysis of a General Principle of Crystal Nucleation, Formation in the Different Hard Tissues. *Adv Dent Res* 11 (1997)
- Kleinheinz, J., Meyer, U., Büchner, T., Kösters, G., Weingart, D., Joos, U.: Orale Manifestation der akuten Leukämie. *Dtsch Z Mund Kiefer GesichtsChir* 1, 57-60 (1997)
- Kleinheinz, J., Weingart, D., Joos, U.: Obrazowanie miesni okolicy ust i nosa za pomoca magnetycznego rezonansu jadowego. *Magazyn stomatologiczny*, 4, 36-38 (1997)
- Kleinheinz, J., Anastassov, G.E., Joos, U.: Ultrasonographic Versus Conventional Diagnostic Procedures in Dislocated Subcondylar Mandibular Fractures. *J Cran Maxfac Trauma* 2, 40-42 (1997)
- Kruse-Lösler, B., Szulczewski, D.H., Kleinheinz, J., Werkmeister, R., Joos, U.: Stellenwert der B-Scan-Sonographie für die Indikation zur Operation bei entzündlichen Schwellungen im Kopf-Hals-Bereich. *Dtsch Zahnärztl Z* 52, 761-764 (1997)
- Meyer, U., Meyer, T., Jones, D.B.: No mechanical role for vinculin in strain transduction in primary bovine osteoblasts. *Biochem and Cell Biol* 75, 81 - 87 (1997).
- Meyer, U., Kleinheinz, J., Gaubitz, M., Schulz, M., Weingart, D., Joos, U.: Orale Manifestationen bei Patienten mit systemischem Lupus Erythematodes. *Dtsch Z Mund Kiefer GesichtsChir* 1, 90-94 (1997)
- Piffkò, J., Bänkfalvi, À., Öfner, D., Rasch, D., Joos, U., Böcker, W., Schmid, K.W.: Standardized demonstration of silver stained nucleolar organizer regions (AgNORs) associated proteins in archival oral squamous cell carcinomas and adjacent non-neoplastic mucosa. *Mod Pathol* 10, 98-104 (1997)
- Piffkò, J., Bänkfalvi, À.: Immunohistochemische Expression des p53 proteins in Plattenepithelkarzinomen und normalem und dysplastischem Epithel der Mundhöhle. *Dtsch Z Mund Kiefer GesichtsChir* 1, 104-107 (1997)
- Piffkò, J., Bänkfalvi, À., Öfner, D., Bryne, M., Rasch, D., Joos, U., Böcker, W., Schmid, K.W.: Prognostic value of histobiological factors (malignancy grading and AgNOR content) assessed at the invasive tumour front of oral squamous cell carcinomas. *Br J Cancer* 75, 1543-1546 (1997).
- Piffkò, J., Bänkfalvi, À., Öfner, D., Rasch, D., Joos, U., Böcker, W., Schmid, K.W.: Standardised AgNOR analysis of the invasive tumour front in oral squamous cell carcinomas. *J Pathol* 182, 450 - 456 (1997)
- Szulczewski, D.H., Werkmeister, R., Gross, R., Schulte, K., Joos, U.: Die Iodiontophorese als zusätzliche Therapie bei Logenabszessen im Mund-Kiefer-Gesichtsbereich. *Dtsch Zahnärztl Z* 52, 688-690 (1997)
- Werkmeister, R., Weingart, D., Joos, U.: La correction chirurgicale du décalage sagittal des maxillaires dans les atrophies alvéolaires majeures. *Rev Stomatol Chir maxillofac* 98, 359 - 362 (1997)

- Wiechmann, D., Ehmer, U., Joos, U., Dörr-Neudeck, K.: Le procédé de double socle calibré préfabriqué - KDMMS. *Rev Stomatol Chir maxfac* 98, 91-95 (1997)
- Wiesmann, H.P., Tkotz, Th., Joos, U., Zierold, K., Stratmann, U., Szuwart, Th., Plate, U., Höhling, H.J.: Magnesium in early dentine mineral of rat incisor. *Bone and Mineral Res* 12, 380-383 (1997)
- Kleinheinz, J.; Stamm, T.; Meier, N.; Wiesmann, H.-P.; Joos, U. MRT-3D-Darstellung der Orbita bei kraniofazialen Fehlbildungen und Verletzungen. *Mund Kiefer GesichtsChir* 2 (Suppl 1): S91-S93, 1998
- Joos U. Functional treatment of craniosynostosis during childhood. *Brit J Oral Maxillofac Surg* 1998;36:91-98
- Anastassov GE, Joos U, Zöllner B. Evaluation of the results of delayed rhinoplasty in cleft lip and palate patients. *Brit J Oral Maxillofac Surg* 1998;36:416-424
- Plate U., Arnold S., Stratmann U., Wiesmann H. P., and Höhling H. J. (1998): General principle of ordered apatitic crystal formation in enamel and collagen rich hard tissues. *Connect Tissue Res* 38: 149-157.
- Wiesmann H. P., Plate U., Zierold K., Höhling H. J. (1998): Potassium is involved in apatite biomineralization. *J Dent Res* 77: 1654-1657.
- Wiesmann H. P., Chi L., Stratmann U., Plate U., Fuchs H., Joos U., Höhling H. J. (1998): Sutural mineralization of rat calvaria characterized by atomic force microscopy and transmission elektron microscopy. *Cell Tissue Res* 294: 93-97.
- Joos U, Anastassov GE. Treatment of craniofacial midline clefts in association with hamartomas: report of three cases. *J Oral Maxillofac Surg* 1998;56:383-392
- Joos U, Kleinheinz J. Therapy of condylar neck fractures. *Int J Oral Maxillofac Surg* 1998;27:247-254
- Joos U, Mann W, Gilsbach J. Microsurgical treatment of midfacial tumours involving the skull base. *J Craniomaxillofac Surg* 1998;26:226-234
- Meyer, U., Meyer, T., Jones, D.B., Attachment kinetics, proliferation rates and vinculin assembly of bovine osteoblasts cultured on different pre-coated artificial substrates. *Journal of Materials Science: Materials in Medicine*, 9, 1998, 301-307
- Meyer, U., Kruse-Lösler, B., Wiesmann, H.P., Handschel, J., Szulczewski, D.H., Joos, U., Effects of micromovements on the outcome of mandibular bone healing. *Journal of Cranio-Maxillofacial Surgery*, 26, 1998, 119
- Handschel, J., Prott, F.-J., Meyer, U., Kleinheinz, J., Walde, M., Joos, U., Prospektive Studie zur Pathologie der strahleninduzierten Mukositis. *Zeitschrift für Mund-, Kiefer- und Gesichtschirurgie*, 2, 1998, 131-135
- Handschel, J.; Prott, F.-J.; Meyer, U.; Kleinheinz, J.; Walde, M.; Joos, U.: Prospektive Studie zur Pathologie der strahleninduzierten Mukositis. *Mund Kiefer GesichtsChir* 2: 131-135, 1998
- Kruse-Lösler, B; Kleinheinz, J.; Werkmeister, R.; Piffko, J.; Metze, D.; Joos, U.: Gigantische proliferierende Trichilemmalzyste der Kopfhaut mit zentralem Karzinom und Lymphknotenmetastasierung. *Mund Kiefer GesichtsChir* 2: 216-219, 1998.
- Kleier, C.; Kleinheinz, J.; Joos, U.: Prospektive Funktionsanalyse und Achsographie bei Patienten mit sagittaler Ramusosteotomie. *Dtsch Zahnärztl Z* 53: 476- 480, 1998
- Kiattavorncharoen S, Kleinheinz J, Joos U. Use of the bicoronal flap approach in craniomaxillofacial injuries. *Thai J Oral Maxillofac Surg* 1998; 12: 99-107.
- Kleier, C.; Werkmeister, R.; Joos, U.: Zink- und Vitamin A-Mangel bei Mundschleimhauterkrankungen. *Mund Kiefer GesichtsChir* 2, 320-325 (1998)
- Piffkò J, Bänkfalvi À, Tory K, Füzesi L, Bryne M, Kusch F, Joos U, Schmid KW. Molecular assessment of p53 aberrations at the invasive tumour front of oral squamous cell carcinomas. *Head Neck* 1998; 20: 8-14.
- Piffkò J, Bänkfalvi À. Aggressive potential of oral cancer: a function of the invasive tumour front. *TumorDiagnostik & Therapie* 1998; 19: 108-112.
- Bryne M, Boysen M, Alfson C, Abeler V, Sudbo J, Nesland JM, Kristensen G, Piffkò J, Bänkfalvi À. The invasive front of carcinomas. The most important area for tumour prognosis? *Anticancer Res* 1998; 18: 4757-4764.
- Arnold S., Plate U., Wiesmann H. P., Stratmann U., Kohl H., and Höhling, H. J. (1999): Quantitative electron spectroscopic diffraction analyses of the crystal formation in dentine. *J Microsc* 195: 58-63.
- R. Werkmeister, B. Brandt, U. Joos. Aberrations of erbB-1 and erbB-2 oncogenes in non-dysplastic

- leukoplakias of the oral cavity. *Br J Oral Maxillofac Surg* 1999; 37: 477-480
- R. Werkmeister, D. Szulczewski, P. Walteros-Benz, U. Joos. Rehabilitation of oral cancer patients with dental implants. *J Cranio Maxillofac Surg* 1999; 27:38-41
- R. Werkmeister, Th. Fillies, B. Brandt, B. Groner, W. Wels, U. Joos. Sensitivity of oral squamous cell carcinomas to an erbB-2 specific immunotoxin. *Eur J Oral Sci* 1999; 107: 338-343
- Kleinheinz, J.; Anastassov, G.E.; Joos, U.: Indications for treatment of subcondylar mandibular fractures. *J Cranio Maxillofac Trauma* 5(2): 17-23, 1999
- Joos U. An adjustable bone fixation system for the sagittal split ramus osteotomy - a preliminary report. *Brit J Oral Maxillofac Surg* 1999; 37:99-103
- Riemann H, Kruse-Lösler B, Schmid M, Metze D. Proliferierende Trichilemmalzyste mit Anteilen eines metastasierenden Plattenepithelkarzinoms. *Hautarzt* 1999; 50: 42-46.
- Szulczewski, D.H.; Kleinheinz, J.; Werkmeister, R.; Meyer, U.; Roth, S.; Joos, U.: Regeneration der Mundschleimhaut im Planum buccale nach Entnahme zur Rekonstruktion von bulbären Urethra-stenosen. *Mund Kiefer Gesichtschir* 3: 34-37, 1999
- Dirksen, D., Stratmann, U.; Kleinheinz, J.; von Bally G.; Bollmann, F.: Three-dimensional visualization and quantification of the mandibular articular surface by optical profilometry. *Cells Tissues Organs* 164: 212-220, 1999.
- Handschei, J.; Kleinheinz, J.; Kelker, M.; Reuter, I.; Joos, U. Reproducible X-ray projection geometry in edentulous patients. *Dentomaxillofac Rad* 28: 368-371, 1999
- Meyer, U., Wiesmann, H.P., Kruse-Lösler, B., Handschei, J., Stratmann, U., Joos, U., Strain related bone remodeling in distraction osteogenesis of the mandible. *Plastic and Reconstructive Surgery*, 103, 1999, 800-807
- Meyer, U., Kruse-Lösler, B., Joos, U., Influence of distraction rates on compression related degenerative alterations in the TMJ. 1999, Monduzzi Editore, Bologna.
- Meyer, U., Kruse-Lösler, B., Joos, U., Basic cell and tissue reactions in distraction osteogenesis of the mandible. 1999, Monduzzi Editore, Bologna
- Meyer, U., Benthous, S., Du Chesne, A., Wannhoff, H., Zöllner, B., Joos, U., Untersuchung von Patienten mit Gesichtsschädelfrakturen unter ätiologischen und rechtsrelevanten Gesichtspunkten. *Zeitschrift für Mund-, Kiefer- und Gesichtschirurgie*, 3, 1999, 152-157
- Meyer, U., Meyer, T., Wiesmann, H.-P., Stratmann, U., Kruse-Lösler, B., Maas, H., Joos, U., The effect of magnitude and frequency of interfragmentary strain on tissue response to distraction osteogenesis, *Journal of Oral and Maxillofacial Surgery*, 57, 1999, 1331-1339
- Meyer, U., Weingart, D., Deng, M., Scheld, H.H., Joos, U., Heart transplant - assessment of dental treatment. *Clinical Oral Investigations*, 3, 1999, 79-83
- Meyer, U., Meyer, T., Vossians, J., Joos, U., Decreased expression of osteocalcin and osteonectin in mandibular distraction osteogenesis. *Journal of Cranio-Maxillofacial Surgery*, 27, 1999, 222-227
- Handschei, J., Prott, F., Sunderkötter, K., Metze, D., Meyer, U., Joos, U., Irradiation induces increase of adhesion molecules and accumulation of β 2-integrin-expressing cells in humans. Pathogenesis of radiation-induced mucositis in irradiated head and neck cancer patients. *International Journal of Radiation Oncology Biology Physics*, 1999, 45, 475-481
- Joos, U., Meyer, U., Tkotz, T., Weingart, D., Use of mandibular fracture score to predict the development of complications. *Journal Oral and Maxillofacial Surgery* 57, 1999, 2-5
- Meyer, T., Meyer, U., Wiesmann, H.-P., Stratmann, U., Joos, U., Identification of apoptotic cell death in distraction osteogenesis. *Cell Biology International*, 23, 1999, 439-446
- Szulczewski, D.H., Kleinheinz, J., Roth, S., Meyer, U., Werkmeister, R., Joos, U., Regeneration der Mundschleimhaut im Planum buccale nach Entnahme zur Rekonstruktion von bulbären Urethra-stenosen. *Zeitschrift für Mund-, Kiefer- und Gesichtschirurgie*, 3, 1999, 34-37
- Hannig M, Reinhardt KJ. Self-etching primers vs. phosphoric acid composite-to-enamel bonding. *Oper Dent* 1999; 24:172-180
- Piffkò J, Bänkfalvi Á, Joos U, Öfner D, Krassort M, Schmid KW. Immunophenotypic analysis of 'normal' mucosa and squamous cell carcinoma of the oral cavity. *Cancer Detect Prev* 1999; 23: 45-56.
- Joos U, Végh A, Piffkó J. Funktionsorientierte primäre Operationen bei LKG-Spalten. (Arc- és szápadhasadékos gyermekek funkció-orientált primer műtéti ellátása). *Pädiater* 1999; 8: 4-7.

20.2 Textbooks published by staff

20.3 Chapters in Books

Weber, H.P., Buser, D., Weingart, D.: The ITI dental implant system. In: Greenberg, A.M., Prein, J., (Eds.) *Craniomaxillofacial Reconstructive and Corrective Bone Surgery: Principles of Internal Fixation*. Springer, New York (1996)

Buser, D., Weingart, D., Weber, H.P.: Local ridge augmentation using guided bone regeneration in deficient implant sites. In: Greenberg, A.M., Prein, J., (Eds.) *Craniomaxillofacial Reconstructive and Corrective Bone Surgery: Principles of Internal Fixation*. Springer, New York (1996)

Kleinheinz, J., Meyer, U., Joos, U.: Different types of bone distraction in craniofacial surgery, *Proceedings of cranial and facial bone distraction processes*. Monduzzi Editore, Bologna (1997)

Piffkò, J., Bänkfalvi, A., Öfner, D., Joos, U., Schmid, K.W.: Prognostic value of static and dynamic proliferation markers at the invasive tumour front in oral cancer. In: *Proceedings of the 5th International Congress on Oral Cancer* (1997)

Piffkò, J., Bänkfalvi, A., Klauke, K., Joos, U., Böcker, W.: CD44 v6 isoform is not a metastasis-related marker in squamous cell carcinomas of the oral cavity. In: Werner, J.A., Lippert, B.M., Rubert, H.H. (Eds): *Head and Neck Cancer- Advances in Basic Research*. Elsevier Science B.V., 1996, 491-496, (1997)

Joos U.: Skull base tumors surgery - role of microsurgical techniques. In: Ward Booth P, Schendel S, Hausamen JE (eds.): *Maxillofacial Surgery*. Harcourt Brace 1999

Reinhardt KJ.: *Primer und Dentinadhäsive*. In: Schneider H (Hrsg.): *Das Adhäsivbuch. Adhäsive in der Zahnheilkunde*. Apollonia, Linnich 1999

20.4 Grants received (>1000 EURO, 1995–1999)

Department	Number of Projects	Sum total in EURO	Promoting Institutions
Conservative Dentistry	2	34 000	<ul style="list-style-type: none"> - GABA, CH - Roeko, D
Periodontics	7	713 000	<ul style="list-style-type: none"> - BMBF (01 KI 9316/9) - ZKF, - BMBF (01 KS 9603/A-5) - Guidor, S. - Bundesministerium für Wirtschaft und Technologie - SIFIN Institut für Immunpräparate und Nährmedien GmbH - Espe-Dental AG
Prosthodontics	12	1 006 000	<ul style="list-style-type: none"> - IMF (DI 219929) - BMBF (03-VB9MU1-8) - DGF (Bo 1359/1-1) - BMBF (13N6762/2) - BMBF (03-VB9MU2-0) - Bristol-Myers-Squibb - Degussa - Ivoclar, Vivadent 3 x - Brassler 3 x - Hereaus-Kulzer
Orthodontics	5	24 000	<ul style="list-style-type: none"> - IMF - (EH 529901) - Scheu-Dental - Wybort - Dental line - Colgate Palmolive
Maxillofacial and Oral Surgery	17	1 422 000	<ul style="list-style-type: none"> - BMBF (DI219929) - Straumann - ESF - Tumorstiftung Kopf-Hals - Essex-Pharma - Straumann - Land Brandenburg - DFG (WI 1769/1-1) - DFG - Ges. zur Förderung der Westf. Wilhelms-Universität - COST-Aktion B 8 - DFG (PL 263/2-1) - BMBF - IMF (Wi-1-2-II/96-10) - DFG - BMBF (0311379) - EU-Projekt

20.5 Higher Degrees Awarded (1995-1999)

Department	Doctoral Thesis (Dr. med. dent.)	Habilitation Thesis (Ph.D)
Conservative Dentistry	22	2
Periodontics	13	2
Prosthodontics	58	1
Dental Material Sciences	9	0
Orthodontics	19	0
Maxillofacial and Oral Surgery	21	2
Total	142	7

Department of Conservative Dentistry

20.6.1 Doctoral Thesis (Dr. med. dent.)

Strenger, Torsten: Nachuntersuchung von konservativ versorgten luxierten Kollumfrakturen, 1995.

Spitzer, Florian: Freisetzung von Fluoridionen aus Glasionomerkementen, 1995.

Olbing, Kathrin: Zur Prophylaxe und Therapie von oralen Schleimhautläsionen bei Kindern mit onkologischen Erkrankungen unter zytostatischer Therapie, 1995.

Kaup, Markus: Untersuchungen über die Veränderungen der Wurzelkanalform nach Bearbeitung mit Wurzelkanalfeilen unter standardisierten Bedingungen, 1996.

Göhring, Claudio: Zur Nominierung von Wurzelkanalinstrumenten und Guttaperchastiften sowie experimentelle Untersuchungen zur Aufbereitung und Füllung simulierter gerader Kanäle, 1996.

Becker, Bernhard Cyriakus Wilhelm Albert: Zur Genauigkeit der Übertragung der Kieferrelation in den Artikulator mittels verschiedener Registratmaterialien, 1996.

Tosse, Markus: Über das Auftreten einer Barodontalgie bei Sporttauchern in der Bundesrepublik Deutschland, 1997.

Steinmann, Frank Michael: Studie über die Beschwerdebilder von Patienten mit Verdacht auf eine Amalgamunverträglichkeit, 1997.

Niermann, Julia Franka: Vergleichende Untersuchung über die Reinigungseffektivität verschiedener elektrischer Zahnbürsten bei nicht eugnather Zahnstellung unter standardisierten Bedingungen, 1997.

Mertens, Robert Luneburg: Die Rhinophonia aperta als Operations-Risiko nach raumerweiternden Eingriffen im Hals- Nasen-Rachenraum, 1997.

Palsherm, Guido: Prospektivstudie zur Prophylaxe und Therapie von Gingivaerkrankungen sowie Plaqueinhibition der Zähne bei onkologisch erkrankten Kindern unter zytostatischer Therapie, 1998.

Kempers, Rainer: Orale Schleimhautläsionen, Candida-albicans-Besiedlung und Reizspeichelmenge bei Kindern unter zytostatischer Therapie, 1998.

Kühne, Nicola Eva-Maria: Neuartige Instrumente für die manuelle Wurzelkanalaufbereitung – Standardisierte Untersuchungen zum Fraktur- und Biegeverhalten, zur Schneidleistung sowie Formgebung gekrümmter Kanäle, 1998.

Smolén, Stefan: Auswirkungen verschiedener Verarbeitungsmethoden auf die Oberflächenbeschaffenheit von Amalgamen. – Vergleichende Untersuchungen an 10 Amalgamen, 1999.

Ramb, Hans-Joachim: Untersuchungen über die Temperaturentwicklung im Pulpakavum bei der Herstellung von Provisorien mit unterschiedlichen Materialien und Techniken, 1999.

Pernice, Axel Anton Werner: Geschichtlicher Überblick über das Instrumentarium und die Methodik der Wurzelkanalbehandlung von der Frühzeit bis zur Gegenwart sowie experimentelle Untersuchungen zum Biege- und Torsionsverhalten von ProFile Series 29 Instrumenten, 1999.

Laja, Adeyinka Ayinde Adewale George: Messung des pH-Wertes an Unterfüllungs- zementen mit Schwerpunkt der lichtpolymerisierbaren Glasionomerkemente, 1999.

Finkensiep, Hanno Ernst Dietrich: Experimentelle Untersuchungen zur Effizienz der transkutanen elektrischen Nervenstimulation (TENS) in der Zahnmedizin, 1999.

Hinrichs, Peter: Eine Studie zur Freisetzung von Quecksilber aus Amalgam-Prüfkörpern bei Temperatur- und Säurebelastung, 1999.

Dähne, Lutz: Effektivität einer chemo-mechanischen Methode (Carisolv®) zur Entfernung kariösen Dentins im Vergleich zu konventionellen Methoden, 1999.

Duesmann, Maria Aparecida: Implantologisch-prothetische Rehabilitation der extrem atrophischen Maxilla (eine retrospektive Studie) , 1999.

Ettl, Nicole: Epidemiologische Studie zur Überprüfung der Zahngesundheit bei Rekruten und anderen Soldaten der Bundeswehr, 1999.

20.6.2 Habilitation Thesis (Ph.D)

Tepel, Joachim: Experimentelle Untersuchungen über die maschinelle Wurzelkanalaufbereitung, 1997.

Schäfer, Edgar: Wurzelkanalinstrumente für den manuellen Einsatz: Schneidleistung und Formgebung gekrümmter Kanalabschnitte, 1996.

Department of Periodontology

20.6.1 Doctoral Thesis (Dr. med. dent.)

Katterbach, Jörg Michael: Identifizierung von Bakterien der subgingivalen Plaque mittels Gaschromatographie, 1995.

Gürpınar, Yesim: Immunhistologische Untersuchungen des entzündlichen Infiltrats bei Patienten mit Erwachsenenparodontitis und schnell fortschreitender marginaler Parodontitis, 1995.

Lohkamp, Frank Heinz: Experimentelle Untersuchung über die Auswirkung zweier verschiedener Chlorhexidindigluconat-mundspüllösungen auf die Plaque- und Gingivitisreduktion während einer experimentellen Gingivitis, 1996.

Eschmann-Speer, Christiane Helga: Reduktion des Keimgehalts von behandlungsbedingten zahnärztlichen Aerosolen durch vorherige Mundspülung mit einem Chlorhexidindigluconat-Präparat, 1996.

Hilbk, Carsten: Experimentelle Untersuchungen über den Einfluß von Delmopinol-Hydrochlorid auf orale Plaqueformationen im Kuzzeitversuch, 1997.

Clausnitzer, Claudia Esther: Klinisch-experimentelle Verlaufsstudie über die Entwicklung der Cycloporin-induzierten Gingivavergößerung, 1997.

Benthaus, Sven Willy: Vergleichende qualitative Untersuchungen zu Effizienz und Einsatzmöglichkeiten von Aufschärfsystemen für Parodontalinstrumente, 1997.

Taschke, Bettina Anja: Morphologische Untersuchungen des Wurzelzementes und des Desmodantes an nicht entkalkten Dünnschliffpräparaten menschlicher Zähne in Abhängigkeit von der parodontalen Erkrankungsform, 1998.

Frie, Godehard: Klinische Untersuchungen zur einzeitigen Rezessionsdeckung oberer Eckzähne mittels resorbierbarer Membranen, 1998.

Steinmann, Dirk: Klinisch-experimentelle, vergleichende Untersuchung einer manuellen und zweier verschiedener elektrischer Zahnbürsten in ihrer Wirkung auf das Gingivaepithel, 1999.

Nassiri-Sheijani, Shahrzad: Klinische und mikrobiologische Testung von Transportmedien für mikrobiologische Proben nach Anaerbiernachweis in menschlichen Zahnfleischtaschen, 1999.

Kesper, Michael: Die Verlaufskontrolle behandelter, weit fortgeschrittener adulter Parodontalerkrankungen durch Bestimmung der Aktivitäten der Myeloperoxidase, β -Hexosaminidase und β -Glucuronidase in der Sulkusflüssigkeit, 1999.

Büchter, André: Klinisch-experimentelle, vergleichende Untersuchungen einer manuellen und zweier elektrischen Zahnbürsten auf ihre Reinigungswirkung und auf ihre Auswirkung auf die Gingiva, 1999.

20.6.2 Habilitation Thesis (Ph.D)

Kleinfelder, J.: Die therapeutische beeinflussung der lokalen Immunreaktion bei aggressiv verlaufenden Formen chronisch-entzündlicher Parodontalerkrankungen, 1997.

Buchmann, R.: Klinische, biochemische und mikrobiologische Parameter zur Diagnose und Therapiekonzepte am Modell der chronisch progressiven Parodontalenzündung und parodontalen Regeneration, 1998.

Department of Prostodontics

20.6.1 Doctoral Thesis (Dr. med. dent.)

Becker, Roger: Zahnärztliche Haftung und Sachverständigenbeweis, 1995.

Khadembashi, Lila: Zur Wirksamkeit von Fluoridierungsmaßnahmen auf die Haltbarkeit von Zähnen und Zahnersatz bei kiefergesichtsversehrten Patienten nach Radiatio, 1995.

Stern-Wasmuth, Anja: Zur Frage der Paßgenauigkeit konfektionierter Oberkieferabformlöffel für die Abformung vollbezahnter Oberkiefer, 1995.

Pötter, Harald: Untersuchung zur Kompatibilität von zweiphasigen Silikonen verschiedener Hersteller, 1995.

Gehlen, Ingelore: Die Prävention von perioperativen Komplikationen bei ambulanten dentoalveolären Interventionen an Risikopatienten unter Lokalanästhesie, 1995.

Runte, Christoph Josef: Der Einsatz der Computergrafik in der zahnärztlichen Prothetik, 1995.

Lucas, Uwe Bernhard: Sonographische Untersuchungen über die Veränderungen der natürlichen Palatum-Konfiguration durch prothetische Behandlungsmittel und deren Auswirkungen auf die Bildung der Sprachlaute, 1995.

Reese, Heiko: Untersuchung des Höckerspitzenreliefs natürlich bezahnter und eugnath verzahnter, kariesfreier Gebisse zur Ermittlung einer neuen Kalottenform, 1995.

Dawirs, Kurt Ferdinand: Die Knochenverankerung von kraniofazialen Epithesen an Titanimplantaten des Brane-mark-Systems. Eine klinische Studie an 42 Patienten, 1995.

Balkenhol, Markus: Überlebenszeit und Nachsorgebedarf von totalen Prothesen, 1995.

Alker, Nicola: Interdisziplinäre Forschung zur Prothesenunverträglichkeit seit 1970, 1995.

Sotodeh, Sadigheh: Befindlichkeitsstörungen im Kiefer-Gesichtsbereich. Kontrollgruppe zur Erarbeitung eines Zahnärztlichen Beschwerdebogens (ZBB) , 1995.

Hartmann, Hans Ernst Wilhelm: Untersuchungen über Höcker-Fossa-Tiefen im natürlichen wie im mit feststehendem Zahnersatz versorgten Gebiß, 1995.

Paßlack, Frank: Untersuchung über die Akzeptanz von Ultraschall bei der Zahnsteinentfernung im Raum Westfalen-Lippe, 1996.

Baumheuer, Ulrich: Die intraorale Stützstifregistrierung mit wechselweise starrem und federndem Stift als Hilfe für die direkte Einschleiftherapie, 1996.

Germeshausen, Petra Karoline: Zur Frage des Einflusses von Abformmaterial und -methode auf die erreichbare Randschlußgenauigkeit von gegossenen Restaurationen – eine in vivo-Untersuchung – , 1996.

Göb, Rainer: Juristische, psychagogische und psychosomatische Aspekte der unterlassenen und unvollständigen Aufklärung des Patienten in der zahnärztlichen Praxis, 1996.

Rocholl, Klaus Wilhelm: Untersuchung zur Amalgamverträglichkeit – Die Bedeutung psychosomatischer Faktoren bei Beschwerden in Zusammenhang mit Amalgamfüllungen, 1996.

Simon, Brigitte Margret Antoinette Elise: Langzeitergebnisse nach Furkationsbehandlung, 1996.

Sutmann, Martin Norbert: Untersuchungen zur Okklusion von Freundprothesen in Abhängigkeit von der Art der Verbindung mit dem Restgebiß, 1996.

Schlösser, Monika Eugenie: Die instrumentelle Funktionsanalyse. Vergleich der Positionierung des Unterkiefers anhand der Remontage nach Gerber und der Methode nach Richter - Eine klinisch-experimentelle Studie, 1996.

Vesser, Brunhilde Klaudia Monika: Untersuchungen zur oralen Stereognosie und Speichelquantität bei psychosomatisch erkrankten Patienten, 1996.

Veaser, Jürgen Franz: Gibt es zahnärztliche Befundkonstellationen die bei Patienten mit psychogener Zahnersatzunverträglichkeit gehäuft beobachtet werden? 1996.

Neuhaus, Kai: Zur Problematik der Kronenrandspaltenmessung (in vitro) , 1996.

- Havermeier, Gernot: Über die Form des Interdentalraumes im natürlichen Gebiß und zum Einfluß der Approximalflächengestaltung auf die Pflegbarkeit von Kronenersatz, 1996.
- Wagner, Johannes Ludwig Wilhelm Franz: Die Aussagekraft des Kongruenztestes in der Totalprothetik, 1997.
- Vehring, Anna Maria Katharina: Die Genauigkeit der Kieferrelationsübertragung durch verschiedene Registriermaterialien beim bezahnten und unbezahnten Patienten, 1997.
- Stelz, Rainer: Vergleichende in vitro-Untersuchungen zur mechanischen und thermischen Belastbarkeit von Kompositfüllungen der Black-Klasse II mit bzw. ohne Verwendung eines Metalleinlagesystems, 1997.
- Schüth, Bernd: Die langfristige Bewährung von herausnehmbarem Zahnersatz, 1997.
- Rooseboom, Dr. med. Dirk Georg: Rehabilitation in der Mund-, Kiefer- Gesichts-Chirurgie – eine patientengestützte Studie beim Mundhöhlenkarzinom, 1997.
- Lechler, Berthold: Vergleich des klinischen Resilienztestes nach Gerber mit entsprechenden Messungen durch den String Condylcomp LR3, 1997.
- Rether, Alexander-Andrej: Aktueller Stand der Frühdiagnose und Prävention von Zahn- und Mundkrankheiten durch niedergelassene Kinderärzte, 1997.
- Knothe, Hagen Dietrich: Korrelation allgemeinmedizinischer Beschwerden mit orofazialen Symptomen bei Patienten einer zahnärztlich-psychosomatischen Sprechstunde, 1997.
- Kinzel, Angela Katharina: Epidemiologische Untersuchung über den Zusammenhang zwischen Funktionsstörungen und okklusalen Interferenzen und Schmerzen im stomatognathen System, 1997.
- Hufnagel, Annette Dagmar: Vergleich verschiedener Methoden zur Messung der Kronenrandschluß-Genauigkeit in vivo, 1997.
- Höing, Markus Lambertus: Vergleichende Untersuchung manuell und maschinell angerührter und dosierter dentaler Abformmassen im Hinblick auf ihre Abformgenauigkeit, 1997.
- Haub, Markus Gregor: Spannungsoptische Untersuchungen zur implantatgestützten totalprothetischen Versorgung des zahnlosen Unterkiefers, 1997.
- Düsterhus, Wolfgang: Nachuntersuchung von Totalprothesen, unter besonderer Berücksichtigung funktionsverbessernder Maßnahmen auf den Langzeiterfolg totalen Zahnersatzes, 1997.
- Berns, Ludger: Zahnärztliche Befund psychosomatisch erkrankter Patienten. Eine Nachuntersuchung von 63 Patienten der Forschungsstelle für Psychosomatik in Münster, 1997.
- Beste, Jochen: Zur ungewöhnlichen Häufigkeit des weiblichen Geschlechts bei allen psychosomatischen Störungen im stomatognathen System, 1997.
- Alagha-Sharifi, Azalea: Hans Moräl und die Entwicklung der Psychosomatik, 1997.
- Ahlers, Hartmut: OptiPost – ein optimiertes Wurzelstiftsystem – Untersuchungen an unteren Frontzähnen und Prämolaren, 1998.
- Everding, Lothar Edmund Maximilian: Die Reliabilität des Münsteraner Beschwerdebogens (MBB) , 1998.
- Heming, Renate: Behandlung des pathologischen Würgereflexes in der Zahnheilkunde durch Akupunktur, 1998.
- Leonhard, Rolf Christian: Der Test der oralen Stereognosie – Erstellung und Untersuchung einer Kontrollgruppe hinsichtlich des räumlichen Wahrnehmungsvermögens innerhalb der Mundhöhle, 1998.
- Ohler, Dr. med. Klaus: Der Zahnarzt in der Wirtschaftlichkeitsprüfung – Argumentationshilfen, Strategien, Rechtsgrundlagen, 1998.
- Pickers, Johannes: Lagestabilität totaler Prothesen – Vergleichsmessungen von Prothesenbewegungen mit dem Siognathograph bei balancierter Okklusion und Eckzahnführung, 1998.
- Uhlig, Bettina Christiane: Entwicklung eines Sulcusfluid-Flow-Modells zum Vergleich von Abformmaterialien und –techniken unter standardisierten Bedingungen, 1998.
- Proll, Christian: Dreidimensionale Vermessung von schädelgerecht einartikulierten Oberkiefermodellen mittels computergestützter Profilometrie, 1999.
- Weltermann, Mark Dennis: Transcutane Sauerstoffpartialdruck-Messung im Bereich des Musculus masseter nach Infrarot-Laser- und Mikrowellen-Bestrahlung, 1999.
- Ordelheide, Karsten: Zum Einfluß säurehaltiger Getränke auf die Oberfläche nichtmetallischer Restaurationsmaterialien in vitro, 1999.

- Umfermann, Jörg Wennemar Heinrich: Zur Frage der Reproduzierbarkeit der Funktionsrandabformung totaler Prothesen bei der Langzeitabformung mit CUSHION GRIP®, 1999.
- Schuster, Michael: Überlebenszeitanalyse von Kronen und Brücken bei Patienten in kontinuierlicher Nachsorge, 1999.
- Schryen, Michael: Die Unterkieferbewegung - Theorien, Aufzeichnungsverfahren und Simulationstechniken im Wandel der Zeit, 1999.
- Siever, Ingo Ludger: Altersbedingte Veränderung der Physiognomie und ihre Bedeutung für die Herstellung von Zahnersatz, 1999.
- Marxkors, David Joachim Hieronymus Dietrich: OptiPost – ein optimiertes Wurzelstiftsystem, 1999.
- Horstmann, Peter Norbert Karl: Basisdokumentation in der prothetischen Ambulanz, 1999.
- Becker, Dirk: Experimentelle Untersuchungen zur Beurteilbarkeit des Kronenrandschlusses im intraoralen Röntgenbild, 1999.

20.6.2 Habilitation Thesis (Ph.D)

- Wolowski, Anne: Zur Erkennung psychosomatischer Störungen in der Zahnheilkunde, 1996.

Institute of Dental Materials Sciences

20.6.1 Doctoral Thesis (Dr. med. dent.)

- Bongard, Peter Wilhelm: Experimentelle Untersuchungen über den Einfluß der Quellung auf das Randspaltverhalten unterschiedlicher Composites, 1995.
- Siebenhofer, Hiltrud: Zum Einfluß zweier Oberflächenversiegler auf Prothesenkunststoffe, 1995.
- Römer, Bettina, Ilse Carola, Melanie: Untersuchungen zum Einfluß eines lichthärtenden Oberflächenversiegelungslackes auf Werkstoffeigenschaften verschiedener Prothesenkunststoffe, 1995.
- Weiß, Michael: Zur Oberflächenbearbeitung des gegossenen Titans, unter besonderer Berücksichtigung der oberflächennahen Reaktionsgrenzschicht., 1996.
- Dietz, Georg-Herbert: Das Ausarbeiten von Titan in Abhängigkeit von den Werkstoffeigenschaften gegossener Objekte, 1996.
- Laatz, Manfred: Schweißen spezieller kieferorthopädischer Drähte unter besonderer Berücksichtigung des Laserschweißens, 1997.
- Höveken, Norbert Alfons: Die Präzision von Gußkronen nach unterschiedlichen Wachsmodellationstechniken im Vergleich zu galvanisch hergestellten Kronen, 1997.
- Dohle, Klaus: Orientierende Studie zur Verwendbarkeit eines additionsvernetzenden Abformmaterials auf Silikonbasis speziell für den Bereich des Sulcus bei der Korrekturabformung, 1997.
- Bünnigmann, Bernhard: Zur Entwicklung von Prothesenbasis-materialien – ein historischer Überblick, 1998.

Department of Orthodontics

20.6.1 Doctoral Thesis (Dr. med. dent.)

- Neudorf-Konze, Brigitte: Osteosarkome des Kieferknochens, 1995.
- Witte, Thomas Bernhard: Das Verhältnis von Hartgewebs- zu Weichteilreaktionen nach funktionskieferorthopädischer Therapie mit dem U-Bügelaktivator Typ 1 – kephalometrische Longitudinalstudie zur Lippenrelation -, 1995.
- Thomas, Michael: Modellanalytische Untersuchung der Befunde von kieferorthopädisch behandelten Patienten mit Nichtanlage oberer seitlicher Schneidezähne im Hinblick auf die Therapie des Lückenschlusses bzw. der Lückenöffnung unter parodontologischem Aspekt, 1995.
- Schmitz, Andreas: Fernröntgenologisch feststellbare Veränderungen während der Behandlung von Patienten mit Aplasien oberer lateraler Incisivi und Einfluß der gewählten Therapieform auf Erfolg, Okklusion, Artikulation, Zahnachsenstellung und Kiefergelenk, 1995.
- Korinth, Gabriela Elisabeth: Kephalmetrische Analyse anhand von Fernröntgenseitenaufnahmen bei

- Conterganbetroffenen, 1995.
- Holtgräwe, Barbara Auguste Margarethe: Weichteilveränderungen nach Oberkieferosteotomien, 1995.
- Hohoff, Ariane: Untersuchungen zur Sprach- und Sprechentwicklung von Kindern mit Trisomie 21 nach Therapie mit der Gaumenplatte nach Castillo-Molares, 1995.
- Wahrhusen, Knut Arne: Gewinnung primärer, boviner Osteoblastenkulturen nach dem Periostauswachsverfahren und ihr Verhalten unter physiologischer Zugebelastung, 1996.
- Rummel, Volker Werner Herbert: Literaturübersicht zur Funktionskieferorthopädie und dentofazialen Orthopädie unter schwerpunktmäßiger Berücksichtigung der Europäischen Schule, 1996.
- Happe, Arndt Jochen Lucas: Gewinnung primärer, boviner Osteoblastenkulturen nach dem Periostauswachsverfahren und ihr Verhalten unter hyperphysiologischer Zugbelastung, 1996.
- Illigens, Anne Maria: Prospektive und retrospektive Beurteilung psychosozialer Aspekte bei Patienten mit kieferorthopädisch-kieferchirurgischer Therapie, 1996.
- Dörr-Neudeck, Klaus Georg Wilhelm: Lagebeziehungen von individuellen und arbiträren Scharnierachspunkten bei Erwachsenen mit skelettalen Dysgnathien und deren Veränderung nach orthognathen Chirurgie, 1997.
- Stenneken, Ludger: Die Frontzahntraumatisierungshäufigkeit der permanenten Dentition in Abhängigkeit von der sagittalen Frontzahnstufe bei Kindern und Jugendlichen, 1997.
- Störmann, Ilka: Prospektive randomisierte Studie zur Untersuchung von unterschiedlichen Retainer-Typen, 1997.
- Robke, Eva-Maria: Die Gaumenplatte nach Castillo-Morales und ihre Wirkung auf die Gaumenentwicklung von Säuglingen mit Trisomie 21 im Vergleich zu gesunden Säuglingen, 1997.
- Ramspott, Christian: Über den Zusammenhang von Frontzahnführung und Kondylenbahnneigung – eine vergleichende Studie zwischen einem Deckbiß- und einem Eugnathenkollektiv, 1997.
- Bormann, Jens Peter: Kieferorthopädie und Mitarbeit. Aktuelle Literaturübersicht und retrospektive Studie, 1997.
- Wessel, Julia Sabine: Korrelation zwischen Körpergröße und linearen Kiefergrößen anhand von Fernröntgen-Seitenbild-Analysen, 1998.
- Lippold, Carsten Wilhelm: Beziehungen zwischen physiotherapeutischen und kieferorthopädischen Befunden. Eine interdisziplinäre klinische Studie und Patientenbefragung, 1999.

Department of Oral and Maxillofacial Surgery

20.6.1 Doctoral Thesis (Dr. med. dent.)

- Schlüsener, Sandra: Identifikationsmöglichkeiten der forensischen Odontologie, 1995.
- Pallasch, Marcus-Gregor: Retrospektive Analyse von enossalen Implantaten (System Branemark) bei radiogener Belastung, autoplastischer Augmentation und hochatrophischem Unterkiefer, 1995.
- Kleinheinz, Johannes: Darstellung der mimischen Muskulatur im paranasalen und perioralen Bereich der Oberlippe mit der magnetischen Resonanztomographie, 1995.
- Wrede, Dirk Johannes Josef: Entzündliche Pseudotumoren der Wangenregion. Eine reaktive Neubildung mit proliferativer Tendenz, 1996.
- Unger, Elisabeth: Faktoren zur Entstehung einer Osteoradionekrose im Rahmen einer kombinierten MKG-chirurgischen und radiologischen Therapie von Patienten mit malignen Tumoren des Kopf-Hals-Bereiches an der ZMK-Klinik Münster, 1996.
- Speer, Joachim Wilhelm Albrecht: Orale Leukoplakien und Leukoplakiekarzinome, 1996.
- Plagemann, Peter Gregor Bernd: Interdependenz hereditärer angioneurotischer Ödeme mit zahnärztlicher bzw. mund- kiefer- gesichtschirurgischer Behandlung, 1996.
- Pötter, Bernward: Nachweis spezifischer Antikörper bei der Diagnostik einer Sensibilisierung durch Nahrungsmittel-Inhaltsstoffe, 1996.
- Omland, Antje: Perioperativer Verlauf von Faktor XIII/Antithrombin III und deren klinische Relevanz nach Tumoroperationen im Mund-, Kiefer- und Gesichtsbereich, 1996.
- Lensing, Carsten: Operative Versorgung von Orbitabodenfrakturen mittels PDS-Folienimplantat (Eine Nachuntersuchung) , 1996.

- Khoury, Michaela: Allgemeine Komplikationen in der zahnärztlichen Lokalanästhesie: Ergebnisse einer prospektiven Studie an 2007 Patienten, 1996.
- Heymann, Svenja Kristina: Studie zur Ätiologie der Lippen- Kiefer- Gaumenspalten, 1996.
- Zöllner, Burkhard: Zusammenhang von funktionellen und ästhetischen Faktoren bei Patienten mit Lippen-, Kiefer- Gaumenspalten nach sekundärer Rhinoplastik, 1998.
- Rother, Nicola: Kombinierte morphometrische und röntgenologische in vitro-Untersuchung zur Bestimmung der Dichtigkeit und optischen Dichte verschiedener retrograder Wurzelfüll-materialien an extrahierten und resizierten Oberkiefer-Frontzähnen, 1998.
- Dittmar, Claudia: Vergleich von Form und Funktion der Nase bei einseitigen Lippen-Kiefer-Gaumenspalten mit und ohne primäre Rhinoplastik, 1998.
- Werkmeister, Richard: ErB-1 und erB-2Onkogone in präkanzerösen Veränderungen der Mundschleimhaut, 1999.
- Petrin, Guido Andreas: Infektionsprophylaxe in der Mund-Kiefer-Gesichtschirurgie: Penicillin G versus Clindamycin, 1999.
- Kleinheinz, Johannes: Beurteilung objektifizierbarer Kriterien zur Therapiewahl bei dislozierten Gelenkfortsatzfrakturen des Unterkiefers im Erachsenalter, 1999.
- Brink, Christian Paul: Implantatversorgung nach traumatischen Zahnverlusten – eine retrospektive Studie –, 1999.
- Alidadi, Amir: Die Wertigkeit der Palpation, Computertomographie und Sonographie für das präoperative Halslymphknotenstaigang des Mundhöhlenkarzinoms, 1999.
- Schröder-Ferkes, Kristina Eleonora Maria: Klinische Vergleichsuntersuchungen vier unterschiedlicher Lokalanästhetika während oralchirurgischer Eingriffe, 1999.

20.6.2 Habilitation Thesis (Ph.D)

- Piffko, Josef: Klinische Aggressivität des Oralkarzinoms: Eine Funktion der invasiven Tumorfront, 1999.
- Werkmeister, Richard: Die Bedeutung von ErbB-Onkogenen für die Prognose und Therapie des Mundhöhlenkarzinoms und seiner Vorstufen, 1999.

20.6 Scientific Awards (1995 to 1999)

Department	Award
Conservative Dentistry	<ul style="list-style-type: none"> - Miller-Prize of German Society of Dentistry and Oral Medicine (DGZMK), - Prize of the German Society of Restorative Dentistry, - Prize of the Dental Teacher of Endodontology
Periodontics	<ul style="list-style-type: none"> - Miller-Prize of the GSDOM, - Best conference prize of the German Society of Periodontics, - Prize for the best thesis of the DGZMK
Maxillofacial and Oral Surgery	<ul style="list-style-type: none"> - Best prize of the year of the Working group Maxillofacial Surgery of the DGZMK, - Prize of SOG

20.7 Innovative Diagnostic and Therapeutic Methods inaugurated by staff (1995 to 1999)

Department	Description of the Method
Conservative Dentistry	<ul style="list-style-type: none"> - Development of new Root Canal Instruments in general and with different cross-sections
Prosthodontics	<ul style="list-style-type: none"> - Development of new bur instrumentarium for the working on tooth substance as well as dental materials. - Development of a Root canal Post-System, - Development of new posterior teeth for removable dentures.
Orthodontics	<ul style="list-style-type: none"> - Calibrating double split-cast system – Muenster's cast-operating-System
Maxillofacial and Oral Surgery	<ul style="list-style-type: none"> - Introduction of the AgNor-System in tumor prognosis - Development of a plate for dysgnathia

Visitors comments

The visitors appreciate the overall research output by the school. There is no doubt that this school contributes to dental science at a high level. It has been noticed that there are substantial differences in ratios of German and English publications between departments.

Section 21

Quality Development

The teaching evaluation lies in the hands of the so-called “Institut für Ausbildungs- und Studienangelegenheiten” (IfAS), founded in 1985. Its tasks in the medical faculty among others are: educational research, organisation of teaching, organisation and documentation of examinations, course guidance, student care.

The appointment of a Dean for Student Affairs underlines the significance of the doctrine of our faculty.

Currently in a multilevel process the teaching load and teaching volume of the faculty as well as the self assessment of the teaching staff according to teaching performance and efficiency is being documented and compared with results of student's questionnaires concerning teaching quality and quantity in obligatory courses. In so called “Jours Fixes” student affairs are discussed on a monthly basis.

In 1992 our students initiated the foundation “Stiftung Lehre” at the medical faculty in Muenster to support innovative teaching projects for the improvement of education by means of achievement oriented measures. A board of curators decides on whether a project will be supported. Students are represented in the board.

The faculty established the election of “teacher of the year” as a stimulus for teaching staff. The election is based on a students' survey once a year. An award of DM 5000,00 for the preclinical and the clinical part each goes with the election. With the support of the provincial gouvernement a special trainee-programme for teaching staff is offered.

The regulation for the post doctoral lecturing qualification (Habilitationsordnung) in Muenster obliques students to give their opinion on the quality of the teaching of the candidate.

At present a list of efficiency criteria for the doctrine is being established. It is meant to be the basis for future allotments in the faculty.

In 1999 the medical faculty ordered the Centre for Science and Technology Studies (CNTS) in Leiden, Netherlands, and the agency Science-Consult in Heiligenhaus near Cologne to make out a survey on the medical establishment of Muenster.

In spring 2000 the Science Council surveyed the medical faculty in Muenster inclusive dental school. A further report about the dental school was drawn up in May 2000 by external experts – both times in the context of an evaluation of all the medical establishments in NRW always including a self assessment.

We attach great importance to communicating with the students. On this respect we are looking for an effective exchange of ideas on organisation of and quality in teaching. Towards the end of semester representatives of all years are invited by the board to discuss the past semester. Last but not least the student's magazine “Dent-Info” is being used as an effective means to mouth the students' opinion if necessary.

Visitors comments

The visitors were not aware of any systematic evaluation system to monitor the quality of teaching. Student questionnaires about the quality of teaching and organisation of the programme should be included as well as opinions of staff. It is recommended that a quality monitoring system for the dental curriculum be developed.

Section 22

Visitors Comments and Executive Summary

The information provided to the visitors on beforehand, as well as all the preparatory work (travel arrangements, etc) was very well taken care of by Professor Dr Dr Friedhelm Bollmann and his team. The visitors would like to thank Professor Bollmann and in particular PD Dr Anne Wolowski for the excellent hospitality provided throughout the visit. The visitors were unanimous in their appreciation of the efforts put into the self-evaluation report of the school. The report was assessed by the visitors as a comprehensive, thorough document, giving an excellent overview and a good insight into the strengths and weaknesses of the school, more specifically the contributions of the various departments and disciplines in the Medical Faculty to the dental curriculum.

The visitors recognise that the curriculum is very well established and places a very strong emphasis on the technical aspects of dental care. The programme of the dental curriculum as presented in the self-evaluation report, is very clear and detailed. The visitors noticed some weaknesses, which are largely the result of the constraints imposed by the „Approbationsordnung“. Therefore the following comments/observations may not be exclusive to the Dental School in Münster, but may be more applicable to German Dental Schools in general.

- The curriculum is teacher oriented, defined in terms of disciplines or departments providing lectures and courses. The visitors recommend a change to the more European-wide used system of a student centred curriculum, defining the curriculum in terms of educational objectives and study hours per course (matching the European credit transfer system).
- Thematic integration, problem oriented courses are advocated over discipline oriented courses.
- The artificial division into pre-clinical and clinical programmes causes a skewed distribution of the learning experiences as exemplified by the schedules of the 5th and 6th semesters
- More parallel programming of clinical courses in the schedule would provide better continuity in developing clinical skills. For example, Periodontology occurs in the 7th and 10th semesters. This results in an interruption in the development of skills, and it does not allow for an appreciation of the outcomes of patient care. Patient care should start much earlier in the curriculum (3rd or 4th semester) in order to provide the student with continuity of patient care. The visitors are aware that the „Approbationsordnung“ must be changed to allow for the implementation of this recommendation.
- Integrated total patient care should be implemented in the later semesters.

- The number of hours devoted to dental laboratory work should be considerably reduced. The important skill required by the practising dentist is the ability to assess the quality of dental laboratory work rather than the ability to carry out every laboratory procedure. The time gained by this reduction could be used to strengthen other aspects of the curriculum e.g. writing reports or scientific essays, general medicine in relation to care of medically compromised or disabled patients, integrated total patient care, dental public health, paediatric dentistry.
- There is a need to establish a unit or body (Studiendekan für Zahnheilkunde) for curriculum affairs including development & assessment, in order to oversee curricular management and planning, based on educational expertise.

Concerning the „Zahnärztliche Vorprüfung,, and the „Staatsexamen,, a practical as well as an oral examination is required by the nation-wide regulation. The certification of each course includes daily supervision of the clinical and laboratory work and a multiple choice or short answer exam at the end of each course. In view of the dominance of oral examinations it is recommended to replace part of the oral exams by a wider spectrum of examination methods in order to measure more objectively a greater variety of important skills. Various methods include oral exams, written essays, multiple-choice questions, short answer questions, Objective Structured Clinical Examinations.

- A quality assessment system based on students' opinions should be developed to provide the curriculum managers with information as to how to maintain and improve the quality.
- The constant replacement of the junior staff restricts the Dental School's ability to implement a programme of staff development. Such a programme should include both clinical and educational courses in order to enhance the appreciation of the value of a teaching career in dentistry.