



**UNIVERSITY OF REGENSBURG**

**FACULTY OF DENTISTRY**

**DentEd**

**SITE VISIT**

**FINAL REPORT**

**May 27 – 31, 2000**

## Acknowledgement

The compilation of this report was only possible through the generous support of many colleagues from the Medical Faculty, the Faculty of Natural Sciences and the Administration of the University/the Medical Faculty. Herewith we want to express our warmest thanks to all of those who helped us and provided impact to this report.

In particular we want to thank the former Dean of the Medical Faculty, Prof. Dr. M. Landthaler, for his support during the initiation phase of the project. A working group was set up with the following members:

Dr. Bimmerle, PD Dr. Dr. Dammer, Prof. Dr. Handel, Prof. Dr. Jilg, Herr Kötterl, Prof. Dr. Müßig, ZÄ Pfeifer, Dr. Reicheneder, Prof. Dr. Schmalz, PD Dr. Schweikl, Prof. Dr. Stolz, Dr. Zeiser

To all of them we express our thanks for the time and effort invested and the many excellent ideas put forward.

Prof. Dr. G. Schmalz

Dr. T. Bimmerle

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## Section 1: Introduction and General Description

### Dental Clinics University of Regensburg

The University of Regensburg was founded in 1967/68 with the enrolment of the first students (law, economics, philosophy). The School of Dental Medicine – which in Germany is traditionally part of the Medical Faculty – was opened in 1983. It was the first part of the Medical Faculty at the University of Regensburg which was officially founded in 1985. The Medical Clinics followed later. The first students of dentistry were enrolled for the winter semester 1984/85. In 1988 the construction of the Medical Clinics of the Medical Faculty was started and in 1992 the Medical Hospital of the Medical Faculty was opened. At that time the Medical Hospital of the Medical Faculty comprised 476 beds, during 1998/99 the Hospital was enlarged to 774 beds. Therefore, the Medical Faculty of the University of Regensburg is the „youngest“ Medical Faculty in Germany.

Today, the School of Dental Medicine has four chairpersons (Prosthodontics, Operative Dentistry/Periodontology, Oral and Maxillofacial Surgery and Orthodontics) which are all members of the Medical Faculty. Since October 1<sup>st</sup>, 1999, the legal status of the Dental and Medical Clinics in the Free State of Bavaria was changed; it was converted into a public institution with some independence from the University. The link between the University and Dental and Medical Clinics is the Medical Faculty. The Medical Faculty is responsible for undergraduate student education as well as for research.

According to German legislation, the School of Dental Medicine of the University of Regensburg provides a five year dental education program (10 semesters) which finishes with the final state board exam in the 11<sup>th</sup> semester. This final exam comprises fourteen subjects and lasts approximately 4 – 5 months. It includes theoretical as well as practical examinations.

In the School of Dental Medicine today about 400 undergraduate students are trained. Each semester, about 37 new students enroll for the first semester program. The number of enrolled students is regulated by federal German legislation and is based on the number/qualification of the academic personal and the equipment available in the School of Dental Medicine. The curriculum is also defined by a German federal law providing the framework for the undergraduate five year course. This frame is identical for all 30 Schools of Dental Medicine in Germany. The undergraduate course is divided into a 2.5 year preclinical and a 2.5 year clinical section. The first five semesters include the education in basic medical sciences (chemistry, physics, biology, biochemistry, physiology, anatomy, histology) and dental materials/technology. Training in dental materials/technology includes three practical (partially phantom head) courses. After the first two semesters of the preclinical section, the students take an examination in chemistry, physics and biology. After all together five semesters (end of preclinical education) the students have to take an examination in biochemistry, physiology, anatomy/histology and dental materials and technology, the later one in theory as well as in practice.

The second part of the undergraduate courses lasts again five semesters and is devoted to the clinical education of the students. Within this part, the students work on phantom heads for one semester and with patients for two years (four semesters) in the main areas of dentistry (Prosthodontics, Operative Dentistry and Periodontology, Oral and

Maxillofacial Surgery and Orthodontics). During this time, they also attend lectures/courses in medical subjects (Internal Medicine, Dermatology, General Surgery, ENT, Pathology, Microbiology/Hygiene).

The School of Dental Medicine has about 19 postgraduate students, mainly in the area of oral surgery, maxillofacial surgery and orthodontics. Special training programs for other areas are in preparation. The School also provides different continuing education programs for dental practitioners including a regular program (quality circle), programs for special areas of interest (e.g. implants, esthetic dentistry, TMJ-problems) and once a year a two day education program with national and international speakers. These postgraduate education programs are performed closely together with the local professional dental organization (Local Dental Chamber).

The Medical Faculty of the University of Regensburg was the first in Bavaria to install a “Dean for Student Affairs”. For the time being, the Dean for Student Affairs is presently a Professor in Microbiology and Hygiene who is heavily engaged in educational affairs. He is also in charge of dental students and cooperates closely with the chairpersons of the School of Dental Medicine.

The school’s interests in research concentrate, among others, on implantology, periodontology, caries prevention, biocompatibility of dental materials, technical and clinical investigations of new materials and technologies and treatment and genetic analysis of patients with craniofacial abnormalities.

The city of Regensburg (about 130.000 inhabitants, among them 15.000 students) is located in Bavaria. It is one of the oldest cities in Germany dating back to the Romans. The city is famous for its large number of historical buildings, including the “Alter Reichstag“, which during the 16<sup>th</sup> until 19<sup>th</sup> century was a convention for the kings, dukes and barons of the Holy German Empire. Famous and well known emperors like Charles the Great, Charles V. and others visited frequently Regensburg. Regensburg was a free city in the middle age. Since 1810 it belongs to Bavaria and is the capital of east Bavaria (Oberpfalz).

#### ***Visitors comments***

The visitors were most impressed by the quality and clarity of the site visit report which contained a great deal of valuable information. The programme for the visit was well prepared and where changes were requested, these were made in a positive and constructive and helpful way. The School must be congratulated for the open manner in which it identified its strengths and weaknesses.

## Section 2: Facilities

### 2.1 Clinical Facilities

Person in School who will explain and show this to the visitors

Dr. T. Bimmerle

E-mail: Theodor.Bimmerle@klinik.uni-regensburg.de

#### *General Explanation*

The Department of Prosthodontics is equipped with 25 dental operating units:

- 8 are used for patient treatment by the staff
- 2 are used for admission of new patients and prosthetic emergency treatment
- 15 are used for patient treatment by the clinical students (8<sup>th</sup> and 9<sup>th</sup> semester)

The Department of Operative Dentistry is equipped with 36 dental operating units:

- 12 are used for patient treatment by the staff
- 3 are used for emergency treatment and new patients
- 21 are used for patient treatment by the clinical students (7<sup>th</sup> and 10<sup>th</sup> semester)

The Department of Orthodontics is equipped with 14 operating units:

- 13 are used for patient treatment by the staff
- 1 is used for the treatment of new patients

The Department of Maxillofacial Surgery is equipped with 18 operating units:

- 12 are used for patient treatment by the staff
- 4 are used for emergency treatment and new patients
- 2 are used for the patients at the ward

The Department has also access to 4 operating theatres for oral surgical and for maxillofacial interventions.

#### *Strengths*

The education takes place at modern equipment

### ***Weaknesses***

Four students have to share one dental unit for dental treatment of patients.

### ***Visitors Comments***

The visitors considered the general quality and maintenance of the clinical accommodation to be excellent. However, some of the dental equipment is more than ten years old and to maintain the high standards a planned replacement programme should be developed and funded.

## **2.2 Teaching Facilities**

Person in School who will explain and show this to the visitors:

Dr. T. Bimmerle

E-mail: Theodor.Bimmerle@klinik.uni-regensburg.de

### ***General Explanation***

The Dental School is equipped with 3 lecture rooms (25, 40 and 150 places). In the Medical School 2 lecture rooms with 100 and 450 places are available. Every department is equipped with a small lecture room, for teaching in small groups.

The preclinical education in chemistry, physics, biology, physiology, biochemistry, and anatomy/histology is performed at the University Campus which is located about 2 km away from the School of Dental Medicine.

### ***Strengths***

The teaching facilities are located within the Dental School and the Medical School for the clinical part of the study. They are basically well equipped.

### ***Weaknesses***

Teaching facilities for the clinical education have to be shared with students from the Medical School which sometimes leads to a shortage of space. The teaching facilities for some preclinical studies are located in the main buildings of the University Campus. It needs some time to get there.

### ***Best Practices***

Multimedia is available, for example beamer. TV connection from operating rooms to lecture rooms.

### ***Innovations***

More small teaching rooms should be available for teaching in small groups.

***Visitors Comments***

Although the teaching rooms are very good, there is a shortage of large and small teaching areas because the facilities are used by both medical and dental students.

**2.3 Teaching Laboratories**

Person in School who will explain and show this to the visitors

Dr. W. Zeiser

E-mail: Wolfgang.Zeiser@klinik.uni-regensburg.de

***General Explanation***

The laboratory for the preclinical student education in dentistry (dental materials/technology) is equipped with 64 working units (each of them supplied with phantom head, micro motor for handpiece and contra angle handpiece, chip blower and bunsen burner). There is also equipment being used for casting, polishing and resin processing. There are the facility for audio/visual education.

For the clinical phantom course (takes place during the first semester of the clinical education) 22 working units are available, supplied virtually with the same equipment as the preclinical courses.

The laboratory for the clinical laboratory work (student fabricate inlays, crowns, and prothesis within their clinical patient courses) is equipped with 48 working places (each of them supplied with a technical handpiece, chip blower and bunsen burner). There is also equipment being used for casting, polishing and resin processing.

***Strengths***

Live demonstrations by video are possible. The students can also watch teaching videos on TV screens. The videos can be lend out from the teachers.

***Weaknesses***

Two and more (up to eight) students have to share one working unit.

***Best Practices***

Live demonstrations by video.

***Innovations***

The working units particularly at these teaching laboratories are very old. So it is necessary that these old working units should be exchanged.

### *Visitors Comments*

The accommodation provided in the teaching laboratories is impressive. A space utilisation survey of these facilities might help to alleviate the shortage of clinical, teaching , and computer facilities identified elsewhere.

## **2.4 Research Laboratories**

### **A. Department of Prosthodontics**

Representative: Prof. Dr. G. Handel

E-mail: gerhard.handel@klinik.uni-regensburg.de

### *General Explanation*

The research topics are a combination of material testing and clinical application.

The department has three rooms -each with about 20 m<sup>2</sup>- for research use:

- mechanical/chemical investigations and specimen preparation
- investigation of colour- behaviour and chemical/physical properties
- artificial ageing.

A fourth room with about 60 m<sup>2</sup>, where scanning electron microscopy is located, is used together with the department of Operative Dentistry and Periodontology. Dental specimen were prepared in the dental laboratory of the department.

Staff: 2 engineers, 1 dental technician, 1 dental assistant.

### *Strengths*

The direct interchange between dentists, dental technicians, dental assistants, students and engineers allows a know how transfer of actual dental problems and scientific research. Both disciplines, dentistry and engineering were combined to a practical research and education. New and actual techniques and materials were investigated in the fields of material science and technical practice. The good equipment of the laboratory facilitates innovative material testing. The co-operation with dental manufacturers guarantee the fast exchange of materials and scientific information. Working together with other departments, clinics of the Medical Faculty, and the University allows the usage of different testing and analysis devices without necessity of buying expansive additional equipment.

### *Weaknesses*

The lack of scientific staff, the low budget, especially for business trips visiting scientific congresses, and the limited space is hindering further development of the research. The future aim to expanse materials testing with biological aspects is therefore restricted.

***Best Practices***

Especially in the field of fixed partial dentures, the evaluation of the qualities and the possibilities of dental materials and prosthodontic restorations with materials testing methods after artificial ageing is performed. Of great importance are investigations on composites, fibre-reinforced materials and all-ceramics.

***Innovations***

Innovations could be established in the fields of artificial ageing of specimens and dental restorations by designing and modifying artificial environments. Here, besides wear characteristics, biological aspects should be included in further studies. Due to the future population development with an increasing part of older humans, further studies focus on partial - and full arch dentures.

**B. Department of Conservative Dentistry and Periodontology**

Representative: Prof. Dr. G. Schmalz

E-mail: Gottfried.Schmalz@klinik.uni-regensburg.de

***General Explanation***

The research laboratories and offices are closely connected spanning an area of about 120 m<sup>2</sup> in total. In addition, there are two other small laboratories on a different floor, and the use of a scanning electron microscope (SEM) is shared with the department of prosthodontics.

Staff: 1 statistician (Ph.D.), 1 biologist (Ph.D.), and 4 technicians hold permanent positions in the research department.

***Strengths***

Many research projects combine the expertise of people working in the basic science and clinical practice. Preclinical as well as clinical studies are often designed and performed by dentists, a statistician or a biologist. In addition, there is a close relation to other institutes of the Medical School.

Research in the Department of Operative Dentistry and Periodontology is focused on the following topics:

***Biocompatibility testing of dental materials***

Information on the unspecific cytotoxicity is obtained by standard cell culture techniques including semi-quantitative and quantitative colorimetric assays. Cytotoxicity of dental filling materials is also determined by a dentin barrier test device which was designed in this laboratory. One important component is the availability of immortalized bovine pulp cells. Immortal pulp cells were constructed in our laboratory by introducing viral oncogenes into primary pulp cells.

Mutagenic activities of dental materials and various compounds are analyzed by various methods recommended by national and international standards. In addition, compounds of known allergic or skin irritating properties are

investigated in vitro using three-dimensional skin equivalent cell cultures. The expression of proinflammatory molecules, like prostaglandine E2 or cytokines is determined.

#### *Preclinical and clinical testing of dental materials*

Quantitative margin analysis under a scanning electron microscope and dye penetration tests using an image analysis system. The examinations are performed before and/or after thermocycling and mechanical loading of the restorations. Measurements of bond strength of dental filling materials to dental hard tissues using a special device for shear bond strength testing. This device allows standardization of dentin depth and permeation. Clinical studies on different types of ceramic inlays in Class II cavities and of composite resins and compomers in Class V cavities are performed using modified USPHS criteria as well as quantitative margin analysis by SEM (replica technique).

#### *Periodontology*

Clinical and histological studies focus on different methods to investigate periodontal regeneration (guided tissue regeneration, enamel matrix proteins, growth factors, bone substitutes), and various periodontal risk factors (e.g. diabetes mellitus, IL-1 gene polymorphism) are considered. In addition, preclinical and clinical investigations concentrate on quantitative digital subtraction radiography as a diagnostic method in periodontology.

#### *Interaction of bacteria with components of the oral cavity, like saliva proteins, tooth surfaces or epithelial cells*

Oral bacteria bind to saliva proteins of the pellicle which covers the enamel surface. This adhesion of bacteria is mediated by specific receptor proteins. Initial adhesion of bacteria is followed by the formation of dental plaque consisting of a complex mixture of a vast amount of bacteria. Bacterial receptor proteins are identified and characterized by biochemical methods. The identification of receptor proteins is related to caries predisposition of individuals in clinical studies.

#### *Epidemiological investigations*

Developmental enamel defects are examined in different groups of children with varying fluoride supplements (0.25 mg -0.75 mg F/day) and control groups (no controlled fluoride intake) using different indices, mainly the Modified Developmental Defects of Enamel Index (Mod DDE Index). The meaning of preventive efforts like topical fluoride intake is related to the development of dental caries.

#### ***Weaknesses***

Many project plans of the department are hampered by the limited budget, and the lack of personell and space. The employment of a chemist would be advantageous in particular because a major part of the research activities is related to preclinical investigations of dental materials.

#### ***Best Practices***

The characterisation of dental materials in preclinical studies, like biocompatibility testing or measurements of bond strength of dental filling materials to dental hard tissues using a special device for shear bond strength testing.

***Innovations***

A dentin barrier test in vitro was designed to study the cytotoxicity of dental filling materials under conditions which simulate the in vivo situation. Measurements of bond strength are performed with a device which allows for the standardization of dentin depth and permeation. Development and characterization of transfected cells originating from oral tissues.

**C. Department of Orthodontics**

Representative: Prof. Dr. D.Müßig

E-mail: dieter.muessig@klinik.uni-regensburg.de

The relationship between phenotype and genotype in patients with tooth anomalies is investigated at the molecular level. More information to be provided.

**D. Department of Oral Surgery and Oral Medicine**

Representative: Prof. Dr. Dr. Herbert Niederdellmann

E-mail: herbert.niederdelmann@klinik.uni-regensburg.de

Information to be provided.

***Visitors Comments***

The research accommodation is adequate and suitably equipped.

**2.5 Library**

Person in School who will explain and show this to the visitors

PD Dr. H. Schweikl

E-mail: Helmut.Schweikl@klinik.uni-regensburg.de

### ***General Explanation***

The library is an integral part of the library of the Medical Faculty which covers an area of about 400 m<sup>2</sup>. It is centrally located and easily accessible. The library holds 56 journals and about 2000 monographs solely related to dentistry, and a total of about 24.000 monographs and 850 scientific journals mainly related to the various areas of medicine. Monographs are arranged systematically by subjects. More than 176.000 doctoral thesis in the area of public health and medicine are available. All acquisitions cover the vast area of medicine and basic sciences like biochemistry, cell biology and molecular biology.

The library of the medical school is very well connected to the various libraries located on the University campus. There is a close contact to the libraries of the departments of biology, chemistry and pharmacology in particular.

Highly qualified and well trained personnel is active in running the library (administration, reference services, book ordering and journal subscription, interlibrary loan and photocopy services), providing information or searching databases in the general field of life sciences. There is one person available to help searching about 100 on-line data bases covered by DIMDI (Deutsches Institut für Medizinische Dokumentation und Information). DIMDI offers the leading bioscientific databases (literature and facts) besides specific European and German information sources. About 80 million information units are regularly updated.

Monographs, journals, doctoral thesis acquired by any library in the country are easily spotted via computer networks and available for reservation and loan services. Photocopies of articles can be ordered by a regular library service or by a special online service. Ordering of books and photocopies from other libraries is easy, fast and inexpensive.

3 personal computers located in the library are connected to the local network and serve to search the various databases. For instance "Biosis", "Current Contents", "MEDLINE" and other data bases are provided on CD-ROM, and a total of more than 1.500 electronic journals is offered by the University's library through the local network. Databases, handbooks etc. can also be searched, and reservation/loan/return services can be accomplished from any terminal connected to the universities network. For instance, monographs and journals are easily spotted by the OPAC (open access catalogue).

Staff: 1 scientific librarian (Dr. W. Bothe), 3 librarians (R. Hackmayer, U. Lange, J. Krebs), 4 assistants to the librarians

Opening hours:

Monday to Friday 8:00 - 22:00

Saturday: 9:00 - 15:00

### ***Weaknesses***

Because of the limited space, issues of journals of previous years are stored in a basement magazine but are available within a few hours. The location of the library is only temporary, it should be moved to a place about 4-times larger than the area occupied at present.

### *Visitors Comments*

The current library and journal holdings are adequate and there is a policy to change the facility into an information centre as soon as funds are available.

## **Section 2.6: Information Technology**

Persons in School who will explain and show this to the visitors

Prof. Dr. G. Schmalz, Dr. K.-A. Hiller

E-mail: Gottfried.Schmalz@klinik.uni-regensburg.de

E-mail: Karl-Anon.Hiller@klinik.uni-regensburg.de

The University of Regensburg has a centralized "Computing Center" (Rechenzentrum) which provides hard- and software for the information technology at the University. This also precludes that members of the faculties are kindly requested to buy all their equipment through this center which guarantees high standard of technology and which provides fast help in case of problems. This center is also in charge of maintenance of hard- and software. A subdivision of this computing center is located in the Medical Faculty, which is quite near to the School of Dental Medicine.

Three areas of information technology are implemented in the School of Dental Medicine:

1. a room equipment with computer hard- and software for use of the students;
2. scientific internal net with free access to the internet for all members of the faculty;
3. medical net with patient data, treatment planning and administration;
4. access to the internet from personal computers at home for members of the faculty.

Ad 1) The students are provided with 9 sets of personal computers (CIP-Pool) including printers with access to the scientific net and relevant data bases. Every student has his/her own access including e-mail-address provided by the University. All communications from the University with the students are performed through e-mail.

Ad 2) Every office of academic personal as well as most of the laboratories are connected to the scientific net. This allows fast access to the internet as well as to relevant data bases. All computer equipment of the departments of the Medical Faculty should be purchased through the Computing Center of the University, which then provides basic and relevant computer programs and which takes care of occurring problems.

Ad 3) The School of Dental Medicine has started to install a computer system (medical net) which – when finalized – will take care of all documentation and all administrative purposes for the Dental School. For the time being, mainly administrative purposes (including billing) are covered by this system. Documentation of all dental treatments is planned to be solely based on information technology. The installation for the final parts of the hardware will start this year. For the time being, the computer program for administrative purposes is based on Highdent Plus, a software which

is developed especially for the needs of the Dental Schools in Baden Württemberg. At present, the final decision as to which computer program shall be installed is not yet finalized.

Ad 4) If desired, members of the faculty, including students, may log into the scientific net as described from a personal computer located at home. Students using on campus housing are provided automatically with this service. All possibilities described may be used.

*Visitors Comments*

The plans to make space available to increase the number of computers for student use are most welcome. The integration of computers into the clinic and the classroom will require additional investment in personnel with special expertise in software development and its academic application.

## **Section 3: Organisational and Administrative Structure**

Prof. Dr. U. Bogdahn

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Phone: +49-941-9446082

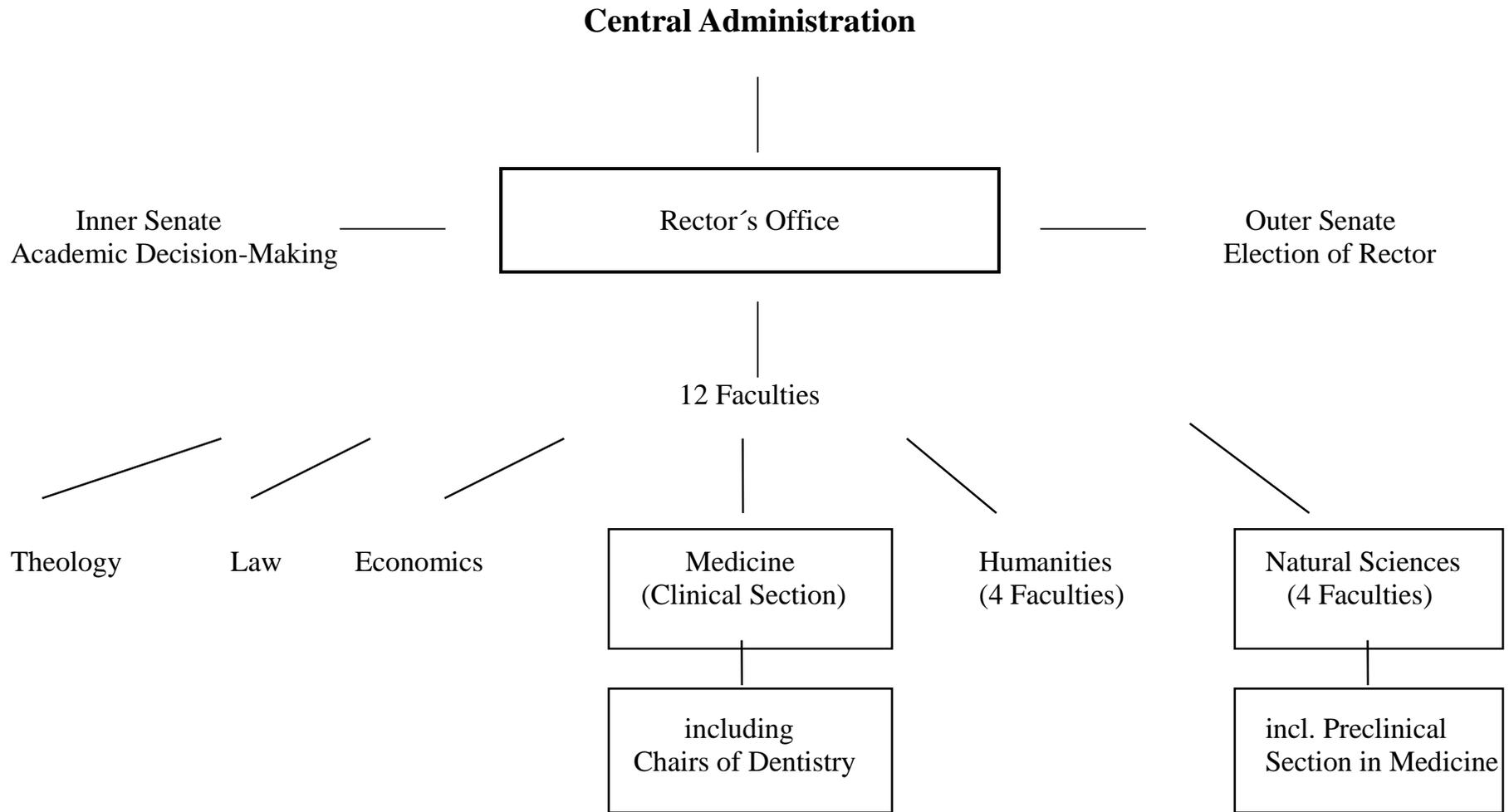
Telefax: +49-941-9446079

E-mail: rosa.pirzer@verwaltung.uni-regensburg.de

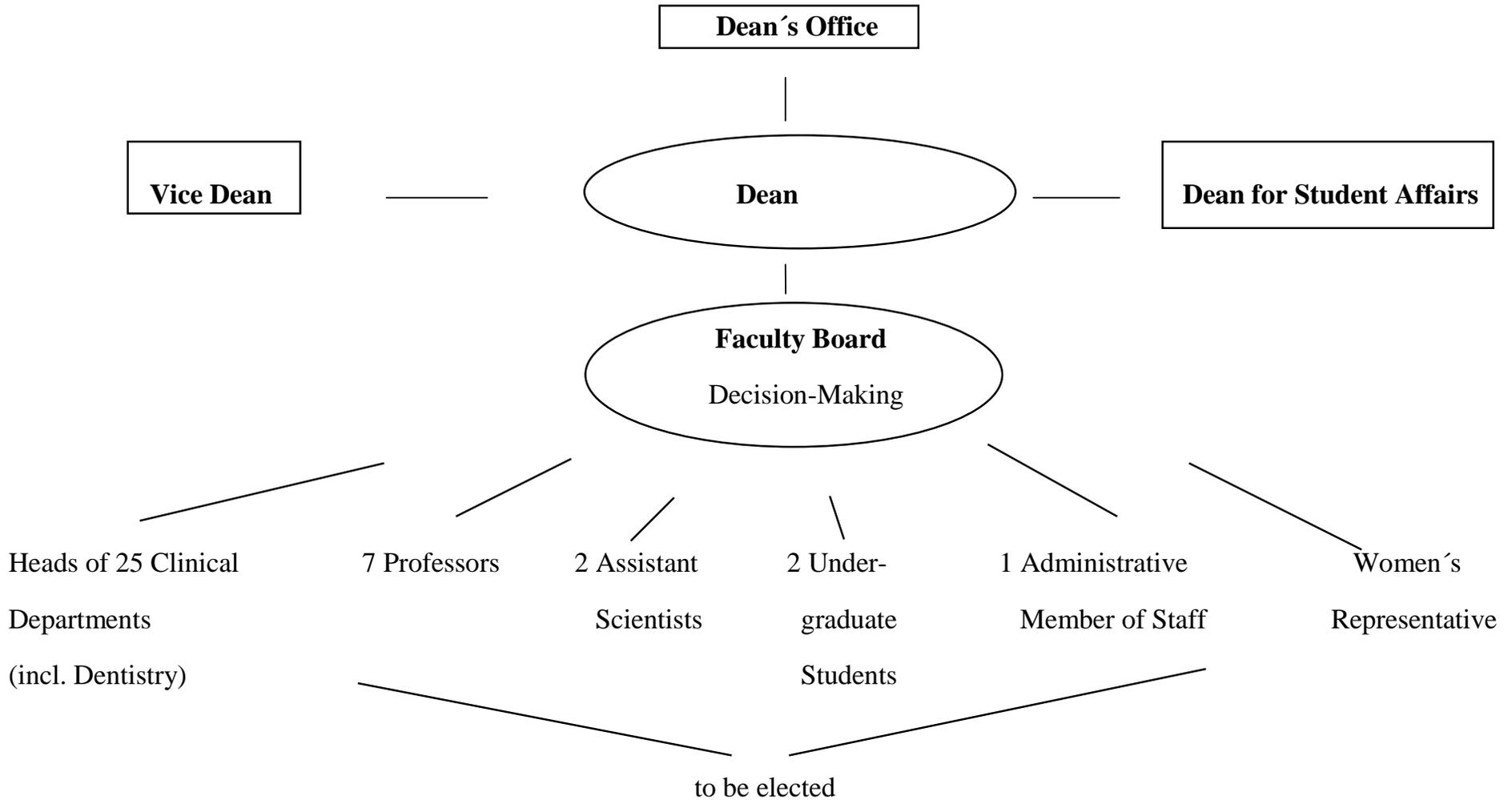
The following charts give an outline of the organisational and administrative structure of the Regensburg University School of Dentistry.

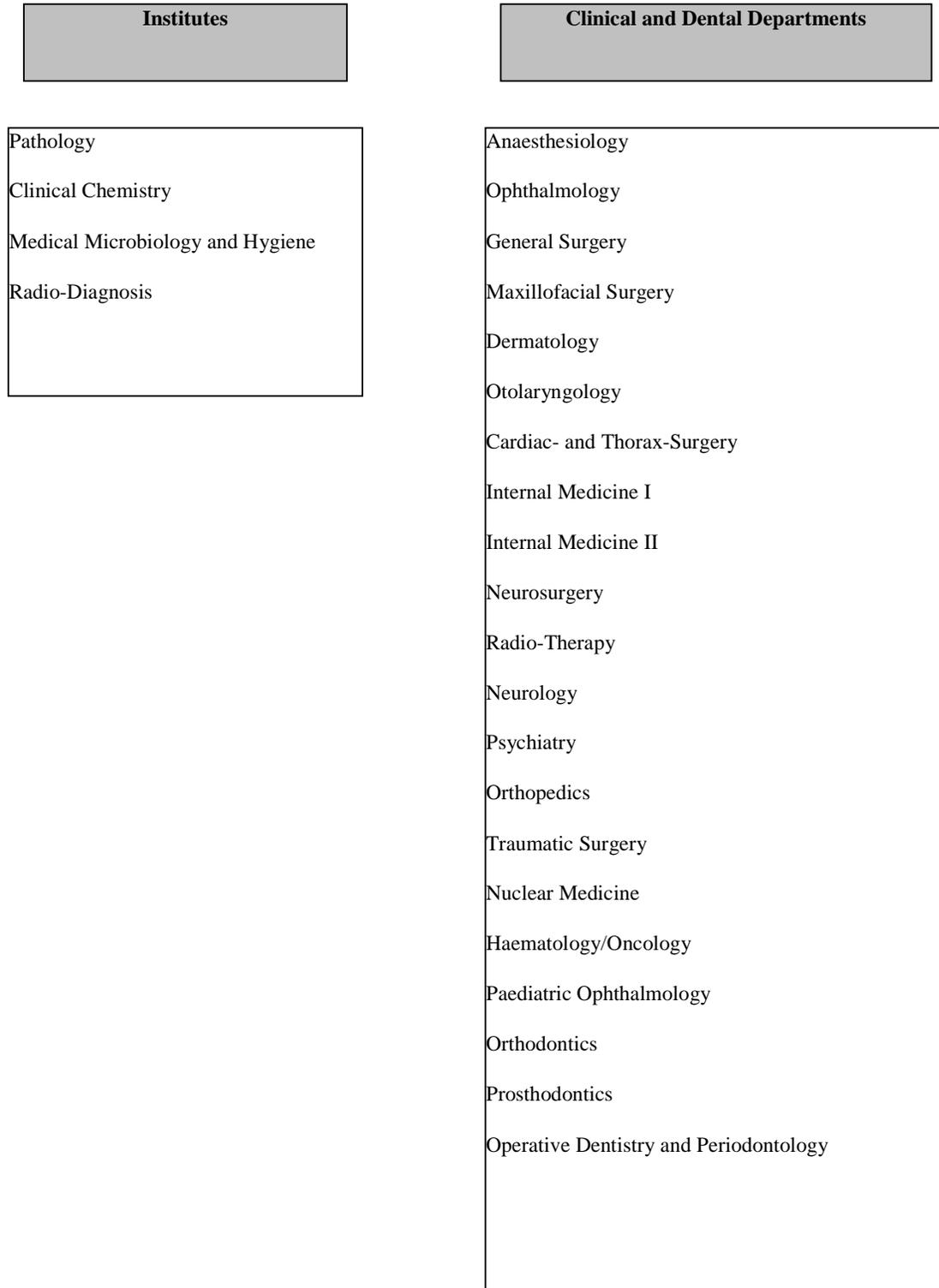
### ***Visitors Comments***

The dual responsibilities of Chairs of Departments for academic and hospital activities is commendable and is an example of good practice. The visitors were interested in the efforts being made in the Faculty Administration Board to address a possible imbalance between the funding received for medical and dental students. This is an important principle and the outcome may be relevant to other European Dental Schools. Clearly the Board was aware of the need to obtain funds for the replacement of dental equipment. The visitors endorse this view and support the bid that will be made to the State Government for this purpose. It was very apparent that the Dental School had a recognised role in the Board which understood the problems it faced.

**Chart 1:****Structure of the University of Regensburg**

**Chart 2:**  
**Organisation of the Regensburg Medical Faculty**

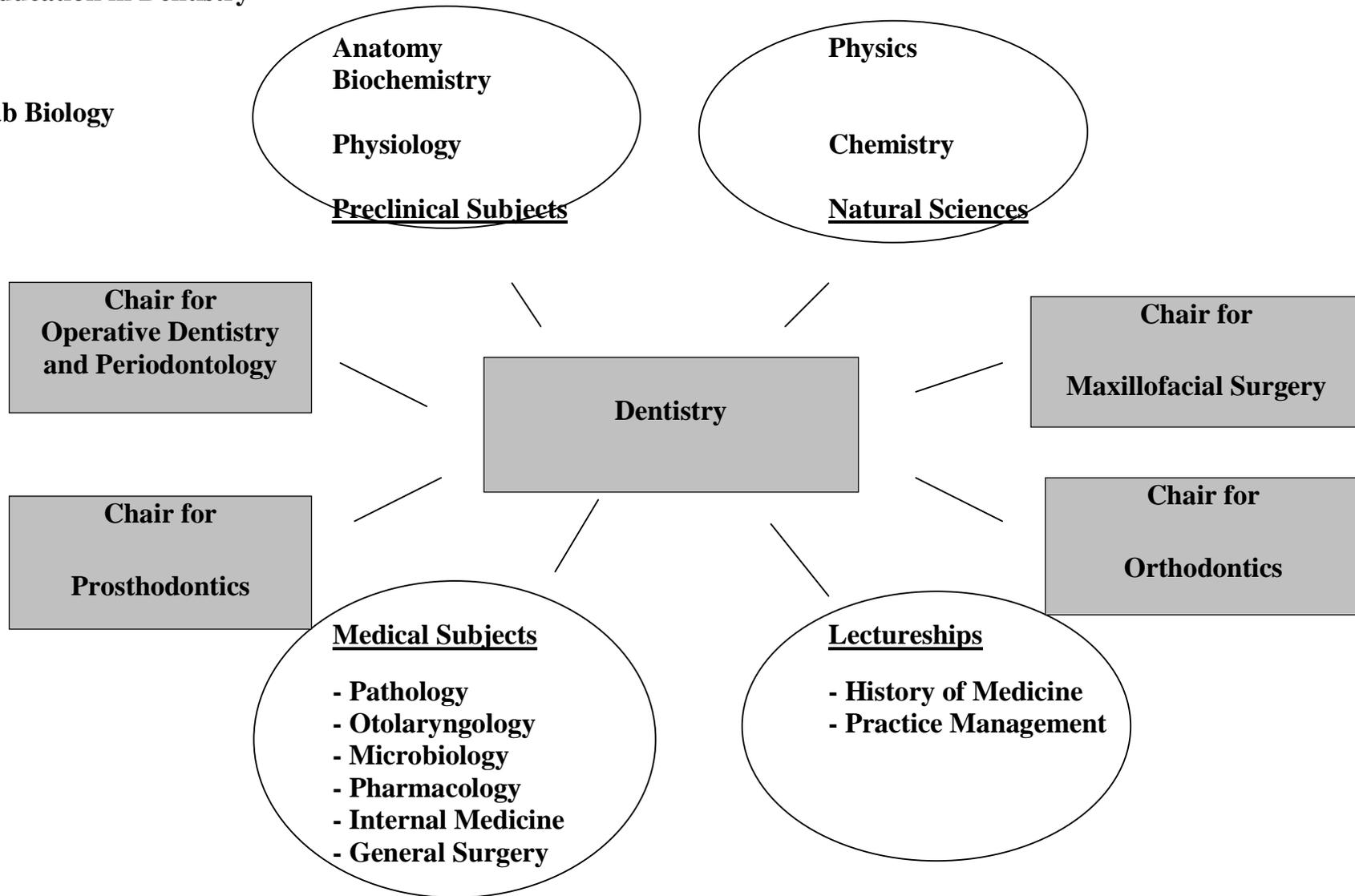


**Chart 3:****Structure of Medical Faculty***25 Departments / Chairs and Divisions:*

**Chart 4:**

**Education in Dentistry**

tab Biology



## Section 4: Staffing

Person in School who will explain and show this to the visitors:

Prof. Dr. Gottfried Schmalz

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### 4.1 Strengths

Several members of the staff had stayed abroad, for example in the USA or France for education and/or performing research. This is reflected by many international multicenter studies and publications. Every semester there are lectures for the students and the staff held by associated teachers (e.g. adjunct professors).

It is possible for our staff to visit the post graduate dental and medical education offered by the Dental/Medical school and courses/further education offered by the local dental association.

Every staff member can visit external courses and attend national and international congresses.

### 4.2 Weaknesses

Only few members of the academic staff are entitled to long term or life positions at the Dental School. This means, that the turnover in the academic staff is considerably fast. Therefore, it is sometimes difficult to equip the courses with teaching personnel (dental instructors) who have broad experience.

### 4.3 Staff Members

Professors	4
Clinical Staff	47
Non Clinical Scientists	4
Technical staff:	
dental technicians, medical technicians, etc.	31
Dental Nursing Staff (Dental Assistants)	47
Nursing Staff (Maxillofacial Ward)	30
Administrative/Secretarial Staff	13
Trainees (Dental Assistants)	6
Remaining Staff (e.g. maintenance)	9

***Professors:***

Prof. Dr. Handel	Department of Prosthodontics
Prof. Dr. Müßig	Department of Orthodontics
Prof. Dr. Dr. Niederdellmann	Department of Maxillofacial and Oral Surgery
Prof. Dr. Schmalz	Department of Operative Dentistry and Periodontology

***Other Senior Non-Professorial Staff:***

PD Dr. M. Behr	Department of Prosthodontics
PD Dr. Dr. R. Dammer	Department of Maxillofacial and Oral Surgery
PD Dr. K.-H. Friedl	Department of Operative Dentistry and Periodontology
PD Dr. Dr. R. Marmulla	Department of Maxillofacial and Oral Surgery
PD Dr. H. Schweikl	Department of Operative Dentistry and Periodontology
PD Dr. B. Thonemann	Department of Operative Dentistry and Periodontology

***Adjunct Professors\*:***

Arenholt Bindslev, Dorthe, D.D.S., Ph.D., Associate Professor  
 Royal Dental College, Faculty of Health Sciences, University of Aarhus, Department of Dental Pathology, Operative Dentistry and Endodontics, Vennelyst Boulevard, DK-8000 Aarhus C, Denmark

D'Souza, Rena, D.D.S., Ph.D., Associate Professor  
 The University of Houston, Department of Basic Sciences - Dental Branch, 6516, John Freeman Avenue, Houston, Texas 77030, USA

Powers, John M., Ph.D., Professor and Vice Chairman  
 The University of Texas Houston, Health Science Center, Department of Restorative Dentistry and Biomaterials (Biomaterials Research Center), 6516 John Freeman Avenue, Houston, Texas 77030, USA

\*) not employed by the University

***Visitors Comments***

Within the report and during the discussion, attention was drawn to the problems caused by the high turnover of academic staff in certain areas. To protect the continuity of the academic agenda, it is important that a solution is found to this in the context of the university and state systems that apply. The three year reviews of staff progress that are carried out by the Chairs of the Departments before contracts are renewed were noted with interest. This process might benefit from personal development plans for individuals with annual assessments. The use of data from the student evaluation questionnaires would enhance this process. Development plans should also be linked to speciality training programmes.

## Sections 5-16 The dental curriculum

### *Visitors comments*

As in all Dental Schools in Germany, the content of the curriculum is controlled by Federal Legislation and a large amount of time is spent on basic and medical science and technical procedures. National discussions are taking place to change the law which are supported by the visitors. This exercise should be completed as soon as possible. There are many positive aspects in the present curriculum which are the result of informal agreements between the Chairs of Departments, but the visiting team identified a number of issues that could be better addressed if the present informal system for curriculum review and development was formalised as a School responsibility. The issues identified included,

- early patient contact for students.
- more opportunities for integrated patient care for students.
- a lack of co-ordination between the teaching of basic science, medical and dental subjects
- the content of the curriculum which increases every year and a lack of balance within and between semesters.

## Section 5: The Biological Sciences

### Section 5.1: Biochemistry

Person in School who will explain and show this to the visitors:

Prof. Dr. Georg Löffler

e-mail: georg.loeffler@vkl.uni-regensburg.de

#### *Introductory Paragraph*

We are teaching the principles of modern biochemistry and molecular biology to medical and dental students. The topics are given with regard to the medical aspects of biochemistry and molecular biology. In accordance with the "Approbationsordnung für Zahnärzte" lectures and a compulsory practical courses are offered.

#### *Primary Aims*

The aims are to teach the students the principles of biochemistry and molecular biology in order to introduce them into medical biochemistry and pathobiochemistry.

#### *Main Objects*

- An introduction into the structure and function of nucleic acids and proteins
- A description of the main pathways of intermediary metabolism
- An introduction into the main principles of metabolic regulation
- A description of the principles of molecular biology including methods frequently used like DNA-sequencing, PCR, molecular cloning
- An introduction into the main biosynthetic pathways
- An introduction into molecular immunology

#### *Hours in the Curriculum*

There are one hour lectures five times a week in the „Wintersemester“ and four times a week in the „Sommersemester“. The topics listed in "Main Objekts", are taught during this one year period. In addition there are 7 practical courses of 7 hours each.

#### *Method of Learning/Teaching*

Lectures use the demonstration of slides and overheads. Learning is controlled by seminars during the practical courses.

***Assessment Methods***

Progress is controlled by a written exam at the end of the practical course.

***Strengths***

The scientists involved in teaching are highly motivated. In addition there is a strong cooperation of young staff members with senior scientists, especially to obtain optimal results in the practical courses. The courses take place in each „Semester“ in a block of 3 weeks. During that time, the students have no other obligations and can fully concentrate on biochemistry.

***Weaknesses***

Part of the students are not interested in biochemistry. Obviously they just want to do dental work.

***Innovations and Best Practises***

Lectures and practical courses are continuously adapted to new developments in (medical) biochemistry.

***Plans for Future Changes***

see Innovations and Best Practises

***Staff Members***

Prof. Dr. G. Löffler

Prof. Dr. P. Hegemann

6 Postdoctoral Fellows

The two professors are responsible for lectures, seminars and practical courses, the postdoctoral fellows for practical courses and seminars.

***Visitors Comments***

The design of the Biochemistry course which allows students to concentrate on understanding the underlying mechanisms associated with their clinical work is an example of good practice.

**Section 5.2: Molecular Biology**

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

**Section 5.3: Genetics**

This area is covered by different disciplines like microbiology, biology, or orthodontics.

## Section 5.4: Physics

Person in School who will explain and show this to the visitors:

apl.Prof.Dr.E.W.Lang

e-mail: elmar.lang@biologie.uni-regensburg

Course: Physics for students in biology, biochemistry, dentistry and pharmacology

### *Introduction*

The course is composed of a four hours per week lecture with demonstrations in basic physics for the natural sciences, a five hours per week experimental lab course and a two hours introduction to each of the lab courses. The course aims at providing a basic knowledge of those aspects of physics of relevance to any student in the natural sciences. A total of 165 demonstrations with in depth explanations of the theoretical as well as experimental aspects are provided as well. The practical lab courses are intended to introduce methodical principles of modern physical measurements. Focused theoretical advice given within a two hours introductory lecture to the experimental methods used during the lab courses provide utmost background knowledge for ten lab courses to be passed successfully by the students.

### *Primary Aims*

The aim of the course is to provide the students with a rather solid background knowledge in physics needed by all natural sciences, hence to equalise the rather diverse knowledge in physics students possess when entering university. Many of the examples given directly relate to matters of medical, biological or pharmaceutical interest.

### *Main Objectives*

The lectures include

Mechanics: space and time, rigid body mechanics, hydrostatics and hydrodynamics, transport and diffusion

Thermodynamics: kinetic theory of gases, equations of state, fundamental laws of thermodynamics, state changes and thermodynamic potentials, two phase equilibrium, multicomponent systems

Electromagnetism: electrostatics and electric fields, electric currents and magnetic fields, magnetic forces, alternating currents, Fourier analysis of signals, electric conduction mechanisms

Oscillations and Waves: acoustic waves, geometric optics, wave optics and Lasers

Atomic and Nuclear Physics: thermal radiation, atomic and molecular spectra, x-rays, radioactivity

The experimental lab courses include:

- Density and hydrostatic scale
- Accelerated motions, force actions on inclines, free-body diagrams

- Friction and viscous drag
  - Calorimetry
  - X-rays
  - Radioactivity
  - Electrical resistance and current-voltage relationships
  - Ultrasound, sound velocity, image formation
  - RLC resonance circuits and oscilloscopes
  - Geometric and wave optics, lenses, diffraction and eye models
  - Microscopy and image formation, Abbé theory
- Open and closed loop regulating circuits

### ***Hours in the Curriculum***

Lectures : 4 hours per week during the first and second semester

Lab courses: 10 out of 12 courses, each course takes 5 hours, during the first and second semester

Lab seminar: 2 hours seminar per Lab course

### ***Method of Learning/Teaching***

Themes are prepared by a senior lecturer and are presented using slides, overhead projection, video and live demonstrations. During the Lab courses students conduct experiments by themselves instructed and supervised by a senior scientist or postgraduate student.

### ***Assessment Method***

Successful attendance, including short oral examinations by the supervisor, is certified at the end of each Lab course. Dentists have to pass an oral examination (30 min duration) personally at the end of the third semester.

### ***Strengths***

Very many live demonstrations during the lectures

### ***Weaknesses***

No obvious practical relation to patients at this stage

**Visitors Comments (5.2 – 5.4)**

Molecular biology is covered in other courses mainly histology. The visitors were told that the staff were concerned about that genetics did not have a more extensive place in the curriculum. The aim to secure equity of knowledge in Physics is commendable since students enter the course with different levels of knowledge because of the High School system. Class sizes are very large and because the course runs over two semesters there is some flexibility in the content of the courses.

**Section 5.5: Chemistry**

Person in School who will explain and show this to the visitors:

Dr. K.P. Ruess; Inorganic and organic chemistry

e-mail: Klaus-Peter.Ruess@chemie.uni-regensburg.de

Course: Chemical laboratory course for dental medicine students

**Introduction**

The course consists of two parts: physical and inorganic chemistry (winter semester; 14 weeks) and organic chemistry (summer semester; 13 weeks). It comprises a one hour lecture per week ("1 SWS") and three hours per week ("3 SWS") of practical experimental work.

Students are participating in the first and second preclinical semester (1<sup>st</sup> year).

The lecture hours are held with all dental and medical students (240) together.

The one hour lectures per week include explanation of methods and topics closely related to the experimental work done by the students, including instructive experiments with elements and compounds relevant to students of medicine. The experimental work is focussed on basic methods, substances and subjects essential for further work in biochemistry, physiology and histology.

The chemical education described above is supported by additional 3 hour lectures per week on General Chemistry: physical and inorganic chemistry (winter semester) and organic chemistry (summer semester), respectively.

**Primary Aims**

The aim of the course is, to familiarise all students - even those with little initial knowledge in chemistry - with the basic concepts of chemistry to such a level of understanding that they will be able to complete the following biochemistry course successfully.

Within the course, the students are trained to get insight into the generation, behaviour, production and analytical determination of chemical substances, significant in pharmacy, nutrition, biochemistry, toxicology and environmental pollution.

***Main Objectives***

Basic concepts of acid-base-reactions including measurement and calculation of pH in solutions of strong and weak acids or bases as well as buffer solutions. Analytical determination of acids and bases by acidimetric titration.

Basic concepts of redox-reactions including the measurement of concentration dependence of the redox potential. Analytical determination of metal species by redox titration

Basic concepts of thermodynamics; solubility of inorganic salts and complex chemistry, including the role of the solubility product and the influence on solubility by complexation and acidification. Analytical determination of metal species by complexometric titration.

Basic concepts of photometry including measurement of absorption spectra. Analytical determination of compounds after derivatization and dye generation.

Basic concepts of catalysis and kinetics demonstrated on different types of organic reaction mechanisms.

Grouping of organic chemical compounds according to their state of oxidation; organic reactions classified by variation or non-variation of the state of oxidation (redox- and non-redox-reactions, respectively).

Natural compounds: lipids, carbohydrates, amino acids and proteins, nucleic acids; their constitution, main reactions and analytical determination: electrophoresis and thin-layer chromatography.

***Hours in the Curriculum***

There are eleven lab days with six hours each and taking place over a period of two semesters (corresponding to 3 SWS), accompanied by about 30 (1-SWS-) lecture hours. The lectures in General Chemistry comprise about 60 lecture hours over a period of two semesters (corresponding to 3 SWS).

***Methods of Learning/Teaching***

Themes in lectures are prepared by a senior lecturer and are presented using overhead projection, blackboard and experimental demonstrations.

After the written examinations (see 6.) the students discuss their results with the senior lecturers and instructors.

Experimental work is done in groups of two persons. Five to seven of such groups are supervised and instructed by one instructor (mostly chemistry students of graduated level, few senior chemists), supported by technical personnel.

In some of the experiments, the students are encouraged to practice all by themselves, and good results are anticipated and certified.

Students are instructed in the use of laboratory equipment (glass ware, centrifuges, photometers, electrodes, electrophoretic and chromatographic devices) and are encouraged to ask questions or discuss special aspects at any time.

***Assessment Methods***

Attendance of all eleven lab days is obligatory and certified. Six internal credit points are available for every lab day and are assigned by the respective instructor. Attendance at the 1-hour-lecture per week is not controlled but heavily recommended.

At the end of the two parts of the course there are two written examinations, thoroughly prepared and carefully corrected by senior chemists, in which the students can get a total of 134 internal credit points. The whole course is successfully finished, if 120 internal credit points have been achieved altogether.

Attendance at the 3 hours-lectures per week in General Chemistry is not obligatory and not certified.

***Strengths***

Emphasis on good and skilful practical work combined with accentuation on analytical and chemical topics as relevant for biochemistry.

Strict estimation of knowledge and capabilities, combined with assessment methods thought out and applied carefully.

***Weaknesses***

Some lack of modern methods and instrumentation including the use of computers and other modern teaching methods, as far as it can be anticipated for a freshmen course dealing with the very basic topics of chemistry.

***Plans for future changes***

Integration of kinetic experiments using modern methods of data evaluation.

Integration of analytical diagnostic tests combined with methods of statistical evaluation.

***Staff Names, Qualification and E-mail Addresses***

Prof. Dr. O. Wolfbeis; Analytical and organic chemistry;

e-mail: Otto.Wolfbeis@chemie.uni-regensburg.de

Dr. K.P. Ruess; Inorganic and organic chemistry

e-mail: Klaus-Peter.Ruess@chemie.uni-regensburg.de

Dr. R. Hutterer; Biochemistry and organic chemistry

e-mail: Rudolf.Hutterer@chemie.uni-regensburg.de

Dr. O. Lossen; Physical and inorganic chemistry

e-mail: Ortwin.Lossen@chemie.uni-regensburg.de

***Visitors Comments***

Chemistry is taught in a concentrated block of time which appears to work well.

**Section 5.6: Biology**

Person in School who will explain and show this to the visitors:

Prof. Dr. Stephan Schneuwly

e-mail [stephan.schneuwly@biologie.uni-regensburg.de](mailto:stephan.schneuwly@biologie.uni-regensburg.de)

***Introduction***

We are teaching aspects of basic Biology and Genetics. These lectures are held by expert researchers in the field. The topics include Cell Biology, Developmental Biology, Evolution, Genetics and Microbiology.

***Primary Aims***

To teach basic subjects of Biology and Genetics needed to understand more advanced topics in Anatomy, Physiology and Biochemistry. To bring all students coming from different high schools on the same level of basic Biological knowledge.

***Main Objectives***

The main objectives include the teaching of basic fields in Biology like Cell Biology, Development Biology, Evolution, Genetics and Microbiology. Care is taken to link basic Biology with medical relevance.

***Hours in the Curriculum***

There are two hours of lecture per week in the „Wintersemester“.

***Method of Learning/Teaching***

This basic lectures include various methods to visualise the topics like slides, overheads, video/film projections and practical demonstrations.

***Assessment Methods***

No assessment is made during the lecture. There is a final oral exam for these students at the „Vorphysikum“.

***Strengths***

Each topic is covered by an expert teacher working scientifically in the field presented.

***Weaknesses***

This lecture is a joint lecture for medical and dentist students, which gives it rather anonymous atmosphere. Usually students are not very interested in non-medical subjects.

***Innovations and Best Practises***

Topics are adjusted every day depending on scientific progress. Great care is taken to link basic biological knowledge with medically important topics.

***Plans for Future Changes***

Topics are updated to cover new ideas in modern fields of Biology and Genetics.

***Staff Names of Teaching Personal***

Prof. Dr. Stephan Schneuwly, Cell Biology

PD Dr. A. Hofbauer, Developmental Biology and Evolution

Prof. Dr. Susanne Modrow, Genetics

Prof. Dr. Reinhard Wirth, Microbiology

***Visitors Comments***

Biology also aims for equity of knowledge. The content of the course, which includes cell biology, is very important for dental students and the time allocated to the block seems limited.

**Section 5.7: Terminology**

Person in School who will explain and show this to the visitors:

Dr. W. Zeiser

E-mail: Wolfgang.Zeiser@klinik.uni-regensburg.de

Lecture: Medical terminology

***Aims and Main Objectives***

The aim of this lecture is to teach the students medical terms:

Construction of medical terms, generic terms and subdivision of terms

Anatomical terms: locomotor system, arteries, veins, blood vessels, inner organs.

Clinical terms: pathology, general medicine, internal medicine, surgery, orthopaedics, neurology, gynaecology, and further medical special fields.

Main grammatical rules (including stress)

***Hours in the Curriculum***

One hour per week, the lecture will take place only during the winter semester. There is no upper limit for the capacity (unless when the lecture room available is not large enough).

***Methods of Learning and Teaching***

One might say that the lecture is a one-man business; besides me, there are no other persons concerned and involved.

***Strengths/Weaknesses***

It is a lecture. Therefore, the weaknesses and strengths are those currently seen.

***Innovations and Future Plans***

No plan ahead at the moment. Up to now there is nothing put down in writing for the students. The lecture is well attended. Therefore, it may be expected that the audience accepts the lecture.

***Visitors Comments***

The visitors have no comments.

## Section 6: Pre-Clinical Sciences

### Section 6.1: Anatomy

Person in School who will explain and show this to the visitors:

Prof. Dr. K.-H. Wrobel, Institute of Anatomy

E-mail: Lehrstuhl.Wrobel@vkl.uni-regensburg.de

#### *Ī Training in anatomy for dental students consists of four lecture series and one dissection course*

Lecture series Anatomy I: General anatomy for students of the 1<sup>st</sup> or 2<sup>nd</sup> semester (depending on admission date). 14 hours

Lecture series Anatomy II: Macroscopic and microscopic anatomy of the organ systems for students of the 3<sup>rd</sup> or 4<sup>th</sup> semester. 56 hours.

Lecture series Anatomy III: Anatomy of the central nervous system and special sense organs for students of the 4<sup>th</sup> or 5<sup>th</sup> semester. 42 hours.

Topographic anatomy for dental students: This lecture accompanies the dissection course and covers in detail selected topics of head and neck anatomy emphasising their importance for dental students. 28 hours. This lecture is a special offer for dental students whereas the lectures in Anatomy I-III are primarily designed for medical students.

Dissection course for dental students of the 4<sup>th</sup> or 5<sup>th</sup> semester. 112 hours. Aims and objectives : Detailed knowledge of the functional and topographic anatomy ( bones, joints, muscles, vessels, nerves, organs) of head and neck, of the central nervous system and the inner organs of the body.

#### *Contents and Methods of teaching/learning*

- a superficial structures of head and neck
- b deep structures of head and neck from outside. In particular, masticatory apparatus and infratemporal fossa.
- c structures of head and neck from the median plane in lateral direction. (Emphasis on oral cavity, tongue, palate, larynx, pharynx).

the central nervous system in situ and in removed state.

The organs of the body cavities, the body wall and selected topics of the anatomy of the extremities and the trunk region( viz. Vertebral column with muscles and joints) are first demonstrated, then the students can study them in detail. The dissections for this part of the course have been done by medical students.

#### *Assessment Methods*

Two oral examinations :

Regensburg-final-Report

TNP 39501-CP-3-99-1-IE-ERASMUS-ETN

## 1. Topographic anatomy of the head, neck, central nervous system

ĩ situs and inner situs

### ***Strengths***

Teaching in small groups, learning by doing, possibility to study the dissected specimens outside the obligatory course time. Co-ordination of dissection and accompanying lecture (see above). A manual exists indicating the single steps of the practical work and outlining the topics of the oral examinations. The dissecting course for dental students is held by the two most experienced anatomists of the institute.

### ***Weaknesses***

Topographical anatomy of head and neck is the most complicated topic of the whole anatomical curriculum. There is a shortage of experienced staff in our institute. Plans for future: Integration of multi-media-based techniques.

## ***2. Training in embryology for dental students consists of two lecture series***

Embryology I: General embryology, gametes, fertilisation, early steps from morula to trilaminar embryo, gastrulation, neurulation, fetal membranes, placenta. 14 hours.

Embryology II: Embryology of the organ systems. Special emphasis on structures of head and neck: skull, bronchial arches, pharyngeal pouches, oral cavity, congenital anomalies of head and neck. 14 hours.

### ***Visitors Comments***

The teaching of anatomy is very extensive and the dissection element gives the students a good opportunity to observe the structures of the head and neck. Although the main area of teaching is related to medical students, special courses in anatomy have been designed for dental students. The plans for the future integration of multimedia-based teaching are especially suitable for this subject.

## **Section 6.2: Physiology**

Person in School who will explain and show this to the visitors:

Prof. Dr. Waldemar Moll

E-mail: Waldemar.Moll@vkl.uni-regensburg.de

### ***Introduction***

Teaching for dental students in classical physiology is composed of (1) a 16 h special lecture for dental students and followed by (2) a full day lab course for 11 days. For the lecture, the university net provides basis material. A lab course book presents the lab courses.

**Primary Aims**

are to give a general basis for internal medicine with special reference to subjects of special interest for dental students

**Main Objectives**

Neurophysiology (action potential, reflexes, evoked potentials)

Muscle (Isometric isotonic contraction, electromyography, echocardiography)

Vision (accommodation, adaptation, eye mirror)

Hearing and balance control (audiometry, frequency discrimination, vestibular tests)

Nutrition and metabolic rate ( energy content, diets, basal metabolic rate, work physiology)

Acid base status ( measuring pH, pCO<sub>2</sub> and BE, alkalosis, acidosis)

Blood ( haemoglobin concentration, cell counting, coagulation tests, blood groups tests)

Respiration (lung function tests, airway resistance)

Kidney ( glomerular filtration rate, electrolytes and creatine in blood and urine)

ECG ( ECG during rest and exercise)

Circulation ( blood pressure measurement, Doppler velocimetry, plethysmography )

(Gastrointestinal functions with special reference to the mouth, CNS functions and endocrine functions and special points of dental interest are presented in the lectures)

**Hours in the Curriculum**

Special lecture: 12 h

Lab course: 11 full days

**Methods of Learning/Teaching**

Lectures in the classical way

Lab course: After introduction, usually own practical work in subgroups of 3

**Assessment Methods**

Multiple-choice examination ( 60 questions; 60 % must be answered correctly)

***Strengths***

Own practical work in small groups, modern equipment, modern computer-assisted sensing and imaging, pathophysiological aspects. Special lecture for dental students, information retrieval via the internet

***Weaknesses***

Still suboptimal adjustment to the special interests of dental students

***Innovations and Best Practices***

Skeletal muscle physiology and electromyography in human . See “*Strengths*“.

***Plans for Future Changes***

Measurements of chewing pressure

Measurement of pain intensity, oral reflexes

***Staff Names, Qualifications and E-mail Addresses for the Institute of Physiology***

Rosemarie Baumann, Professor, Rosemarie.Baumann@vkl.uni-regensburg.de

Armin Kurtz, Professor, armin.kurtz@vkl.uni-regensburg.de

Waldemar Moll, Professor, waldemar.moll@vkl.uni-regensburg.de

Wagner Charlotte, Wiss. Assistant, charlotte.wagner@vkl.uni-regensburg.de

Dragon Stefanie, Wiss. Assistant, stefanie.wiss@vkl.uni-regensburg.de

Sandner Peter, Wiss. Assistant, peter.sandner@vkl.uni-regensburg.de

***Visitors Comments***

This course has been specially adapted for dental students which is an example of good practice in a discipline where it can be difficult to motivate dental undergraduates. The laboratory section ensures that the students understand the theoretical content of the course.

**Section 6.3: Histology (and Molecular Biology)**

Person in School who will explain and show this to the visitors:

Prof. Dr. Will Minuth

E-mail: will.minuth@vkl.uni-regensburg.de

***Introduction***

The students are informed about cell structures, extracellular matrices and the different kinds of tissues and organs in the human body. Students from the 4. and 5. semester attend to the course.

***Primary Aims***

In the histological course the students learn microscopical techniques and acquire knowledge in histological techniques. All kinds of microscopic structures in cells, tissues and organs and their histological characteristics are studied.

***Main Objectives***

Main objectives are to acquire knowledge of the cell architecture, the epithelia, connective tissues, muscle and nerve tissue, blood and blood vessels, lymphatic organs, respiratory organs, mouth, tooth and tooth development, secreting glands and oesophagus, stomach, gut, liver, pancreas, endocrine organs and urogenital system.

***Hours in the Curriculum***

Per semester:

Hours: 28          course

Hours: 48          lecture          total hours: 76

***Methods of Learning/Teaching***

A professor and a lecturer are teaching the students in the histological course. A learning program for the students and numerous colour illustrations in form of slides support the teaching. The students have to successfully pass one combined theoretical/practical examination.

***Assessment Methods***

The course in the present form allows a close contact to the individual student. During the microscopical inspection of the specimens the students may ask questions. This interactive personal learning has proved to be very effective.

***Strengths***

The histological teaching combines lectures which address large groups of students to convey basic knowledge, and courses (small groups) which allow the students to acquire detailed practical and theoretical competence. Teaching in the practical courses allows personal communication, intense instructing and close supervision.

***Weaknesses***

The lectures and courses in histology are timed according to the curriculum of the medical students. The curriculum of the dental students is not adequately co-ordinated; medical students are admitted only in the winter semester, dental students in winter and summer. This results in heterogeneous groups of dental students with different timing of their

curriculum. In addition, due to the occupancy by technical courses at the dental school (dental materials/technology) most students are not able to regularly attend the lectures. This is a considerable handicap for these students.

### ***Innovations and Best Practices***

Optimised slide material and actual renewal of course script material are available. Actual renewal of specimen material is further offered.

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

A change from slides to computer illustrations and animations is planned, so that each student can select individual teaching materials from the institute.

### ***Staff Names***

Prof. Dr. Will Minuth

Prof. Dr. Herbert Hees

PD Dr. Sabine Kloth

Dr. Karl Schumacher

Dr. Sabine Wagner

### ***Visitors Comments***

The combination of lectures and small group teaching with exercises is appropriate for this subject and provides a foundation for teaching histopathology later in the curriculum. The teachers of histology considered that there is a problem because two groups of students start the course at different times. This is a product of a two semester entry to the School.

## **Section 7: Para-Clinical Sciences**

### **Section 7.1: Pharmacology**

Person in School who will explain and show this to the visitors:

Prof. Dr. Frieder Kees

e-mail: frieder.kees@chemie.uni-regensburg.de

#### ***Introductory Paragraph***

The course is taught at the end of the education in dentistry and takes half a year.

#### ***Primary Aims***

The primary aim is to teach those essentials of pharmacology that are relevant for dental students.

#### ***Main Objects***

General pharmacology: pharmacodynamics/pharmacokinetics, analgetics and antipyretics, hypnotics, local anaesthetics, antibiotics and disinfectants, drug interactions, course of prescription, emergency therapy

#### ***Hours in the Curriculum***

The course comprises half a year consisting of a two hours lecture once a week

#### ***Method of Learning/Teaching***

Lectures

#### ***Assessment Methods***

Written examination at the end of the course.

#### ***Strengths***

No particular strengths

#### ***Weaknesses***

A weakness is an occasional lack of focus on what is really relevant for dentistry, and lack of time for the dental students to attend the lectures.

#### ***Innovations and Best Practises***

No further comments.

***Plans for Future Changes***

No concrete plans, but pharmacology teaching for dental students might be improved. I should perhaps add that pharmacology teaching for medical students is optimal winning the students the best marks of our country.

***Staff Members***

Prof. Dr. H. Grobecker

Dr. K.P. Ittner

Prof. Dr. F. Kees

Dr. H. Russ

***Visitors Comments***

The flexibility which allows students to begin this course at different times is commendable but dental students do not attend as many lectures as their medical colleagues. This may be due to the timing of the lectures which are held at 5 p.m. or later when the dental students have been working with other things during the whole day. The limited staff in the department makes changes in the course difficult.

**Section 7.2: Microbiology**

Person in School who will explain and show this to the visitors:

Prof. Dr. Wolfgang Jilg

E-mail: wolfgang.jilg@klinik.uni-regensburg.de

***Introduction***

The course is placed in the third clinical semester.

***Primary Aims***

Providing knowledge of the properties of bacteria, fungi and viruses important for dentistry (causing odontogenic infections, responsible for pathological changes in the mouth, being transmissible from patient to dentist and vice versa); providing basic knowledge of clinical symptoms, diagnosis, therapy and prophylaxis of diseases caused by these agents.

***Introduction to medical microbiology and its role for dentistry:***

Staining and cultivating of bacteria (Staphylococci, Streptococci), identification of bacteria by biochemical reactions (Enterobacteria), methods of disinfection and sterilisation; clinical hygiene, aseptic techniques, therapy with antibiotics, anaerobic bacteria, virology: characteristics of viruses, pathogenesis of viral infections, diagnostics of viral infections,

specific DNA- and RNA viruses relevant to dentistry (Herpesviruses; Enteroviruses), bloodborne viral infections (hepatitis B, C, HIV-infection).

### ***Hours in the Curriculum***

The course lasts one semester for 4 hours a week (lecture and practical exercises)

### ***Methods of Learning/Teaching***

Lectures and practical work: cultivating and staining of microorganisms, microscopy, cultivating viruses, performing serological assays for antigens and antibodies.

### ***Assessment Methods***

Written examination at the end of the course

### ***Strengths***

Combination of lectures and practical course

### ***Weaknesses***

Too many subjects, especially as students are heavily burdened by other more dentistry-specific subjects

### ***Innovations and Best Practices***

Combination of lecture and practical exercises

Concentrating on only those subjects with the highest relevance for dentists.

### ***Visitors Comments***

This extensive and compulsory course is delivered at an appropriate time before students enter the clinical semesters and the knowledge is maintained during the clinical course by frequent contact with the discipline.

## **Section 7.3: General Pathology**

Person in School who will explain this to the visitors:

Prof. Dr. Ruth Knüchel

Prof. Dr. Ferdinand Hofstädter

E-mails: Ruth.Knuechel-Clarke@klinik.uni-regensburg.de

Ferdinand-Hofstaedter@klinik.uni-regensburg.de

## ***1. Name of Lecture: General Pathology for Students of Dental Medicine***

### ***Aims***

To impart knowledge on basic mechanisms of disease, and pathophysiological processes combined with classical morphological patterns.

### ***Main Objectives***

The items chosen for the class are basic knowledge for physicians. They include for example arteriosclerosis, heart diseases, principles of inflammation, and basic knowledge of tumour growth and spread. Links to oral pathology are given, whenever possible.

### ***Hours in the Curriculum***

1hr/week suggested for the 7. semester (= 2<sup>nd</sup> clinical semester)

### ***Method of Learning/Teaching***

The class is held as an interactive lecture with questions to the students.

The class starts with short repetitions of items of the previous lectures. Options to see the institute of pathology, and to be guided through the basic processing of specimens is given for each class, and the attendance of an autopsy is encouraged.

### ***Assessment Methods***

For the very class the interaction with the students is the only assessment, sometimes including a quiz at the end of the term. The formal assessment is the Oral Exam in pathology (State Board Examination) with 4 students interviewed for one hour.

### ***Strengths***

Open class environment with constructive feed back in case of interested students.

The class motivates some students to do a medical thesis in a more general topic of medicine, as oncology or modern genetics, or learn some modern diagnostic tools as cytometric techniques.

### ***Weaknesses***

Students are very busy with other course obligations, which makes it hard for the students to voluntarily attend lectures.

### ***Desirable Innovations***

Earlier involvement of aspects of pathology in clinical teaching e.g. by interdisciplinary classes.

## ***2. Name of Course: Histopathology for Students of Dental Medicine***

Person in School who will explain this to the visitors:

Regensburg-final-Report

TNP 39501-CP-3-99-1-IE-ERASMUS-ETN

Prof. Dr. Knüchel, MD

Dr. M. Woenckhaus, MD

E-mail: Ruth.Knuechel-Clarke@klinik.uni-regensburg.de

### ***Primary Aims***

Familiarise the students of dentistry with basic patterns of pathomorphology, including oral pathology.

### ***Main Objectives***

To provide basic understanding of histomorphology and to stimulate some thoughts about the role of histopathology in assessment of diagnosis of disease and prognosis of tumours.

### ***Hours in the Curriculum***

2 hours per week for the 7<sup>th</sup> semester (= 2<sup>nd</sup> clinical semester)

### ***Method of Learning/Teaching***

The topic is introduced by some general explanations, some overheads or some macroscopical slides. Consequently, the slide is shown by the professor by projecting the microscope picture via CCD camera onto the wall. The important structural features are pointed out, and then the student is given adequate time to find the features indicated by looking at own slides with his microscope (one microscope/student). The teacher (professor or advanced resident) is available for theoretical questions as well as for any questions concerning the morphological structures, the students identify.

### ***Assessment Method***

In contrast to the lecture this course is an obligatory part of the curriculum, and a test is performed at the end of the term, including diagnosis of slides and theoretical questions.

### ***Strengths***

Most students like to familiarise with the matter of morphology by own practice.

### ***Weaknesses***

None known

### ***Innovations and Best Practices***

Bringing in a case from daily routine, and establishing a common diagnosis seems motivating.

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

No work has been initiated, however the topic is apt for CD-ROM-mediated learning programs.

*Visitors Comments*

The visitors have no comments.

## Section 8: Human Diseases

### Section 8.1: General Medicine

Person in School who will explain and show this to the visitor:

Dr. F. Kullmann

E-mail: Frank.Kullmann@klinik.uni-regensburg.de

#### *Introduction*

This course tries to give a short overview on diagnosis and treatment of selected diseases in internal medicine (hematology/oncology, gastroenterology, cardiology, nephrology, endocrinology, intensive care medicine).

#### *Primary Aims*

is to refresh the knowledge in the pathogenesis as a basis for the understanding of diagnostic procedures and therapies in internal medicine. In addition, the lectures have to focus on diseases in more detail which are of special interest for dental students (e.g. hepatitis).

#### *Hours in the Curriculum*

During an academic year (2 semesters) the following topics in “internal medicine“ are presented (2 hours per week) in a lecture:

Infectious diseases (bacterial, viral), gastroenterology (mouth, esophagus, stomach, small and large bowel, pancreas), hepatology (hepatitis, biliary disorders), endocrinology (diabetes, thyroid gland, diseases of the hypothalamic-pituitary-adrenal axis), immunology, rheumatology (rheumatism and autoimmune connective tissue disorders), hematology/oncology (principals of cytostatic therapy, clotting disorders), cardiology (hypertension, coronary heart disease), nephrology (glomerulonephritis).

Usually the students visit this lecture during the 8<sup>th</sup> and 9<sup>th</sup> semester.

In addition to the 90min lectures the dental students get an introduction to practical examinations (internal medicine) in different units. This course is based on 6 to 7 dates on a semi-annual basis. The course is 1 semester , 2 hours per week and is located in the 10<sup>th</sup> semester.

#### *Visitors Comments*

Teaching is mainly delivered through lectures with medical students and attendance by dental students is limited. There is also a compulsory additional patient course for dental students which should be extended. This would allow attendance at the initial block to be reduced.

## **Section 8.2: General Surgery**

Person in School who will explain and show this to the visitors

Prof. Dr. Matthias Anthuber

E-mail: matthias.anthuber@klinik.uni-regensburg.de

### ***Introduction***

The course is given semi-annually and is placed in the 4<sup>th</sup> year of the 5-year curriculum. The course is divided in two parts: a theoretical part with weekly lectures (45 minutes) in which for dentists most relevant surgical basics in diagnostic and treatment of surgical diseases are presented with slides and overheads, supplemented by single case presentations; a practical part (90 minutes), in which students of dentistry are introduced to emergency medicine, resuscitation techniques as well as basic techniques in wound management (tying and sewing techniques). Furthermore students visit with a tutor the operation theatre (OR) to give them an impression of surgical procedures as far as asepsis, scrubbing techniques and principal behaviour in the OR is concerned.

### ***Primary Aims***

The primary aims are to sensitise students of dentistry for surgical diseases with which they may get in contact in their later professional life and to educate them how to deal with such cases in terms of disease detection, emergency management, advice to patients and referral practice.

### ***Main Objectives***

Symptom-orientated perception of surgical disorders, risk management, comprehensive disease management, behaviour in emergency situations, learning of basic surgical techniques, interdisciplinary approach to complex cases.

### ***Hours in the Curriculum***

Weekly lectures: 45 minutes, practical part: 90 minutes per week.

### ***Methods of Learning/Teaching***

The theoretical part is given in the traditional form of lectures using slides, videos and overheads. In the practical part the students are advised by a surgical fellow in techniques of tying and sewing.

### ***Assessment Methods***

At the end of the teaching period there is a conference with the students to evaluate the quality of the course.

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

To make the course more attractive for the students by improving teaching contents and techniques, even though we are aware that students of dentistry unfortunately believe that general surgery is of minor relevance for their professional practice.

***Visitors Comments***

The theory of general surgery is delivered in parallel with basic surgical techniques where the students practice on models. There is also an introduction to emergency medicine where resuscitation techniques are carried out on models. Both of these teaching methods constitute good practice. The teaching of the management of medically compromised patients is divided between too many disciplines. Given the growing importance of this area, teaching should be rationalised so that students understand the principles as well as the practical aspects.

**Section 8.3: Anaesthesiology**

This area is covered in different disciplines like Maxillo-facial Surgery, and it is part of the clinical courses at the Dental School (7.-10. semester).

***Visitors Comments***

This is covered within Maxillo-facial Surgery.

**Section 8.4: Otorhinolaryngology**

Person in School who will explain and show this to the visitors

Prof. Dr. med. W. Hosemann

E-mail: werner.hosemann@klinik.uni-regensburg.de

Name of course: Lecture in Otorhinolaryngology

Name of lecture: Otorhinolaryngology for dental students

***Introduction***

The lecture in otorhinolaryngology covers main aspects of the anatomical, physiological and clinical basics of disorders of the ear, nose, throat including head and neck surgery.

***Primary Aims***

Giving an overview on the principles and practice of Otorhinolaryngology, Head and Neck Surgery. Special emphasis is given on diseases which might show up during dental practice including the most important hints on differential diagnosis. Literary studies at home should be initiated.

***Main Objectives***

Basics of ENT physiology (including audiology, vestibulometry); Anatomy of the head and neck; Examination techniques and diseases of the ear (external ear, middle ear, inner ear), Examination techniques and diseases of the nose (external nose, nasal cavity and paranasal sinuses); Examination techniques and diseases of the pharynx and larynx; Principles of head and neck surgery including regional plastic surgery; Traumatology; Allergology

***Hours in the Curriculum***

The lecture runs over one half-year ('semester') on Friday from 2 p.m. until 3.30 p.m. (two hours per week).

***Methods of Learning/Teaching***

A time-table of the course listing all detailed lectures, the different lecturers and the respective lecture hall is published in advance. The responsible university teacher gives a special introduction presenting books and monographs available for literary studies. Different lecturers of the staff of the ENT-clinic are presenting their lectures using conventional slide projection. The students are stimulated to ask questions at any time during the lectures.

***Assessment Methods***

There is no special test after all lectures have been presented. However, the topics are covered in the ENT-part of State Board Examination at the end of the dental undergraduate education.

***Strengths***

The anatomical, physiological basics of Otorhinolaryngology are presented.

***Weaknesses***

The place in the weekly time table of the students is not optimal. Otorhinolaryngology is generally regarded as a topic of minor importance leading to a marked reduction in the quantity of the audience during the course.

***Visitors Comments***

Otorhinolaryngology is taught in the last semester at an appropriate place in the curriculum, but there is limited attendance by dental students because of the amount of clinical teaching and the proximity of the final examinations.

**Section 8.5: Dermatology**

Person in School who will explain and show this to the visitors

Prof. Dr. med. W. Stolz

E-mail: Wilhelm.Stolz@klinik.uni-regensburg.de

Title of course: Dermatology for Students of Dental Medicine.

***Introduction***

The course Dermatology for Students of Dental Medicine will be held for the 4<sup>th</sup> and 5<sup>th</sup> clinical semester.

***Primary Aims***

The course mainly focuses on teaching students the most common skin diseases, particularly those including the oral mucosa, as well as skin diseases caused by the treatment of teeth such as contact allergies. In addition, we concentrate

on the recognition of the most frequent malignant skin tumours on the face, e.g. basal cell carcinoma, squamous cell carcinoma, and malignant melanoma.

### ***Main Objectives***

Tumours of the skin, psoriasis, acne, viral, mykotic and bacterial infections of the skin, sexually transmitted diseases, autoimmune diseases, allergies, and eczema.

### ***Hours in the Curriculum***

1 ¼ hour once a week followed by a 30 min. presentation of patients.

### ***Method of Learning/Teaching***

Lecture and interactive patient discussion

### ***Assessment Methods***

Students have to pass an examination in every subject of the course

### ***Strengths***

Systematic lecture about the main subjects in dermatology is always given by the same teacher, who will supervise the students throughout the entire semester. Patients will be presented by a different teacher.

### ***Weaknesses***

It might not always be possible to present a patient with a disease that corresponds to the topic of a particular teaching session.

### ***Innovations and Best Practices***

Therefore, the course is combined with a multimedia tutorial programme. So far, four lessons suitable for dental students have been made available on the internet ([www.-derma2000.klinik.uni-regensburg.de](http://www.-derma2000.klinik.uni-regensburg.de))

The topics of these lessons are:

- Anatomy of the skin, primary skin lesions, principles of topical therapy
- Sexually transmitted diseases
- Viral infections
- Atopic eczema

Interactive learning via the internet also requires the students to ask questions to the virtual patients as well as to answer questions at the end of each topic. A minimum of 60% correct answers is necessary for students to obtain a so-called

'Certificate of Successful Participation'. The credit points achieved in these lessons will contribute to the score of the final examination.

***Visitors Comments***

The link between Dermatology and Materials Science in the Dental School in research projects is an obvious strength. Undergraduate lectures are complemented by patient demonstrations and in some cases with virtual patients using multimedia which must be of great value to students. A great deal of effort is put into finding patients with diseases of the oral mucosa or related areas. To reflect this, students should be encouraged to attend by addressing the overloaded curriculum.

## Section 9: Orthodontics and Child Dental Health

### Section 9.1: Orthodontics

Person in School who will explain and show this to the visitors:

Prof. Dr. D. Müßig

E-mail: dieter.muessig@klinik.uni-regensburg.de

#### *Introduction*

The education in Orthodontics comprises 3 courses, each with a concomitant seminar series, and 3 lecture series. Students of the 2<sup>nd</sup> and 3<sup>rd</sup> course attend a further seminar series of case presentation.

Course I:	Course of Orthodontic and Dento-facial Technique	6 <sup>th</sup> semester
Course II:	Course of Orthodontic Treatment I	7 <sup>th</sup> – 8 <sup>th</sup> semester
Course III:	Course of Orthodontic Treatment II	8 <sup>th</sup> – 9 <sup>th</sup> semester

#### *Primary Aims*

The students should be able to diagnose the severity of malocclusions and assess the degree of treatment. They should be familiar with the procedures used by orthodontists in order to select patients properly for treatment or for referral.

#### *Main Objectives*

##### *Theoretical Instruction:*

Physiology and pathophysiology of the cranio- and dentofacial growth and development.

Relationship of function and dysfunction to occlusion and malocclusion respectively.

Diagnostic methodologies and principles of a proper orthodontic diagnosis.

Definition of treatment goals and development of a suitable treatment plan including prognosis, retention and consideration of alternatives.

Specification of treatment procedure and selection of the biomechanical and functional appliance design, interaction with specialists.

##### *Clinical Instruction:*

Knowledge and skill of orthodontic prevention.

Knowledge and skill of patient examination, assessment and diagnosis and or orthodontic documentation.

Knowledge of treatment planning.

Knowledge of fabrication and clinical management of different orthodontic appliances.

### ***Hours in the Curriculum***

Numbers of hours students actually spend treating patients per week are 3 hours during Course III. Course I/II only comprises clinical exercises of the participants on each other as preparations for future patient examination and treatment.

### ***Method of Learning/Teaching***

Lectures, seminars, video-presentations, practical exercises, case analysis and treatment planning, laboratory work, patient treatment under supervision, case presentations and discussions.

### ***Assessment Methods***

In Course II and Course III the students have to prepare several written case presentations including a comprehensive diagnostic assessment and a treatment plan which lists the individual treatment stages together with the planned appliances. In addition, they fabricate three (course II) or two appliances (course III) for their patients. Every step of practical work (theoretical and clinical) is assessed by an instructor. For assessment of the theoretical state of knowledge two written tests must be passed during the semester.

### ***Strengths***

Clinical instruction includes treatment of patients.

Theoretical instruction is directly transferred into clinical practice.

### ***Weaknesses***

No comprehensive orthodontic treatment by the students.

Shortage of patients with uncomplicated problems.

Instruction is partially performed by dentists in postgraduate orthodontic education.

Considerable rotation within the academic staff due to the type of contract.

### ***Innovations and Best Practices***

Emphasis on orthodontic prevention.

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

Development of programs for problem-based learning: Intensity the use of modern electronic equipment, CD-ROM instead of printed material.

***Visitors Comments***

The visitors commend the Department for placing emphasis on diagnosis and the need for students to be able to recognise which cases they can treat and which they must refer. Students are also encouraged to participate in an additional exercise with a case presentation. This is unique to Regensburg and is an example of good practice. The visitors were told that the staff were concerned that students did not relate some of the basic science teaching in the early years e.g. embryology to dental development as it affects the discipline.

**7 9.1.1: Contribution of Oral Maxillofacial Surgery in Orthodontology**

Person in School who will explain and show this to the visitors:

PD. Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

Operative treatment of dento-facial anomalies

Extraction therapy of impacted tooth, in cases of hyperdontia/ hypodontia

Exposition (uncovering), chaining of impacted tooth

Compactosteotomy

Orthognatic Surgery - mono/bimaxillar splitting osteosynthesis in cases of dysgnathia

Distractionosteogenesis

***Visitors Comments***

The visitors have no comment.

**Section 9.2: Child Dental Health****Section 9.2.1: Pediatric Dentistry**

Person in School who will explain and show this to the visitors:

Dr. Stefan Ruhl

E-mail: Stefan.Ruhl@klinik.uni-regensburg.de

***Introduction***

A 1<sup>st</sup> semester: Practical work in pediatric dentistry within the phantom course for Operative Dentistry and Periodontology.

- B 5<sup>th</sup> clinical semester: treatment of children within the clinical course of Operative Dentistry and Periodontology, visitation programs in kindergarten.
- C Theoretical examination as part of the state board in Operative Dentistry and Periodontology

***Primary Aims***

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

***Main Objectives***

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

***Hours in the Curriculum***

- A 1<sup>st</sup> clinical semester: 16 hours theoretical education, 16 hours practical training at the phantom head
- B 2<sup>nd</sup> clinical semester: 16 hours theoretical education
- C 5<sup>th</sup> clinical semester: approximately 40 hours practical work with patients, three hours in kindergarten, 40 hours assistance while children are treated .

***Method of Learning/Teaching***

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

***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.

***Weaknesses***

Too few children being able to be treated by students (**Bavaria has a DMFT of 1.0 for the 12year old children**). Most of the children attending the School of Dental Medicine are handicapped or non willing children.

***Plans for Future Changes***

To recruit more children being able to be treated by students.

**Section 9.2.2: Oral Maxillofacial Surgery in Child Dental Health**

Person in School who will explain and show this to the visitors:

PD. Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

Etiopathogenesis, clinic, therapy of infection diseases (specific, non specific, virus diseases)

odontogenic soft tissue infection

osteomyelitis of jaw

congenital syndromes (Francescetti-Syndroma, Robin-Syndroma etc.) distractionosteogenesis

cleft lip, palate

oncology: ameloblastoma, odontogenic tumours, haemangioma etc.

impacted tooth, cyst of jaw and soft tissue in maxillofacial region

traumatology tooth, alveolar ridge, jaw, soft tissue

### ***Visitors Comments***

Paediatric Dentistry is currently part of Conservative Dentistry which reflects the position in many German Dental Schools. The provision of a dedicated clinical area for children should be considered.

## Section 10: Public Dental Health and Prevention

Not a separate subject of the dental curriculum in Germany but integrated part of different courses. Public oral health and especially preventive dentistry are regarded as the basic concept of education in our school. The education starts at the very beginning of the dental undergraduate program by theoretical lectures given to the first year students. Preclinical students are also invited to participate in preventive exercises by clinical students.

Public oral health and preventive dentistry is mainly taught in the lectures and courses of Operative Dentistry and Periodontology. However, treatment regimen in Prosthetic Dentistry, Orthodontics as well as all Maxillofacial Surgery are strongly related to preventive aspects. A major part of this study is devoted to cross infection control.

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 practical measures in preventive dentistry on each other. A whole lecture series (14 hours) is devoted to preventive dentistry. Within the first and second course of Operative Dentistry and Periodontology (2<sup>nd</sup> and 5<sup>th</sup> 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.

Further to this individual preventive measures, the students are part of a education program provided to the kindergarten / basic schools in Regensburg by the Department of Operative Dentistry and Periodontology. Within this program, the students are informed about group prophylaxes and they themselves perform group instructions.

Primary prevention is also the subject of an oral examination during the State Board Examination after the end of the undergraduate education.

### *Visitors Comments*

Public Dental Health is not taught as a separate subject in Germany but interest is growing. Its introduction into the curriculum would provide a focus for teaching some of the other important non clinical disciplines that are identified later. The visitors were impressed by the involvement of students in preventive exercises throughout the course especially using each other as patients early in the curriculum. The staff should be commended for their commitment to the kindergarten and public school preventive programme and its contribution to the reduction in disease prevalence. This concept should be extended to other population groups identified by a formal needs assessment which would provide new research opportunities.

Students are taught Epidemiology and statistics and have experience of data collection and analysis.

## Section 11: Restorative Dentistry

### Section 11.1: Conservative Dentistry

Person in School who will explain and show this to the visitors:

Prof. Dr. Gottfried Schmalz

e-mail: gottfried.schmalz@klinik.uni-regensburg.de

#### ***Introduction***

In Regensburg there are three courses in Operative Dentistry. There are also various lectures and seminars accompanying these courses.

6<sup>th</sup> semester: Phantom Course (20 hours per week, 240 or 280 hours per semester\*)

7<sup>th</sup> semester: Clinical Course I (20 hours per week, 240 or 280 hours per semester\*)

10<sup>th</sup> semester: Clinical Course II (20 hours per week, 240 or 280 hours per semester\*)

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

#### ***7 Primary Aims***

Diagnosis and preventive or invasive treatment of caries and other tooth lesions

#### ***Main Objectives***

Etiology and epidemiology of caries and non-caries tooth lesions

Methods and strategies in caries prevention on an individual and on a group basis

Different diagnostic methods for caries detection and their limitations

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

Indication of the different restorative materials and their toxicology and biocompatibility

Adhesive dentistry and esthetic aspects

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\* Sommersemester / Wintersemester

***Hours in the Curriculum***

see No. 1

***Method of Learning/Teaching***

The course in the 6<sup>th</sup> semester is a training course at the Phantom working unit. The students learn and practice cavity preparation and the handling of the different filling materials. During the lectures accompanying this course the students learn the theoretical background for their practical work.

In the two clinical courses (7<sup>th</sup> and 10<sup>th</sup> semester) the students treat patients under a very stringent supervision by dental instructors/faculty. 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. In the lectures and seminars which accompany this courses the students must give presentations based on their own literature survey.

***Assessment Methods***

Every single step during the treatment of patients must be checked by a clinical instructor/faculty. If the treatment is correct, the student earns points. At the end of the whole course the student must have fulfilled a program of various restorative treatments and he must have reached a certain score of points. At the beginning of every semester the students are informed about the scheme. One part of the course in the 6<sup>th</sup> semester is also a written test to prove the theoretical knowledge. Theoretical knowledge and practical skills are further examined during the State Board Examination at the end of the undergraduate education (after the 10<sup>th</sup> semester). The examination takes 5 days ( hours) including Operative Dentistry, Periodontology and Endodontology.

***Strengths***

In the 7<sup>th</sup> and the 10<sup>th</sup> semester the students treat patients. Thereby, they learn and practice the technical skills which 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. They have to write literature reviews of a given theme and they have to present it verbally during the seminar.

***Weaknesses***

Before the students treat patients there is only one semester for training all the different treatment procedures on the phantom head. Therefore, the students have to learn the theoretical background on treatment procedures and the materials used during that semester (1<sup>st</sup> clinical semester). As there is an increase in different materials and treatment procedures in the recent years, the training time for each procedure had to be reduced.

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 modalities, with only a limited training effect.

***Innovations and Best Practices***

Prevention based concept of Operative Dentistry including minimal invasive dentistry

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

Combination of adhesive dentistry with esthetic and biological aspects

A special lecture series is provided on the biocompatibility of dental materials

Regular lectures from foreign professors on dental materials, toxicology and tooth differentiation

Lectures in English language

***Plans for Future Changes***

Updating technology as new methods are developed. More emphasis on seminar type of discussion of patient cases and treatment strategies (PBL)

***Staff Names***

Prof. Dr. G. Schmalz

PD Dr. K.H. Friedl

PD Dr. H. Schweikl

PD Dr. B. Thonemann

Dr. T. Bimmerle

Dr. M. Christgau

Dr. M. Federlin

Dr. A. Felden

Dr. P. Garhammer

Dr. K.-A. Hiller

Dr. B. Holler

Dr.- H. Jung

Dr. H. Oberländer

ZÄ. S. Pfeiffer

Dr. S. Ruhl

**Section 11.2: Endodontics**

Persons in School who will explain and show this to the visitors:

Prof. Dr. Gottfried Schmalz, PD Dr. Birger Thonemann

E-mail: [gottfried.schmalz@klinik.uni-regensburg.de](mailto:gottfried.schmalz@klinik.uni-regensburg.de)

Birger.Thonemann@klinik.uni-regensburg.de

### ***Introduction***

Endodontology is an integrated subject of Operative Dentistry

Endodontology is an integral part of

- |  |                           |
|--|---------------------------|
| a. Training course of Operative Dentistry on dental simulators | 6 <sup>th</sup> semester  |
| b. Clinical Course of Operative Dentistry I                    | 7 <sup>th</sup> semester  |
| c. Clinical Course of Operative Dentistry II                   | 10 <sup>th</sup> semester |

### ***Primary Aims***

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

### ***Main Objective***

- Biology and development of pulp and periapical tissue
- Anatomy of root canals
- Pathology of the pulp and the periapical region including pathology of inflammation
- Diagnosis of endodontic diseases
- Vital pulp therapies
- Root canal treatment procedures
- Procedures in pediatric endodontology
- Failures of endodontic therapy
- Endodontic emergency treatment
- Postendodontic treatment (e.g. restoration of the endodontically treated tooth).

### ***Hours in the Curriculum***

Since endodontology is an integral part of the courses of Operative Dentistry the exact timing for treatment of patients with endodontic problems cannot be given exactly.

During the 6<sup>th</sup> semester (clinical phantom head) there is a special “Endodontology week“, where the students only perform endodontic treatment for 38 hours on special dental simulators (acrylic block, two dental simulator integrated extracted molars). This simulator course integrated endodontic training course is accompanied by endodontic lectures integrated in the seminar of the training course (7 hours) and 2 hours of demonstration. In the course of Operative Dentistry I and II respectively the students have to perform endodontic treatment of at least five root canals.

### ***Methods of Learning/Teaching***

The methods of teaching/learning are the same as already explained for the courses of Operative Dentistry. During the seminar accompanying the clinical courses, the students have to report on and discuss recent published literature in the field of endodontology.

### ***Assessment Methods***

The assessments methods are the same as already mentioned for the courses of Operative Dentistry. For the clinical courses the student have to perform endodontic therapy on at least five root canals during each course of Operative Dentistry. Theoretical knowledge and practical skills are further examined during the State Board Examination at the end of the undergraduate education (after the 10<sup>th</sup> semester). The examination takes 5 days ( hours) including Operative Dentistry, Periodontology and Endodontology.

### ***Strengths***

See Operative Dentistry (basic subject)

### ***Weaknesses***

See Operative Dentistry (basic subject)

### ***Innovations and Best Practices***

Dental simulator integrated training of root canal treatment procedures

The separation of a particular “Endo week“ from the dental training course of Operative Dentistry allows for a more detailed and distinct focus on endodontic treatment procedures

Students learn to evaluate and compile scientific literature as well as to verbally report in front of an auditorium

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

Integration of rotary instrument assisted root canal treatment and root canal filling methods

### ***Staff***

see section 11.1

**Visitors Comments (11.1 – 11.2)**

The School should be commended for the flexibility in the Phantom Head and Clinical courses which allows talented students to progress quickly freeing staff to provide more assistance for their weaker colleagues. The concept of breaking student pairings to mix the strong and the weak is an example of good practice. The visitors were particularly impressed by the lecture series on Biocompatibility which includes current research and by the lectures series which introduce Adjunct Professors.

**Section 11.3: Prosthodontics****1. Preclinical Student Education in Dentistry:**

Persons in School who will explain and show this to the visitors:

Prof. Dr. G. Handel, Dr. R. Lang, Dr. W. Zeiser

E-mail: Gerhard.Handel@klinik.uni-regensburg.de

**Introduction**

The preclinical student education in dentistry consists of 3 courses, which include lectures, seminars and practical demonstrations.

<b>A</b>	Introductory Course of Clinical and Lab Procedures	1 <sup>st</sup> semester
<b>B</b>	Preclinical Phantom Course I	3 <sup>rd</sup> semester
<b>C</b>	Preclinical Phantom Course II (during the lecture free period)	3 <sup>rd</sup> or 4 <sup>th</sup> semester

**Primary Aims**

The 3 courses are designed to train students to perform and perfect the technical and manual skills of prosthetic dentistry and to appropriate the theoretical background required for the ensuing clinical courses in prosthodontics.

**Main Objectives**

- Knowledge about the anatomy and function of the stomatognathic system.
- Fundamentals of prosthodontics and dental materials.
- Proper use of various dental materials.
- Principles of design and construction of prosthetic restorations.
- Development of the basic psychomotor skills used in clinical dentistry (e.g., skills needed to prepare teeth in a patient's mouth)

- Basic experiences in instrument application (hand and rotary), dental material manipulation, waxing technique and the “lost wax“ casting technique.
- Practical constructions of typical restorations (e.g., crowns, bridges (temporary and permanent), removable partial denture and full denture).

### *Hours in the Curriculum*

<b>A (TPK):</b>	lectures:	32 hours (anatomy and function of the stomatognathic system)
		46 hours (dental materials; 26 given in 1 <sup>st</sup> and 20 given in 2 <sup>nd</sup> semester)
	demonstrations:	32 hours
	practical work:	223 hours
<b>B (PH I):</b>	seminar:	20 hours (fundamentals of prosthodontics and principles of design and construction of prosthetic restorations (I))
	demonstrations:	10 hours
	practical work:	194 hours
<b>C (PH II):</b>	seminar:	10 hours (fundamentals of prosthodontics and principles of design and construction of prosthetic restorations (II))
	demonstrations:	5 hours
	practical work:	142 hours

### *Methods of Learning/Teaching*

Preclinical education is equally focused upon practical work and the acquisition of theoretical knowledge. The courses are delivered in a laboratory environment and supplemented with lectures and audio-visual aids. Simulation (using phantom-head and models) chairside and table instruction, and television and slide demonstration are teaching strategies used to stress the clinical relevance of the preclinical prosthodontic instruction. The practical exercises are explained in detail in a manual. A weekly required lecture on dental materials is offered. To deepen the theoretical knowledge, students are encouraged to read selected material from required textbooks.

### *Assessment Methods*

Assessment of the practical skills:

Each step of the practical exercises is assessed by an instructor. After delivery, each piece is rated to a 5-grade system ("1" = excellent; "5" = failed). If the student does not achieve the course goal (average of marks must be less than (or equal to) "4"), she/he must attend the course again.

Assessment of the theoretical knowledge:

In the first course, students are subjected to 3 written tests (1 relates to anatomy and function of the stomatognathic system; 2 relate to dental materials) and 1 oral examination (identification of teeth).

In the second course, students are subjected to 4 written tests; 3 short tests (1 for each practical construction) and 1 final test at the end of the course ( about fundamentals of prosthodontics and principles of design and construction of prosthetic restorations). In the third course, students are subjected to 1 final test at the end of the course.

Except the short tests, the written tests comprise 90 questions (yes/no type). Of a maximum score of 90, students have to reach a score of 77 (68 on dental materials) to pass. If the score is lower, students can repeat the test once before next semester.

Students can take part in the following course only when they had successfully completed the practical and theoretical part of the course before.

### ***Strengths***

The clinical situation is simulated closely (e.g., by the use of phantom-heads). Step-by-step demonstrations are given by course instructors and dental technicians. Students are given exact reading assignments. Manual, slides and video-tapes are very good. Students spend a lot of time to perfect their manual skills.

### ***Weaknesses***

The instructor/student relation (1/15-20) could be improved (e.g. less students per instructor). The laboratory is used since 1984; so there are some problems with the function of the units and the getting of replacement parts. Due to the great amount of theoretical knowledge that students have to acquire and the lot of hours they have to spend at our laboratory, leisure activities are certainly somewhat restricted during 1<sup>st</sup> and 3<sup>rd</sup> semester.

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

Reconstruction of the preclinical lab with completely new equipment to ensure an even better preparation of the students for their clinical work.

## ***2. Clinical education in Prosthodontics***

Persons in School who will explain and show this to the visitors:

Prof. Dr. G. Handel, PD Dr. M. Behr

E-mail: Gerhard.Handel@klinik.uni-regensburg.de

### ***Introduction***

The students have to successfully pass two clinical prosthodontic courses: a beginner course during the 8<sup>th</sup> semester and an advanced course during the 9<sup>th</sup> semester.

### ***Primary Aims***

Undergraduate students should achieve basic knowledge and skills in fixed partial dentures, removable partial dentures and full arch dentures. For patients with different clinical situations, they should be able to plan and perform prosthetic restorations.

### ***Main Objectives***

- At the end of their studies, students should have knowledge on:
- Fixed partial dentures
- Removable partial dentures
- Full arch prosthesis
- TMG disorders
- Implantology
- Adhesive fixed prosthetic restorations
- Dental materials

### ***Hours in the Curriculum***

Course I:

total time: 280 hours: 60 hours oral lectures, 220 hours treating of patients, including laboratory work.

Course II:

total time: 280 hours: 42 hours oral lectures, 238 hours treatment of patients including laboratory work.

### ***Methods of Learning/Teaching***

Course I:

During the first two weeks a preclinical preparation test and a theory test are taken to check the knowledge and skills of students before they start to treat patients. In addition, they receive special knowledge in metal-ceramic framework design.

Small units of fixed partial dentures and removable denture under the observation of instructors are manufactured and inserted. Fundamentals in diagnosing TMJ disorders are provided. The restorations had to be carried out by the students themselves under the supervision of three dental technicians. Complex dental restorations, for example ceramics or metal prosthesis-frameworks, are made in professional laboratories. Theory is provided in two weekly lectures.

Course II:

Greater units of fixed partial dentures and removable denture under supervision are manufactured and inserted. Special knowledge in implantology and adhesive fixed partial dentures is offered in special lectures. The students can insert dental implants in a training head and they can carry out a single crown and a bar-fixed reconstruction on the training-implants. An adhesive-fixed partial denture in the anterior and posterior area can also be performed using a training head. Fundamentals are provided in two weekly lectures. Students also have to give presentations on specific topics.

### ***Assessment***

According to an appraisal scale the students have to reach a designated minimum level to receive a certificate of the course. Every treatment step is checked by an instructor. Crucial treatment steps are assessed by junior instructors. At the end of their studies (after the 10<sup>th</sup> semester), the students have to demonstrate their practical and theoretical knowledge during an examination which lasted 10 days (State Board Examination).

### ***Strengths***

Students obtain comprehensive knowledge in treatment and manufacturing of conventional prosthetic restorations. They are taught to manage lab-side and chair-side problems during treatment of patients with prosthodontics.

Proficiencies and skills in implantology and adhesive-fixed restorations are provided and patients with low grade TMJ-disorders can be treated.

### ***Weaknesses***

The supervisor-student ratio is unfavorable (i.e. too many students for one instructor). Sometimes, there are not enough appropriate patient cases available for the great number of students.

### ***Innovations and Best Practices***

Comprehensive education in treatment of patients and laboratory processes.

Practical lectures including implantology and adhesive-fixed partial dentures

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

Introduction of new dental materials: e.g. all-ceramics, fiber-reinforced composites

Lectures on dental materials and clinical problems

Lectures on using the Internet to gather information about dental materials and new treatment methods

English language lectures

Improvement of the multidiscipline treatment of patients

Use of multimedia for lectures (CD-ROM)

## **Section 11.4: Occlusion and Function of the Masticatory System**

Persons in School who will explain and show this to the visitors:

Prof. Dr. G. Handel, PD Dr. M. Behr

E-mail: Gerhard.Handel@klinik.uni-regensburg.de

### ***Introduction***

Lectures about occlusion start during the preclinical courses.

In the clinical lectures TMJ disorders were taught. Diagnosis with axiography, magnetic resonance tomography and treatment of internal derangement using appliances, physiotherapy or surgical methods are themes of the lectures.

### ***Primary Aims***

Students should be able to evaluate a diagnosis and perform a treatment plan in the case of TMJ disorders.

### ***Main Objectives***

- Anatomy of the cavum oris
- Anatomy of the TMJ
- Knowledge about physiological occlusion
- Internal derangement
- Appliances
- Articulators

### ***Hours in the Curriculum***

Special lecture during 6<sup>th</sup> Semester 4 hours.

Oral lectures and practical examination during the 8<sup>th</sup> and 9<sup>th</sup> Semester.

### ***Methods of Learning/Teaching***

*Preclinic:*

Wax up examination (following Payne/Lundeen), lectures about tooth morphology and anatomy of the mouth and TMJ are given.

#### *Clinic*

Lectures about diagnosis with axiography, magnetic resonance tomography and treatment of internal derangement using appliances, physiotherapy or surgical methods are themes of the lectures. Students learn how to perform and insert an appliance.

#### ***Assessment Methods***

No special assessment during course

#### ***Strengths***

Students can treat patients with low grade TMJ-disorders during the course

#### ***Weaknesses***

No demonstration of patient cases

#### ***Innovations and Best Practice***

Demonstration of axiography

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

- Demonstration of patient cases
- Lectures in smaller groups
- Lectures in physiotherapy-treatment

#### ***Visitors Comments (11.3-11.4)***

The visitors were impressed by the early introduction of students to practical Phantom Head work in the third semester which allows the early identification of those who have no manual dexterity or do not wish to pursue a career in dentistry. The comparative difficulty of the preliminary examination is also welcome for the same reason. The commitment to introducing new techniques and materials e.g. exposure to implantology in the Phantom Head Course is commendable. The two-year gap between the Prosthodontic Phantom Head course and treating patients is matter of concern in case students lose the skills they have obtained. The staff have recognised the problems caused by a lack of suitable patients and have found alternative ways of providing experience

## Section 12: Periodontology

Person in School who will explain and show this to the visitors:

Dr. Michael Christgau

### *Introduction*

The periodontal education is integrated part of Operative Dentistry. Periodontology is taught in 2 main lectures and 3 courses including the corresponding seminars.

### *Main Lectures*

A	Periodontology Part I	1 <sup>st</sup> clinical semester
B	Periodontology Part II	2 <sup>nd</sup> clinical semester

### *Courses*

A	Phantom Course of Operative Dentistry and Periodontology	1 <sup>st</sup> clinical semester
B	Clinical Course of Operative Dentistry and Periodontology Part I	2 <sup>nd</sup> clinical semester
C	Clinical Course of Operative Dentistry and Periodontology Part II	5 <sup>th</sup> clinical semester

### *Primary Aims*

The students should be able to recognise and diagnose the different types of periodontal diseases and should be able to treat preventively and/or invasively (deep scaling and root planing) according to the pathologic symptoms. He should be familiar with more advanced treatment modalities.

### *Main Objectives*

- Development, anatomy, and physiology of the periodontal structures
- Etiology and pathogenesis of periodontal diseases (microbiology, host response, risk factors)
- Epidemiology of periodontal diseases
- Periodontal diseases and systemic disorders
- Diagnosis of gingival and periodontal diseases (clinical and radiographic examination methods, indices, supportive examination by of microbiological, host response, and genetic parameters)
- Prophylaxis of gingival and periodontal diseases
- Therapy of gingival and periodontal diseases:

- treatment planning, strategic approach
  - hygienic phase (professional plaque control, occlusal adjustment, splinting)
  - corrective phase (deep scaling and root planing, methods of periodontal surgery, regenerative techniques, antimicrobial chemotherapy)
  - maintenance phase: supportive periodontal therapy (i.e. recall)
- Principles of plastic, mucogingival and preprosthetic surgery

### ***Hours in the Curriculum***

The lectures Periodontology I and II are held alternately during the summer and winter semester. They comprise 1 hour per week (14 weeks per semester).

Periodontal training within the Phantom Course comprises seminars, practical demonstrations, and hands-on-training (scaling and root planing) at the phantom head. Furthermore, each student has to perform intraoral examinations and preventive treatments (instructions in oral hygiene and nutrition, supragingival tooth cleaning) in other students and one patient (8 half days per semester).

Within the Clinical Course of Operative Dentistry and Periodontology Part I (5 half days per week, 14 weeks per semester), a student has to perform systematic periodontal examination and treatment including the hygienic phase (i.e. patient instruction, professional plaque control, filling therapy, occlusal adjustment, splinting) and the corrective phase (scaling and root planing) in one patient suffering from *moderate* periodontal disease. Furthermore, each student is responsible for the supportive periodontal therapy of 5-10 patients periodontally treated previously in Course I. The clinical course is accompanied by a 90-minute seminar once per week including theoretical instructions and literature reviews by the students.

Within the Clinical Course of Operative Dentistry and Periodontology II (5 half days per week, 14 weeks per semester), a student has to perform systematic periodontal examination and treatment including the hygienic phase (i.e. patient instruction, professional plaque control, filling therapy, occlusal adjustment, splinting) and the corrective phase (scaling and root planing, antimicrobial chemotherapy) in one patient suffering from *progressive* periodontal disease. Similar to Course I, each student is responsible for the supportive periodontal therapy of 5-10 patients periodontally treated previously in Course II. The clinical course is also accompanied by a 90-minute seminar once per week. The seminar comprises theoretical instructions, hands-on-training (access surgery at the porcine jaw, regenerative techniques, i.e. Guided Tissue Regeneration, Enamel Matrix Proteins), and oral presentations about selected periodontal subjects by the students, based on a literature review performed by the students.

### ***Method of Learning/Teaching***

Lectures, practical and video demonstrations, hands-on-training, clinical treatment while being instructed.

***Assessment Methods***

Written examination during the Phantom Course. Theoretical knowledge and practical skills are further examined during the State Board Examination at the end of the undergraduate education (after the 10<sup>th</sup> semester). The examination takes 5 days ( hours) including Operative Dentistry, Periodontology and Endodontology.

***Strengths***

While being instructed by post-graduate staff members, students perform systematic clinical treatment of periodontally diseased patients. Since Periodontology is integrated part of Operative Dentistry, the students are taught in “whole patient“ treatment according to the individual needs Students get familiar with importance and clinical application of supportive periodontal therapy.

***Weakness***

Because of the dense time schedule of the students, little time is left to discuss and reflect individual patient cases in a seminar. Periodontal examination is limited to traditional diagnostic methods. So far, students are normally not involved in assistance during periodontal surgery.

***Innovations and Best Practices***

Hands-on-training at the porcine jaw to learn the methods of conventional access surgery as well as modern periodontal regenerative techniques, i.e. Guided Tissue Regeneration using non-resorbable and bioresorbable membranes, Enamel Matrix Proteins. Furthermore, the students are taught in different periodontal suture techniques.

***Plans for Future Changes***

Each student will have to assist in one periodontal surgery performed by a post-graduate staff. Periodontal examination will be extended to supportive diagnostic methods (e.g. microbiological and genetic markers).

***Visitors Comments***

There is an emphasis on prevention and prophylactics early in the module which is commendable. The structured approach to literature review and its practical use where students identify topics and make presentations is also an example of good practice. The practical training in modern surgical techniques (including the application of membranes) on animal models (slaughter house heads) is also commendable.

## **Section 13: Oral and Maxillofacial Surgery and Dental Radiography and Radiology**

### **Section 13.1: Lecture: Oral Maxillofacial Surgery (Spezielle Mund-, Kiefer- und Gesichtschirurgie)**

Person in School who will explain and show this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

#### ***Introduction***

The lecture in Oral and Maxillofacial Surgery covers all aspects ranging from dentoalveolar surgery to major maxillofacial surgery that is performed in the clinic during inpatient treatment.

#### ***Primary Aims***

Diseases, trauma, symptoms and syndromes in the OMF region and their treatment.

Limitations of outpatient surgical treatment.

#### ***Main Objectives***

- Dentoalveolar surgery dental office - basics of surgery - basics of wound and bone healing
- Relevant pharmacotherapy (Antibiotics, Analgetics)
- Local anaesthesia
- Dentoalveolar surgery - tooth extraction - apicectomy -
- impacted teeth
- dental implants
- Biomaterials
- Preprosthetic surgery and sinuslift
- Treatment and rehabilitation of tumour patients
- Microsurgical tissue transfer
- Diagnostic procedures and surgery and physiotherapy of the temporo-mandibular joint

- Diagnostic procedures and treatment of fractures
- Reimplantation of tooth
- Transplantation of teeth
- Hygiene regime in oral surgery praxis
- Fractures of the mandible and the maxilla / midface
- Soft tissue and nerve injuries
- Cleft lip, cleft palate
- Orthognatic surgery
- Surgery and diagnostic of salivary glands
- Diagnostic and surgery of the maxillary sinus

#### ***Hours in the Curriculum***

The lecture runs over four terms (semesters) on Wednesday from 7.45 till 8.30 am

(1 hours per week equals 12 hours per semester)

#### ***Method of Learning/Teaching***

Themes are prepared by senior lectures and are presented in the lecture hall using slides or transparencies. There is the possibility to ask questions during or discuss special aspects at the end of the lecture.

#### ***Assessment Methods***

Topics of the lectures are part of a verbally test, which is compulsory to take and pass for the operation course I and II, as well as part of the Final Dental Examination in Oral surgery and Maxillofacial surgery.

### **Section 13.2: Lecture: Oral Medicine (Zahn-, Mund- und Kieferkrankheiten)**

Person in School who will explain and show this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

#### ***Introduction***

The lecture in Oral medicine (ZMK) is voluntary for the students and is held by the senior staff of the Department of Oral and Maxillofacial Surgery.

***Primary Aims***

Diseases in the oral cavity and head and neck region.

Medical diseases with indispensable and optional oral manifestations.

***Main objectives***

- Specific and non specific types of inflammation
- Bacterial infections - pathogenesises, antibiotic-therapy
- Diseases of the maxillary sinus
- Bone pathology, Osteomyelitis of jaw
- Cysts (bone, soft tissue)
- Abscesses of the mandible and of the maxilla (odontogenic soft tissue infection)
- infection prophylaxis, hygiene, disinfecting, HIV Hepatitis B and C
- Leukoplakia-diseases of the oral mucosa, precancerous lesions (early detection)
- Epithelial tumors
- Mesenchymal tumours
- Bone tumours, odontogenic tumours
- Disorders of the temporo mandibular joint
- Pain, neuralgia and analgetic therapy
- Diseases of oral epithelium
- Salivary gland diseases
- Craniofacial Dysmorphogenesis
- Cleft lip, cleft palate
- Dental focus
- Compromised patients with medical risk factors, coagulation disorders

***Hours in the Curriculum***

The lecture is held on Tuesday from 7.30 till 8.15 am 1 hour per week (28 hours totally), and is usually offered for 4<sup>th</sup> year dental students (7<sup>th</sup> and 8<sup>th</sup> semester) but according to the timetable it can be visited during the whole dental training scheme.

***Method of Learning/Teaching***

Themes are prepared by different lecturers and presented using slides or overhead foils. There is the possibility to discuss topics during or at the end of the lecture.

***Assessment Methods***

Topics of the lectures are part of the verbally test in the operation course 1 and 2. In the Final Dental Examination oral medicine is a principal subject. There are groups of approx. 4 students that take the exam at one examiner.

A wide range of themes are covered. Different lectures give a more colourful picture of the subjects, new developments are presented.

**Section 13.3: Courses**

Person in School who will explain and show this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

***Introduction***

The knowledge in Oral Surgery, Maxillofacial surgery and in Oral Medicine thought in the lectures is consolidated in the three consecutive practical courses and an additional conferences and so-called course auscultando et practicando. The first three courses are based on each other.

In the following Introductory Course, OP 1, 2 are therefore listed together below.

***Primary Aims***

The primary aims of the four courses are the following:

***Introductory Course anaesthesia and exodontia (Anästhesie- und Extraktionskurs)***

Basic surgical knowledge and techniques

Local anaesthesia

History taking

Theoretical background and practical experience of surgical techniques and a non-patient setting

Basics in general anaesthesia

Techniques of dentoalveolar surgery

Treatment of general / medical emergencies in the dental office

*Operation Course I, Oral Surgery (OP 1 Kurs)*

Assessment and treatment of patients in the outpatient setting

Diseases of the mouth and their treatment

Dentoalveolar surgery and exodontia.

Taking patients history

Extraoral and intraoral examination

Setting up a treatment plan for different patients

Extractions of teeth

Assistance at the surgical removal of teeth and dentoalveolar surgery

Working under sterile conditions

Learn about and to see complication

*Operation Course II, Maxillofacial Surgery (OP 2 Kurs)*

Inpatient treatment e.g. surgical treatment of severe tooth related, maxillofacial diseases, tumours and trauma.

Major Oral- and Maxillofacial surgery.

History taking especially related to risk factors e.g. general medical problems

Performing extraoral and intraoral examinations .

Taking part in the patient treatment on the wards

Assistance in maxillofacial operations e.g. in tumour, trauma and orthognathic surgery

Emergency dental surgery: trauma, dental infections, abscess and surgical and medical

treatment under inpatient conditions

Assess postoperative woundhealing

***Hours in the Curriculum***

Within the curriculum of dental medicine the three courses are consecutive and based on each other.

*Introductory Course Anaesthesia and Exodontia (An und Ex Kurs, 3<sup>rd</sup> year 6<sup>th</sup> semester)*

The introductory course is offered in the 1<sup>st</sup> semester of the clinical training, along with the introductory course in Operative Dentistry and Periodontology. The course consists of a practical part (approx. 2 hours per week, total 20 hours) and a theoretical part (lecture with 2 hours per week, total 20 hours). The lecture is held on Friday 13.00 – 14.30 , the practical part Thursday / Wednesday afternoon from 2 - 4 p.m.

*Operation Course 1 Oral Surgery (OP 1 Kurs, 4<sup>th</sup> year 7<sup>th</sup> semester)*

The course is within the second semester of the clinical dental training, at the same time students start to treat patients in the first course in Operative Dentistry and Periodontology. It is a full time course for about 2. weeks and during this time the students do not take part in the course of Operative Dentistry and Periodontology. From one term (approx. 30-40 students) 3 - 5 students spent about 2.5 weeks in the outpatient clinic / accident and emergency rooms of the Department of Oral and Maxillofacial Surgery (approx. 100 hours).

Parallel to the practical course a 1 hour seminar that covers special themes of oral surgery is offered on Thursday 5-6 p.m. (total number of 12 sessions) and is held by students under supervision (or individual agreement).

*Operation Course 2 Maxillofacial Surgery (OP 2 Kurs, final year 9<sup>th</sup> semester)*

The course is taken in the 9<sup>th</sup> semester of dental medical training, so students are in their final year of their dental education. The course is within the fourth semester of the clinical dental training and lasts 3 weeks (120 hours) At the same time students take part in the second course of Operative Dentistry and Periodontology. During the block course 3-5 students (of approx. 30- 40 students per term) spend all day either in the theatre or on the wards. There is no patient treatment in the course of Operative Dentistry and Periodontology.

In both courses the students take part in special consulting hours for oncology, temporo-mandibular joint disorders, orthognatic surgery, cleft lip and palate and traumatology.

***Method of Learning/Teaching***

*Introductory Course Anaesthesia and Exodontia (3<sup>rd</sup> year 6<sup>th</sup> semester)*

In the lecture the theoretical background for the practical part of the course is taught. The lecture covers taking patients history, intraoral and extraoral examination, premedication, local anaesthesia, incidents during local anaesthesia / dental treatment and extraction of teeth.

The practical part is divided in: under supervision students apply mutually local anaesthesia as well as they prepare iv. infusion, take peripheral venous blood and blood pressure. In practical exercises under supervision on phantoms (and sometime animal cadavers) students practise basic surgical techniques like incisions. Operative removal of impacted teeth and apicectomies.

*Operation Course 1 Oral Surgery (OP 1 Kurs, 3<sup>rd</sup> year 7<sup>th</sup> semester)*

Students apply their theoretical knowledge, which they have gained in the introductory course. They spend most of the time in the outpatient clinic. At chairside students take patients history, perform intra and extraoral examinations and

simple oral surgical procedures like exodontia. Students are under supervision of a doctor each on a one to one basis. They assist in operations like removal of impacted teeth and assist acute dental surgical treatment like dental trauma and incision of abscesses. They repeat basic surgical techniques like suturing patients wounds. Within the dental training students have patient contact for the first time.

*Operation Course 2 Maxillofacial Surgery (OP 2 Kurs, final year 9<sup>th</sup> semester)*

On the ward bedside teaching under supervision of the doctor in charge is offered and students are involved in the daily workload (taking patients' history, taking blood, iv. infusions, changing dressing). In the theatre of the Department of Oral- and Maxillofacial Surgery students assist hard and soft tissue maxillofacial operations. In the accident and emergency room of the Department students perform acute dental procedures e.g. pulpitis treatment (trepanation), local abscess incision and minor dental and soft tissue trauma.

***Assessment Methods***

Introductory Course Anaesthesia and Exodontia (An und Ex Kurs) (3<sup>rd</sup> year 6<sup>th</sup> semester)

Attendance certificate for the special tasks at each course day, oral exam at the end of the course, end semester certificate (Schein).

*Operation Course 1 Oral Surgery (OP 1 Kurs, 3<sup>rd</sup> year 7<sup>th</sup> semester)*

Attendance certificate for the special tasks to document i.e. tooth extractions, operative assistance and attendance at seminars. At the end of the semester there is a multiple choice written test examination (or oral exam) for all students of this course term. End of semester certificate (Schein)

*Operation Course 2 Maxillofacial Surgery (OP 2 Kurs, final year 9<sup>th</sup> semester)*

Attendance certificate for the special tasks to document assisting operations (operation report) and ward duties (patient's history, iv. incisions. changing dressing).

Written test at the end of the semester. End of semester certificate (Schein)

**Section 13.4: Clinic and Polyclinic Oral Medicine (auscultando et practicando, case presentation)**

Person in School who will explain and show this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

***Introduction***

One day before 3/4 students examine patient with a special disease in maxillofacial region. On Tuesday and Thursday between 12.00 and 13.00 h the students are giving a verbal report about the history, local and general status, diagnosis and therapy of examined patients. An other student demonstrates the radiographic, CT and MRT- investigations by help of an overhead projector. The patient is also present in this event.

All data, especially the differential diagnosis will be discuss with the students in the auditory.

The attendance at this course is obligatory about 4 Semesters.

***Main Objectives***

Fracture diagnostic and treatment

Fractures of the mandible and the maxilla / midface

Preprosthetic surgery and sinuslift

Diagnostic and treatment of tumour patients with microsurgical tissue transfer

Diagnostic and surgery of the temporo-mandibular joint

Soft tissue and nerve injuries

Orthognathic surgery

Surgery of salivary glands

Surgial and diagnostic procedures of sinus disorders

Acute and chronical odotogenic soft tissue and bone infection

***Hours in the Curriculum***

The lectures runs over four terms on Wednesday and Thursday at noon for 3/4 hours, and is taken during the 3<sup>rd</sup> to the 5<sup>th</sup> year (6<sup>th</sup>, 7<sup>th</sup> and 9<sup>th</sup> semester). The attendance at this course is obligatory about 4 semesters.

***Method of Learning/Teaching***

Two students interview and examine the patient under supervision of the lecturer in front of the auditory and present the case to the peers. Usually patient is presented. Additionally, these cases are further illustrated using slides, radiographs, MRT and CT- investigations, transparencies, video presentations and live TV-broadcasting from the theatre by the lecturer.

There will be discuss about special questions at the end of the lecture, especially differential therapy and different modalities of therapy.

**Visitors Comments (13.1 – 13.4)**

The department of Oral and Maxillofacial Surgery is an example of the advantage of having a close connection between the Medical Specialities in the General Hospital and the department in the School. Because of this relationship, students have a continuous exposure to general health care problems and the management of medically compromised patients. The department has good facilities inside the Dental School and in the general hospital.

**Section 13.5: Oral/Dental Radiology and Radiography**

Persons in School who will explain and show this to the visitors:

PD Dr. Dr. R. Marmulla; PD Dr. Dr. R. Dammer

E-mails: Ruediger.Marmulla@klinik.uni-regensburg.de; Ralf.Dammer@klinik.uni-regensburg.de

**Introduction**

Presentations cover Oral and Maxillofacial Surgery of in- and outpatient cases and give students a possibility of repeating major subjects and getting introduced in rare cases.

Students Education in Dental and Maxillofacial Radiology is based on 2 German Federal Laws:

“Approbationsordnung für Zahnärzte“ (law of licence to practise dentistry)

“2. Röntgenverordnung (RöV)“ (law of radiation protection)

The RöV has priority over the Approbationsordnung. In radiography the radiation protection is of prime importance. According to the RöV the dental students education prescribes the time (lessons and practical training ) and the subject matters:

24 hours course on radiation protection (minimum)

48 hours course on dental and maxillofacial radiology (minimum)

**Primary Aims**

Primary aim is to learn the dental radiographic techniques regarding radiation protection and to learn special dental and cranial radiographic diagnostics, teleradiography, basics in computed tomography, magnet resonance tomography and ultrasound investigation on head/neck region

**Methods of Learning/Teaching**

Lectures with slides, overhead, TV

X-ray-course. Training with manikin heads, patients

clinico-radiological colloquium. Training radiographic diagnostics with tracing x-rays

***Assessment Methods***

Final examination of the course

Examination in radiology as part of State Examination

***Visitors Comments***

The facilities for radiographic examinations are very well equipped and the students learn a lot about radiation protection, physics and the laws that restrict the use of radiography. There is little discussion of selection criteria and of diagnostic methods in the dental radiology course. However the subject is revisited in other parts of the clinical curriculum.

**Section 13.6: Oral Pathology**

In addition to Prof. Knüchel-Clarke „Oral Pathology“ (see Section 14.2)

Person in School who will explain and show this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

„Conference pathology - oral maxillofacial surgery,,

***Primary Aims***

Demonstration of symptomatology, diagnostical investigations, therapy, complications and natural history of diseases in association with the pathohistological microscopical picture.

***Main Objectives***

Benign tumours, malignant tumours, cysts, specific/non-specific infection diseases, oral manifestations of systemic diseases.

***Hours in the Curriculum***

The lecture runs 1 hour / month on Wednesday, by a special plan and agenda

***Visitors Comments***

See under 14.2.

## **Section 14: Oral Medicine and Oral Pathology**

### **Section 14.1: Oral Medicine**

Person in School who will explain this to the visitors:

Prof. Dr. Ferdinand Hofstädter, MD

Name of Course: Maxillofacial surgery/Pathology conference

#### ***Primary Aims***

To discuss primary diagnosis and differential diagnosis of a broad range of biopsies and specimens, obtained in the department of MFS, and sent to pathology.

#### ***Main Objectives***

Further mutual understanding of both disciplines ( clinical questions, options of diagnosis in pathology), and especially present the discussion to the student of dentistry. While the course of histopathology still has a major emphasis on general pathology, here merely oral pathology is presented.

#### ***Hours in the Curriculum***

1hr/month, suggested to students of dentistry and residents of both MFS and pathology.

#### ***Method of Learning/Teaching***

Either cases are chosen to present a defined entity (e.g. variation of ameloblastomas) or recent rare or interesting cases are chosen. The clinical history and differential diagnosis is presented first, and consequently macroscopy is described or shown by slides, followed by the histomorphology, presented via projection of the microscope slide onto the wall. Therapeutic procedures are discussed, and students are encouraged to ask any questions.

#### ***Assessment Methods***

None, voluntary class.

#### ***Strengths***

Well perceived and attended course, good to consolidate students' knowledge in pathology.

#### ***Visitors Comments***

The visitors have no comments.

### **Section 14.2: Oral Pathology**

Persons in School who will explain this to the visitors:

Regensburg-final-Report

TNP 39501-CP-3-99-1-IE-ERASMUS-ETN

Prof. Dr. Ruth Knüchel, MD

Prof. Dr. Ferdinand Hofstädter, MD

E-mails: Ruth.Knuechel-Clarke@klinik.uni-regensburg.de

Name of Lecture: Oral Pathology for Students of Dental Medicine

### ***Primary Aims***

To impart knowledge on oral and head and neck pathology

### ***Main Objectives***

Information is focussed on topics relevant for dentists, including e.g. benign and malignant tumours of the head and neck, and surrounding organs ( salivary glands, thyroid gland, larynx), local changes of the oral mucosa, and systemic diseases as lymphoma and common cancers. The student shall be alerted to be observant concerning macroscopical changes, and as in general pathology the student shall learn what information can be derived from pathology.

### ***Hours in the Curriculum***

1hr/week suggested for the 8. semester ( = 3<sup>rd</sup> clinical semester )

### ***Method of Learning/Teaching***

The class is held as an interactive lecture with questions to the students.

The class starts with short repetitions of items of the previous class. The option to see the institute of pathology, and be guided through the basic processing of specimen is given for each class, and the attendance of an autopsy is encouraged.

### ***Assessment Methods***

For the very class the interaction with the students is the only assessment, sometimes including a quiz at the end of the term. The formal assessment is the Oral Exam in pathology (Staatsexamen) with 4 students interviewed for one hour.

### ***Strengths***

Open class environment with constructive feed back in case of interested students.

The class motivates some students to do a medical thesis in a more general topic of medicine, as oncology or modern genetics, or learn some modern diagnostic tools as cytometric techniques.

### ***Weaknesses***

Students are very busy with other course obligations, which makes it hard for the students to voluntarily attend lectures.

***Plans for Future Changes***

Earlier involvement of aspects of pathology in clinical teaching e.g. by interdisciplinary classes.

***Visitors Comments***

This course is an extremely good example of a multidisciplinary approach combining staff development with student attendance at case conferences with real patients. In contrast to many general pathology departments there is a genuine interest and knowledge of oral pathology.

## Section 15: Dental Emergencies and Care of Special Patients

### Section 15.1: Dental Emergencies

Persons in School who will explain this to the visitors:

PD Dr. Dr. R. Dammer

Dr. N. Kutz

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

Medical emergencies are elementary part of education for dentists. Basic theoretical requirements are given in lectures „anaesthesia and exodontia,, supported by specialists of anaesthesia and intensive medicine. In the courses OP I/ II, but also „auscultando et practicando,, and in the lecture oral medicine („risk patients“) further information is provided. Especially the practical courses are suitable to repeat and improve the practise in reanimation and giving first aid in cases of emergency.

During the clinical courses (Operative Dentistry, Endodontology, Periodontology, Prosthodontics, Surgery) every student is trained in the management of dental emergencies. Every department has a section where emergency patients are treated and the students are appointed to these units (on the average 4 days per course). Furthermore, students participate at the emergency service (i.e. evening and night) on a voluntary basis.

#### *Visitors Comments*

The availability of a comprehensive emergency dental service at all hours for all of the population is commendable and the involvement of all students on a voluntary basis is an example of good practice.

### Section 15.2: Care of Special Patients

Person in School who will explain this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

#### *Main Objectives*

so called „risk patients,,

oral/dental diseases post transplantation

ASA III/IV - risk

AIDS and other immune deficiencies

immune suppressive therapy

anticoagulation therapy

psychopathology, neuroses, neuropathology - patients not able to treat in local anaesthesia.

The theoretical basics are given in lectures oral medicine, general medicine, anaesthesia and exodontia.

The students practise experiences can got in the courses OP I/ II, *ascultando et practicando*.

Patients required dental treatment under general anästhesia (e.g. cerebral handicapped patients) are treated according to a set regime. The students have the chance to attend such treatments during their OP-courses.

***Visitors Comments***

This was reviewed under General Surgery.

## **Section 16: Behavioural Sciences, Communications, Ethics and Jurisprudence, Practice Management**

### **Section 16.1: Behavioural Sciences**

Person in School who will explain this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

The course auscultando et practicando of oral medicine starts in each semester with a 4 hours lecture about relations between physicians and patients. The students will be taught in guidelines for ethics, solution of live crises and conflicts between physicians and patients but also in the survey of the history of diseases.

Furthermore, during the lecture series on pedodontics and periodontics (Operative Dentistry and Periodontology), TMJ-problems (Prosthodontics) and other areas topics related to behavioural sciences are taught.

### **Section 16.2: Communications**

Person in School who will explain this to the visitors:

Prof. Dr. G. Schmalz

E-mail: Gottfried.Schmalz@klinik.uni-regensburg.de

Aspects of communication are covered in different lectures/courses, e.g. those of preventive dentistry.

### **Section 16.3: Ethics and Jurisprudence**

Person in School who will explain this to the visitors:

PD Dr. Dr. R. Dammer

E-mail: Ralf.Dammer@klinik.uni-regensburg.de

Special knowledge in jurisprudence and medical inspection will be taught in special lectures oral medicine (2 hours), and practise management (2hours).

#### ***Main Objectives***

liability

behaviour in case of compensation

types of medical inspections

principles of medical inspections

## **Section 16.4: Practice Management**

Person in School who will explain this to the visitors:

Prof. Dr. G. Schmalz

### ***Introduction***

Practice management is taught by a dental practitioner from the city of Regensburg who is also – for the time being – the chairman of the local professional dental organization (Local Dental Chamber). He provides a 1 hour per week lecture (14 hours).

### ***Primary Aims***

Legal requirements to work as a dentist in private practice in Germany including all laws and regulations. Definition and description of different postgraduate programs. Description and critical assessment of dental professional organizations (dental chamber, social insurance associations) and of other (independent) political organizations.

Basic aims of practicing dentistry in a private practice and technical problems involved in treating patients from state social insurance. Critical assessment of the situation in Germany concerning its social insurance system and discussion of alternatives. Problems and possibilities of performing private dental work on patients participating in the state social insurance system.

Information on different forms of practice (single dentist, group practice). Legal requirement for billing. Basic concepts on the selection of auxiliary personal. Costs of a new practice, costs of practice management, insurance, tax aspects.

### ***Strengths***

In a small group of students, the single aspects can be intensively discussed. The students get inside information into the structures and the constraints of a private practice, to which 90 % of the students are released after their state board. The students are prepared to this situation and they are provided with a sense of critique for the present situation concerning the social insurance system. It also should provide the student with the enthusiasm to engage themselves in political matters.

### ***Weaknesses***

The lectures are given to the students during the last semester of their study. During this time, the students are mainly concerned with problems arising from the expected State Board Examination. Therefore, the students are sometimes not very concentrated. The information should be given to the students earlier in their curriculum and the time frame for the discussion of problems should be enlarged. In consequence some young dentists are lacking a critical approach to the legal, financial and technical milieu of private practice.

***Visitors Comments (16.1 – 16.4)***

The curriculum content in behavioural science, ethics and jurisprudence and the care of patients with special needs and practice management is limited. These areas require development by addressing the overloaded curriculum.

## Section 17: Examinations, Assessments and Competences

Person in school who will explain and show this to the visitors:

Prof. Dr. W. Jilg (Dean for Curriculum and Student Affairs)

e-mail: rosa.pirzer@verwaltung.uni-regensburg.de

In Germany, education in dentistry is ruled by nation-wide law. The contents of the education as well as official examinations follow a rigid scheme.

### Section 17.1: Examinations

#### *Undergraduate Curriculum (University Examination)*

During the Undergraduate Curriculum students have to fulfill certain requirements and to pass certain University examinations in order to get certificates needed to be allowed to take part in three official (State) examinations.

Classes and lectures have to be taken in the following subjects:

#### *Prerequisites for the “Scientific Pre-Examination“ (“Vorphysikum“) (1<sup>st</sup> State Examination):*

Lectures in Biology, Chemistry and Physics.

Practical Courses in Physics and Chemistry.

#### *Prerequisites for the “Dental Pre-Examination“ (“Physikum“) (2<sup>nd</sup> State Examination):*

Lectures in Histology and Embryology, Physiology, Biochemistry, Dental Materials, Anatomy.

Practical Courses in Anatomy, Biochemistry, Physiology, Histology, Dental Materials/Technology, Medical Terminology (if necessary).

#### *Prerequisites of the Dental Final Examination (State Board Examination) (3<sup>rd</sup> State Examination):*

Lectures in General Pathology, Oral Pathology, Otolaryngology, Dermatology, General Surgery, Microbiology, Hygiene and Health Care, History of Dentistry, Pharmacology, Internal Medicine, Oral Medicine, Oral and Maxillofacial Surgery, Preventive Dentistry, Pediatric Dentistry, Conservative Dentistry, Endodontics, Periodontology, Prosthodontics, Orthodontics.

Practical Courses in Histopathology, Clinical Chemistry, Radiology and Radiography, General Surgery, Dermatology, Orthodontics, Oral- and Maxillofacial Surgery, Restorative Dentistry (incl. Preventive, Pediatric and Conservative Dentistry as well as Endodontics and Periodontology), Prosthodontics, Oral Medicine.

The successful and regular attending of a successfully partaking in the courses is certified. Usually, there is no passing of course for a student without written or oral test in order to prove the efficient knowledge in the area.

***Official Examinations (nation-wide)******Scientific Pre-Examination (“Vorphysikum“):***

To be passed after at least two semesters.

Subjects: Biology, Chemistry, Physics

Oral examination only.

***Dental Pre-Examination (“Physikum“):***

To be passed after at least five semesters.

Subjects: Anatomy, Biochemistry, Physiology, Dental Technics and Dental Materials.

Oral examination: Biochemistry, Physiology.

Oral and practical examination: Anatomy, Dental Technics and Dental Materials.

***Prerequisites of the Dental Final Examination (State Board Examination):***

To be passed after at least ten semesters.

Subjects: General- and Oral Pathology; Pharmacology; Hygiene and Microbiology and Health Care; Internal Medicine; Dermatology; Otolaryngology; Oral Medicine; Oral Surgery incl. Dental Radiology; General Surgery; Maxillofacial Surgery; Operative Dentistry; Preventive and Conservative Dentistry incl. Pediatric Dentistry, Endodontics, Periodontology; Prosthodontics; Orthodontics.

Examinations have to be taken either theoretical or practical or as a mixture of both. Generally, the theoretical exams are oral. There is no involvement of external examiners.

The passing of the examinations mentioned above has to follow the sequence mentioned above. After having passed the final dental examination the student may apply to the Ministry for Internal Affairs for the license necessary to practice as a dentist.

**Section 17.2: Assessments and Competences*****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.

***Weaknesses***

Distinct sequence of courses makes innovative concepts difficult. Due to a lack of time, there is no possibility of teaching additional subjects such as psychology or neurology.

The greatest disadvantage of this system is that the number of students is related to the number of teachers according to a key dating back to the early seventies. However, meanwhile new treatment concepts have been developed in all areas of dentistry which are more sophisticated and which require a different relation with less students per teacher. In medicine, a relation of one teacher to three students is set for courses, where the students themselves examine patients (= non invasive procedures). However, in dentistry the relation is one teacher to seven students set for courses, where the students treat patients (= invasive procedures). This situation hampers dramatically an innovative approach to modern kinds of teaching, e.g. the introduction of problem based learning.

*Visitors Comments (17.1 – 17.2)*

Currently, the timing and nature of the examinations is mainly prescribed by Federal law. Inevitably, this does not allow a progressive approach to change. The Chairs of the Departments are very aware of this problem. Two years of supervised experience follow graduation to prepare graduates for a social insurance system. This is organised by the Regional Dental Chamber/Professional Insurance Organisation (Kassenzahnärztliche Vereinigung) and the influence of the Dental School is limited. For this reason, consideration should be given to establishing a formal mechanism to obtain feedback from the supervising dentists on the strength and weaknesses of the new graduates. The initiative to create an alumnus is progressive and would provide a source of information about the quality and content of the undergraduate course.

## **Section 18: Other Influences**

Person in School who will explain and show this to the visitors :

Dr. T. Bimmerle

E-mail: Theodor.Bimmerle@klinik.uni-regensburg.de

### **Section 18.1: Regional Oral Health Needs**

About 130 dentists are practising in the Regensburg area, and patients have many opportunities to get dental treatment. This is one reason why many of the patients who come to our Clinic have severe problems. Patients with only insignificant dental problems are sometimes hard to find which creates a problem for the clinical student courses, especially in Prosthodontics. This situation is, however, circumvented in many cases by offering reduced rates for e.g., dentures.

### **Section 18.2: Evidence Based Treatments**

All lecturers in our School are provided with the actual scientific literature from the library and from on-line literature data basis by computer. Also, evidence based medicine (EBM) has been introduced in our lectures and courses. Problems during the treatment of patients can be discussed by the lecturers and students. By means of the actual literature the students learn to accomplish evidential conclusions.

### **Section 18.3: Involvement in other University Activities and Sport**

The „Sportzentrum“ of our University offers many possibilities. Courses in almost all disciplines in sport (e.g. tennis, soccer, swimming, basket-ball, etc) are offered. Besides this the students have the opportunity to enjoy other cultural activities like music, orchestra and theatre. During the study the students can also participate in computer courses free of charge.

### **Section 18.4: Recreation**

Regensburg is a very old town with a wonderful historical city centre. There are also many cinemas and the students can get in with a reduced entrance-fee. Also the rural surroundings and the Danube serve as recreation areas.

### **Section 18.5: Student Selection Procedures**

The student selection procedure is regulated in Germany by a federal administration by a 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. Actually there are 3 candidates for one study place. This scheme, however, will be changed starting with the winter semester 2000/2001. Then all new students are selected according to the high school grades (except the 6% non-EU-students).

## **Section 18.6: Labour Market Perspectives**

Because of the decrease of oral diseases, especially caries, in Germany, it is often difficult to find a place of employment. There is a tendency that the number of job opportunities decreases with the number of necessary treatments. Dentists are –theoretically- allowed to open their own practise immediately after their final State Board Examination. However, young dentists require a two year training period in a private practice after the passed successfully the State Board Examination in order to qualify for participation at the dental social insurance system. Only after this time dentists are allowed to set up their own practices including the treatment of patients from the social insurance (85% of the population).The number of practices in a particular region is limited according to law.

### ***Visitors Comments (18.1 – 18.6)***

All students speak English and some parts of the course are delivered in that language.

The School has carried out a local oral health needs assessment which has demonstrated a low disease prevalence. This , together with a low dentist / population ratio has affected the number and mix of patients available for teaching.

## Section 19: Student Affairs

Name of student representatives who will discuss this:

- 5. clin. sem. Rueppell Marcus
- 4. clin. sem. Laban Christopher
- 3. clin. sem. Mertins Peter
- 2. clin. sem. Taubenhansl Peter / Wojahn Tim
- 1. clin. sem. Beuer Stephan / Männer Tobias
- 5. preclin. sem. Basel Julia
- 4. preclin. sem. Erhard Niko / Gebhard Roland
- 3. preclin. sem. Mühlfriedel Bastian / Wunsch Steffen

### Section 19.1: Student selection procedure

- a Average number of dental students qualifying per year: 65
- b Average number of dental students admitted to the first year: 75
- c Length of course in semesters: 10 semester of study and 1 semester for examination
- d Is there a separate period of vocational training following graduation as a dentist in your country? Yes  
2 years postgraduate training in order to be allowed to work for the social insurance system.
- e Is that organised by the University/Dental School? No  
It is controlled by the "Bayerischen Landes Zahnärztekammer".

#### *Visitors Comments*

The University and the city are extremely attractive and provide an excellent environment for study. Notwithstanding the above, the national system which allocates 80% of the students to different Universities limits the choice of students and does not allow staff to participate in most of the process. Equally, although the pre-clinical course identifies poor manual dexterity quickly, there is no mechanism to exclude unsatisfactory students early in the course. The recent introduction of a post of Dean of Student Affairs is the first in Bavaria. The concept is most interesting and might provide a catalyst to allow some of the good practice identified in this report to develop throughout the Faculty. During the visit, the student representatives were encouraged to participate and to express their views openly.

## 19.2 Student Organisations and University activities

*Visitors comments*

The Student Organisation appeared strong and well managed but dental students found it difficult to participate in wider University affairs because of the pressure of the course. They were particularly disappointed at the lack of formal student exchange programmes e.g. Erasmus. According to the University administration, this is due to the numerous clasus in Germany and cannot be changed without amending federal legislation. The introduction of a student elective scheme perhaps during the vacations might help to overcome this difficulty. The School has recently introduced an informal staff/student forum to discuss a wide range of issues of mutual interest. This is an example of good practice and should be formalised.

## Section 20: Research and Publications

### A. Department of Prosthodontics

Representative: Prof. Dr. G. Handel

E-mail: gerhard.handel@klinik.uni-regensburg.de

#### *Publications in Refereed Journals (1997-1999)*

Rosentritt M, Leibrock A, Lang R, Behr M, Scharnagl P, Handel G. Apparatur zur Simulation des Kausorgans (Regensburger Kausimulator). *Materialprüfung* 39 (1997) 3.

Fellner C, Behr M, Fellner F. Artefakte durch Dentallegierungen in der MR-Bildgebung des Temporomandibulargelenks: eine Phantommodellstudie bei 1,5T. *Fortschr. Röntgenstr (RäFo)* (1997) 7,55.

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Leibrock A, Reinthaler M, Rosentritt M, Behr M, Handel G. In-vitro-Studie zur Verbundfestigkeit der Verblendsysteme Targis/Targis Link und Visio-Gem/Rocatec. *Dtsch Zahnärztl Z* 53(4) 1998; 286-291.

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Lang R, Rosentritt M, Behr M, Leibrock A, Handel G. Colour stability of provisional crown and bridge restoration materials. Brit Dent J 1998;185:468-471.

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Rosentritt M, Lang R, Behr M, Handel G. In-vitro Verfärbungen von Füllungsmaterialien ausgelöst durch UV-Licht und Nahrungsmittel. Acta Med Dent Helv 4: 147-152 (1999).

Lang R, Rosentritt M, Behr M, Handel G. Farb- und Biegeverhalten von Prothesenbasismaterialien nach künstlicher UV-Alterung. Dtsch Zahnärztl Z 1999;4(54):277-280.

Behr M, Rosentritt M, Leibrock A, Schnieder-Feyrer, Handel G. Finishing and polishing of the Ceromer material Targis. Lab-side and chair-side methods. J Oral Rehabil 1999;26:1-6.

Leibrock A, Degenhart M, Behr M, Rosentritt M, Handel G. In vitro study of the effect of thermo- and load-cycling on the bond strength of porcelain repair systems. J Oral Rehabil 1999;26:130-137.

Rosentritt M, Behr M, Leibrock A, Handel G. Vennering composites- a thermoanalytical examination. J Materials Science, Materials in Medicine 1999;10:91-98.

***Grants received > 1000 Euro***

Espe Dental AG, Seefeld, Germany (2)

Ivoclar Dental GmbH, Schaan, Liechtenstein (3)

Degussa AG Dental, Hanau, Germany

Girrbach Dental Systems, Pforzheim, Germany

***Doctoral Theses (Dr. med. dent.)***

see Appendix

***Habilitation Thesis***

Michael Behr. Faserverstärkte Komposite in der Zahnmedizin. Regensburg, 1999

**B. Department of Conservative Dentistry and Periodontology**

Representative: Prof. Dr. G. Schmalz

E-mail: Gottfried.Schmalz@klinik.uni-regensburg.de

***Publications in Refereed Journals (1997-1999)***

Friedl, K.-H., Schmalz, G., Hiller, K.-A., Mortazavi, F.: Marginal adaptation of composite restorations versus hybrid ionomer/composite sandwich restorations. *Oper Dent* 22, 21 - 29 (1997).

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Fan, P.L., Arenholt-Bindslev, D., Schmalz, G., Halbach, S.: Environmental issues in dentistry - mercury. *Int Dent J* 47, 105 - 109 (1997).

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Schweikl, H., Schmalz, G.: Glutaraldehyde-containing dentin bonding agents are mutagens in mammalian cells *in vitro*. *J Biomed Mater Res* 36, 284-288 (1997).

Schmalz, G.: Concepts in biocompatibility testing of dental restorative materials. *Clin Oral Invest* 1, 154 - 162 (1997).

Friedl, K.-H., Hiller, K.-A., Schmalz, G., Bey, B.: Clinical and quantitative marginal analysis of feldspathic ceramic inlays at 4 years. *Clin Oral Invest* 1, 163 - 168 (1997).

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Halbach, S., Hickel, R., Meiners, H., Ott K., Reichl, F.X., Schiele, R., Schmalz, G., Staehle, H.J.: Amalgam im Spiegel kritischer Auseinandersetzungen: Interdisziplinäre Stellungnahmen zum “Kieler Amalgam-Gutachten“. Hrsg.: Institut der Deutschen Zahnärzte. Deutscher Ärzteverlag, Köln, 1999.

### ***Editorial Activities***

Prof. Dr. G. Schmalz is the Editor in Chief of *Clinical Oral Investigations*.

### ***Grants received > 1000 Euro***

Espe Dental AG, Seefeld, Germany (5)

Ivoclar Dental GmbH, Schaan, Liechtenstein (2)

Degussa AG Dental, Hanau, Germany (2)

Sun Medical, Japan

GABA, Switzerland

Ethicon, Germany

Regensburg-final-Report

ESPE/BMBF, Germany

Bundesministerium für Forschung und Technologie

Bundesministerium für Bildung und Forschung

REFORM (Grant from the University of Regensburg)

Deutsche Forschungsgemeinschaft (5)

***Awards***

Prof. Dr. G. Schmalz:

Annual European Prize for the Substitution of Animal Experimentation “Anny Eck-Hieff Preis“, 1999

Dr. S. Ruhl:

Poster award at the 17<sup>th</sup> International Lectin Conference (INTERLEC 17) 1997. “Lectin-mediated binding of *Streptococci* and *Actinomyces* to leukosialin and leukocyte common antigen on granulocytes.“

Corsodyl Resesarch Award from SmithKline Beecham 1998. “Mucine an Granulozyten als Rezeptoren für die lektinähnlichen Adhäsine oraler Streptokokken und Aktinomyceten.“

Poster award of the DGZMK/Dentsply 1999. “Speichelproteine und Glycoproteine bei Kleinkindern mit “Nursing-Bottle Syndrome““.

Dr. M. Christgau:

Arthur H. Wuehrmann Prize 1999 of the American Academy of Oral and Maxillofacial Radiology. “Quantitative digital subtraction radiography for the determination of small changes in bone thickness: an in vitro study.“

PD Dr. B. Thonemann:

Poster award of the DGZMK 1997: Klinische Untersuchung zur nicht-invasiven Versorgung keilförmiger Zahnhalsdefekte.

***Invited Presentations at International Meetings***

Prof. Dr. G. Schmalz: Annual Dental Congress of the Swedish Dental Society, Stockholm, 1997.

Prof. Dr. G. Schmalz: Symposium Danish Dental Association, Aarhus, 1998.

Prof. Dr. G. Schmalz: Academy of Dental Materials, Tempe, USA, 1999.

PD Dr. K.-H. Friedl: Federation Dentaire International (FDI), Barcelona, 1998.

Dr. M. Christgau: 2<sup>nd</sup> German Symposium of One-Step Guided-Tissue-Regeneration. Köln 1997.

Dr. S. Ruhl: Sialinsäure-Workshop. Society for Research of Sialic Acid. Kiel 1997.

PD Dr. B. Thonemann: European Cooperation in the field of scientific and technical research action, B8 Odontogenesis. Paris, 1998 and Berlin 1999.

***Doctoral Theses (Dr. med. dent.)***

see Appendix

***Habilitation Thesis***

Helmut Schweikl. Die biologische Wirkung von Monomeren zahnärztlicher Komposite: Charakterisierung induzierter Genmutationen *in vitro* und molekulare Analyse HPRT-defizienter V79-Zellen. Regensburg, 1997.

Birger Thonemann. Immortalisation boviner Pulpazellen. Regensburg, 1998.

Karl-Heinz Friedl. Der Einfluß verschiedener Parameter auf die Haftung zahnärztlicher Adhäsivsysteme am Dentin. Regensburg, 1999.

Michael Christgau. Histologische und immunhistologische Untersuchungen des parodontalen Wundheilungsverlaufs nach gesteuerter Geweberegeneration unter Berücksichtigung materialbedingter Gewebereaktionen. Regensburg, 1999.

Stefan Ruhl. Proteine und Glycoproteine im Speichel: Interaktionen mit der oralen mikrobiellen Flora und mögliche klinische Bedeutung. Regensburg, 1999.

**C. Department of Orthodontics**

Representative: Prof. Dr. D. Müßig

E-mail: dieter.muessig@klinik.uni-regensburg.de

The Department of Orthodontics, headed by professor Dr. Müßig started services in the year 1998. Since then, a research team is being developed to concentrate on the investigation of craniofacial genetics and biomechanics. These research projects, publications, and doctoral thesis are currently in progress. So far, the department has received 2 Grants > 1000 Euro.

**D. Department of Oral Surgery and Oral Medicine**

Representative: Prof. Dr. Dr. Herbert Niederdellmann

***Publications in Refereed Journals (1997-1999)***

Marmulla R, Wagener H, Hilbert M, Niederdellmann H (1997) Präzision computergestützter Systeme bei profilverbessernden Eingriffen im Gesicht. *Mund-, Kiefer- und Gesichtschirurgie* 1: S65-S67.

Marmulla R, Hilbert M, Niederdellmann H (1997) Inherent precision of mechanical, infrared and laser-guided navigation system for computer-assisted surgery. *Journal Cranio-Maxillofacial Surgery* 25: 192-197.

Marmulla R, Hilbert M, Niederdellmann H (1997) Quality Assurance of the Inherent Precision of Navigation Systems. *Comput Aided Surg, Abstracts from CIS 97, No. 17-96.*

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Dammer R, Wurm EM, Niederdellmann H, Fleischmann H, Knüchel R (1997) Immunzytochemische Venenblutuntersuchung an Patienten mit manifesten Mundhöhlenkarzinomen, oralen Präkanzerosen, benignen Tumoren und chronisch alkoholkranken Patienten. *Mund-, Kiefer- Gesichtschirurgie* 1: 95-103.

Dammer R, Niederdellmann H, Wöhrl W, Frank B, Wagener H (1997) Modifizierte transdentale Fixation mit dem geschraubten Frontzahnaufbau nach Wirz. *Zeitschrift für Zahnärztliche Implantologie* 13: 136-141.

Dammer R, Niederdellmann H, Dammer P, Nuebler-Moritz M (1997) Conservative or radical treatment of keratocysts: a retrospective review. *British Journal of Oral and Maxillofacial Surgery* 35: 46-48.

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Marmulla R, Hilbert M, Niederdellmann H (1998) Intraoperative Präzision mechanischer, elektromagnetischer, infrarot- und lasergeführter Navigationssysteme in der computergestützten Chirurgie. *Mund-, Kiefer- und Gesichtschirurgie* 2: S145-S148.

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Hilbert M, Marmulla R, Strutz J (1998) Vergleichende Genauigkeitsmessungen zwischen einem mechanischen (Viewing Wand) und einem lasergeleiteten mikroskopischen Positionierungssystem (MKM) mit Hilfe eines geometrischen Meßobjektes. *HNO* 46: 44-49.

Marmulla R, Niederdellmann H (1998) Bone Segment Navigation with the SSN System. *Journal Craniomaxillofacial Surgery* 26 Suppl. 1: 113.

Marmulla R, Niederdellmann H, Lorenz B, Dammer R, Niederdellmann C (1998) Ein computergestütztes Navigationssystem als neues Operationsverfahren zur Orbitarekonstruktion. *Klinische Monatsblätter für Regensburg-final-Report*

Augenheilkunde 213: 301-305.

Marmulla R, Niederdellmann H (1998) Computer-assisted Bone Segment Navigation. *Journal Craniomaxillofacial Surgery* 26: 347-359.

Marmulla R, Niederdellmann H (1998) Contrôle de la précision de la position des segments osseux pendant la navigation chirurgicale. *Rev Stomatol Chir maxillofac* 99: 184-187.

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Marmulla R, Hilbert M, Niederdellmann H (1997) Immanent Precision of mechanical, infrared an Laser-guided Navigation System for CAS. Lemke HU (Hrsg.): Amsterdam: Elsevier Publ., 863-865, International Congress Series 1134.

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Wagener H, Niederdellmann H, Dammer R, Knüchel R (1998) Die Verwendung unterschiedlich modulierter Hochfrequenzströme in der Mund-, Kiefer-, Gesichtschirurgie. Plastisch-rekonstruktive Chirurgie, Reinbek: Einhorn-Pressen Verlag.

Marmulla R, Niederdellmann H, Wagener H (1998) Vector and Computer-guided Bone Segment Navigation. Lemke HU (Hrsg.): Computer Assisted Radiology and Surgery. Amsterdam: Elsevier Publ. 555-557, International Congress Series 1165.

Marmulla R, Niederdellmann H (1998) Visual Basic Based Archiving and Communication Systems for Windows. Lemke HU (Hrsg.): Computer Assisted Radiology and Surgery. Amsterdam: Elsevier Publ. 898, International Congress Series 1165.

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***Doctoral Theses (Dr. med.dent.)***

see Appendix

***Habilitation Thesis***

Priv.-Doz. Dr. Dr. R. Dammer. Methodische Aspekte des Proliferationsverhaltens oraler und oropharyngealer Plattenepithelkarzinome. Regensburg, 1999.

Priv.-Doz. Dr. Dr. R. Marmulla. Computergestützte Knochensegmentnavigation. Regensburg, 1999.

***Visitors Comments***

The quality and quantity of the research output is impressive and reflects the excellent facilities and dedication of the entire staff. The involvement of highly qualified non-clinical scientists is a further example of best practice. The School is commended for attracting funding from a wide variety of resources. The development of a School based research strategy would further strengthen the position. The number of higher degrees awarded is commendable as is the large proportion of undergraduates who begin their Doctorate studies before the qualify.

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

### *Staff evaluation by students*

Since a couple of years, the Medical Faculty has installed an education evaluation system by the students. This system is organized by the Dean for Student Affairs. This evaluation of lectures and practical courses is carried out on standardized questionnaires which are distributed to all students at the end of each semester. These questionnaires are anonymous and leave space for the students to articulate their estimation of the different lectures and courses.

The advantage of this system is that constructive information is provided, e. g. for overlapping lecture subjects or discrepancies in treatment concepts. This system has been the basis for discussion and some changes in the dental curriculum.

The disadvantage for the time being is that the students are not very interested in taking part in this evaluation program. They were reluctant to fill out the questionnaires being afraid that negative critique may have some consequences on their educational situation. However, this apparently is decreasing.

### *Faculty and staff development*

Faculty and staff development is mainly carried out within the environment of the four departments. There are programs for theoretical and practical postgraduate education. Beside these departmental activities, there are also activities across the department borders and lectures from different areas of dentistry are organized. Postgraduate staff can experience in teaching through participation in courses and lectures. They are an essential part of the clinical courses.

The advantage is that the practical educational programs is individually tailored to the group of junior staff. The junior staff is in close contact with the senior staff participating from their experience.

The disadvantage is that the organizational structures are loose and depend on the activity of junior and senior staff. Time allocated to postgraduated programs is too short, because education and patient treatment consumes a lot of time.

### *Visitors Comments*

There are quality systems to measure clinical work. There is also a formal mechanism to assess teaching using questionnaires.

## **Section 22: Visitors Executive Summary on the School**

### **22.1 Main Findings**

The Dental School in Regensburg provides a good dental education and high quality research and patient care.

The physical facilities and equipment are generally excellent.

The staff are highly qualified and dedicated and the students are enthusiastic.

The content of the curriculum is currently controlled by Federal law and a large amount of time is spent on practical procedures. This creates rigid boundaries between the clinical and preclinical sections of the course which complicate the integration of the scientific and clinical teaching. There are national plans to rationalise the curriculum and the format of the examinations which are welcomed by everyone.

Medical and dental education is very well integrated to the benefit of both disciplines.

### **22.2 Strengths**

Students receive an intensive Phantom Head training to develop their manual skills

The clinical teaching and research facilities are excellent

The standard of the equipment is high and it is well maintained

Students are committed, intelligent and articulate. They are very supportive of their school, faculty and university and expressed their appreciation for the education provided by the staff

Faculty members at all levels are enthusiastic

For a relatively young institution, the quality and quantity of research is impressive. There is also a good exchange of information between the clinical and non clinical departments

The postgraduate and specialist training programmes are well organised

The lecture series on biocompatibility is commendable as is the use of adjunct professors

The introduction of students to practical work in the first semester allows the early identification of those who have no manual dexterity or do not wish to pursue a career in dentistry

There is a commitment to introducing new techniques and materials e.g. implantology in the Phantom Head course

The emphasis placed on orthodontic diagnosis and the ability of students to recognise their limitations is welcome

There are good library services and a commitment to move towards an information centre

The Department of Oral and Maxillofacial Surgery provides a bridge between the medical hospital and the Dental school. This exposes the students to management of medically compromised patients

### **22.3 Weaknesses**

The limitations placed on curriculum development by the Federal regulations

The lack of a formal curriculum working group with wide representation

A highly loaded curriculum which does not allow students to participate in wider University activities

Too much time spent on technology procedures

Students do not appreciate the importance of those subjects in the curriculum that are not directly related to clinical care

Facilities for small group teaching are extremely limited which could prevent curriculum development

The lack of a planned replacement programme for dental equipment

The limited availability of suitable patients for students care

Access to IT and computer assisted teaching is extremely limited

The teaching of behavioural science, psychology, communication skills, dental public health, ethics and jurisprudence etc. should be improved.

There is too little emphasis on comprehensive patient care by students and for the students to follow a patient from diagnosis and treatment planning to completion of treatment

### **22.4 Innovations and examples of good practice**

The well developed Kindergarten and Public School preventive programmes and the involvement of students

A 24 hour emergency dental service using students on a voluntary basis

The dual responsibilities of Departmental chairs for academic and hospital activities

The flexibility in the Phantom Head and Clinical courses which allows talented students to progress quickly, freeing staff to provide more assistance for their weaker colleagues

The concept of breaking student pairings to mix the strong and the weak students

The evaluation of teaching and courses by students

The efforts being made to develop an alumnus

The introduction of a Dean of Student Affairs

## **22.5 Recommendations**

Students should be introduced to clinical work earlier in the curriculum and there should be more opportunity for integrated patient care

A curriculum working group should be introduced to review the content and sequences of all subjects

A staff development programme for individuals should be introduced. This would help the School to identify and enhance personal strengths in teaching, research and patient care

## Appendix:           Dissertations leading to the title “Dr. med. dent.”

In the first row the name of the graduate is given, followed by the title of the thesis and the name of the supervising professor:

1	Andreas Martin	Technische Erprobung mobiler Daten-fernübertragungssysteme im Rettungs-dienst	Prof. Dr. Nerlich Michael
2	Badur-Ganter Elke	Säuglingshämangiome Spätergebnisse nach Behandlung mit dem blitzlam-pengepumpten Farbstofflaser	PD Dr. Hohenleutner Ulrich
3	Baierl Matthias	Der Einfluß der intraoperativ gewonnenen peritonealen Spülzytologie auf das Überleben von Patienten mit gastrointestinalen Karzinomen	Prof. Dr. Jauch Karl-Walter
4	Benda Winfried	Wirkung der Ursodeoxycholsäure auf die indomethacin-induzierte Enteritis bei der Ratte	Prof. Dr. Groß Volker
5	Berkmiller Gebhard	Untersuchungen zum Einfluß von Noradrenalin und Opioiden auf die IL-6-Sekretion in der Milz	PD Dr. Straub Rainer
6	Bittner Matthias	Farbverhalten des Mainbond/Omega 800 Systems bei verschiedenen Schichtungsmethoden und Brennbedingungen	Prof. Dr. Handel Gerhard
7	Brandenstein Sven	Der Einfluß von dentinadhäsiven und unterschiedlichen viskösen Befestigungskompositen auf die marginale Adaptation von Keramikinlays im Dentin	Prof. Dr. Schmalz Gottfried

- 8 Braun Birgit Zur Häufigkeit der bakteriellen Fehl-besiedlung des Dünndarms in einem Patientenkollektiv mit und ohne Diabetes mellitus Prof. Dr. Palitzsch Klaus-Dieter
- 9 Brüker-Csaszar Barbara Weichteilvorhersage in der kieferorthopädischen Chirurgie mit dem Dento-facial Planner Version 1.51 Prof. Dr. Dr. Niederdellmann Herbert
- 10 Brunner Thomas Verteilungsmuster der Extrazellulär-matrix-Rezeptor-Integrine $\beta$ 1 und  $\beta$ 4 in dreidimensionalen Mono- und Kulturen von Harnblasencarcinomzelllinien und Fibroblasten Prof. Dr. Knüchel-Clarke Ruth
- 11 Bucher Irmgard Keim- und Resistenzsituation an einer pneumologischen Fachklinik über 13 Jahre apl. Prof. Dr. Siemon Gerhard
- 12 Burchard Anna Katharina Histochemische Untersuchungen der Lymphgefäßversorgung im Bereich der lateralen Nasenwand des Menschen Prof. Dr. Hosemann Werner
- 13 Csaszar Gabor Der 3-D-OSS zur Modellplanung bei computergestützter Simulation in der kieferorthopädischen Chirurgie Prof. Dr. Dr. Niederdellmann Herbert
- 14 Degenhart Marcus Systeme zur intraoralen Reparatur von keramischen Verblendungen - eine vergleichende in-vitro Studie zur Verbundfestigkeit Prof. Dr. Handel Gerhard

- |    |                    |  |                             |
|----|--------------------|--|-----------------------------|
| 15 | Dr. Stoiber Helmut | Diagnostische Wertigkeit der hoch-auflösenden Single Photon Emission Computed Tomography (SPECT)-Untersuchung des Knochens beim Nachweis ossärer Infiltrationen von Plattenepithel | Prof. Dr. Eilles Christoph  |
| 16 | Edl Heidi          | Sphinktererhaltende Operationsverfahren beim Rektumkarzinom – Komplikationen, Funktion und Rezidivrate   | Prof. Dr. Jauch Karl-Walter |
| 17 | Enderes Renate     | In-vitro-Prüfung der Zytotoxizität von Dentalwerkstoffen anhand des Erlanger Ciliatentests   | Prof. Dr. Schmalz Gottfried |
| 18 | Erdell Iris        | Interventionelle Therapie infizierter Nekrosen bei akuter Pankreatitis   | Prof. Dr. Zirngibl Hubert   |
| 19 | Ernst Sabine       | Photodynamische Inaktivierung gram-positiver Bakterien am Beispiel von Staphylokokken nach Sensibilisierung mit 5-Aminolävulinsäure und Photo-frinR                                | PD Dr. Szeimies Rolf-Markus |
| 20 | Esterbauer Sandra  | Wachstumskinetik von transfizierten Kalbspulpazellen auf Rinderdentin  | Prof. Dr. Schmalz Gottfried |
| 21 | Euringer Michael   | Die Wirkung des Endopeptidase-Inhibitoren Thiorphan an wachen Kaninchen vor und nach Erzeugung einer catechol-amin-induzierten Kardiomyopathie                                     | PD Dr. Elsner Dietmar       |

- |    |                    |  |                             |
|----|--------------------|--|-----------------------------|
| 22 | Federl Christoph   | Auswirkungen spezieller radiotherapeutischer Parameter auf die Prognose von Weichteilsarkomen im Kindesalter. Retrospektive Erhebung am Kollektiv der nach dem CWS-86 Protokoll                    | Prof. Dr. Herbst Manfred    |
| 23 | Felden Astrid      | Überlebensanalyse und klinische Nachuntersuchung von Einlagefüllungen und Teilkronen aus Keramik – eine retrospektive Studie   | Prof. Dr. Schmalz Gottfried |
| 24 | Felderhoff Annette | Klinische und radiologische Untersuchungen zur endonasalen Stirnhöhleneröffnung im Rahmen der operativen Behandlung chronischer Sinusitiden  | Prof. Dr. Hosemann Werner   |
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