



# **DentEd Site Visit**

## **University of Dresden Dental School**

**June 12<sup>th</sup> - 16<sup>th</sup> 1999**

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## Visitors:

Prof. Jolán Bánóczy	Budapest	(Oral Biology)	(Chairperson)
Prof. Jukka Meurman	Helsinki	(Restorative Dentistry)	(Rapporteur)
Prof. Pal Barkvoll	Oslo	(Oral Medicine)	
Dr. Denise MacCarthy	Dublin	(Restorative Dentistry & Periodontology)	
Prof. Maria Wierzbicka	Warsaw	(Conservative Dentistry)	

# Curriculum

## **DENTED Visit Dresden on June 12 - 16, 1999**

GENERAL INFORMATION ABOUT DRESDEN (Extract from information Package 1999 to Socrates students)

Dresden, situated on the Elbe, first acquired influence and importance during the reign of two monarchs, Friedrich August I., called August der Starke, and his son Friedrich August II. During the late 17th and the first half of the 18th century, these two members of the dynasty of Wettin initiated the creation of those magnificent baroque buildings and unique collections of art that helped the capital of Saxony to attain the designation City of Elbe-Florence. Many of the buildings are still scarred from the war, however, numerous historical buildings have been restored or like the Frauenkirche are under restoration.

People from all over the world come to see the famous opera house designed by Gottfried Semper in the 19th century and the Zwinger. The latter was created as the background for sumptuous festivities which August der Starke held in the pavilions, orangeries and the interior court (1709 to 1722). In the Semper Opera and in numerous large and small theatres classical or modern productions are shown.

Near Dresden, Johann Friedrich Böttger discovered the secret of porcelain manufacture in 1708. Nowadays, the porcelain collection holds 20,000 unique pieces from Japan, China and Dresden. If you share the preference of the Saxonian sovereigns for jewelry, gold and silver – the Grünes Gewölbe (Green Vault) is the most important treasure vault in Europe. Finally, there are two important picture galleries, the "Old Masters" and the "New Masters", representing a very fine collection of European paintings from the 15th to the 20th century.

In the very centre of town you will find pastures that sweep onto the river Elbe on both banks. They are ideally suited for jogging and cycling, undisturbed by automobile traffic. Moreover, there is the Großer Garten, an ideal green place for picnics and for open theatre. On weekends you might want to take a trip on the oldest paddle steamer fleet in the world, either upstream or downstream. Upstream will bring you first to Pillnitz. This chateau de plaisir, built in the "Chinese Style", and the vast park with its botanical rarities are, in any case, worth a visit. A bit further on and you will reach the Sächsische Schweiz (Saxon Switzerland). The unusual sandstone rocks are a favourite target for mountain free climbers, and if that happens to be your hobby, be sure to bring along your equipment to Dresden. The forests and pastures on either side of the river offer plenty of ordinary hiking trails, exploring old castles and tasting the Saxonian wine and specialities in different country inns i.e. downstream at your way to Meissen, one of the oldest German towns, with a magnificent castle and cathedral towering over medieval houses.

One of the characteristics of students life in Dresden is the large number of student clubs, they offer various entertainments such as live concerts, dancing facilities, movies and so on. In the district Neustadt of Dresden restaurants and pubs are situated serving the taste of all different nations and ..... but soon you will be able to experience the life in Dresden for yourself

You can reach Dresden by flight: Dresden has an international airport, mostly served via Frankfurt, increasing destinations within Europe are served by direct flights to Dresden. Or you go by the fast IC-trains which is sometimes the cheaper possibility or if you own a car you reach Dresden on brand new highways.

## GENERAL INFORMATION ABOUT THE MEDICAL FACULTY

### The History of the Faculty of Medicine "Carl Gustav Carus"

The medical university was founded in 1993 and named after Carl Gustav Carus (1789-1869) who worked as a medical doctor and teacher in the gynaecological hospital in Dresden and who wrote a first text book in obstetrics and gynaecology (1820). This new medical university in Dresden was based on different types of hospitals which represented a long history of medical education in Dresden. Starting in 1748 the first "wound medicines" were educated in the Collegium medico-chirurgicum and were treating patients in a first hospital with 12 beds. After world war II a new medical academy was reorganized and rebuilt in 1954 which was transferred after the reunification of Germany in the new and still expanding Medical Faculty Carl Gustav Carus within the TU Dresden of today.

### Studying at the Faculty of Medicine "Carl Gustav Carus"

The medical and dental school curriculum operates on the semester system. The academic year starts in the Winter Semester, in session from October through mid-February, and ends with the Summer Semester, in session from April through mid-July. Students are admitted in either semester but most of the lectures/courses are offered only in the winter or only in the summer semester.

The Dental School curriculum is based on the requirements of Germany's dentists licensing regulations (Approbationsordnung für Zahnärzte). According to these regulations, a minimum of ten semesters or five years, totaling at least 5,000 hours of theoretical and practical instruction, is required of students of dentistry.

The curriculum is divided into three segments:

The basic segment (a minimum of two semesters of one year) ends with the successful examination in basic science (Naturwissenschaftliche Vorprüfung). The preclinical segment (a minimum of three semesters or one and a half year) is concluded with the second part of the national examination (Zahnärztliche Vorprüfung). It is followed by five clinical semesters (two and a half years), at the end of which the third part of the national dental examination (Zahnärztliche Prüfung)

After passing this final part of the national dental examination (graduation from the Dental School), full certification (Approbation als Zahnarzt) is granted by the appropriate state authority.

### Lectures and courses

The Vorlesung is a lecture by the instructor. Lectures provide students with overviews of certain central topics in their field. Lectures are open to all students and are held in German language.

In Seminare emphasis is placed on clinical-theoretical interrelations. Here, students should actively participate in discussion and give short oral presentations.

In Übungen and Praktika (practical courses, exercises and tutorials) students will work in laboratories or in hospitals under the guidance of experienced assistants or dentists. A detailed description of each course is in the curriculum.

### Scheine

A Schein is the certification of the student's successful participation in a practical exercise/course passing i.e. an examination at the end of the semester .

## **University of Dresden**

### **Timetable for DENTED VISIT June 12 - 16, 1999**

Visitors: Prof. Jolán Bánóczy (Chairperson) Budapest  
(Oral Biology) Prof. Jukka H. Meurman (Rapporteur) Helsinki  
(Restorative Dentistry)  
Dr. Denise J. MacCarthy Dublin  
(Rest.Dentistry and Periodontology)  
Prof. Pal Barkvoll Oslo  
(Oral Medicine)  
Prof. Maria Wierzbicka Warszawa  
(Conservative Dentistry)

#### **Saturday, June 12, 1999**

Day Coordinator: Prof. Winfried Harzer

15.00 Arrival at the airport and transport to the hotel W. Harzer  
"Pension Andreas", Mendelssohnallee 40/42 and staff  
Tel.: 0351/315770

17.00 Meeting of the visitors with the Dean W. Harzer  
(Departure from the Hotel)  
17.30 -  
19.30 City-Tour Dresden W. Harzer

20.00 Dinner with the Dean and staff members, W. Harzer  
General description of the school, U. Eckelt  
Confirmation of arrangements M. Walter  
W. Klimm  
G. Hetzer

#### **Sunday, June 13, 1999**

Day Coordinator: Prof. Harzer

10.00 Meeting in the dental school (Lecture room)  
General introduction W. Harzer  
Organisational and administrative structures U. Eckelt  
Staffing in the four departments M. Walter  
(Place: Lecture room) W. Klimm

11.30 Tour through the departments

13.30 Lunch

15.00 - Overall comments on the school W. Harzer  
18.00 Plans for introduction of PBL K. Böning  
(Place: Room 305, 2nd floor)

Evaluation program  
Assessments and examinations W. Klimm

Research and publications  
evidence based treatment M. Walter

Integrated courses in the Dental Curriculum Th.Hoffmann

20.00 Working dinner Personal invitation in  
Deans house  
(Harzer)

### **Monday, June 14, 1999**

Day Coordinator: Prof. Eckelt

#### **Team A**

09.00 - Biological Sciences,  
10.00 Biochemistry, Molecular Biology Th. Kriegel  
(Place: Room 305, 2nd floor)

10.00 - Periodontology Th.Hoffmann  
11.00 Preventive and Community Dentistry, G. Hetzer  
(Place: Room 305, 2nd floor)

11.00 - Oral Surgery, Maxillo-Facial Surgery U. Eckelt,  
13.00 General Surgery R. Pinkert  
(Place: House 30, Room 005)

#### **Team B**

09.00 - Pharmacology, K. Andreas  
10.30 Microbiology, E. Jacobs  
General Pathology M. Müller  
(Place: Room 430, 3rd floor)

10.30 - Conserv. Dentistry, Endodontics W. Klimm  
11.15 (Place: Room 107, 1st floor)

11.15 - Prosthodontics M. Walter  
12.15 (Place: Room 307, 2nd floor)

12.15 - Orthodontics W. Harzer  
13.00 and Paediatric Dentistry G. Hetzer  
(Place: Room 430, 3rd floor)

13.00 - Working lunch (Cafeteria) W. Harzer  
14.00 Quality development K. Böning  
Harvard Curriculum in medicine and dentistry I. Rost  
(Place: Cafeteria) P. Dieter

14.00 - Meeting of visitors  
16.00 (Place: Room 305, 2nd floor)  
16.00 - Visit of the "integrated course" M. Walter  
17.00 5th year W. Klimm  
(Place: Students house)

17.00 - Meeting with students  
18.00 Practice management  
Competencies  
Socrates exchange  
(Place: Students house)

20.00 Dinner - (V.: Th.Hoffmann)  
Visitors and school staff  
Overall discussions, innovations,  
strengths/weakness

## **Tuesday, June 15, 1999**

Day Coordinator: Prof. Walter

09.00 - Anatomy and Physiology R. Funk  
11.00 (Place: Institute of Anatomy) A. Deußen

11.00 - General Medicine, Dermatology, J. Schulze  
12.00 General Surgery, Oto-Rhino-Laryngology H.D.Saeger (Place: Room 305,  
2nd floor) J. Knothe

12.00 -  
13.00 Lunch

13.00 - Seminar of tutorial Prosthodontics K. Böning  
14.00 4th year (PBL-Introduction course)  
(Place: Students house)

14.00 - Meeting of visitors  
16.00 (Place: Room 305, 2nd floor)

16.00 - Preliminary findings,  
17.00 Meeting with the Dean  
(Place: Room 305, 2nd floor)  
17.00 -  
19.00 Completion of the report  
  
21.00 Working dinner

**Wednesday, June 16, 1999**

Day Coordinator: Prof. Klimm

09.00 – Meeting with the Dean of Medical Faculty Prof. Kirch  
12.00 Completion of the report

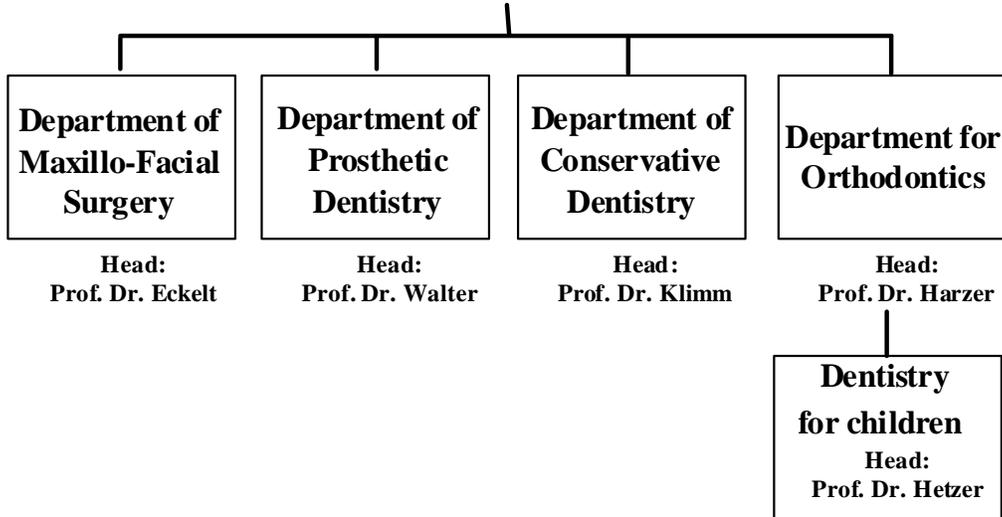
12.00 -  
14.00 Lunch

14.00 - Presentation of the preliminary report in W. Harzer  
15.00 a general meeting of the dental school  
(Place: Lecture-room)

16.00 Transportation to the airport

**University of Dresden  
Dental School  
(Zentrum für Zahn- Mund- und Kieferheilkunde)**

**Dean: Prof. Dr. Harzer**



## Curriculum Dentistry

Course/ Practical <u>training (h)</u>	Lecture/ Seminar (h)
Physics 60	45
Chemistry 60	45
Biology	45
Anatomy 180	180
Physiology 105	120
Biochemistry 105	120
Terminology	15
Dental Materials	60
Propedeutics 300	60
Phantom Course Prosthodontics I 255	
Phantom Course Prosthodontics II 300	
General Pathology	30
Special Pathology	30
Course Pathology 15	

Hygiene and Public Health	15
Microbiology 30	15
History of Medicine	15
Pharmacology and prescription 15	45
General Surgery	30
Surgery policlinics 30	
Internal Medicine I/II 10	50
Laboratoriums Medicine 30	
Oto-Rhino-Laryngology	30
Dermatology	30
Introduction in Dentistry	15
Oral Medicine I/II	60
Oral Medicine I/II/III/IV	240
Maxillo-Facial-Surgery I/II	60
Operation course (Oral Surgery) 90	
Radiography course 60	45
Prosthodontics I/II	60
Policlinics of Prosthodontics I/II 45	
Pract. course of Prosthodontics I/II 480	
Pract. course of Conservative Dentistry 480	

Policlinics of Conservative Dentistry I/II  
45

Propedeutic course of Cons. Dentistry  
240

Pedodontics (Lecture and Course)                      30    45

Introduction in Orthodontics    30

Orthodontics I/II    60

Propedeutic course Orthodontic  
12

Pract. course in Orthodontic I/II  
240

Intruduction in professional of dentistry    15

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**Center of Oral Medicine**  
**Faculty of Medicine**  
**Technical University of Dresden**  
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**Germany**  
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## **SECTION 1: INTRODUCTION AND GENERAL DESCRIPTION**

### **SECTION 1: INTRODUCTION AND GENERAL DESCRIPTION**

Responsibility: Dean Prof.Dr. Winfried Harzer  
E-mail: harzer@rcs.urz.tu-dresden.de  
Fax: 00493514584312

#### **The Mission**

Well-trained and proficient oral physicians with an excellent knowledge of comprehensive dental care under changing epidemiological conditions in the next millenium.

This means introducing new training methods focused on integrating the basic sciences into practical tuition and cooperating with other health care professionals. Problem-based learning helps facilitate team work as well as vertical and horizontal integration.

#### **The Commitment**

The Dental School is committed to provide undergraduate, postgraduate and continuing education in oral health care and dentistry at the Faculty of Medicine. It cooperates with the School of Dental Hygienists and Auxiliaries. Both the Dental School and the Medical Faculty have launched a pilot program of problem-based learning in the 8<sup>th</sup> term in 1999. The methods are adapted at the Harvard Medical and Dental School Boston.

The Dental school runs a student exchange program with the Universities of Dundee and Leuven in the frame of the Socrates network.

The School is divided into four departments (see Organigram)

- Department of Maxillo-Facial Surgery (Head: Prof.Dr.Dr. Eckelt ,17 physicians, 49,6 nurses and auxiliaries)
- Department of Prosthodontics (Head: Prof.Dr.Walter) 16,5 dentists, 16,35 auxiliaries, technicians etc.)
- Department of Conservative Dentistry (with Periodontics, Prof. Dr. Hofmann), Head: Prof. Dr. Klimm, 17 dentists, 20,5 aux.
- Department of Orthodontics (with Pedodontics, Prof. Dr. Hetzer) , Head: Prof. Dr. Harzer, 14 dentists, 16,7 aux.
- Most physicians and dentists work full time

#### **The Future**

The curriculum has been part of German Federal Law since 1955. A new curriculum placing greater emphasis on prevention, integration of PBL elements and the basic sciences should have been introduced for many years. That's why we started the integrated course in the 5<sup>th</sup> year and the PBL pilot project.

The institute's administration structure will be changed by separating the hospital from the Faculty of Medicine in July 1999. Then the Dental School will be part of the hospital but the academic/teaching staff will structurally remain at the Faculty

of Medicine. The hospital clearly benefits from this organisational separation which makes it more independent from state control and ensures higher profitability. On the other hand, this new structure might lead to an overload of patient care and drawbacks in training and research.

## **SECTION 1: INTRODUCTION AND GENERAL DESCRIPTION**

### ***Visitors Comments***

*On Sunday 13 June we had a general introduction to Medical and Dental Hospital complex.*

*The Dental School in Dresden is situated on a campus and is integrally linked with the Medical University which was established in its present form in 1994, when the School had its transition from an eastern German school. The dental hospital has been recently refurbished with excellent equipment for staff and students. There are traditional departments which are described above.*

*There are 800 physicians and dentists, and approximately 4000 staff in total in the Medical Faculty. The population of Saxony is 4.7 million and of Dresden, 0.5million.*

*The organisational structure of the University Dental School was described and is outlined above. The various structures must stand independently financially .*

*The mission of the School was discussed and the 'Oral Physician' concept was introduced. The function of the School is to train undergraduate dental students and provide ongoing education and training for postgraduate dentists. Dental nurses and dental hygienists are employed by the dental hospital. Dental nurses have a training programme run by Dental Chambers which is controlled by general dental practitioners.*

*General information about dental undergraduate training in Germany was as follows:*

*There are 28 Dental Schools*

*There is no independent Faculty of Dentistry*

*There is one private university in Witten*

*The dental and medical academic information is generally delivered in the traditional way with lecture based programmes. Problem based learning (PBL) has not been implemented in any dental schools to date. PBL has been introduced in Munich Medical Faculty only, but it is planned to start in Heidelberg and Dresden in the immediate future.*

*All dental schools work to 1955 federal law.*

## **Section 2: Facilities (Incl. Library, Lecture Theatres, Seminar Rooms etc.)**



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## **Section 2: Facilities (Incl. Library, Lecture Theatres, Seminar Rooms etc.)**

### Person in charge showing visitors round:

Heads of the Departments: Prof. Dr.Dr. Eckelt (Max. Facial Surgery), Prof. Dr. Walter (Prosth.), Prof. Dr. Klimm (Conserv.), Prof. Dr. Hoffmann (Period), Prof. Dr. Harzer (Orthod.), Prof.Dr. Hetzer (Pedodontics).

### **Center of Oral Medicine**

#### 78 dental units for clinical training

- 33 units for practical undergraduate training, 1 left-hand unit (Conserv. Dent., Prosth., Period., Pedodont., Orthodont.)
- 12 units for practical training in oral surgery
- 32 units for special dental care and partly for practical undergraduate training in all departments
- 1 general anesthesia unit
- 60 places for preclinical training

#### For radiological examinations

- 2 orthopantomographs
- 1 CT (Scanorama)
- 1 cephalostat
- 4 intraoral imaging devices(1 digital)

#### Lecture theater and seminar rooms

- 1 lecture room (120 seats), 2 seminar rooms (10 seats), use of lecture rooms and seminar rooms at the Faculty of Medicine
- 2 rooms for phantom training

#### Library and facilities for multimedia use

- Special library for dentistry with a comprehensive collection of professional literature
- Library of the Faculty of Medicine with concise medical and dental literature
- Video/ photographic/ graphic design and poster production studios

#### Scientific facilities (laboratories, microscopes etc.)

- Histological laboratory
- Scanning microscope
- Laboratory for dental technology

**Strengths**

All facilities for preclinical and practical training are state-of-the-art and not older than 6 years.

**Weaknesses**

Separation of the two libraries and not enough computer workstations.

**Planned developments**

Additional workstations and seminar facilities for PBL

***Section 2: Facilities  
(Incl. Library, Lecture Theatres, Seminar Rooms etc.)***

***Visitors Comments***

*The newly refurbished dental school offers excellent facilities for clinical training and the visitors want to congratulate the Dresden school for the tremendous improvements achieved over the past few years. The plans to further improve the physical facilities such as the concentration of the student and specialist dental clinics into one building is a welcome development.*

*The number of computer stations must be increased so that the students can work at the internet and library databases by themselves - this development is a necessity for the full implementation of Problem Based Learning.*

*The introduction of Problem Based Learning will require availability of seminar rooms for small group tutorials. Seminar room are currently available close-by to the dental school.*

*The library facilities should be rationalized and merging of the existing two separate libraries might be considered.*

## SECTION 5

### **5.1: Biochemistry**

#### **Biochemistry (Section 5.1)**

(Prof.Dr.Klaus-Wolfgang Wenzel, e-mail:kwenzel@rcs.urz.tu-dresden.de, fax 0049-3518832875

Prof.Dr.Peter Dieter, e-mail:dieter@rcs.urz.tu-dresden.de, fax 0049-3518832869

Prof.Dr.Thomas Kriegel, e-mail:kriegel@rcs.urz.tu-dresden.de, fax 0049-3518832869)

3rd preclinical semester (winter semester): **Biochemistry** (lectures 75 h, seminars 30 h, practical exercises 45 h)

4th preclinical semester (summer semester): **Biochemistry** (lectures 75 h, seminars 30 h, practical exercises 45 h)

**Examination:** two written and one oral examination during winter and summer semester; German Medical Licensing Examination Step I "Zahnärztliche Vorprüfung" (oral) after 5th semester.

#### **1. Lectures**

- Winter semester:

- Structure and functions of proteins
- Nucleic acids
- Biocatalysis and regulation of metabolism by enzymes
- Function and metabolism of carbohydrates
- Citric acid cycle
- Oxidative phosphorylation
- Structure, function and metabolism of fatty acids and lipids
- Basics of amino acid and nitrogen metabolism
- Nucleic acids, metabolism and biochemistry of genetic information
- Fundamentals of molecular biology
- Protein biosynthesis

- Summer semester:

- Basics of pH regulation
- Essential nutrients
- Digestion and resorption
- Biological membranes and transport systems
- Blood components and homeostasis

- Hormones and hormonal regulation
- Specific metabolism of particular organs and connective tissue

## **2. Seminars (voluntary)**

- Topics as in lectures

## **3. Practical exercises**

- Winter and summer semester:
- pH determination, buffers, photometry
- Carbohydrates, lipids, proteins
- Enzymes
- Oxidative phosphorylation, electron transport systems
- Ketogenesis
- Metabolism of nitrogen and nucleotides
- Acid-base balance
- Electrophoresis (serum proteins)
- Hemoglobin
- Molecular biology (PCR, restriction enzymes)
- Carbohydrate metabolism under different stress conditions

## **4. Examination**

- Lectures and seminars  
One written (multiple choice) and one oral examination during winter and summer semester
- Practical exercises  
One written examination at the end of summer semester
- German Medical Licensing Examination Step I "Zahnärztliche Vorprüfung"  
(oral) after 5th semester

**SECTION 5**  
***5.1: Biochemistry***

***Visitors Comments***

## **Section 6**

### **6.1: Anatomy**

### **6.2: Physiology and Pathophysiology**

#### **Anatomy (Section 6.1)**

Anatomy is part of the basic dental education. Two main parts exist in the curriculum of anatomy: macroscopical and microscopical anatomy.

In macroscopical anatomy three sections are found:

Part 1: General Anatomy and Embryology ( Term 1, term 2, 1<sup>th</sup> year)

Part 2: Topographical anatomy (term 2)

Part 3: Neuroanatomy (term 3, 2th year).

Lectures: 200 h

Practical training: 105 h

The microscopic anatomy comprises:

Part 1: Histology (term 1, 1th year)

Part 2: Neuroanatomy (term 3, 2th year)

Part 3: Special microscopic anatomy of organ systems and organs (term 4, 2th year)

Lectures: 45 h

Practical Exercise: 60 h

#### **Macroscopic Anatomy:**

##### **1. Introduction:**

Knowledges about human embryology, systematical and topographical anatomy and neuroanatomy are the base for a general understanding of the complex structures in the human body.

##### **2. Primary aims**

In lectures and exercises, the students can study relations about structure and function of the human body. In practical exercises, they can the train their power of examination and manual facilities.

##### **3. Main objectives**

- principles in development
- anatomical terminology
- anatomy of the organ systems
- topographical anatomy of the organs

- neuroanatomy
  - anatomy of the sensory organs
4. Hours of the curriculum
    - Part 1: General Anatomy: lecture 22,5 h, practical exercise 15 h
    - Part 2: Topographical Anatomy: Lectures: 90 h, Practical exercises 75 h
    - Part 3: Neuroanatomy: Lectures: 60 h, Practical exercises 15 h
  5. Methods of learning
    - Studying of anatomical models
    - Dissecting course
  6. Assessment methods
 

The knowledges of the students are assessed in testations.
  7. Strengths
    - anatomical studies and preparations on human bodies
  8. Weakness
    - no seminars
  9. Innovations
 

Inclusion of computer-aided methods in the anatomical education
  10. Plans for the future
 

Special dissecting course for students of dendistry

### **Microscopical Anatomy**

#### 1. Introduction:

Knowledges about the histological arrangement of tissues and organs are the base for differential diagnostic studies and for the judgment of results in the clinic.

1. Primary aims
 

Lectures and practical exercises demonstrate relations between structure and function on the cellular and subcellular level.
2. Main objectives
  - histology of the tissues in general
  - histology of the nervous system
  - histology of the organs
3. Hours in the curriculum
 

Part 1. Histology: Lectures 15 h, practical exercises: 15 h

Part 2. Neuroanatomy and sensory organs: practical exercises 15 h  
Part 3. Microscopical anatomy of organs: Lectures: 30 h, practical exercises 30 h

4. Methods of learning  
Special lectures and microscopical examinations of tissues and organs
5. Assessment methods  
Differential diagnostic knowledges about organs are assessed in two testations.
6. Strengths  
The connection between the theoretical background about the structure and function of organs and the microscopical examination of sections in special courses
7. Weakness  
The share of special dental tissues in the lectures and exercises are to low.  
The groups of students in the microscopic courses are too big.
8. Innovations  
Immunohistochemical methods of the institute are incorporated in the courses and lectures.
9. Plans for the future  
Inclusion of videos/computer movies of in vitro studies and electron microscopy.

## Physiology and Pathophysiology (Section 6.2)

(Prof. Dr. med. Andreas Deussen, e-mail: Andreas.Deussen@mailbox.tu-dresden.de, fax: +49 351 458 5378, phone: +49 351 458 3551)

Physiology as a basic science subject is taught during the undergraduate studies (2<sup>nd</sup> year). It has its general importance to promote understanding of cause-effect relationships in biology. A special strength in physiology are the concepts of homeostasis and modern theories of control and regulation which permit comprehensive views based on knowledge gained with various reductionist and/or integrative experimental models. Physiology supplies the basic concepts how the human body works and is thus of utmost importance for understanding why the body or certain parts fail under patho(physio)logical conditions.

**The overall organization of teaching in physiology is as follows:**

**Term 3, 2<sup>nd</sup> year: Main lecture 4 hours per week, practical (experimental) exercises with an average of 3.5 hours per week.**

**Term 4, 2<sup>nd</sup> year: Main lecture 4 hours per week, practical (experimental) exercises with an average of 3.5 hours per week.**

End of Term 5, 3<sup>rd</sup> year: **Oral examination** (2 hours, 4 students)

The series of main lectures is organized to start in the 3<sup>rd</sup> term with curricula on subcellular, membrane, whole cell, and later organ physiology that are of importance for a general understanding of function of the individual modules. In the 4<sup>th</sup> term students will then proceed learning about the complex interaction of the different modules with respect to their hierarchical organization. The topics of the main lectures proceed in a series that matches the topics of the different practical exercises. The latter comprise seminars to deepen the background and help with the interpretation of the analysis of the respective experiments conducted by the students.

The main lectures are given for dental and medical students together, while dental students perform their experimental exercises and seminars separately.

Themes of the **main lectures** during the **3<sup>rd</sup> term** (4 hours per week, 14 weeks):

1. Definitions, basic concepts and methods in physiology
2. Basic cell functions, signal transduction
3. Physiology of excitation
4. Neuron and sensory receptor

5. Membrane ion fluxes
6. Skeletal and smooth muscle
7. Basic concepts of reflex and hormonal regulation
8. General sensory physiology
9. Blood
10. Physiology of the heart
11. Hemodynamics of the body circulation
12. Ventilation and gas exchange in the lung
13. Nutrition and gastrointestinal tract
14. Energetics
15. Glomerular and tubular processes in the kidney
16. Acid-base balance

Themes of the **practical exercises** during the **3<sup>rd</sup> term** (4 hours per week):

1. Blood plasma and erythrocytes
2. Excitation and conduction in nerve
3. Skeletal and smooth muscle
4. Cardiac contraction
5. ECG
6. Analysis of alveolar ventilation
7. Mechano- and chemoreceptors
8. Membrane transport

Themes of the **main lectures** during the **4<sup>th</sup> term** (4 hours per week, 13 weeks):

1. Concepts in neuronal and humoral regulation
2. Regulation of circulation
3. Homeostasis of water and ion balance, thirst
4. Body temperature and temperature regulation
5. Regulation of respiration
6. Regulation of digestion and absorption in the gastrointestinal tract, hunger
7. Limbic system, hypothalamus and hypophysis
8. Somatic sensations, pain
9. Functional organization of the brain
10. Sensorimotor and cortical functions
11. Sense of hearing
12. Physiology of vision
13. Learning, memory, behaviour
14. Special physiology of young and old age
15. Exercise and sports physiology, effects of special environments

Themes of the **practical exercises** during the **4<sup>th</sup> term** (3 hours per week):

1. Regulation of blood pressure and flow

2. Mechanics of lung ventilation
3. Ultrafiltration
4. Metabolic rate and ergospirometry
5. Spinal reflexes
6. Hearing and cortical functions
7. Receptor functions of the retina
8. EEG, evoked potentials

The education in physiology is complemented by teaching of pathophysiology after the preclinical examination. This teaching is performed specifically for the dental students. The goal is to apply knowledge of physiological facts studied before to conditions of disturbed organ function under clinical conditions. The teaching is offered as a series of 14 lectures (2 hours each) during the sixth term and comprizes in about 2/3 problems of general importance in pathophysiology and in the other 1/3 aims specifically important in dentistry.

Themes of the **lectures** during the **6<sup>th</sup> term** (2 hours per week, 14 weeks) include:

1. Cardiovascular system, 10 hours
2. Pulmonary gas exchange, 4 hours
3. Upper gastro-intestinal tract, 4 hours
4. Masticatory apparatus, 4 hours
5. Sensorimotor disturbances in the orofacial system, 6 hours

### Section 6

#### **6.1: Anatomy**

#### **6.2: Physiology and Pathophysiology**

#### **Visitors Comments**

*These Departments are well equipped and well run.*

*The Anatomy Department appeared to have a well organised research team which offers support and interaction with the Dental School.*

*The Physiology and Pathophysiology Course should be a mandatory course rather than an optional course. This fact that it is mandatory relates to the availability of staff and finance.*

*9 Staff           -6 Engineers/Physiologists/ Biologists  
                      -3 Medics*

## **Section 7**

**7.1: Pharmacology and Toxicology/Clinical Pharmacology for Dent. Students**

**7.2: Microbiology and Hygiene**

**7.3: Pathology**

### **Pharmacology and Toxicology / Clinical Pharmacology (Section 7.1)**

Term 6, 3<sup>rd</sup> year: **Pharmacology and Toxicology** (lectures 30 h)

Term 7, 4<sup>th</sup> year: **Pharmacology and Toxicology** (lectures 15 h)

Term 8, 4<sup>th</sup> year: **Clinical Pharmacology** (lectures 15 h)

Term 11 **Examination.** Oral examination, 2 h (4 students)

### **Pharmacology and Toxicology**

(Prof. Dr. med. Klaus Andreas, e-mail: [pa1@rcs.urz.tu-dresden.de](mailto:pa1@rcs.urz.tu-dresden.de),

fax: 00493518832842)

Pharmacology and Toxicology is a speciality with undergraduate and postgraduate education. In the Dental Curriculum the main task consists in teaching the base of pharmacotherapy and the principles of intoxication risk.

#### 1. Introduction

Pharmacology and Toxicology are the scientific base of pharmacotherapy and estimation of intoxication risks. Knowledge of drug treatment and about effects of important poisons are indispensable for dentists to get necessary professional qualification.

#### 2. Primary Aims

The basic concepts of pharmacotherapy of common diseases and the principles of important intoxications will be explained with a specific emphasis on dental practice.

#### 3. Main objectives

- General Principles of Pharmacology and Toxicology
  - Introduction
  - Pharmacodynamics: Mechanisms of drug action and the relationship between drug concentration and effect. Molecular aspects. Receptor. Drug receptor interaction.
  - Pharmacokinetics: Translocation of drug molecules (Passive and active processes. Influence of pH). Routes of administration. Absorption. Distribution. Elimination (Biotransformation. Excretion). Half-Life. Extent and rate of availability. Dosages.

- Individual variation.
- Drug interaction.
- Drugs acting at the peripheral autonomic and somatic motor nervous system
  - Cholinergic agonists
  - Anticholinesterase agents
  - Atropine, scopolamine, and related antimuscarinic drugs
  - Agents acting at the neuromuscular junction and autonomic ganglia
  - Catecholamines and sympathicomimetic drugs
  - Adrenergic receptor antagonists
- Drugs acting on the central nervous system and drug therapy of inflammation
  - Opioid analgesics and antagonists
  - Antipyretic-antiinflammatory analgesics  
and other antiinflammatory drugs
  - Local anaesthetics
  - General anaesthetics
  - Hypnotics/sedatives, anxiolytic drugs
  - Drugs used in treating motor disorders (M. Parkinson, epilepsy)
  - Drugs used in affective disorders (neuroleptics, antidepressants)
- Cardiovascular drugs
  - Cardiac glycosides and other substances with positive inotropic effect
  - Anti-anginal drugs
  - Antidysrhythmic drugs
- Drugs acting on the blood
  - Anticoagulants
  - Antiplatelet agents
  - Fibrinolytic and antifibrinolytic agents
- Antibacterial agents
  - General considerations
  - Sulfonamides, trimethoprim-sulfamethoxazole, quinolones
  - Beta-lactam antibiotics: Penicillins, cephalosporins, cephalomycins, carbapenems
  - Tetracyclines, chloramphenicol, aminoglycosides, erythromycin
  - Antibacterial agents affecting DNA gyrase
  - Miscellaneous antibacterial agents
- Toxicology
  - General principles of treatment of intoxication
  - Responses of blood and respiratory system to toxic agents:

Carbon monoxide, methemoglobin  
generating substances, cyanides,  
hydrogen sulfide, lung irritants  
(pulmonary oedema), nitrogen,  
carbon dioxide.

- Heavy metals and heavy-metal antagonists:  
Lead, mercury, arsenic, cadmium,  
thallium and chelating agents
- Organic solvents:  
Aromatic hydrocarbons, aliphatic  
hydrocarbons
- Ethanol, drugs and addiction
- Pesticides:  
Anticholinesterase insecticides  
(organophosphorus ester, carbamate  
ester),  
  
organochlorine insecticides (DDT,  
HCH).  
  
Herbicides:  
  
Chlorphenoxy  
compounds (2,4-D,  
2,4,5-T, incl. dioxin),  
  
bipyridyl derivatives  
(paraquat)

4. Hours in the Curriculum
  - 45 hours
5. Methods of learning/teaching
  - Lectures
5. Assessment of Methods
  - Knowledge of the students is assessed in an oral examination
5. Strengths
  - Systematic lectures with practical relevance
5. Weaknesses
  - No seminars
5. Innovations
  - Handouts for each chapter
5. Plans for the future
  - More problem based learning

## Clinical Pharmacology for Dentists

Prof. Dr. Joachim Fauler, Fax 0049351 458 4341, e-mail:Joachim.Fauler@mailbox.tu-dresden.de

Clinical pharmacology completes the education in pharmacology and is the key to clinical pharmacotherapy. The main aim of this course is to provide the student with the knowledge of drug treatment of common diseases and its implication in dentistry. The lectures takes place within the 4<sup>th</sup> year.

### 1. Introduction

Drug treatment of patients can have a considerable impact on the safety of dental treatment. Therefore, dentists must have a basic knowledge of drug treatment of common diseases.

### 2. Primary aims

The basic concepts of drug therapy of common diseases will be explained with an specific emphasis on dental practice.

At the end of each lecture the students must solve a few questions upon the subject of the lecture and then work out the appropriate treatment for one or two cases.

### 3. Main objectives

- Drug regulation in Germany and how to prescribe drugs in dentistry
- Anticoagulation and platelet inhibiting drugs
- Drugs affecting the cardiovascular system
- Drug treatment in emergency medicine
- Local anesthetics
- Pain control with nonsteroidal anti-inflammatory drugs and opioids
- Antibiotics

### 1. Hours in the Curriculum

- 15 hours

### 1. Method of learning

- Lectures with discussions and case exercises

### 1. Assessment of Methods

- Knowledge of the students is assessed in an oral examination

### 1. Strengths

- Combination of lectures with case exercises will help the students better to memorise the essential aspects of the lecture

### 1. Weaknesses

- Classes are too large for individual group studies

### 1. Innovations

- Case demonstrations

### 1. Plans for the future

- More problem based learning

## Microbiology and Hygiene (Section 7.2)

(Prof.Dr.med.Enno Jacobs, e-mail: [je4@irz.inf.tu-dresden.de](mailto:je4@irz.inf.tu-dresden.de), fax 0049 351 463 8570)

Microbiology and Hygiene is taught for undergraduate students and is positioned in the third year and in the fifth year. Lectures and practical courses in Microbiology and Hygiene are taught in a proportion of 80 to 20 % of 50 hours.

## Content of lectures and practical courses in Microbiology and Hygiene

### 1. Introduction

Bacterial, viral, fungal and parasitic infectious diseases are classified according to the particular organ systems and into a clinically relevant context. Pathogenesis and virulence factors are included towards understanding of infectious diseases as well as all different aspects of prevention, diagnosis, therapy and control.

### 2. Content of lectures

- History of major spreads of infectious diseases and developments in diagnosis, therapy and prevention
- The bacterial morphology, virulence factors and host-parasite interactions
- Common laboratory approaches to prove bacterial agents
- Pyogenic bacteria: Staphylococci and Streptococci
- Respiratory tract infections and invasive complications i.e. sepsis and meningitis
- Gastrointestinal tract infections: Systemic infections, diarrhoeal diseases and food spread enterotoxins
- Urinary tract infections
- Hospital infection: Sources, routes of spread, host factors, prevention and control
- Techniques for disinfection and sterilization and controlling of the different approaches
- Water spread diseases i.e. Legionella
- Mycobacteria, Actinomyces and other infectious agents in the immunocompromised host
- Sexually transmitted diseases
- Anaerobic bacterial infections of the skin, muscle and in odontogenous processes
- Plaque forming bacteria and caries
- Infectious diseases in the oral cavity i.e. diphtheria and Candida albicans stomatitis
- Antimicrobial agents, chemotherapy and vaccination
- Biology of viruses
- Respiratory Viruses and of childhood exanthems
- Herpesviruses, Hepatitis viruses and Retroviruses: Problems in odontotherapy
- Travelers diseases and parasites

### 3. Content of laboratory courses

- Handling of human pathogenic agents, prevention, disinfection methods and control of contamination
- Specimen collection, transport and processing of human material
- Gram staining, microscopy and cultivation of plaque bacteria
- Identification and characterisation of microorganisms
- Antibiotic test assays and interpretation of antibiotic sensitivity patterns
- Serology
- Molecular diagnostic techniques

#### 4. Hours in the Curriculum

Lectures (40 h) and laboratory courses (10 h).

#### 5. Methods of learning/teaching

Laboratory courses are run in groups of 10 to 15 students

#### 6. Assessment methods

Obligatory attendance

#### 7. Strengths

Theory and practice is closely linked

#### 8. Weaknesses

No time for seminars

#### 9. Innovations

Lectures and laboratory courses will be taught next year in modern facilities

#### 10. Plans for the future

Textbook in microbiology written especially for students studying dentistry

### **Pathology (Section 7.3)**

(Prof. Dr. Martin Müller, Prof. Dr. Dietmar Kunze,

e-mail: patholog@rcs.urz.tu-dresden.de, fax 00493514584328)

### **General Pathology**

Term: 3d year;

Lectures: 28 hours

Topics: Causes of Disease

Pathogenesis

Cells and Tissues in Health and Disease

Pathology of Circulation

Inflammation

Neoplasia

## **Systematic Pathology**

Term: 4th year

Lectures: 30 hours

Microscopy and

Exercise: 39 hours

Topics: Cardiovascular System

Respiratory System

Alimentary Tract

Liver, Pancreas, Biliary Tract

Kidney and Urinary Tract

Male and Female Reproductive Tract

Mammary Gland

CNS

Endocrine Glands

Orofacial Diseases

## **Section 7**

***7.1: Pharmacology and Toxicology/Clinical Pharmacology for Dent. Students***

***7.2: Microbiology and Hygiene***

***7.3: Pathology***

### ***Visitors Comments***

#### ***Pharmacology & Toxicology***

*A special course in Clinical Pharmacology is provided for the dental students. The Visitors were informed that this is the first Clinical Pharmacology course in Germany.*

*All aspects of clinical pharmacology appeared to be covered in collaboration with clinical disciplines.*

*This course is made up of 45 hours of lectures and 15 hours of clinical practice.*

#### ***Pathology***

*This course is comprised of lectures and practical with training in microscopy.*

*It was unclear how many hours were spent on oral pathology, but approximately 30% of the time was spent on Orofacial Diseases .*

#### ***Oral & Dental Pathology***

*This is dealt with superficially on this programme. However this topic is covered in more depth by Prof. Klimm in Conservative Dentistry*

#### ***Microbiology & Hygiene***

*Microbiology is taught in the 3<sup>rd</sup> Year and hygiene in the 5<sup>th</sup> year. Hygiene includes disinfection, sterilisation, blood borne diseases, cross Infection and waste disposal. The Visitors felt that the important area of Hygiene should be scheduled earlier in the programme.*

*Immunology is not taught on the programme.*



## **Section 8**

**8.1: Internal Medicine for Dental Students**

**8.2: General Surgery**

**8.3: Otorhinolaryngology**

**8.4: Cardiopulmonary Resuscitation**

### **Internal Medicine for dentistry students (Section 8.1)**

Prof. Dr. med. habil. Jan Schulze

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The lectures in Internal Medicine for dentistry students are part of the curriculum to mediate basic Science knowledge in Internal and General Medicine for dentists. The training is divided into a general part in the 8<sup>th</sup> Term and a more specialised part in the 9<sup>th</sup> Term. The 8<sup>th</sup> Term consists of 26 hours lectures and the 9<sup>th</sup> Term of 20 hours lectures and 9 hour practical training and bedside Teaching. At the end of the 9<sup>th</sup> Term a final examination finalises the training with examination basic knowledge in Internal medicine.

#### **8. Term**

Common and important syndromes in Internal Medicine are used to give an overview in Medical Practice. Interrelationships between dentistry and Internal Medicine like infectious diseases and metabolic disorders are part of the training. To be aware of emergency situations and handling the patient in such a situation is one of the main intentions in mediating medical knowledge. The ongoing dentist should be sensitised for major symptoms in the head and neck area of the patients to contact specialised institutions.

#### **9. Term**

This Term is used to extend the medical knowledge in infectology and nephrology and psychosomatic as well. The student should depend his basic knowledge and be in a position to estimate seriousness of an disease and estimate the right intervention.

Basic practical skills like invasive procedures, taking patient history and non-invasive diagnostic procedures are part of the training. Theoretical knowledge in interpretation of diagnostic results is mediated. The students should be in a position of right intervention in an emergency.

### **Practical Training**

Theoretical Skills taught while the lectures are applied while the practical course. Main symptoms in the head and neck area of the patients are demonstrated to the student and intervention in this case is taught. The student has the chance to take patient histories and should apply theory practically. Intensive training in direct patient examination with basic methods like palpation, Inspection, percussion and auscultation is done, injection, other invasive procedure, catheterization, infusion, transfusion and electrocardiography are demonstrated.

### **Examination**

Examination is orientated on the main Topics of the training for basic Internal Medicine. The student has to show to understand an overview in Internal Medicine and knowledge about the main symptoms characteristic for the most common diseases. The student must have knowledge about handling emergency situations and treating risk patients.

### **Main Topics for examination - dentistry students 9<sup>th</sup> Term**

1. Emergency Medicine
  - lung oedema
  - unconsciousness in diabetic patients while dentist's treatment
  - bronchial asthma: acute case
2. Cardiology
  - left ventricle insufficiency
  - acute myocardial infarction
3. metabolic diseases
  - metabolic syndrome
  - diabetes mellitus
  - adiposity, morbid obesity
  - fatty acid metabolism - failure
4. Endocrinology
  - common pituitary diseases (acromegaly, prolactinoma)
  - thyroid diseases: struma, goiter, hyper, hypothyroid disease
  - adrenal gland insufficiency, Cushing's disease, Addison disease
5. Pneumology
  - asthma: definition, clinical symptoms, therapy
  - sleep apnoea syndrome
  - pneumonia

6. Nephrology
  - renal hypertension: renal-vasulopathy, renal-parenchyma, genesis, consequences
  - renal insufficiency: stages, uraemia, dialysis
  - renal diseases: nephrotic syndrome, glomerulonephritis, pyelonephritis
  - cystic kidney disease: renal anaemia, renal osteopathy
7. Haematology
  - anaemia: clinical picture, common forms
  - hematopoesis: common hematopoetic diseases
  - coagulopathies
8. Oncology
  - basics: histology, cytology, cell-proliferation, karnofsky index
  - differences in palliative/curative treatment
9. Gastroenterology
  - stomach, -duodenum
  - helicobacter pylori
  - colitis ulcerosa, -chrons disease
10. infectious diseases
  - infectious diarrhoea
  - AIDS, HIV-infection

## **General Surgery (Section 8.2)**

Prof. Dr. H. D. Saeger, phone: ++49/351/4582742, fax: ++49/351/4584395,  
e-mail: [Hans-Detlev.Saeger@mailbox.tu-dresden.de](mailto:Hans-Detlev.Saeger@mailbox.tu-dresden.de)

Surgery for dentist students gives information about epidemiology, diagnostic procedures, some technical principles and prognosis of different surgically treated diseases. Lectures and a basic training of clinical examination are presented during the 3<sup>rd</sup> year of the students education

The curriculum includes 2h/week, summing up to a total of 56 hours teaching general surgery.

1. Main objectives:
  - Would healing, asepsis and infection, endocrine, gastrointestinal, cardiovascular, orthopedics, trauma, neurosurgery.
2. Teaching method:
  - Lecture
3. Assessment:
  - Oral examination as a part of the final exam after 5 years of education (1 professor, 4 students)

4. Plans for the future:

Integrated seminars with simultaneous participation of 1-3 medical teachers with different specialities (e. g. internist, radiologist, surgeon) – at least partially – could probably improve the effectiveness of teaching. This system avoids unnecessary repetitions of medical topics. Summarizing pathological entities could be more impressive for the students.

## **Otorhinolaryngology (Section 8.3)**

Teaching dentist students in ENT is done in consideration that both disciplines are very close in many points.

Main interest is a practical orientation emphasizing the principles of a modern diagnostic including differential diagnosis and therapy.

Lecture is given in the 5th year of study (30 hours).

A speciality of the education of dentist students in Dresden is the endocopal live demonstration of typical diseases of the nose, oral cavity, pharynx, larynx, sinuses and the ear that is performed in every lecture. This principle of teaching elucidates the unity of findings of physical examination and the diagnosis. The students are involved actively in this process.

The examen is performed orally by a single auditor on one day.at the end of the 5th of studies (4 students in 2 hours).

### **1. Lecture in Rhinology**

1.1 Embryology (olfactory placode, turbinates, sinuses)

1.2 Anatomy  
cartilage, bones, muscles, vessels, nerves

1.3 function

1.4 methods of examination

- Inspection, rhinoscopy, palpation, examination of olfactory function, rhinomanometry, ultrasound diagnostic, endoscopy, radiological diagnostic including CT scan.

1.5 clinics

- external nose: deviation and malformation, folliculitis, furuncle, eczema of the orifice of the nose, fractures of the nose, tumors
- nasal cavity: rhinitis, malignant granuloma, rhinitis atrophicans, allergic rhinitis, foreign bodies, septal deviation, hematoma and abscess of the septum, dysosmia, bleeding of the nose
- sinuses: sinusitis of the maxillary, ethmoid, frontal, sphenoid sinus
- chronic sinusitis
- mucocoeles
- tumors of the sinuses

- fractures of the frontal base

## **2. Lecture in oral cavity and pharynx**

- 2.1 anatomy
  - nasopharynx, oropharynx, hypopharynx
  - Waldeyer's lymphatic tissue
- 2.2 physiology
  - swallowing, creating of tone and speech, function of the tonsils
- 2.3 methods of examination
  - inspection, endoscopy, palpation, testing of gustatory function, Imaging
- 2.4 clinics
  - nasopharynx: adenoids, juvenile fibrom of the nasopharynx, malignoma
  - oropharynx: lacunary angina, acut pharyngitis, chronic pharyngitis, angina Plaut Vincent, paratonsilar abscess,
  - parapharyngeal abscess, chronic tonsillitis, , injuries
  - oral cavity: plicated tongue, geographic tongue, glossitis rhomboidea mediana, leukoplakia, hairy tongue, Hunter glossitis, soor, mucositis, carcinoma of the tongue

## **3. lecture in laryngology, hypopharynx and esophagus**

- 3.1 embryology
- 3.2 anatomy
  - cartilage, muscles, ligaments, joints, structures vessels, nerves, lymphatic supply
- 3.3 function
- 3.4 methods of examination
  - inspection, palpation, examination with mirror and laryngoscope, microlaryngoscopy, x-ray examination, stroboscopy, electroglottography, electromyography, analysis of the sound of the voice
- 3.5 clinics
  - dysplastic dysphoni: hypoplasia of the larynx, glottitis of the sulcus, asymmetria of the larynx, laryngeal diaphragm, laryngomalacia, laryngoceles
  - disturbances in the development of the voice
  - secondary organic changes of the vocal cords (hyperemia, nodules of the vocal cords, polyps of the vocal cords, contact ulcerosis, cysts
  - inflammations (acut and chronic sinusitis, acut epiglottitis, pseudocroup, specific inflammation
  - acut edema of the entrance of the larynx
  - trauma (granuloma due to intubation, lesions due to intubation, luxation of the arytenoid cartilage

- aphthosis and soor
- papilloma of the larynx (adults and children)
- paralysis (laryngeal sup. and inf. nerve, uni- and bilateral paralysis)
- functional dysphonia (hyper- and hypofunctional dysphonia, psychogenic)
- aphonia, voice generated by the vestibular folds.
- Generation of the voice after partial and total laryngectomy (esophageal voice, voice prosthesis, Servox speech aid)
- malignant tumors of the larynx (radical and functional neck dissection)
- carcinoma of the hypopharynx  
esophagus (anatomy, barium swallow test, esophagoscopy, foreign bodies, diverticulosis of the esophagus, chemical burn)
- Trachea (anatomy, tracheotomy, coniotomy, foreign bodies, inflammation)
- neck (methods of examination, differential diagnosis of a palpable tumor, metastasis, cysts, tumor of the carotid glomus)
- speech impediments (definition of speaking and speech)
- normal and retarded development of the speech
- dyslalia
- nasal speaking
- Stuttering and tachyphrasia
- Dysphasia and dysarthria

## **4. Lectures in ear**

- 4.1 embryology
- 4.2 anatomy (external ear, middle ear, pneumatic rooms, fascial nerve, labyrinth)
- 4.3 physiology
  - transportation and transformation of sound
  - labyrinth
- 4.4 methods of examination
  - anamnesis, inspection, otoscopy, examination of the hearing function, speech audiometry, objective testing of the hearing, testing of the vestibular organ, imaging
- 4.5 clinics
  - external ear: anomalies and malformations, injuries, cerumen, foreign bodies, hematoma of the ear, exostosis, eczema, tumors
  - middle ear: rupture of the tympanic membrane, otobasal fracture, malformations, tumors, otosclerosis
  - acute otitis of the middle ear (complications: fascial palsy, mastoiditis)
  - chronic otitis of the middle ear (complications, tympanoplasties)
  - inner ear: Menière's disease, sudden hearing loss, vertigo, acoustic trauma, hard of hearing due to noise, herpes zoster, presbycusis, hereditary hearing loss, tumors, acoustic neuroma

## **5. lecture in neck**

- 5.1 anatomy
- 5.2 methods of examination
  - inspection, palpation, biopsies, imaging procedures
  
- 5.3 clinics
  - medial and lateral fistula and cysts
  - non specific lymphadenitis of the neck
  - specific lymphadenitis of the neck
  - differential diagnosis of lymph nodes
  - malignant lymphoma
  - TNM-classification

## **6. lecture in salivatory glands**

- 6.1 anatomy
- 6.2 function
  - (function in humidification, cleaning, protection, excretion)
  
- 6.3 methods of examination
  - (inspection, palpation, imaging)
- 6.4 clinics
  - inflammation,
  - sialolithiasis
  - tumors
  - ranula

## **Cardiopulmonary Resuscitation Training (Section 8.4)**

(Prof. Dr. D. M. Albrecht, e-mail: [dm\\_albre@rcs.urz.tu-dresden.de](mailto:dm_albre@rcs.urz.tu-dresden.de), fax +49 351 458 4336, internet: [www.tu-dresden.de/-medkai/](http://www.tu-dresden.de/-medkai/))

Cardiopulmonary Resuscitation Training is a facultative lesson offered by the Clinic for Anaesthesiology and Intensive Care Medicine. In the course (90 minutes per week) Students in the 3<sup>rd</sup> year can practise cardiopulmonary resuscitation under supervision of a consultant anaesthetist. After a short brief cardiac arrest situations are simulated with a special training phantom.

### **1. Introduction**

At work every dentist may have to deal with medical emergencies. Especially cardiac arrest is a situation with very little chance to survive if Basic Life Support is not done within the first 3-5 minutes. For this reason it is very important that the dentists can provide cardiopulmonary resuscitation until the emergency medical doctor is on scene.

2. Primary Aims

After the CPR-training the students should be able to deal with a cardiac arrest situation and should be familiar with Basic Life Support (BLS).

3. Main Objectives

- diagnosis of unconsciousness, respiratory insufficiency/apnea and cardiac arrest
- to make a correct emergency call
- to perform basic cardiopulmonary resuscitation
- 

4. Hours in the Curriculum

24 hours practical training

5. Method of learning/teaching

Practical training with resuscitation phantom

6. Assessment methods

There is no examination, but every student participating in the lesson demonstrates BLS in a simulated cardiac arrest situation.

7. Strengths

Small groups. Realistic situations.

8. Weaknesses

90 minutes are not enough to teach the theoretical background in emergency medicine.

9. Innovations

Very realistic real time simulation of emergency situations. A lot of emergency medicine techniques can be trained with the resuscitation phantom.

10. Plans for the future

To offer 4 training lessons instead of 2 per week and lessons in every study year. A special Mega – Code - Training should be offered to practise not only Basic Life Support but also Advanced Life Support.

**Section 8**

***8.1: Internal Medicine for Dental Students***

***8.2: General Surgery***

***8.3: Otorhinolaryngology***

***8.4: Cardiopulmonary Resuscitation***

***Visitors Comments***

***Internal medicine***

*Students are trained to examine patients – BP, ECG, etc. Students examine patients' at the bedside.*

*The students are trained in Endocrinology e.g. Diabetic coma, Acromegaly, Addison's, etc .*

*The Visitors asked how the students are trained to manage medically compromised patients and whether Internal Medicine could work more closely with OMFS?*

***Otolaryngiology***

*(Prof. Knothe spoke mainly in German)*

*Appeared to be little link between Otolaryngiology and OMFS.*

*Following discussion, teaching regarding the Temporomandibular Joint appeared to be covered in the following areas:-*

- Otolaryngiology*
- OMFS*
- Orthodontics*
- Prosthodontics*

*The Visitors felt that there should be more integration of these important areas in student teaching and in clinical practice.*



## Section 9

### **9.1: Orthodontics**

### **9.2: Paediatric Dentistry**

#### **Orthodontics (Section 9.1)**

(Prof.Dr. Winfried Harzer, e-mail:harzer@rcs.urz.tu-dresden.de, fax 00493514585318)

http: www.tu-dresden.de/medpko/ko.htm

Orthodontics is a speciality with undergraduate and postgraduate education. In the Dental Curriculum the main task consist in teaching Orthodontic diagnosis and basic principles of treatment. The course begins in the 3<sup>rd</sup> year and ends in the 5<sup>th</sup> year. Lectures, seminars and practical training are in a proportion of 90 to 30 to 360 hours.

The overall description of the are

Term 6, 3<sup>rd</sup> year: **Craniofacial development** (lectures 30 h)

Term 7, 4<sup>th</sup> year: **Diagnosis of malocclusion** (lectures 30 h), **Propaedeutical course** in manufacturing and use of removable appliances (120 h)

Term 8, 4<sup>th</sup> year: **Orthodontic diagnosis and treatment planing** (lectures 30 h, seminars 20 h, practical training 100 h)

Term 9, 5<sup>th</sup> year: **Complex Orthodontic treatment** (one case per student, seminars 10 h, practical training 110 h)

Term 11 **Examination:** 1<sup>st</sup> day: - Case report, written examination

2<sup>nd</sup> to 4<sup>th</sup> day: Manufacturing of a removable appliance

4<sup>th</sup> day: Oral examination, 2 h (4 students)

#### **Craniofacial development**

##### 1. Introduction

Knowledgees abaout Craniofacial development and dentition are the theoretical foundation for an optimal practical training in Orhodontics. The lectures are used although for introduction in Terminology, Epidemiology and Etiology of molocclusions.

##### 2. Primary Aims

The introductory lectures should make the students fit for the practical training

##### 3. Main objectives

- History of Orthodontics
- Phylo- and Ontogenesis of orofacial system

- Growth and development of teeth and jaws
- Genetics, Syndromes of head and neck, cleft of lips and palate
- normal and anomalous dentition, prevention of local malocclusion
- Terminology
- Classification of diagnosis
- Epidemiology
- Orthodontic tissue reaction
- Orthodontic mechanics

#### 4. Hours in the Curriculum

30 hours for lecture with some patient demonstrations

#### 5. Method of learning/teaching

Lectures with discussions, slides and videofilms

#### 6. Assessment methods

The knowledes of the students are assessed in a written examination at the end of term.

#### 7. Strengths

Linkage of theoretical basis with examples of preventive growth stimulation methods through patient demonstrations.

#### 8. Weaknesses

no seminars and study in small groups

#### 9. Innovations

Patient demonstrations

#### 10. Plans for the future

more problem based learning and more preventive objectives

### **Diagnosis of malocclusions and Propaedeutical course**

#### 1. Introduction

During this term the students learn basic skills needed to diagnose malocclusion traits using dental casts, cephalograms and photographs and make growth studies using radiographs of the hand. In the propaedeutical course they produce different kinds of braces and bend exercises on orthodontic wires.

#### 2. Primary Aims

The students can recognize different malocclusion traits, finds several cephalometric landmarks, know how cephalometric analysis and model analysis are done in orthodontics and can conclude for the best way of treatment. In the course they should get skills for manufacturing of braces and learn the right way of use and their indication.

### 3. Main objectives

- Timing for diagnosis in the individual malocclusion and transfer to the specialist
- Anamnesis, clinical investigation and findings
- Functional tests
- Cephalometric analysis, analysis of hand radiograph
- Analysis of dental casts in orthodontics (space analysis, prediction of unerupted teeth during mixed dentition)
- Symptoms list, diagnosis and conclusions for the treatment plan
- Skills in manufacturing of braces (transversal and Y- plate, activators)
- Bend of loops in orthodontic wires

### 4. Hours in the Curriculum

Diagnosis of malocclusions: Lectures ( 22 h), seminars and exercises (8h)

Propaedeutical course: Practical training (120 h)

### 5. Method of learning/teaching

Lectures alternating with theoretical and practical exercises in groups

### 6. Assessment methods

Diagnostic knowledges are assessed in a written examination at the end of the term. Practical skills in manufacturing of braces are assessed by a target of different plates

### 7. Strengths

Combination of knowledges about diagnosis of malocclusion with practical skills in application of braces.

### 8. Weaknesses

The groups of students are too big (1/20)

### 9. Innovations

Exercises of wire bends and loops in the propaedeutical course

### 10. Plans for the future

Time reduction in the propaedeutical course to spend for oral hygiene exercises in orthodontic patients

## **Orthodontic diagnosis and treatment planning**

### 1. Introduction

This course is focused at the systematic of diagnosis and treatment in the different kinds of malocclusions. The students get patients with the same diagnosis at the particular day and prepare the comprehensive care for this patient. The students get before a lecture and a seminar to this specific diagnosis and case. In a second part of the course the students take part at the routine treatment of orthodontic

patients through the tutors. In these patients they make small treatment steps like slicing of deciduous teeth for prevention of crowding, frenectomy or change of wires for the fixed appliances

## 2. Primary Aims

The students should train basic skills for diagnosis and treatment of orthodontic patients. They learn this under systematic conditions in the first part of the course (5h) and under the daily conditions in an orthodontic office in the second part of the course (3h).

### 3. Main objectives

- Impressions and producing of dental casts
- Practical training of orthodontic diagnosis and treatment planing
- Treatment plan for crowding, cross-bite, open-bite, Class-III, II/1 and II/2 malocclusion, hypodontia, retention of teeth.
- treatment steps in the daily routine like slicing of deciduous for prevention of crowding and cross-bite, bracket bonding, change of wire, control of braces, frenectomy.

### 4. Hours in the Curriculum

30 hours lecture adapted to the topics of course (100 h), 20 hours seminar

### 5. Method of learning/teaching

6 students per tutor, 2 students per dental chair, during treatment of patients one student assists the other

### 6. Assessment methods

Oral examination of one student per group (6) before each course, written examination at the end of term

### 7. Strengths

Good balance between systematic learning of practical skills and doing practical steps like in an orthodontic office

### 8. Weaknesses

Sometimes not enough patients for each specific malocclusion

### 9. Innovation

Active participation at the daily routine treatment

### 10. Plans for the future

PBL (Harvard model) in the course seminars (case library)

## **Complex Orthodontic treatment**

### 1. Introduction

In this practical course every student gets one patient to start the orthodontic treatment selfstanding and control the progress during the whole term

## 2. Primary Aims

Responsibility of students for patients care should promote through selfstanding work out of diagnosis, treatment plan, manufacturing of the brace, incorporation of appliance and watching of the treatment progress

## 3. Main objectives

- Doing the diagnosis and treatment process in the whole
- Close interaction between student and patient
- Psychological aspects of patients care, to understand patients wishes and complains, stimulation of compliance
- Control of oral hygiene during treatment period
- Registration of treatment succes and effect of appliance

## 4. Hours in the Curriculum

110 hours practical training and 10 hours seminar

## 5. Method of learning/teaching

6 students per tutor, separate treatment time for each student, defence of treatment plan in the student group, learning from the other treatment plans

## 6. Assessment method

Evaluation of diagnosis and treatment steps for the case, written examination at the end of the term

## 7. Strengths

Comprehensive care of orthodontic patients (only with removable appliances)

## 8. Weaknesses

Time for watching and control of treatment process is to short

## 9. Innovations

Comprehensive care during the undergraduate studium

## 10. Plans for the future

Extension of time for treatment control in 10<sup>th</sup> term

## **Final examination**

The written, practical and oral examination after the 5<sup>th</sup> year is the most important assessment and gives the best information about the skills and knowledges of the student.

## **Hours in the Curriculum of Orthodontics**

year	Total	3rd year	4th year	4th year	5th
term		6th term	7th term	8th term	9th
Lectures 90		30	30	30	
Seminars 30				15	15
Propedeutic course 120			120		
(treating patients) 240				120	120
<b>Total</b> 480		30	150	165	135

## Paediatric Dentistry (Section 9.2)

(Prof.Dr.G. Hetzer, e-mail:g.hetzer@rcs.urz.tu-dresden.de, fax 00493514585303)  
<http://www.tu-dresden.de/medakzh/kzh.htm>

### 1. Introduction

Paediatric Dentistry is based on knowledge and clinical skills from the other dental disciplines adapted and applied to the specific age group. Therefore it is the quite last subject taught in the dental curriculum.

### 2. Primary Aims

Primary aim of the paedodontic curriculum is to make dentists well fit for

- the general preventive and restorative dental care of infants, children and adolescents and
- to assess the time of referring a child to a dental specialist (orthodontist, dental surgeon)

### 3. Main Objectives:

- Diagnosis and treatment planning
- Behavioural science, pre-medication, pain control and patient management
- Prevention
- Restoration of primary and young permanent teeth
- Endodontics
- Traumatology

- Developmental disturbances of teeth
- Periodontics
- Prosthetics

all with relevance to Paediatric Dentistry.

#### 4. Hours in the Curriculum

The paedodontic curriculum comprises during the 9<sup>th</sup> semester

13 lectures (26 hours)

2 clinical seminars (4 hours) and

during the 10<sup>th</sup> semester

clinical course (45 hours) where the students are treating infants, children and adolescents.

#### 5. Method of learning/teaching

lectures / theoretical exercises in groups; clinical training is carried out in groups of 6 - 8 students with one teacher (paedodontist) for each group; during the treatment one student assists the other.

#### 6. Assessment methods

Short written examinations during the lectures and a certification (Schein) of the student's successful participation in the clinical course.

#### 7./8. Strengths / Weaknesses

The students obtain a sound theoretical knowledge of the Paediatric Dentistry, but they have only a limited clinical experience in this field.

#### 9. Innovations

- All lectures are combined with demonstrations of patients or clinical procedures.
- Medically or socially compromised children are integrated into the clinical course.
- Hospitations of students in treatments of children under general anaesthesia, to give students a basic understanding of organization and indications for the use of general anaesthesia.
- Practical training in the field of Paediatric Dentistry is not established at all German universities.

#### 10. Plans for the future

Extension of student's practice in caries prevention during the pre-clinical segment and to add more problem based learning in the curriculum.

#### **Final examination**

Paediatric Dentistry is a separate part of the Conservative Dentistry in the national dental examination (practical and oral examination).

### **Section 9**

**9.1: Orthodontics**

**9.2: Paediatric Dentistry**

**Visitors Comments**

**Orthodontics**

*The orthodontic programme is well structured and run.*

*Undergraduate and postgraduate education is carried out in the Dental School.*

*Continuing education organised by the Dental Chamber*

*Orthodontic auxiliaries and dental hygienists are utilised to:*

*remove resin, polish } teeth and make impressions for study casts.*

**Paediatric Dentistry**

*The staffing in this area comprises a professor, dentist, nurses, 1 dental hygienist and a dietician*

*Research is being undertaken in the areas of fluoride, epidemiology and public dental health.*

*It is suggested that this area should be more closely linked with preventive dentistry and developed in its own right.*

**Section 10**  
**Preventive and Community Dentistry**  
**10.1: Medical Informatics and Statistics**

**Preventive and Community Dentistry (Section 10)**

(Prof.Dr.G. Hetzer, e-mail:g.hetzer@rcs.urz.tu-dresden.de, fax 00493514585303)  
<http://www.tu-dresden.de/medakzh/kzh.htm>

1. Introduction

This entity comprises several fields (prevention of oral diseases, epidemiology, behavioural science, dental care for patients with special needs, ethics and practice management) which are integrated parts of other dental sections (Paediatric Dentistry, Conservative Dentistry, Periodontology, Orthodontics). During the undergraduate training there is no a special curriculum of oral public health. A postgraduate training in public health has been established in Dresden since 1991.

2. Primary aims

Primary aims are to make students competent in the design, implementation and completion of a preventive dental care program for every type of patient, to train socially responsible dentists and to give students a basic understanding of dental public health problems.

3. Main objectives

Basics of *prevention of oral diseases*:

- Saliva
- oral microbiology
- dental plaque
- de-/remineralisation
- diet
- oral hygiene
- antiseptics, antimicrobials
- risk assessment and individual approaches for disease prevention

Basics of *oral public health*:

- Organization, responsibilities and activities of dental health care
- Cost-benefit-considerations
- Special oral problems related to different age groups and population groups
- Professional dental associations
- Scientific dental associations
- Insurance systems

4. Hours in the curriculum

The hours for preventive dentistry in every special course are not fixed exactly. During the 1st year students do preventive measures in kindergartens:  
lectures – 4h  
practice in small groups (2 - 3 students) – one half day  
During the 5th year there are special lectures (15 h) in the field of dental profession science.

#### 5. Methods of learning / teaching

Lectures, discussions in small groups, clinical training

#### 6. Assessment methods

Assessment methods are like in other dental sections. Educational effect during the student's practice in kindergartens is assessed by nursery-school teachers.

#### 7. Strengths

Individual preventive measures are compulsory integrated into the clinical courses.

#### 8. Weaknesses

No special curriculum; the number of available hours is too low.

#### 10. Plans for future changes

- Extension of elements of oral prevention in the pre-clinical segment (first step)
- Reorganization of Germany's dental licensing regulations (second step)

## **Medical Informatics and Statistics (Section 10.1)**

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fax +49 351 3177133) <http://www.imib.med.tu-dresden.de>

Medical Informatics is a speciality with undergraduate and postgraduate education. In the Dental Curriculum the main task consists in teaching basic principles and methods of Medical Informatics with special focus on Dental Informatics and Clinimetry. Lectures and practical training in computer pools are in a proportion of 14 to 4 hours. The lecture is located in 4<sup>th</sup> clinical semester.

### Medical Informatics

#### 1. Introduction

Medical Informatics comprises the theoretical aspects of information processing and communication. Knowledge about Medical Informatics is a prerequisite for the rational use of computers in medicine. Clinimetrics is a basic of evidence based medicine.

## 2. Primary aims

Development of knowledge and skills for the application of computers

## 3. Main objectives

What is Medical Informatics?

Information and communication

Data, information, knowledge

Computers and symbols

Telecommunication, networking and integration

Basic concepts of Clinimetrics: process of clinical observations, sources of variance, normal/abnormal, disease, diagnosis, therapy, prevention, natural history of disease

Process and outcomes

Process of documentation, medical record, legal aspects

Classification and coding

Decision support

Information systems in medicine

Databases and knowledge resources in internet

What is evidence?

Clinical trial: planning, design, execution and analysis

Health statistics

## 4. Methods of learning/teaching

Lectures with discussions, computer presentations, practical training at computers

## 5. Assessment methods

No assessment

## 6. Weaknesses

Too little time for practical exercises at the computer

## 8. Innovations

Training at computers

## 9. Plans for the future

Better integration in clinical lectures and methods for problem based learning

## **Section 10**

### ***Preventive and Community Dentistry***

#### ***10.1: Medical Informatics and Statistics***

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

#### ***Preventative & Community Dentistry***

*There should be some consideration of provision of dental care for special needs groups including ethnic groups.*

*There should be training in communications and in the behavioural sciences.*

*Students should be exposed to the concept of teamwork including work with the various auxiliary groups - eg dental hygienists.*



## Section 11

### **11.0: Pre-clinic Section**

**Dental Materials I and II**

**Basic Dental Science**

**Phantom Course I in Prosthodontics**

**Phantom Course II in Prosthodontics**

**Introduction to Practical Dentistry**

### **11.1: Conservative Dentistry**

### **11.2: Endodontics**

### **11.3: Prosthodontics**

## **Preclinic Section 11.0**

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## **Lecture dental materials I and II**

### 1. Introduction

The lectures in dental materials are a theoretical preparation of the students for the correct use of dental materials. The lectures comprise 30 hours in the first semester and 15 hours in the third semester.

### 2. Primary aims

Primarily the theoretical basis of dental materials are presented.

### 3. Main objectives

Basic composition of dental materials are presented. The usefull combination of different materials in the working chain are presented.

### 4. Hours

no patient training included

### 5. Method of learning/ teaching

lectures, seminars

6. Assessment methods

lectures of the Medical Faculty Dresden; final examination at the end of the semester

7. Strengths

Adequate possibilities for a systematic presentation of the lecture content.

8. Weaknesses

low stimulation for self studying

9. Innovation

Another 15 hours in dental materials are located in the fourth semester as a practical course. In the eighth semester a facultative lecture clinics of dental materials are introduced as chairside teaching with focus on dental material incompatibility. In a second part innovative technologies such as laser welding and full ceramic systems are demonstrated.

10. Plans for the future

Expanding chairside teaching in clinical dental material in the eighth semester.

**Course Basic dental science**

1. Introduction

The course basic dental science is an introduction into dentistry. All clinical relevant dental materials and technologies are included in the practical course. The course also includes principles of prophylaxis in dentistry. The course includes a total of 300 hours, it comprises 40 hours of lectures, 10 hours of seminars and 260 hours of practical course in the second semester.

2. Primary aims

The pre-clinical training is a preparation for the clinical training. It comprises two main goals:

- knowledge in the biological and technological basis
- an orientation in therapy and prophylaxis.

3. Main objectives

- the correct use of the clinical relevant dental materials
- training in technological processes
- knowledge and training in therapeutic, diagnostic and prophylactic contents in dentistry
- interdisciplinary learning
- practical training in the kindergarten
- diagnostics and practical training in senior residences
- practical training in oral diagnostics
- special training in the coordination of the eye and the hand

4. Hours

no patient training in this course

5. Method of learning/ teaching

- high share in practical training (stimulation of the students)
- systematic presentation of the content
- first theory then practical training
- use of video technique

6. Assessment methods

evaluation of the courses within the Medical Faculty Dresden, examination at the end of the courses.

7. Strengths

Optimizing the links between theory and the practical dentistry as well as between therapeutic, diagnostic and prophylactic aspects.

8. Weaknesses

Low stimulation of the students for self study.

9. Innovation

- inclusion of training in dental prophylactic
- interdisciplinary teaching
- best training: visiting of kindergartens and senior residences by the students, which gives them a first contact with patients

10. Plans for the future

reduction of the group size of the students

## **Phantom course I in prosthodontics**

### 1. Introduction

Phantom course I in prosthodontics is an introduction in the biological and technological principles of fixed partial dentures. The course comprises a total of 255 hours (30 hours lectures, 10 hours seminars, 215 hours practical course). The course is located in the third semester.

### 2. Primary aims

This preclinical course is a preparation of the students for their clinical courses. The course includes two main goals:

- the biological and technological basis for fixed partial dentures
- training the skills with articulators, impression materials and tools for the tooth preparation

### 3. Main objectives

- preparation for the clinical courses
- enhancing the quality of demonstration within the courses for example by video
- synoptic presentation for example patient treatment in the lecture hall with the use of video technique
- use of phantom heads
- training of the sequences treat a patient with fixed partial dentures

### 4. Hours

no patient treatment by the students in this course

### 5. Method of learning/ teaching

- increase the level of difficulty (beginning with the tooth preparation on a cast in the hand followed by tooth preparation at the phantom head
- simulation of clinical treatment

### 6. Assessment methods

all student work, evaluation of teaching by the Medical Faculty Dresden, seminars, lectures at the end of the course

### 7. Strengths

adjustment between preclinical training and clinical training

8. Weaknesses

phantom teeth have to be adjusted for correct occlusion

9. Innovation

- adjustment between preclinic and clinic concerning materials and methods
- introduction of seminars
- separation in clinical and technical procedures as performed in the clinical training (phantom head - articulator - phantom head)
- focus on quality assessment (crown margin, occlusion, approximal contacts)
- inclusion of biological aspects (trauma by preparation)

10. Plans for the future

enhance the quality of occlusion in phantom teeth

## **Phantom course II in prosthodontics**

1. Introduction

The phantom course II in prosthodontics comprises the biological and technological basics in removable partial denture. The course comprises 300 hours (30 hours lectures, 270 hours practical course). The course is located in the fifth semester.

2. Primary aims

The course is a preparation for the clinical training of the students. It focuses on two main goals:

- the biological and technological principles for removable partial dentures
- basic training in TMJ diagnostics

3. Main objectives

- preparation for the clinical courses
- enhancement of the course quality by video demonstration
- the use of phantom heads
- the training of clinical adequate sequences in the treatment with removable partial dentures and TMJ diagnostics
- inclusion of the clinically relevant dental materials and technologies
- inclusion of removable partial dentures with cast clasps

- inclusion of innovative technologies such as laser welding and implant training at the phantom head
- intensifying the training in tooth preparation for fixed partial dentures and fabrication of casts

4. Hours

No patient treatment by the students in this course.

5. Method of learning/ teaching

- separation of the clinical and technical procedures are simulated in this course according to clinical courses
- teaching of the theoretical basis and demonstration prior to the practical courses

6. Assessment methods

all student work, evaluation of the training by the Medical Faculty Dresden; final examination at the end of the course

7. Strengths

coordination of the procedures between preclinical and clinical training

8. Weaknesses

lack of seminars

9. Innovation

- coordination preclinic – clinic with focus on methods and material
- separation of the clinical and technical sequences within prosthodontic treatment
- inclusion of quality assessment in the students skills
- inclusion of a basic training in TMJ diagnostic
- inclusion of innovative technologies such as laser welding and the insertion of implant in the phantom head

10. Plans for the future

inclusion of 10 hours of seminars

## **Introduction in practical dentistry**

1. The lecture is designed as an interdisciplinary lecture with the inclusion of many educators. The lecture is located in the first semester and comprises 30 hours.
2. The student is introduced into dentistry.
3. – Introduction into the schedule  
– Introduction into the dental school  
– Historical aspects of medicine and dentistry in Dresden  
– Presentation of the interdisciplinary links between dentistry and internal medicine, hygiene, psychosomatic, working science, (Rechtsmedizin?) as a first orientation  
– Introduction into the different disciplines in dentistry (paediatric dentistry, prevention, orthodontics, cariology and endodontology, periodontology, x-ray in dentistry). The introductions are given by the division directors.
4. No patient treatment.
5. Lectures, seminars, demonstrations
6. Evaluation by the Medical Faculty Dresden
7. Most important aspect of lecture is to introduce the students to the interdisciplinary aspects in dentistry.
8. Contents and sequence of the lectures are optimized.
9. – First aspect is the placement of the lectures in the first semester.  
– Another aspect is to emphasize on dentistry being a part of the medicine  
– presentation of all disciplines in dentistry as an overview for the students orientation  
– The presentation is performed by the division directors  
– The lectures are co-ordinated by the responsible faculty-member of the pre-clinical training
10. No change are planned so far.

### **Facultative lecture in working science and dentistry**

1. The facultative lectures present aspects of working science in dentistry. The lectures comprise 15 hours in the 7<sup>th</sup> semester.
2. The aspects in working science include:
  - patients intraoral changes caused by their profession
  - ergonomic aspects of the dental profession.
3. The lectures are emphasized on
  - intraoral changes of patients caused by their profession
  - teaching basics in ergonomic aspects in dentistry
  - presentation of the most important requirements for dental equipment
  - presentation of optimising dental working processes (dental equipment, suction, dentistry and environment, special needs)
  - presentation of practise management
  - presentation of illness and disabilities in the dental profession dentistry and how to avoid that

– presentation of own research on the topics mentioned above

4. No patient treatment
5. Lectures, seminars, demonstrations, video
6. Evaluation by the Medical Faculty Dresden
7. Interdisciplinarity with the department for working science in the lectures.
8. The implementation of the theoretical lectures into the clinical treatment is insufficient so far.
9. The facultative lectures are first at a German Dental School since 1972. Inclusion of the Vice-president of the European Association for Dental Ergonomie into the lecture.
10. Additional effort is needed to implement the contents of the lecture into the clinical treatment.

## **Facultative lecture “clinical material science”**

1. Clinical material science is a lecture with patient demonstration. It includes 15 hours in the 8<sup>th</sup> semester.
2. Based on the lectures dental material science I and II (read in the first and in the third semester) patient-related aspects are presented. Additionally innovative technologies are demonstrated respectively are trained by the students themselves.
3. Material incompatibility in patients
  - after presentation of the basics, diagnostic methods are demonstrated. Chairside teaching of the students in the diagnosis of material incompatibilities.
  - Presentation of a synoptic concept to diagnose material incompatibilities in patients.
  - innovative technologies are demonstrated in small groups (for instance: provera-system)
  - in small groups new technologies are trained (for example: laser welding)
4. Students present patients within the lecture. The share is momentary 25%.
5. Lectures, seminars, patient demonstration, active inclusion of students into the patient demonstrations.
6. Evaluation by the Medical Faculty Dresden.
7. In Germany a rising share in subjective material incompatibilities is observed. This is included into dental education and is presented in patient demonstration.
8. The time share in the schedule for patients demonstrations should be risen to 50%. Computer aided techniques should be included also more intensively.
9. Active inclusion of the students in these lectures.
10. - rising the numbers of patients
  - inclusion of intraoral video-technique
  - rising the chair of computer-aided technologies

## **Conservative Dentistry (Section 11.1)**

## **Endodontics (Section 11.2)**

Prof. Dr. Wolfgang Klimm

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1. Conservative Dentistry and Endodontics are taught together as "Zahnerhaltung" and are based on the knowledge and the skills of the pre-clinical segment of the curriculum, which ends with the successful completion of the national pre-clinical examination.

A sufficient basis for the patient management during the term 7 and term 10 is given by lectures and Propedeutic course during the term 6 and seminars during the term 7.

2. Primary aims of the Conservative Dentistry and Endodontics are to give theoretical knowledge and clinical skills for the preventive, restorative and endodontic dental care of adults.

3. Main objectives

- Structural biology of the teeth
- Tooth abnormalities
- Microbial ecology of the oral cavity
- Epidemiology and etiology of dental caries
- Histopathology and clinic of caries
- Caries risk assessment and prevention
- Non-invasive, minimal-invasive and invasive treatment of carious and non-carious lesions
- Diagnostics and treatment of pulp diseases and apical periodontitis
- Traumatic injuries and tooth surface loss
- Complications and incidents of treatment

4. Hours in the Curriculum

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	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year	Total
	6 <sup>th</sup> term	7 <sup>th</sup> term	10 <sup>th</sup> term	

Lectures	60	60		
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Seminars	30	15	45	
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Propedeutic course	210			
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Clinical course	240	240	480	
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(treating patients)				
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<b>Total</b>	<b>270</b>	<b>270</b>	<b>255</b>	<b>585</b>
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5. Method of learning/teaching

Propedeutic course: Method of "triple jump":

phantom head (dry) – (simulator)(wet) - dental chair (wet)

Clinical courses: Demonstrations, exercises,  
patient examination, patient  
management, patient presentation

Lectures: Evidence-based teaching concepts:

- Microecological concept of oral health and disease
- Plaque concept of caries etiology and prevention
- Concept of non-invasive caries diagnostics
- Risk concept of carious and non-carious lesions
- Concept of individual prevention of carious and non-carious lesions depending on treatment needs and age
- Concept of non-invasive and minimal-invasive early caries management
- Biological concept of management of pulp-dentin complex
- Concept of triad of root canal therapy

#### 6. Assessment methods

- Certificate (Schein) of Propedeutic course (written test and assessment of casts) (term 6)
- Certificate (Schein) of clinical course of Conservative Dentistry and Endodontics I (written test, presentation of patients) (term 7)
- Certificate (Schein) of clinical course II (term 10)

#### 7. Strengths

High number of hours students spend treating patients.  
There is a high interdisciplinary education standard.

#### 8. Weakness

Technical equipment of phantom course could be improved.

#### 9. Innovations

- Complex teaching of Restorative Dentistry, Endodontics and Periodontics
- Interdisciplinary course of Conservative Dentistry, Periodontics and Prosthodontics during the 9<sup>th</sup> and 10<sup>th</sup> semester
- Integration of Laser technique in diagnostics and treatment, Radiovisiography, CAD/CIM restorations
- Dental technician work by students
- Partial implementation of Propedeutic course under chair-side conditions

#### 10. Planes for future changes

Optimize technical equipment of phantom course,  
introduce problem based learning to clinical seminars.

### **Prosthodontics (Section 11.3)**

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Within the Dental Curriculum prosthodontics comprises treatment strategies, diagnostic principles, basic treatment principles and the practical treatment of simple cases and complex cases in a synoptic course together with the department of and restorative dentistry and periodontology.

Although there is no official specialization in prosthodontics in Germany, a postgraduated training is offered to become a specialist of the Deutsche Gesellschaft für Zahnärztliche Prothetik und Werkstoffkunde (German Association for Prosthodontics and Material Science).

### **6th semester (3rd year) Lecture Prosthodontic I**

held 2 hours per week in the summer semester

### **7th semester (4th year) Lecture Prosthodontics II**

held 2 hours per week in the summer semester

### **8th semester (4th year) clinical course Prosthodontic I**

held 16 hours per week in the summer semester plus held 2 hours per week for the policlinics

### **9th semester (5th year) clinical course Prosthodontics II**

held 16 hours per week in the winter semester plus held 2 hours per week for the policlinics

**Final examination:** oral examination in groups of 4 students (30 minutes per student) practical examination over a period of 10 days comprising patient treatment with a fixed partial denture and a removable partial denture.

### **6th semester (3rd year) Lecture Prosthodontics I**

### 1. Introduction

The lectures comprise the basic principles in prosthodontics and fixed partial dentures.

### 2. Primary aims

Introduction into the field of prosthodontics and fixed partial dentures.

### 3. Main objectives

Main objectives are to transfer basic knowledge in

- public health, treatment need
- physiology of the masticatory system
- tooth loss, diagnosis
- decision-making
- treatment planning
- tooth preparation
- fixed prosthodontics
- prognosis of fixed appliances

### 4. Hours

2 hours per week (total 26 hours)

### 5. Learning/teaching

Lectures using slides, overheads, video.

### 6. Assessment

none

### 7. Strengths

Lectures are upgraded every year.

### 8. Weaknesses

Two hour part within a lecture block from 7.30 am until 12.30. Students get tired.

### 9. Innovations

Inclusion of international literature into the lectures.

### 10. Plans

Concentrate more on overall treatment strategies.

## **7th semester (4th year) Lecture Prosthodontics II**

### 1. Introduction

The lectures comprise the principles removable partial dentures, implantology and special fields in prosthodontics.

### 2. Primary aims

Principles in removable partial and complete dentures as well as implantology. To give an overview in contemporary prosthodontics and prepare for the practical courses in the following semester.

### 3. Main objectives

Main objectives are to transfer knowledge in

- removable prosthodontics
- complete denture prosthetics
- implant prosthodontics
- craniomandibular disorders
- gerodontology and psychosomatic disorders
- maxillofacial prosthodontics
- research in prosthodontics

### 4. Hours

2 hours per week (total 30 hours)

### 5. Learning/teaching

Lectures using slides, overheads, video.

### 6. Assessment

none

### 7. Strengths

Lectures are upgraded every year.

### 8. Weaknesses

Two hour part within a lecture block from 7.30 am until 12.30. Students get tired.

### 9. Innovations

Inclusion of international literature into the lectures.

### 10. Plans

Concentrate more on overall treatment strategies.

## **Clinical Course and Tutorials Prosthodontics I**

### 1. Introduction

Prosthodontics I is scheduled in the 8th semester (summer semester, 15 weeks). It is the first clinical course in Prosthodontics and the second in the field of restorative dentistry.

### 2. Primary aims

The primary aims of the course include

- basic knowledge in the diagnosis of TMJ-disorders
- basics in prosthetic management strategies based on clinical diagnosis
- basic clinical training in prosthetic treatment comprising more simple cases

### 3. Main objectives

Main objectives are basic skills in

- diagnosis, management strategies and decision-making,
- treatment planning,
- management of cranio-mandibular disorders,
- treating patients with crowns and fixed partial dentures,
- treating patients with removable partial dentures,
- treating patients with complete dentures.

### 4. Hours

Clinical course 16 hours per week, tutorials 2 hour per week. First four weeks are dedicated to preliminary exercises. Consecutively, students spend approximately 6 hours per week actually treating patients.

### 5. Learning/teaching

Chair-side teaching in small groups, seminars, tutorials, clinical practice. All basic treatment phases are demonstrated.

### 6. Assessment

Written exam 4 weeks after beginning (topics: main lectures Prosthodontics I and II in 6th and 7th semester, preliminary exercises), case related oral exam at the end, general assessment of clinical knowledge and skills by clinical teachers

### 7. Strengths

Good hard ware conditions

### 8. Weaknesses

Lack of patients matching the requirements of clinical education, growing number of students per teacher, growing number of students coming in from other universities just for the prosthodontic courses in Dresden.

### 9. Innovations

Starting implementation of problem based learning in tutorials.

### 10. Plans

Increasing implementation of the problem based learning approach.

## **Course and Policlinics Prosthodontics II**

### 1. Introduction

Prosthodontics II is scheduled in the 9th semester (winter semester, 15 weeks). It is the second clinical course in Prosthodontics and held in close co-operation with the course Conservative Dentistry II. In fact, both courses form a synoptic unit and last two semesters (9th and 10th).

## 2. Primary aims

Primary aims are to make the student capable to manage cases with complex interdisciplinary treatment needs and advanced training in all fields of prosthodontic treatment.

## 3. Main objectives

- Main objectives are
- complex management strategies
- advanced skills in treating patients with crowns and fixed partial dentures
- advanced skills in treating patients with removable partial dentures,
- advanced skills in treating patients with complete dentures.

## 4. Hours

Clinical course 16 hours per week, policlinics / tutorials 2 hours per week. Students spend approximately 6 hours per week actually treating patients.

## 5. Learning/teaching

Chair-side teaching in small groups, seminars, tutorials, clinical practice

## 6. Assessment

Written exam 4 weeks after beginning (topics: lectures Prosthodontics I and II in the 6th and 7th semester, course prosthodontics I, periodontics), case presentation, general assessment of clinical knowledge and skills by clinical teachers

## 7. Strengths

Interdisciplinary approach, good hard ware conditions

## 8. Weaknesses

Lack of patients matching the requirements of clinical education, growing number of students per teacher, growing number of students coming in from other universities just for the prosthodontic courses.

## 9. Innovations

Interdisciplinary approach

## 10. Plans

Optimizing the interdisciplinary approach, extending implementation of the problem based learning approach.

## **Section 11**

### ***11.0: Pre-clinic Section***

***Dental Materials I and II***

***Basic Dental Science***

***Phantom Course I in Prosthodontics***

***Phantom Course II in Prosthodontics***

## ***Introduction to Practical Dentistry***

***11.1: Conservative Dentistry***

***11.2: Endodontics***

***11.3: Prosthodontics***

### ***Visitors Comments***

#### ***Prosthodontics***

*Staffing in this department includes 1 C4 professor(Head) and 1 C3 professor in preclinical training, experimental dentistry and dental materials.*

*Academic staff comprised– 2 senior dentists, 12 dentists (mostly: 5 year term) and 1 engineer.*

*The visitors found the clinical prosthodontics teaching to be very broad minded and preventive oriented.*

*The auxilliary staff consisted of ten dental nurses, one dental hygienist and two dental technicians.*

*This programme has a heavy emphasis on preclinical technical/laboratory training.*

*Legislation for dental undergraduate studies (Approbationsordnung) must be reviewed to allow flexibility in the development of an undergraduate dental curriculum to meet the changing community needs in the new millenium. The visitors also welcomed the plans to reduce the hours used for mere technical and manual training, particularly extensive in prosthodontics which in often at the expense of training in preventive dentistry.*

#### ***Conservative Dentistry***

*This area is made up of the disciplines of cariology, endodontics and periodontics Dental implantology and placement of implants is carried out in OMFS.*

*In the clinical teaching, an holistic and integrated treatment principle is followed by grouping the restorative (conservative) dentistry, endodontology, periodontology and prosthodontics together. The visitors welcomed this principle, however the development of separate departments was discussed. In the clinic the students work in pairs, which partly compensates for the lack of auxiliaries. This practice also fulfills the educational principles of training students from the auxiliary perspective.*

## Section 12

### Periodontology

#### Periodontology (Section 12)

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#### 1. Introduction

Theoretical lectures as well as propedeutic and clinical training are generally built up on the knowledge of the preclinical education of the first part of dental curriculum, which is finished by successful completion of the national pre-clinical examination (Physikum).

A sufficient basis for the patient management during the 7<sup>th</sup> and 9<sup>th</sup>/10<sup>th</sup> semester is given by basic as well as clinical lectures and by propedeutic training using models such as commercially available ones and pig jaw.

Lectures and courses are given during third, fourth and fifth year of study. Students are lectured about normal structure and function, phylogenesis and physiology (0.5 h / week), etiology and pathogenesis (0.5 h / week), diagnostics, classification and treatment modalities (1 h / week) during 3rd year. Further they are lectured about various aspects of epidemiology, public health as well as risk assessment, acute and chronic trauma of the periodontium, regenerative and adjunctive chemotherapeutic treatment of periodontitis as well as maintenance care (1 h / week) during fourth year.

During fourth year treatment modalities are demonstrated and trained in small group clinical course and during fifth year complex treatment is performed in the synoptic course.

#### 2. Primary aims

Primary aim of periodontal teaching is to make the students familiar with biologic knowledge as well as diagnostic as therapeutic measures basic to periodontology, so that they are enabled to do periodontal diagnostics, prevention as well as basic treatment methods.

#### 3. Main objectives

- biologic principles of normal structure, phylogenesis and function of periodontal tissues
  - microbiology (plaque microfilm), etiology and pathogenesis of inflammatory gingival and periodontal diseases
  - diagnostic parameters, classification and clinical pictures of gingivitis and periodontitis
- risk assessment, epidemiologic and public health aspects
- primary and secondary prevention with focus on different age as well as different risk groups (special care of the elderly population)

- mechanical therapy strategies using different instrumentation (hand/ultrasonic)
- Biological basis of surgical treatment modalities such as flap operation, GTR,

GBR as well as of possible regenerative reactions of periodontal structures

- antibiotics in periodontology, supportive care, recall

### 1. Hours in the curriculum

	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year	Total
<b>Lectures</b>	30	15		45
<b>Seminar</b>		9	4.5	13.5
<b>Propedeutic Course</b>	30			30
<b>Clinical Course</b>		75	80	155
<b>Periodontal Surgery</b>			10	10
<b>Total</b>	60	99	94.5	253.5

- The clinical course of fourth year is Interdisciplinary performed together with and included in the clinical training of Conservative dentistry
  - The clinical course of fifth year is a synoptic course of Periodontics, Conservative Dentistry, Endodontics and Prosthodontics. The main topic of this problem based teaching concept clinical course is the application of the disciplinary knowledge in interdisciplinary decision making in general dental treatment strategies. Integrated in this course is also demonstration and training of periodontal surgery (flap operation, furcation treatment, GTR, mucogingival and plastic periodontal surgery).

#### 1. Method of learning/teaching

The main topics are lectured in a traditional manner using lecture of 45/90 minutes. In seminars (small group) the knowledge of these lectures is applied on a more or less problem based teaching of different complex patient situations.

Furthermore the students have to make themselves familiar with specific aims of periodontology using actual literature (w.w.w.).

The aim of the propedeutic course is the training of diagnostic as well as treatment measures.

#### 2. Assessment methods

- Certificate of propedeutic model training (written test as well as assessment of training results - together with Conservative dentistry)
- Certificate of clinical training (patient) included in Conservative Dentistry and Endodontics

- Certificate of clinical course II (this is an interdisciplinary clinical course of Periodontology, Conservative dentistry, Prosthodontics)

### 7. Strengths

- high interdisciplinary education standard

### 8. Weakness

- time as well as man power in periodontal education needs an increase

### 8. Innovations

- interdisciplinary concepts of clinical courses
- integration of all modern diagnostic as well as treatment procedures in the interdisciplinary clinical courses
- problem orientated teaching

### 8. Planes for future changes

- earlier start of patient presentation

## Periodontology

Type of course: 6<sup>th</sup> Semester

**Lecture:**  
2h /  
week

Tue 13.30 – 14.15

Fri 09.15 – 10.00

**Propedeutic training:** 2h /  
week

Tue 14.30 – 16.00

### **Contents: Lecture:**

Normal structure and function,  
etiology and pathogenesis

Diagnostic parameters  
(Plaque, Bleeding, Pocketing,  
Attachment level,  
Microbiology, Radiography);

Instruments, Hygienic Phase,  
Scaling, Deep scaling

**Contents: Propedeutical training:**

Diagnostic parameters of inflammatory periodontal diseases,

Instruments and their handling (scaling, deep scaling)

Hygienic phase of treatment, professional tooth cleansing, patient instruction

**Exam:** Written test, assessment of training results

**Type of course:**

**7<sup>th</sup> Semester Lecture:** 1h / week

Mo 11.00 – 12.30 (every two weeks)

**Clinical training\*:** 5 h / week

\*integrated in clinical training of Conservative Dentistry as announced in time table (16 h / week)

Tue 09.30 – 19.30

Fri 07.00 – 13.00

**Seminars\*:** 0.6 h / week

\*integrated in seminars of Conservative Dentistry as announced in time table (2 h / week)

We 09.15 – 10.45

**Contents: Lecture:**

Structural biology of the periodontium – clinical application

Risk assessment, epidemiologic and public health aspects

Biological basis of surgical treatment modalities such as flap operation, GTR, GBR as well as of possible regenerative reactions of periodontal

structures

Acute and chronic periodontal  
trauma

Mucogingival and plastic periodontal  
surgery

**Contents: Clinical training:**

Clinical diagnostics, patient  
instruction, scaling, professional oral  
hygiene, deep scaling, follow up

**Exam:** Presentation of patients

-

**Type of course: 9<sup>th</sup> & 10<sup>th</sup> Semester**

**Semin  
ars\*:  
0.3 h /  
week**

\*integrated in seminars of Conservative Dentistry as announced in time table  
(1 h / week)

Mo  
08.15 –  
09.00  
(10<sup>th</sup>  
semest  
er)

**Clinica  
l  
trainin  
g\*:** (6  
h /  
week)

\*integrated in synoptic clinical training of Conservative  
Dentistry, Periodontology and Prosthodontics as announced  
in time table (regularly 16 h / week during 10<sup>th</sup> semester,  
synoptic 240 during 9<sup>th</sup> and 10<sup>th</sup> semester)

9<sup>th</sup> semester Mo 14.00 – 18.00

We 07.30 – 12.00

Thu 14.30 – 18.00

10<sup>th</sup> semester Mo 09.00 – 18.00

Thu 07.30 – 12.00

**Contents:** The main topic of this problem based teaching concept clinical course is the application of the disciplinary knowledge in interdisciplinary decision making in general dental treatment strategies

**Exam:** Presentation of patients,  
national dental examination

***Section 12***  
***Periodontology***

*Visitors Comments*

*The teaching of the periodontology programme was well structured. In the clinical teaching, an holistic and integrated treatment principle is followed by grouping the restorative (conservative) dentistry, endodontology, periodontology and prosthodontics together. The visitors welcomed this principle, however the development of separate departments was discussed.*

## **Section 13**

**13.1: Oral and Maxillofacial Surgery**

**13.2: Oral/Dental Radiology and Radiography**

### **Oral Surgery (Section 13.1)**

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fax 0049 351 458 5348)

#### **1. Dentistry, part I ("Zahn-, Mund- und Kieferheilkunde I")**

##### **An introductory single paragraph explaining the course and its timing in the curriculum**

This course belongs to Maxillofacial Surgery. It is timed in the 6<sup>th</sup> semester (1<sup>st</sup> clinical semester). The lecture gives basic knowledge for the general and surgical dentistry/ Oral surgery. An additional practical course takes place to train the skills in local anaesthesia. On successful participation in the practical course the students take a certificate. At the end of the clinical course the students have to take examinations in conformity to the Registration's Order for Dentists ("Approbationsordnung für Zahnärzte") as a part of "Chirurgie II".

##### **Primary Aims**

Primary aim is to give the students a good entrance to clinical / surgical dentistry by teaching of following essentials:

##### **Main Objectives**

- Legal and medical basics about connections between doctor and patient
- Diagnostics
- Devices and hygiene
- Local anaesthesia
- Tooth extraction
- Wound healing and its disturbances

##### **Hours in the curriculum**

One semester (15 weeks). 2 lectures per week (: 30 hours)

Practical course after the term: 2 hours).

**Method of learning/ teaching**

The lecture is held by professors and senior lecturers. There are diapositives, overhead slides, videos.

The prac is carried out in groups of about 8 students within our outpatient department. The students are trained in the various methods of nerve block anaesthesia.

**Assessment methods**

At the end of each prac there is a short oral examination, and the students get a certificate ("Testat").

**Strength**

The knowledge aquired in this course enable the students to start their clinical attachments.

**Weakness**

There is not enough practical training.

**Innovations and Best Practices**

The course is updated currently.

**Plans for future changes**

It is recommendable to plan a one-week-full-time prac between two terms. Main objectives should be:

- Local anaesthesia
- Instruments, Desinfection, Sterilisation
- Simple tooth extraction
- Treatment of disturbances of wound healing
- Emergency

**2. Oral and maxillofacial surgery part I and part II with general dentistry part II**

## **(Mund-, Kiefer- und Gesichtschirurgie Teil 1 und 2 mit Zahn-, Mund- und Kieferheilkunde Teil 2)**

An introduction

Oral and maxillofacial surgery are lectures in the clinical wintersemester of the fourth and in the summersemester of the fifth study year. The purpose of these lectures is to teach about diseases in oral and maxillofacial surgery and general dentistry and about their surgical and non-surgical treatment methods.

### **Primary aims**

Special attention is focused on the dentists capability to diagnose the diseases which must have an oral or maxillofacial surgical treatment.

### **Main objectives**

Diagnostics, surgical and non-surgical therapy of

- unerupted and impacted teeth
- tooth-autotransplantation
- periradicular inflammatory
- inflammatory processes of the jaw and soft tissue of the face and neck
- odontogenic and non-odontogenic cysts
- implantology and preprosthetic surgery
- malignant and benign tumordiseases
- temporomandibular joint diseases
- general and especially traumatology
- abortive developments of the skeletal face
- surgical correction of maxillofacial skeletal deformities
- clefts of mouth and face
- fibro-osseal lesions of the jaw
- diseases of the mucous membrane of the mouth and the skin of the face
- diseases of the salivary glands
- paralyses of the nerves of the face
- parafunction of the masticatory system

### **Hours in the curriculum**

The lecture is included in the 7<sup>th</sup> semester with 4 hours in the week and in the 10<sup>th</sup> semester with 2 hours in the week.

### **Method of learning / teaching**

The teaching is given in lectures. In some special lectures teach the maxillofacial surgeon together with a paediatrician, a paediatric dentist, a neurologist or a specialist of other departments of medicine and dentistry.

### **Assessment methods**

final university examination

### **Strength**

The students obtain a sound theoretical knowledge throughout the integration of other disciplines of medicine and dentistry. The choice of subject consist with the group of themes of the clinical course "Clinic of General Dentistry" in the 7<sup>th</sup> till 10<sup>th</sup> semester.

### **Weaknesses**

Theoretical teaching does not always precede with the clinical training in the course "clinic of general dentistry".

### **Innovations and best practices**

The lectures are combined with video-demonstrations.

In especially lectures the students get scripts about the important guiding principles .

### **Plans for future changes**

The students get a script with the content of the lecture and the important guiding principles some days before to improve the understanding of the taught diseases and to facilitate a better exchange of ideas and of a discussion.

## **3. Clinic of General Dentistry, part I – IV (Klinik und Poliklinik Zahn-, Mund- und Kieferheilkunde I - IV")**

### **An introduction**

Clinic of General Dentistry is planned as a practical course about diseases of teeth, mouth, face, jaw and skeleton of the face. It is based on knowledge of the preclinical and clinical semesters of dentistry. The courses involve in a first part the practical training with patients and the mediation of the theoretical knowledge. In each course the second part is a lecture about leading symptoms of diseases of the teeth, the mouth, the face and the skeleton of the face.

The lecture involves 4 semesters with 4 hours in the week and begins in the 4<sup>th</sup> year of study in the winter-semester.

The overall descriptions are created for four semesters and were repeated after two years because the students of the 4<sup>th</sup> and 5<sup>th</sup> year have the same lecture together.

The part II and IV in the 8<sup>th</sup> and 10<sup>th</sup> semesters in the 4<sup>th</sup> and 5<sup>th</sup> year involve a synoptic part 2 hours in the week. In this second part will be taught a representative of all four departments of dentistry .

### **Primary aims**

Primary aims are to make students well fit for his profession by

- practical training to take up anamnesis, diagnosis and therapy of patients of all age groups with all diseases for the patients history
- theoretical demonstration and lecture about all diseases

### **Main objectives**

- Tumor diagnostics and therapy
- Traumatology
- deformities of the skeleton of the face
- Implantology/Transplantology
- Inflammatory processes
- Infections of mouth and face
- Pain diagnostics and therapy
- Temporomandibular joint diseases
- Salivary gland diseases>
- Skin and mucous membrane diseases
- Oral and maxillo-facial surgery
- Treatment planning
- All diseases of dentistry

### **Hours in the curriculum**

The teeth-mouth- and maxillary medicine lecture comprises during the 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> semester, in each semester 60 hours.

### **Method of learning / teaching**

In each lecture four students practise the demonstration of two patients. The lecture contents a summary and a survey about all diseases of the teeth, mouth, jaw and face.

### **Assessment methods**

A certification for each semester about the constant participation in the course.

### **Strength**

The students obtain a scientifically sound lecture deduced with a patients disease. These is a bed side teaching.

### **Weakness**

The practical course is a common course for the 7<sup>th</sup> and 9<sup>th</sup> semester and the 8<sup>th</sup> and 10<sup>th</sup> semester. Teaching in small groups of each semester would be better.

### **Innovation and best practices**

- In each course are combined the demonstration of patients with a theoretical lecture about clinical procedures of these cases.
- By a video-camera the patients demonstration will be televised to monitors in the lecture theatre .
- By the video-camera the practise students demonstrate the patients symptoms together with the teaching surgeon to the listening students for a discussion in the lecture.
- In the half time of lectures in the 8<sup>th</sup> and 10<sup>th</sup> semester all disciplines of dentistry teach synoptic together about specific questions and problems of diseases in dentistry.
- Specialists of clinical departments are integrated.

### **Plans for future changes**

Separation of the 7<sup>th</sup> and 9<sup>th</sup> and also of the 8<sup>th</sup> and 10<sup>th</sup> semester, thereby extension of the students practice in groups of about 10 students.

## **4. Oral and maxillofacial surgery (Mund-, Kiefer- Gesichtschirurgie )**

Operation course I

### **An introduction**

First practical exercises in oral surgery based on knowledge of the preclinical lectures and introductory clinical lectures. The course involves the first extraction training by phantom exercises and first practical training with patients.

### **Main objectives**

Primary aims are

- practical training of extraction of teeth
- practical training to take up patients history
- handle to make oral local anaesthesia
- handle the complications related to local anaesthesia

### **Main objectives**

- phantom-training of extraction therapy

- training of take up patients history
- training of emergency-instruments
- training of extraction instruments
- phantom-training of suture-techniques
- training of extraction therapy
- training of assistance by oral operations

### **Hours in the curriculum**

The first surgical course comprises during the 8<sup>th</sup> semester, 30 hours, for each student a full week course with 40 hours.

### **Method of learning / teaching**

Practical exercises of an assistant with one or two students.

### **Assessment methods**

Certification about the student successful participation and knowledge about contents of the course.

### **Strength**

The student obtain practical manual dexterities for the extractions therapy.

### **Weakness**

only a few of patients want an extraction therapy by a student.

### **Innovations and best practice**

The clinical course is combined with

- theoretical teaching,
- assistance by operations in general anaesthesia
- 

### **Plans for future changes**

Extension of students practice beginning with the first clinical semesters.

## **5. Oral and maxillofacial surgery (Mund-, Kiefer- und Gesichtschirurgie) Operation course II**

### **An introduction**

Second practical exercises in oral surgery based on knowledge of the clinical lectures and operation course I. The course involves the first training of oral operations by phantom exercises and with patients.

**Primary aims**

- practical training of oral operations
- practical training to take up patients history

**Main objectives:**

- training of extraction therapy
- training of take up patients history
- training of operation instruments
- phantom-training of mucousal incisions
- phantom-training of oral operations with the jaw of the pig
- training of assistance by oral operations
- training of assistance by maxillofacial operations

**Hours in the curriculum**

The second surgical course comprises during the 9<sup>th</sup> semester, 30 hours, for each student a full week course with 40 hours.

**Method of learning / teaching**

Practical exercises of an assistant with one or two students.

**Assessment methods**

Certification about the students successful participation and knowledge about contents of the course.

**Strength**

The student obtains practical manual dexterities for the oral surgical therapy.

**Weakness**

The surgical therapy is limited when the student is an operator, most he is assistant of the operator.

**Innovations and best practice**

The clinical course is combined with

- theoretical teaching
- assistance by operations in general anaesthesia.

Plans for future changes

Extension of students practice beginning with the third clinical semester.

## **Oral/Dental Radiology and Radiography (Section 13.2)**

### **An introductory single paragraph explaining the course and its timing in the curriculum**

The course (lecture and practical class) is timed in the 6<sup>th</sup> semester (1<sup>st</sup> clinical semester). It gives basic and special knowledge and skills for the use of X-rays in dentistry, inclusive subjects of radiation protection. On successful participation in the practical course the students take a certificate. At the end of the clinical course the students have to take examinations in conformity to the Registration's Order for Dentists ("Approbatonsordnung für Zahnärzte") as the so called "Chirurgie III".

### **Primary Aims**

Primary aim is to develop accuracy in the use of X-rays in connection with both clinical indication and radiation protection.

### **Main Objectives**

- Legal basics ("Röntgenverordnung")
- Radiation protection
- Physical basics, Dosimetry
- Dental radiology (main techniques, computer- assisted radiology)
- General Radiology, inclusive CT, MRI, Ultrasound, Nuclear medicine, Radiotherapy
- Clinical findings and use of X-rays

### **Hours in the curriculum**

One semester (15 weeks). 3 lectures per week (: 45 hours)  
4 practicals per week (: 60 hours).

### **Method of learning/ teaching**

The lecture is held by an assistant professor. Lectures on surrounding subjects (Physics, General Radiology [Conventional Radiology, CT, MRI], Ultrasound, Radiotherapy, Nuclear medicine) are held by specialists of these subjects. There are diapositives, overhead slides, videos.

The exercises are performed in groups of about 5 students within our X-ray department. The students are trained in the various methods of positioning the patient and the film. They work at both conventional and computed devices. The teaching (tutorials, guidance) is done by assistant medical practitioners.

### **Assessment methods**

At the end of each practical training there is a short oral examination ("Testat").

### **Strengths**

- Special knowledge (CT, MRI etc.) is given by specialists (Radiologist, Radiotherapist...)
- The radiological knowledge is early available in the clinical course

### **Weakness**

The students' clinical experience is not yet available in the 6<sup>th</sup> semester.

### **Innovations and Best Practices**

Use of computer- assisted teaching.

- The course is updated currently.

### **Plans for future changes**

It should be considered to divide the course into two parts: 1<sup>st</sup> part at the beginning of the clinical course, and 2<sup>nd</sup> part at the end of it (10<sup>th</sup> semester).

## **Section 13**

***13.1: Oral and Maxillofacial Surgery***

***13.2: Oral/Dental Radiology and Radiography***

### ***Visitors Comments***

*Accident & Emergency, trauma including tooth fractures and dental extractions are carried out in the Clinic of General Dentistry.*

*In the Department of Oral and Maxillofacial Surgery there are 25 beds and 2 recovery beds. There are two operating theatres for complex cases. 1 one of them takes place additional operations with day care.*

*Maxillo-facial, oral surgery, plastic surgery and post surgical reconstruction is carried out in the folloing clinical cases:  
Tumour/Trauma, Cleft Palate, Cranio facial and Reconstructive surgery,  
Orthognatic Surgery*

*The Department has links with:- ENT, Oncology and Neurosurgery  
Dental implants are placed, especially if grafting is required.*

*Joint Consultation Clinics are held regularly between Oral Surgery / OMFS.*

*The visitors noted that there appeared to be a lack of teaching and structure in the area of Oral Medicine and this should be addressed.*



## Section 17

### Examinations, Assessments and Competences

### **Section 17: Examinations, Assessments and Competences**

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

Name: Prof. Dr. Wolfgang Klimm

e-mail: klimm@rcs.urz.tu-dresden.de fax: 0049 351 458 27 13

#### 1. The overall approach to assessments in the school

All chairs of the school have defined the goals of knowledge, skills and attitudes that are required in different fields of dentistry. Methods of assessment are assessment of casts, written test, presentation of patients, short oral presentation, oral examination. Assessments are not necessarily always in the end of the courses. The organization and content of national dental examination are defined in the regulations of the licence to practise as a dentist (Approbationsordnung für Zahnärzte).

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

Assessment methods mentioned in item 1. motivate students. In addition the formative influence of the staff plays an important role to motivate students.

#### 3. Strengths

A high number of senior staff members is involved in the educational work. Students spend treating patients a high number of hours. The interdisciplinary education improves the competence of students.

#### 4. Weaknesses

There is an interdisciplinary teaching, but a disciplinary examination.

#### 5. Innovations and/or Best Practices

Clinical work is assessed by 3 parameters: organization and attitudes, skills and knowledge. Results of assessment are discussed by the whole staff in a so-called grading conference.

#### 6. Plans for future changes

In addition a interdisciplinary dental examination seems to be necessary in the future.

#### 7. External examiners

There has been no external examiners at the examinations.

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

After successful completion of the national pre-clinical examination (Physikum) the student is entitled to continue studies in the clinical phase. The pre-clinical examination consists of a basic scientific part (after 2<sup>nd</sup> term) and a dental part (after 5<sup>th</sup> term). The successful completion of national dental examination is the pre-condition of the licence to practise as a dentist. This licence is granted by Government committees of the appropriate Regierungsbezirk.

9. The extent to which the school seeks those competences recommended by the EU Advisory Committee on the Training of Dental Practitioners?

Our school seeks those competences recommended by the EU Advisory Committee increasingly.

## Section 17 **Examinations, Assessments and Competences**

### **Visitors Comments**

*The basic segment (a minimum of two semesters of one year) ends with the successful examination in basic science (Naturwissenschaftliche Vorprüfung). The preclinical segment (a minimum of three semesters or one and a half year) is concluded with the second part of the national examination (Zahnärztliche Vorprüfung). It is followed by five clinical semesters (two and a half years), at the end of which the third part of the national dental examination (Zahnärztliche Prüfung).*

*After passing this final part of the national dental examination the student graduation from the Dental School, full certification (Approbation als Zahnarzt) is granted by the appropriate state authority.*

*There is good experience with practical examinations in the clinic. However, there seems to be interdisciplinary teaching but disciplinary examination. Therefore, plans for interdisciplinary examination and assessment procedures seem necessary. The introduction of external examiners, even international, might also be considered.*

*Changes in the present curriculum are needed to implement the **Problem Based Learning (PBL)** concept, which has already started in the medical faculty, and also as a pilot project in the dental school. The expansion of medical components in the clinical years and taking into account the biological and technological developments of international dentistry calls for further development of the curriculum. The visitors were impressed by the enthusiasm among the faculty staff towards the afore mentioned changes.*

*The Approbationsordnung gives the framework of basic teaching in Germany. The Dresden School has adopted a more modern teaching philosophy including the introduction of PBL together with the medical faculty according to the Harvard Medical School principles. The visitors observed a great enthusiasm among the dental educators, but still much work is needed before PBL will be fully implemented.*

## **Section 18**

### **Other Influences**

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

#### **18.2: Evidence Based Treatment**

### **Section 18 - Other Influences**

#### **18.1 Regional oral health needs**

The influence of regional oral health needs on dental education is relatively low. However the German dental health care system strongly influences daily treatment decisions of private practitioners. Several, especially prosthodontic and orthodontic measures are not covered by the insurances. These limitations are discussed and play a major role in the clinical courses.

#### **18.2 Evidence based treatment**

The trend towards evidence-based dentistry has been recognized and efforts have been undertaken in the field of research activities such as to install a nationwide network for evidence-based dentistry. However, the implementation of evidence-based treatment in the clinical courses is still at the beginning because of the well known lack of high level evidence.

## **Section 19**

### **Student Affairs**

### **Section 19: Student Affairs**

Name of Student representatives: Mrs. Moroschan

Final Year:

Fourth Year

Third Year:

Second Year

This will be the basis for a discussion with the visitors.

### **Basic Data from Dental Schools**

- a. Average number of dental students qualifying per year:**50**
- b. Average number of dental students admitted to the first year:**40 to 45**
- c. Length of course in years and semesters:**5 years / 10 semesters**

- d. Is there a separate period of training on the job following graduation as a dentist in your country? **YES, (2 years)**
- e. If yes to d) above, is that organised by the University or Dental School **NO**

### **The Postgraduate Programs**

- Oral and maxillofacial Surgery
- Oral Surgery
- Orthodontics
- Public Health

### **Auxiliary/Technology/Other Programs**

The Dental School cooperates with the School of Dental Nurses and Dental Hygienists and is involved in the practical training of 16 students per year.

The continuing education organized by the Dental School is mainly focused on the development of clinical skills and takes place on weekends.

The Dean of the Dental School is the Chairman of the Dresden Dentists' Society (800 members). Within the continuing education scheme the society organises biannual congresses.

## **Section 19** ***Student Affairs***

### ***Visitors Report***

*The visitors enjoyed their meeting and discussion with the students who appeared positive, optimistic and enthusiastic about their studies. They also expressed their respect for the leaders of the school and fully supported the implementation of the new ways of teaching. However, more facilities for internet connections and library databases are needed.*

*The students seemed satisfied with their clinical practice except for oral surgery, where apparently too few dental extractions were taught due to lack of suitable patients.*

*The connections with international student bodies, such as the International Association for Dental Students, are too few although some students had taken advantage of the EU Socrates program.*

*The dental school should take responsibility for the education of dental nurses and dental hygienists so that their practical training could be arranged together with that of the dental students.*

## **Section 20**

### **Research and Publication**

#### **Research and Publication (Section 20)**

##### **D. Orthodontics,**

Representative: Prof. Dr. W. Harzer

e-mail: harzer@rcs1.urz.tu-  
dresden.de

##### **Paediatric Dentistry**

Representative: Prof. Dr. G. Hetzer

e-mail: g.hetzer@rcs.urz.tu-  
dresden.de

##### **E. Public Dental Health**

Representative: Prof. Dr. M. Walter

e-mail: m.walter@rcs.urz.tu-dresden.de

##### **F. Periodontology, Conservative Dentistry, Endodontics,**

Representative: Prof. Dr. W. Klimm (Conservative Dentistry)

e-mail: klimm@rcs.urz.tu-dresden.de

##### **Prosthodontics**

Representative: Prof. Dr. M. Walter (Prosthodontics)

e-mail: m.walter@rcs.urz.tu-dresden.de

G. Oral Surgery, Oral Medicine, Oral Pathology

Representative: Prof. Dr. Dr. U. Eckelt  
e-mail: mkg@rcs.urz.tu-dresden.de

## **20.1 Number of publications in refereed journals**

**1996 1997 1998**

D. Orthodontics 1 2 5

Paediatric Dentistry 4 3 2

E. Public Dental Health

Related publications included in Orthodontics, Paediatric Dentistry  
and Prosthodontics

F. Periodontology, Conservative 4 5 4

Dentistry, Endodontics,

Prosthodontics 10 6 7

G. Oral Surgery, Oral Medicine, 3 3 5

Oral Pathology

## **20.2 Number of textbooks published by staff**

**1996 1997 1998**

D. Orthodontics - - -

Paediatric Dentistry - - -

E. Public Dental Health

see Prosthodontics

F. Periodontology, Conservative - 1 -  
Dentistry, Endodontics,

Prosthodontics - - 1

G. Oral Surgery, Oral Medicine, - - -  
Oral Pathology

### **20.3 Number of chapters in books**

**1996 1997 1998**

**D. Orthodontics 2 - 2**

Paediatric Dentistry 2 - 2

E. Public Dental Health

Related publications included in Orthodontic, Paediatric Dentistry  
and Prosthodontics

F. **Periodontology, Conservative ---**  
Dentistry, Endodontics,

Prosthodontics **1 2 2**

G. Oral Surgery, Oral Medicine, **2 1 4**  
Oral Pathology

## 20.4 Grants received in EURO

**1996 1997 1998 Total**

**D. Orthodontics**, 98.168,- 75.722,- 25.871,- 199.761,-

**Paediatric Dentistry** 49.646,- 66.826,- 28.888,- 145.360,-

E. Public Dental Health

Related publications included in Orthodontic, Paediatric Dentistry  
and Prosthodontics

F. **Periodontology**, 14.265,- 19.122,- 42.846,-76.233,-

**Conservative Dentistry**,

**Endodontics**,

**Prosthodontics** 237.495,- 85.130,- 158.961,- 481.586,-

G. Oral Surgery, **50.362,- 13.703,- 37.682,- 101.747,-**

Oral Medicine,

Oral Pathology

449.936,- 260.503,- 294.248,- 1.004.687,-

**20.5 Number of invited presentation at international meetings**

**1996 1997 1998 Total**

**D. Orthodontics - - 1 1**

**Paediatric Dentistry - - - -**

**E. Public Dental Health----**

**F. Periodontology, - - - -**

**Conservative Dentistry,**

**Endodontics,**

**Prosthodontics - - 2 2**

**G. Oral Surgery, - - - -**

Oral Medicine,

Oral Pathology

DENTED VISIT

COMPETENCE QUESTIONNAIRE

On a scale of 0 - 10, (0 = no knowledge, understanding or ability and 10 = complete competence in ability and knowledge to carry out the task) please score your perception of your knowledge, understanding and ability in respect of the following competences (circle a number for each question).

**Please Tick Male [ ] Female [ ]**

No. Competence Never Little or no More

-  
carried Experience Experience Competent

1 Your own competence in carrying out a medical and dental history, dental patient examination, diagnosis and 7,8 comprehensive treatment planning for a patient

---

2 Your competence to recognise any deviations or changes from normal healthy tissues such as oral cancer 5,4 or other oral pathologies

---

3 Your competence to recognise and classify periodontal disease 7,5

---

4 Your competence to gain informed consent for treatment from a patient 7,5

---

5 Your competence in completing a scaling and polishing 8,7

---

6 Your competence in completing a root planing for a patient with probing 7,1 pockets depths generally about 5mm

---

7 The completion of endodontic treatment  
a) on a central incisor a) 7,7  
b) on a tooth with more than one root canal b) 6,6

---

8 Periapical surgical treatment of teeth with apical pathologies 3,2

---

9 The surgical removal of a buried tooth root (includes elevation of a muco-periosteal flap, usually excision of 3,6 bone, tooth fragment elevation and replacement of flap, usually with sutures)

No. Competence Never Little or no More

- carried Experience Experience Competent

10 Excisional biopsy of a pathological lesion 1,6

---

11 Routine extraction of a molar or premolar tooth 6,9

---

12 The clinical procedures involved in the completion and placement of an acrylic partial denture 7,3

---

13 The clinical procedures involved in the completion and placement of a cobalt chromium or gold partial denture 6,7

---

14 The clinical procedures involved in the preparations, impressions and placement of a three-unit fixed bridge 8,0

---

15 The clinical procedures involved in the preparations, impressions and placement of a three-unit adhesive- resin-bonded bridge 2,9

---

16 Cavity preparation and completion of the restoration for a Class II cavity 9,0

---

17 Periodontal surgery including elevation of flap and completion of tissue treatment of exposed root surfaces and replacement of flap 3,9

---

18 Correction of minor orthodontic problems and knowing when to refer patients with more complex 7,1

problems

---

19 The clinical skills to place orthodontic bands 5,7

---

20 The carrying out of cardio-pulmonary resuscitation 5,8

### **Facultative lecture in working science and dentistry**

1. The facultative lectures present aspects of working science in dentistry. The lectures comprise 15 hours in the 7<sup>th</sup> semester.
2. The aspects in working science include:
  - patients intraoral changes caused by their profession
  - ergonomic aspects of the dental profession.
3. The lectures are emphasized on
  - intraoral changes of patients caused by their profession
  - teaching basics in ergonomic aspects in dentistry
  - presentation of the most important requirements for dental equipment
  - presentation of optimising dental working processes (dental equipment, suction, dentistry and environment, special needs)
  - presentation of practise management
  - presentation of illness and disabilities in the dental profession dentistry and how to avoid that
  - presentation of own research on the topics mentioned above
4. No patient treatment
5. Lectures, seminars, demonstrations, video
6. Evaluation by the Medical Faculty Dresden
7. Interdisciplinarity with the department for working science in the lectures.
8. The implementation of the theoretical lectures into the clinical treatment is insufficient so far.
9. The facultative lectures are first at a German Dental School since 1972. Inclusion of the Vice-president of the European Association for Dental Ergonomie into the lecture.
10. Additional effort is needed to implement the contents of the lecture into the clinical treatment.

### **Facultative lecture "clinical material science"**

1. Clinical material science is a lecture with patient demonstration. It includes 15 hours in the 8<sup>th</sup> semester.
2. Based on the lectures dental material science I and II (read in the first and in the third semester) patient-related aspects are presented. Additionally innovative technologies are demonstrated respectively are trained by the students themselves.
3. Material incompatibility in patients
  - after presentation of the basics, diagnostic methods are demonstrated. Chairside teaching of the students in the diagnosis of material incompatibilities.
  - Presentation of a synoptic concept to diagnose material incompatibilities in patients.
  - innovative technologies are demonstrated in small groups (for instance: pro-cera-system)
  - in small groups new technologies are trained (for example: laser welding)

4. Students present patients within the lecture. The share is momentary 25%.
5. Lectures, seminars, patient demonstration, active inclusion of students into the patient demonstrations.
6. Evaluation by the Medical Faculty Dresden.
7. In Germany a rising share in subjective material incompatibilities is observed. This is included into dental education and is presented in patient demonstration.
8. The time share in the schedule for patients demonstrations should be risen to 50%. Computer aided techniques should be included also more intensively.
9. Active inclusion of the students in these lectures.
10. - rising the numbers of patients
  - inclusion of intraoral video-technique
  - rising the chair of computer-aided technologies

## Otorhinolaryngology

Teaching dentist students in ENT is done in consideration that both disciplines are very close in many points.

Main interest is a practical orientation emphasizing the principles of a modern diagnostic including differential diagnosis and therapy.

Lecture is given in the 5th year of study (30 hours).

A speciality of the education of dentist students in Dresden is the endoscopic live demonstration of typical diseases of the nose, oral cavity, pharynx, larynx, sinuses and the ear that is performed in every lecture. This principle of teaching elucidates the unity of findings of physical examination and the diagnosis. The students are involved actively in this process.

The examen is performed orally by a single auditor on one day at the end of the 5th of studies (4 students in 2 hours).

### 1. Lecture in Rhinology

1.1 Embryology (olfactory placode, turbinates, sinuses)

1.2 Anatomy

cartilage, bones, muscles, vessels, nerves

1.3 function

1.4 methods of examination

- Inspection, rhinoscopy, palpation, examination of olfactory function, rhinomanometry, ultrasound diagnostic, endoscopy, radiological diagnostic including CT scan.

1.5 clinics

- external nose: deviation and malformation, folliculitis, furuncle, eczema of the orifice of the nose, fractures of the nose, tumors

- nasal cavity: rhinitis, malignant granuloma, rhinitis atrophicans, allergic rhinitis, foreign bodies, septal deviation, hematoma and abscess of the septum, dysosmia, bleeding of the nose

- sinuses: sinusitis of the maxillary, ethmoid, frontal, sphenoid sinus

- chronic sinusitis

- mucocoeles

- tumors of the sinuses

- fractures of the frontal base

## 2. Lecture in oral cavity and pharynx

### 2.1 anatomy

- nasopharynx, oropharynx, hypopharynx
- Waldeyer's lymphatic tissue

### 2.2 physiology

swallowing, creating of tone and speech, function of the tonsils

### 2.3 methods of examination

inspection, endoscopy, palpation, testing of gustatory function, Imaging

### 2.4 clinics

- nasopharynx: adenoids, juvenile fibrom of the nasopharynx, malignoma
  - oropharynx: lacunary angina, acut pharyngitis, chronic pharyngitis, angina Plaut Vincent, paratonsillar abscess,
- parapharyngeal abscess, chronic tonsillitis, , injuries
  - oral cavity: plicated tongue, geographic tongue, glossitis rhomboidea
  - mediana, leukoplakia, hairy tongue, Hunter glossitis, soor, mucositis,
  - carcinoma of the tongue

## 3. lecture in laryngology, hypopharynx and esophagus

### 3.1 embryology

### 3.2 anatomy

cartilage, muscles, ligaments, joints, structures vessels, nerves, lymphatic supply

### 3.3 function

### 3.4 methods of examination

inspection, palpation, examination with mirror and laryngoscope, microlaryngoscopy, x-ray examination, stroboscopy, electroglottography, electromyography, analysis of the sound of the voice

### 3.5 clinics

- dysplastic dysphoni: hypoplasia of the larynx, glottitis of the sulcus, asymmetria of the larynx, laryngeal diaphragm, laryngomalacia, laryngoceles
- disturbances in the development of the voice
  - secondary organic changes of the vocal cords (hyperemia, nodules of the vocal cords, polyps of the vocal cords, contact ulcerosis, cysts
  - inflammations (acut and chronic sinusitis, acut epiglottitis, pseudocroup, specific inflammation
- acut edema of the entrance of the larynx
  - trauma (granuloma due to intubation, lesions due to intubation, luxation of the arytenoid cartilage
- aphthosis and soor
  - papilloma of the larynx (adults and children)
- paralysis (laryngeal sup. and inf. nerve, uni- and bilateral paralysis)

- functional dysphonia (hyper- and hypofunctional dysphonia, psychogenic)
- aphonia, voice generated by the vestibular folds.

Generation of the voice after partial and total laryngectomy (esophageal voice, voice prosthesis, Servox speech aid)

- malignant tumors of the larynx (radical and functional neck dissection)
- carcinoma of the hypopharynx
  - esophagus (anatomy, barium swallow test, esophagoscopy, foreign bodies, diverticulosis of the esophagus, chemical burn)
- Trachea (anatomy, tracheotomy, coniotomy, foreign bodies, inflammation)
- neck (methods of examination, differential diagnosis of a palpable tumor, metastasis, cysts, tumor of the carotid glomus)
- speech impediments (definition of speaking and speech)
- normal and retarded development of the speech
- dyslalia
- nasal speaking
- Stuttering and tachyphrasia
- Dysphasia and dysarthria

## 4. Lectures in ear

### 4.1 embryology

### 4.2 anatomy (external ear, middle ear, pneumatic rooms, facial nerve, labyrinth)

### 4.3 physiology

- transportation and transformation of sound
- labyrinth

### 4.4 methods of examination

- anamnesis, inspection, otoscopy, examination of the hearing function, speech audiometry, objective testing of the hearing, testing of the vestibular organ, imaging

### 4.5 clinics

- external ear: anomalies and malformations, injuries, cerumen, foreign bodies, hematoma of the ear, exostosis, eczema, tumors
- middle ear: rupture of the tympanic membrane, otobasal fracture, malformations, tumors, otosclerosis
- acute otitis of the middle ear (complications: facial palsy, mastoiditis)
  - chronic otitis of the middle ear (complications, tympanoplasties)
- inner ear: Meniere's disease, sudden hearing loss, vertigo, acoustic trauma, hard of hearing due to noise, herpes zoster, presbycusis, hereditary hearing loss, tumors, acoustic neuroma

## 5. lecture in neck

### 5.1 anatomy

### 5.2 methods of examination

- inspection, palpation, biopsies, imaging procedures

### 5.3 clinics

- medial and lateral fistula and cysts
- non specific lymphadenitis of the neck
- specific lymphadenitis of the neck
- differential diagnosis of lymph nodes
- malignant lymphoma
- TNM-classification

## 6. lecture in salivatory glands

### 6.1 anatomy

### 6.2 function

(function in humidification, cleaning, protection, excretion)

### 6.3 methods of examination

(inspection, palpation, imaging)

### 6.4 clinics

- inflammation,
- sialolithiasis
- tumors
- ranula

## Medical Informatics and Statistics

(Prof.Dr. Hildebrand Kunath, e-mail:kunath@imib.med.tu-dresden.de,  
fax +49 351 3177133) <http://www.imib.med.tu-dresden.de>

Medical Informatics is a speciality with undergraduate and postgraduate education. In the Dental Curriculum the main task consist in teaching basic principles and methods of Medical Informatics with special focus on Dental Informatics and Clinimetry. Lectures and practical training in computer pools are in a proportion of 14 to 4 hours. The lecture is located in 4<sup>th</sup> clinical semester.

### Medical Informatics

#### 1. Introduction

Medical Informatics comprises the theoretical aspects of information processing and communication. Knowledge about Medical Informatics is a prerequisite for the rational use of computers in medicine. Clinimetrics is a basic of evidence based medicine.

#### 2. Primary aims

Development of knowledge and skills for the application of computers

#### 3. Main objectives

What is Medical Informatics?

Information and communication

Data, information, knowledge

Computers and symbols

Telecommunication, networking and integration

Basic concepts of Clinimetrics: process of clinical observations, sources of variance, normal/abnormal,disease, diagnosis, therapy, prevention, natural history of disease

Process and outcomes

Process of documentatation, medical record, legal aspects

Classification and coding

Decision support

Information systems in medicine

Databases and knowledge resources in internet

What is evidence?

Clinical trial: planning, design, execution and analysis

Health statistics

4. Methods of learning/teaching

Lectures with discussions, computer presentations, practical training at computers

5. Assessment methods

No assessment

6. Weaknesses

Too little time for practical exercises at the computer

7. Innovations

Training at computers

8. Plans for the future

Better integration in clinical lectures and methods for problem based learning

## **Publications 1995 to 1998**

### **1. Textbooks**

Klimm, W.; Graehn, G.: Der keilförmige Defekt. Berlin: Quintessenz, 1993

Gängler, P. (Hrsg.); Hoffmann, T.; Hoyer, I.; Kamann, W.; Merte, K. :  
Lehrbuch der konservierenden Zahnheilkunde. Berlin/Wiesbaden: Ullstein Mosby, 1995

Hetzer, G.; Krämer, N.; Wetzel, W.-E. (Hrsg.): Gesellschaft für Kinderzahnheilkunde und Primärprophylaxe in der DGZMK: 4. Jahrestagung 1997, Kongreßband. Mediz. Verlag, München, 1997

Klimm, W.: Kariologie. Ein Leitfaden für Studierende und Zahnärzte. München, Wien: Carl Hanser, 1997

Hetzer, G.; Krämer, N. (Hrsg.): Gesellschaft für Kinderzahnheilkunde und Primärprophylaxe in der DGZMK: 5. Jahrestagung 1998, Kongreßband. Lengenfelder, Erlangen, 1998

Walter, M.; Krappweis\*, H.; Kirch, W. (Hrsg.): Public Health und Zahngesundheit - 2. Workshop. S. Roderer Verlag, Regensburg, 1998

Walter, M.; Rieger, C.; Wolf, B.; Böning, K.: Bevölkerungsrepräsentative Studie zum zahnärztlich-prothetischen Versorgungsgrad und Behandlungsbedarf. S. Roderer Verlag, Regensburg, 1998.

Harzer, W.: Lehrbuch der Kieferorthopädie. Carl Hanser Verlag München, Wien, 1999

Hetzer, G. (Hrsg.): Zahngesundheit bei Dresdner Klein- und Vorschulkindern. Roderer, Regensburg, 1999

Mavros, A.; (1998)  
Verhaltenstoxikologische, hämatologische und neuropathologische Untersuchungen zur Einzel- und Kombinationswirkung von Nitrat und Kohlenmonoxid nach prä- und postnataler Gabe bei Ratten  
Sächs. Druck- und Verlagszentrum ISBN 3-929048-99

## 2. Chapters in books, Supplements

### 1995

Dörr, W.; Jacubec, A., Kummermehr, J.; Herrmann, T.; Dölling-Jochem, I.;  
Eckelt, U.<sup>1)</sup>

Effects of stimulated proliferation on oral mucositis during conventional radiotherapy.  
Radiother. Oncol. 37(1995) 100-107

Eckardt, L., Hönicke, K., Harzer, W.: Zusammenhänge zwischen EMG-Aktivität und Computertomography des Masseters.

In: Scholle, H. Chr., Struppler, A., Freund, H. J., Schumann, N-P.: Motodiagnostik - Mototherapie II, Jena, Univ. Verlag 1995, S. 173-178

Eckelt, U.; Rasse, M.

Contrôle clinique radiographique et axiographique après ostéosynthèse par vis de traction des fractures de la région condylienne de la mandibule.

Rev. Stomatol. Chir. Maxillofac. 96 (1995) 158-165

Eckelt, U.

Kryotherapie bei Trigeminusneuralgie

In.: Deutsche Kälte-Klima-Tagung 1995, Ulm, 22. – 24.11.1995

DKV-Tagungsbericht 22 (1995) Band III, S. 157-161

Gräßler, G., Hetzer, G.: Zum Kariesbefall sächsischer Kinder im Zeitraum von 1987 bis 1994.  
Jahrestagung der Gesellschaft für Kinderzahnheilkunde und Primärprophylaxe in der DGZMK,  
Leipzig, 03./04.11.1995, Abstractband S. 5.

Gräßler, G., Viergutz, G.: Bericht über die gemeinsame Jahrestagung der Gesellschaft für  
Kinderzahnheilkunde und Primärprophylaxe in der DGZMK und der Deutschen Gesellschaft für  
Kinderzahnheilkunde e.V. Schweiz Monatsschr Zahnmed, 105, 107-109 (1995).

Harzer, W.: Size Relationships and interactions between crown diameters in twins and family  
members.

In: Ralf J. Radlanski and Herbert Renz: Proceedings of the 10th International Symposium On  
Dental Morphology. Berlin, Sept. 1995, S. 124-135

Hetzer, G.: Zahnentwicklung und Entwicklungsstörungen.

In: H.-J. Maiwald (Hrsg.): Kinderzahnheilkunde, Spitta -Verlag, Balingen 1995, Teil 2,  
Kapitel 5.

Hetzer, G.: Psychologische Aspekte in der Kinderbehandlung.

In: Schriftenreihe der Akademie Praxis und Wissenschaft in der DGZMK; (Hrsg.):  
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S. 33-45.

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Bedeutung der Spurenelemente für die Gesundheit des Menschen. 3. Aufl. Lehrmittelverlag  
Hagemann GmbH, Düsseldorf 1995.

Hetzer, G.: Buchrezension: P.W. Stöckli, E. D. Ben-Zur: Zahnmedizin bei Kindern und Jugendlichen. Dtsch Zahnärztl Z 50, 593 (1995).

Hetzer, G.: Buchrezension: Koch, G., Modeer, Th., Poulsen, S., Rasmussen, P.: Kinderzahnheilkunde - ein klinisches Konzept. Dtsch Zahnärztl Z 50, 652 (1995).

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**Section 20**  
**Research and Publication**

**Visitors Comments**

*The yearly list of publications shows that research is going on in various fields. The planning and introduction of an entirely new educational approach (PBL) must take considerable time and effort and research may suffer during the implementation. However opportunities for a different research focus may be presented.*

*Although a number of scientific papers are published each year it is a concern of the visitors that the teachers have an apparent overload of clinical, teaching and administrative work, resulting in little time for research. This situation is in no way unique, rather is it well-known for most academic teachers in dentistry and medicine. Nevertheless, the visitors strongly support increased resources for research.*

*A strong point for the Dresden Dental School is the strong link between Clinic and Basic Sciences.*

*The students should have more contact with research done by the staff and be encouraged to participate.*

*To ensure a continuous supply of well trained leaders in education, the School is encouraged to provide further development activities for junior faculty members and consider including them as tutors in the PBL sessions.*

*Finally the Visitors recommend that the School should consider placing some emphasis on international collaborative research.*

## **Section 22**

### **Visitors Comments on Dresden Dental School**

Final report by the DENTED visitor group  
on the site visit to  
Centre of Oral Medicine, Faculty of Medicine,  
Technical University of Dresden  
June 12-16, 1999

**J. Bánóczy, J.H. Meurman, D. MacCarthy, P. Barkvoll,  
M. Wierzbicka**

#### **PROLOGUE**

DENTED is a European Union (EU) funded thematic network aimed at the promotion and development of quality improvement through self-assessment and peer discussion in the dental schools of Europe. Based on project groups, visitors were appointed to 16 Dental Schools in the course of the years 1999/2000. The Technical University of Dresden was the second dental school in Germany to apply for the visit. This is the report of the visit based on the formal background material prepared by the school and observations and discussions during the on-site visit.

The visitors very much appreciated the dynamic atmosphere at the Dresden dental school and were impressed by the extensive renovations so well made during the past few years. The spirit among the professors, teachers, other staff members and students was inspiring and contagious and reflected the forward looking mission of the school. The DENTED team also wants to extend their thanks for the warm hospitality and excellent facilities provided for the work.

## **THE VISITORS**

The group of visitors was appointed by the DENTED Project, awarded in 1997 to the Dublin Dental Hospital under the auspices of DG XXII of the European Union and consisted of the following [AREAS OF EXPERTISE ARE GIVEN IN PARENTHESIS]:

**Bánóczy, Jolan**, M.D., D.M.D., Ph.D., D.Sc.; Professor and Past Dean; Chairman of the Visiting Committee, Semmelweis University, Budapest, Hungary [ORAL MEDICINE, ORAL BIOLOGY; PREVENTIVE DENTISTRY]

**Meurman, Jukka H.**, M.D., Ph.D., D. Odont., Professor and Dean; Reporter of the Visiting Group, University of Helsinki, Finland [DENTAL INFECTIOUS DISEASES; ORAL MEDICINE; CARIOLOGY]

**MacCarthy, Denise**, B.D.S., M.Dent.Sc., M.A., F.D.S.R.C.S., Senior Lecturer, Consultant in Restorative Dentistry and Periodontology, Director of Dental Hygiene Programme Trinity College, Dublin, Ireland [RESTORATIVE DENTISTRY AND PERIODONTOLOGY; PREVENTIVE DENTISTRY]

**Barkvoll Pal**, Cand. Odont., Dr. Odont., Professor and Chair, University of Oslo, Norway [ORAL AND MAXILLOFACIAL SURGERY]

**Wierzbicka, Maria**, Dr. Hab. Med. Sci, Professor and Past Dean; The Medical University of Warsaw, Poland [CONSERVATIVE DENTISTRY AND PERIODONTOLOGY; PREVENTIVE DENTISTRY]

## **AIMS**

The aim of the school is to educate dentists capable of meeting the challenges of the new millennium. The school aims to implement the oral physician concept by increasing the medical aspects in the curriculum. This is necessary because of the changing demographics and disease panorama due to the fact that the proportion of the elderly is constantly increasing in society. Further, the school aims to fulfill the curricular requirements for harmonization of dental education in the European Union.

## **OBJECTIVES**

Changes in the present curriculum are needed to implement the **Problem Based Learning (PBL)** concept, which has already started in the medical faculty, and also as a pilot project in the dental school. The expansion of medical components in the clinical years and taking into account the biological and technological developments of international dentistry calls for further development of the curriculum. The visitors were impressed by the enthusiasm among the faculty staff towards the afore mentioned changes. The good relationships between dental and medical disciplines and their leaders, and the facilities in the recently renovated buildings offer excellent possibilities to fully achieve the aims and objectives set by the school. Modern four-handed dentistry calls for close cooperation between the dentist and the auxiliary. The dental school should take responsibility for the education of dental nurses and dental hygienists so that their practical training could be arranged together with that of the dental students.

## **DEVELOPMENTS PLANNED**

The Visitors commend the plans to further improve the physical facilities such as the concentration of the student and specialist dental clinics into one building. The leadership further aims to increase computer facilities also to the students which is a necessity for the full implementation of PBL. It became evident that the legislation for dental undergraduate studies (Approbationsordnung) must be reviewed to allow flexibility in the development of an undergraduate dental curriculum to meet the changing community needs in the new millennium. The visitors also welcomed the plans to reduce the hours used for mere technical and manual training, particularly extensive in prosthodontics which is often at the expense of training in preventive dentistry.

## **UNDERGRADUATE COURSE STRUCTURE**

The course is a five-year whole time curriculum which is divided into three segments:

The basic segment (a minimum of two semesters of one year) ends with the successful examination in basic science (*Naturwissenschaftliche Vorprüfung*). The preclinical segment (a minimum of three semesters or one and a half year) is concluded with the second part of the national examination (*Zahnärztliche Vorprüfung*). It is followed by five clinical semesters (two and a half years), at the end of which the third part of the national dental examination (*Zahnärztliche Prüfung*).

After passing this final part of the national dental examination the student graduation from the Dental School, full certification (*Approbation als Zahnarzt*) is granted by the appropriate state authority.

## **FACILITIES**

The newly refurbished dental school offers excellent facilities for clinical training and the visitors want to congratulate the Dresden school for the tremendous improvements achieved over the past few years. The number of computer stations must be increased so that the students can work at the internet and library databases by themselves. The library facilities should be rationalized and merging of the existing two separate libraries might be considered.

## **STUDENT SELECTION**

The students, having completed second level of education (*Abitur*), are analyzed based on their notes in a central bureau (*Zentrale Vergabestelle ZVS*). The best are then distributed partly according to their applications to the dental schools in Germany. In Dresden, the school has to accept 80 % of the students based on the decision of the ZVS, but can select the remaining 20 % based on the results of an interview.

## **TEACHING METHODS**

The *Approbationsordnung* gives the framework of basic teaching in Germany. The Dresden School has adopted a more modern teaching philosophy including the introduction of PBL together with the medical faculty according to the Harvard Medical School principles. The visitors observed a great enthusiasm among the dental educators, but still much work is needed before PBL will be fully implemented.

In the clinical teaching, a holistic and integrated treatment principle is followed by grouping the restorative (conservative) dentistry, endodontology, periodontology and prosthodontics together. The visitors welcomed this principle. In the clinic the students work in pairs, which partly compensates for the lack of auxiliaries. This practice also fulfills the educational principles of training students from the auxiliary perspective.

Examinations: There is good experience with practical examinations in the clinic. However, there seems to be interdisciplinary teaching but disciplinary examination. Therefore, plans for interdisciplinary examination and assessment procedures seem necessary. The introduction of external examiners, even international, might also be considered.

The Appendix 1 describes in detail the curriculum.

## **STUDENTS**

The visitors enjoyed their meeting and discussion with the students who appeared positive, optimistic and enthusiastic about their studies. They also expressed their respect for the leaders of the school and fully supported the implementation of the new ways of teaching. However, more facilities for internet connections and library databases are needed.

The students seemed satisfied with their clinical practice except for oral surgery, where apparently too few dental extractions were taught due to lack of suitable patients.

The connections with international student bodies, such as the International Association for Dental Students, are too few although some students had taken advantage of the EU Socrates program.

## **RESEARCH**

The visitors were impressed by the excellent facilities and good interdisciplinary tradition of scientific research. The school is to be congratulated for recent development in this area. The system of allocating financial resources and achieving grants for research are based on competition: scientific output, impact factors, degrees, grants; which is very positive. It appeared, however, that the allocation of research money does not take into account the full credit of international research achievements which should be encouraged. The publication of research articles in international peer-reviewed journals should be encouraged, in particular.

The school might need to think about discussing the strengths and weaknesses in its present research profile in order to allocate resources to areas with greatest potential. It is not the task of the DENTED visitor group to evaluate research in more detail. However, the school might want to consider a separate evaluation from a purely scientific perspective.

## **STAFFING**

There are approximately 65 dentists and 104 auxiliary staff working in the dental school of Dresden. Most physicians and dentists work full time. The School is divided into four departments:

- Department of Maxillo-Facial Surgery (Head: Prof. Dr. Dr. Eckelt), 17 physicians, 49,6 nurses and auxiliaries
- Department of Prosthodontics (Head: Prof. Dr. Walter) 16,5 dentists, 16,35 auxiliaries, technicians etc.
- Department of Conservative Dentistry (with Periodontics, Prof. Dr. Hoffmann), Head: Prof. Dr. Klimm, 17 dentists, 20,5 aux.
- Department of Orthodontics (with Pedodontics, Prof. Dr. Hetzer) Head: Prof. Dr. Harzer, 14 dentists, 16,7 aux.

In the organization of the teaching (PBL) it is mandatory that the different departments work together. The visitors noted no obstacles in this respect. On the contrary the enthusiasm regarding new developments was mutually shared.

The organization of the dental school is given in Appendix 2.

## **STRENGTHS**

- Enthusiastic atmosphere in the school
- Refurbished buildings providing excellent clinical and research facilities
- First dental school in Germany to implement PBL
- Integrated clinical course providing an evidence based approach to dental training and holistic patient care
- Excellent personnel and obvious inter-departmental cooperation within the dental school and medical faculty
- Students trained in four-handed dentistry
- Enthusiastic and positive students, happy with their clinical training

## **WEAKNESS**

- Certain topics, such as lichen planus and other aspects of oral medicine, are taught in several areas and might benefit from establishment of an own discipline of Oral Medicine and Oral Pathology
- Preventive dentistry curriculum should be extended
- There is heavy emphasis on technical preclinical exercises and clinical laboratory work to the cost of other, biological areas
- The area of hygiene is taught in the fifth year. This covers cross-infection control etc. and should be scheduled earlier in the course
- Immunology as an own entity appears to be lacking
- There seems to be a lack of patients for student treatment and more training for students in minor oral surgery and treatment of medically compromised patients might be needed
- Library and computer facilities for the students should be improved

## **CONCLUDING REMARKS**

- The 1955 federal law (Approbationsordnung) should be changed to allow more flexible development of dental curriculum to meet future needs of the community. The Dresden school should continue its ice-breaking functions towards new teaching methods, such as the problem based learning and the other pioneering effects of the school in this respect.
- Pediatric Dentistry, Public Dental Health, Periodontology and Oral Medicine should be

reorganized as independent disciplines. The number of hours spend in laboratory technical work should be reduced.

- International teacher, staff and student exchange should be encouraged (SOCRATES).
- The dental team approach should be developed by integration and control of dental nurse and dental hygiene education into the dental school.
- Publication of research in international peer-reviewed journals should be encouraged

**Dresden, 1999.06.16**

**Jolan BÁNÓCZY**

**Jukka H. MEURMAN**

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