



FACULTY OF ODONTOLOGY UNIVERSITY OF ICELAND



**VATNSMÝRARVEGI 16, IS 101 REYKJAVÍK,
ICELAND**

TEL: +354 525 4850; FAX: +354 525 4874

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DRAFT REPORT

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Visitors

Chairperson	Antonio Carassi	Milan
Rapporteur	Paul Dowling	Dublin
	Vera Hubkova	Hradec Kralove
	Irmtrud Jonas	Freiburg
	Noel Claffey	Dublin

LIST OF RECOMMENDED TEXTBOOKS FOR THE COURSE IN ODONTOLOGY, UNIVERSITY OF ICELAND

Where a subject does not have a standard textbook teaching material is provided by the teacher, usually as photocopies.

Cell Biology	Goodman	Medical Cell Biology
Chemistry, I,II,III	Zumdahl	Chemistry
Dental Morphology	Carlsen	Dental Morphology
Anatomy I	Petrén & Carlsöö	Anatomi för Tandläkarstudende og Tandläkare
Anatomy II	Blöndal	Head and Neck Anatomy
Oral Histology	Junguera et al	Basic histology
	Ten Cate	Oral Histology
	Woodburn	Essentials of Human
Anatomy		
Biochemistry I	Baynes et al	Medical Biochemistry
Physiology	Sherwood	Human Physiology
Oral Physiology	Krogh-Poulsen	Ortofunktion: bidfunktion/bettfysiologi
Biochemistry II	Baynes et al	Medical Biochemistry
	Tylstrup & Fejerskov	Textbok of Clinical Cariology
Microbiology & Immunol I	Bagg et al	Essentials of Microbiology...
Pathology	Kumar et al	Basic Pathology
Oral Pathology	Johannesson	Meinafræði munns og kjalka
	Shafer, Hine, Levy	Oral Pathology
	Cawson & Odell	Colour Guide to Oral Path
Microbiology & Immunol II	Marsh & Martin	Oral Microbiology
Operative Dent (preclinical)	Skinner & Phillips	Science of Dental Materials
	Baum et al	Textbook of Operative Dentistry
Removeable Prosthetics (preclin)	Skinner & Phillips	Science of Dental Materials
and Fixed Prosthodontics (preclin)	Mc Givney et al	Removeable Partial Prosthodontics
	Sowter	Dental Lab Technology
Pharmacology	Rang et al	Pharmacology

Cariology	Tylstrup & Fejerskov	Textbok of Clinical Cariology
Local Anaesthesia	Evers et al	Handbok of Dental Local Anaesthesia
Occlusion and TMJ Disorders	Pertes & Gross	Temporomandibular Disorders and Orofacial Pain
Radiology	Miles et al	Oral and Maxillofacial Radiology
Medicine	Axford Macleod	Medicine Davidson's Principles and Practice of Medicine
	Scully et al	Medical Problems in Dentistry
Periodontology	Lindhe et al	Clinical Periodontology and Implant Dentistry
Endodontics	Weine	Endodontic Therapy
Operative Dentistry	Baum et al	Textbook of Operative Dentistry
Removeable Prosthodontics (full)	Bolender et al	Prosthodontic Treatment for Edentulous Patients
Removeable Prosthodontics (partial)	McGivney et al	Removeable Partial Prosthodontics
Fixed Prosthodontics	Shillingburg	Fundamentals of Fixed Prosthodontics
Oral Surgery	Peterson et al	Contemporary Oral and Maxillofacial Surgery
Orthodontics	Thilander & Rönning	Introduction to Orthodontics
Paedodontics	Koch et al	Pedodontics- A Clinical Approach

SECTION 1. INTRODUCTION

1.1 Background and history of dental education in Iceland

Based on material provided by Thordur Eydal Magnússon, dr odont, professor emeritus eydal@rhi.hi.is

Dental education began in Iceland in the spring of 1945 in the Faculty of Medicine of the University of Iceland. This followed approval of a law by the Parliament, Althingi, dating from 1941. This law required that dental students must have completed the middle part of the examinations in medicine before dental training could begin and this training then took two years. Permission was given for the appointment of a tutor dental technician but other tuition was to be from part-time teachers. University regulations from 1942 gave more details on the dental curriculum. Undergraduate dental education thus began with three students in two rooms of the upper floor of the main University building. In 1947 these three students became the first to graduate in dentistry from the Faculty of Medicine.

New regulations set according to a law from 1947 came into force in 1949 and established a new curriculum for dental education. According to these regulations a separate five-year course was established for training in dentistry with only chemistry taught jointly to medical and dental students. Normally there were 20 students in the course with four graduating annually. Further changes in the regulations governing dental education in the Faculty of Medicine were approved in 1958 and 1973. With the former regulation the course was lengthened to six years. Dental teaching was moved to temporary premises in the basement of the main hospital (Landsspítalinn, later the National University Hospital) in November 1959 but the stay turned out to be some 18 years longer than the five years originally planned. Although this new accommodation was much larger than the rooms in the main University building, the facilities fell some way short of the requirements for teaching and research in dentistry at that time. Furthermore the number of students was increased so that six students were allowed to enter the second year of the course, following a competitive examination at the end of the first year.

When three professors had been appointed to teach dentistry in the University, steps were taken to formalise the establishment of a separate Faculty of Odontology within the University of Iceland which came into being on May 2nd 1972. A new building to house the Faculty of Odontology and several preclinical medical subjects was commenced in 1980. Although the building remains unfinished, particularly the Northern end, the two floors intended for the Faculty of Odontology were taken into use at the beginning of 1983.

Although the number of students per year was raised to eight for a short period this was reduced again to six partly to prevent over-production of dentists for this small population and in order to reduce costs by reducing the need for part-time teachers. At the same time the school for dental technicians and the clinical training course for dental assistants were set up on the Faculty's premises.

From its inception in 1947 to the present day some 240 dentists have graduated from this school and three dentists have defended their doctoral theses in the Faculty. Clinical specialist training has not been undertaken in the Faculty largely because there is a requirement for specialists to have obtained their training (a minimum of three years) abroad.

1.2 Primary objectives of the faculty

1. Academic and clinical training of dental students according to the law and regulations of the University of Iceland (1999-2000). The qualification is recognised as allowing the holder to practice dentistry in the other Nordic countries and countries within the European Economic Area.
2. Academic training to Masters or Doctorate degree level but not including postgraduate clinical training to specialist level. (This must be carried out abroad according to the rules governing recognition of specialist training in dentistry from 1986).
3. To conduct research into topics pertaining to the field of dentistry.
4. To provide the Government of Iceland or other relevant bodies with advice on matters concerning dentistry and dental health as and when such advice is requested. Provide representation on official bodies such as the committee on specialist recognition and the Committee on Preventive Dentistry of the Ministry of Health.

1.3 Curriculum

Entry into the University of Iceland is open to all who have completed the matriculation examination (*studentspróf* - student's examination) or equivalent. This examination is usually taken at the age of 20 y and follows a broad 4-year further education training. No stipulation is made concerning subjects that have to be studied in order to gain entry to the Faculty of Odontology but most students have a background in mathematics, physics and chemistry and biology. It is possible, although undoubtedly difficult, for a student to enter dentistry with a background in the humanities. The first term of first year comprises an introductory course in physiology and anatomy; a course on cell biology; chemistry; and both theoretical and practical training in dental morphology. This latter course provides a good test of manual dexterity. At the end of the first term

there is a series of examinations with a *numerus clausus* and only the top 6 students are allowed to continue to the second term of the course. The average mark of all the courses is used for selection but the formula is weighted towards the courses in dental morphology to resolve instances where there is a tie.

The course in the first term is run largely in collaboration with the Faculty of Medicine but they have now decided to use the permission from the new University law to hold an entrance examination in August and select their students directly on the basis of that examination. The Faculty of Odontology has decided, for the time being, to continue with open entry into the first term and then select students following the examinations because it gives the Faculty the opportunity to evaluate manual skills before the student is too committed to the dental course. Changes that are afoot in the school system should result in the student's examination being taken at 19 y of age (from 2003) and the Faculty is aware of the possible need to re-evaluate its first year teaching in the near future. Preliminary study of this matter does not, however, suggest that the Faculty should join the Faculty of Medicine in its entry examination and therefore some restructuring of the first-year classes will be necessary.

Following entry into the second term of the course the students continue with chemistry and anatomy but to this some subjects with more direct dental relevance are added. In the second year of the course the students receive their first exposure to patients by joining the final-year students in the oral diagnosis clinic where new patients are examined and assigned to appropriate waiting lists according to their respective treatment needs. The third year of the course is largely taken up with the subjects of dental technology but also the paraclinical subjects are taught, some of them having been introduced in the second term of second year.

Students are required to pass all the subjects in the year of study before proceeding to the following year. Although exceptions are occasionally made it is essential for students to have completed all subjects from the first three years of the course before they can proceed to the clinical part of the curriculum that occupies the last three years of the course. Most of the subjects in the later part of the course span more than one year and are sometimes divided into junior and senior clinical courses.

In addition there is the possibility for students to undertake an optional research project (more or less in their own time) And 2-3 students per year usually do this. The size of the project is variable and the credits obtained are additional to those for the dental

degree. Many of the projects have been presented as contributions of the Faculty of Odontology to the Nordic-Dutch Dentsply Student Competition that is held annually in Copenhagen. An optional course in oral medicine and continuing education courses for dental practitioners mark the initial steps being taken by the Faculty to meet the need for structured further training of dental practitioners. Several have now attended a clinic of their choice and taken on more advanced clinical problems under the supervision of a clinical specialist from the Faculty. This development is being monitored by the Dental Institute of the Faculty that has been set up to run continuing education courses and it is hoped to integrate this activity with the initiative recently taken by the Icelandic Dental Association establishing a voluntary system of credits for continuing education of dentists.

Overview of Courses in the Faculty of Odontology, University of Iceland

1.1 First year, Autumn term – Competitive entry courses.

1.1.1	Chemistry I Ásgeir Bjarnason, dósent	4 credits [ECTS: 8]
1.1.2	Introduction to Anatomy and Physiology Hannes Blöndal, professor & others	4 credits [ECTS: 8]
1.1.3	Dental Morphology, theoretical Karl Örn Karlsson, lektor.	2 credits [ECTS: 4]
1.1.4	Dental Morphology, practical Karl Örn Karlsson, lektor	5 credits [ECTS: 10]

Competitive Examination (numerus clausus)

1.2 First year, Spring term

1.2.1	Cell Biology Helga Ögmundsdóttir, dósent	1 credit [ECTS: 2]
1.2.2	Chemistry II Sigmundur Guðbjarnason, professor	4 credits [ECTS: 8]
1.2.3	Chemistry III Sigríður Jónsdóttir & others	2 credits [ECTS: 4]
1.2.4	Anatomy I Jóhann Arnfinnsson, biologist and others	3 credits [ECTS: 6]
1.2.5	Occlusion theoretical Karl Örn Karlsson, lektor	2 credits [ECTS: 4]
1.2.6	Occlusion practical Karl Örn Karlsson, lektor	1 credit [ECTS: 2]
1.2.7	Statistics Sigurður Rúnar Sæmundsson, assist. teacher	1 credit [ECTS: 2]

- 1.2.8 Introduction to Dentistry
Taught by the clinical teachers 1 credit [ECTS: 2]

2.1 Second year, Autumn term

- 2.1.1 Anatomy IIa
Hannes Blöndal, professor 3 credits [ECTS: 6]
- 2.1.2 Anatomy IIb (oral histology)
Björn Ragnarsson, lektor. 2 credits [ECTS: 4]
- 2.1.3 Radiology (physics)
Jón Viðar Arnórsson, lektor 2 credits [ECTS: 4]
- 2.1.4 Biochemistry I
Hörður Filippusson, dósent. 4 credits [ECTS: 8]

2.2 Second year, Spring term

- 2.2.1 Physiology (2 terms)
Stefán B. Sigurðsson, professor & Karl Örn Karlsson, lektor.
8 credits [ECTS: 16]
- 2.2.2 Oral Diagnosis (2 terms)
Jón Viðar Arnórsson, lektor & Árni Þórðarson, lektor.
1 credit [ECTS: 2]
- 2.2.3 Biochemistry II
Baldur Símonarson, dósent, & Peter Holbrook, professor.
4 credits [ECTS: 8]
- 2.2.4 Microbiology/Immunology I
Peter Holbrook, professor & Gunnsteinn Haraldsson, asst. teacher
2 credits [ECTS: 4]
- 2.2.5 Pathology General
Sigfús Nikulásson, lektor 3 credits [ECTS: 6]
- 2.2.6 Propadeutical Philosophy
Teachers from the Dept. of Philosophy 1 credit [ECTS: 2]

3.1 Third year, autumn term

- 3.1.1 Oral Pathology

- Sigfús Nikulásson, lektor 2.5 credits [ECTS: 5]
- 3.1.2 Bacteriology/Immunology II
Peter Holbrook, professor & Gunnsteinn Haraldsson, asst. teacher
1.5 credits [ECTS: 3]
- 3.1.3 Preclinical. Operative Dentistry-theoretical (2 terms)
Halla Sigurjóns, dósent 3 credits [ECTS: 6]
- 3.1.4 Preclinical Operative Dentistry-practical (2 terms)
Sigfús Þór Elíasson, professor, Halla Sigurjóns, dósent, Inga B. Árnadóttir,
lektor, Helgi Magnússon, adjúnt.
3 credits [ECTS: 6]
- 3.1.5 Precl. Removable Prosthetics theoretical (2 terms)
Einar Ragnarsson, dósent. 5 credits [ECTS: 10]
- 3.1.6 Preclinical Removable Prosthetics practical (2 terms)
Einar Ragnarsson, dósent, Gunnar G. Leifsson, asst, teacher,
Gunnlaugur Rósarsson, asst. teacher 5 credits [ECTS: 10]
- 3.1.7 Preclinical Fixed Prosthetics theoretical (2 terms)
Einar Ragnarsson dósent. Björgvin Jónsson, adjúnt.
2.5 credits [ECTS: 5]
- 3.1.8 Preclinical Fixed Prosthetics practical (2 terms)
Einar Ragnarsson dósent, Björgvin Jónsson, adjúnt.
1.5 credits [ECTS: 3]
- 3.1.9 Preclinical Occlusion and TMJ course (2 terms)
Karl Örn Karlsson, lektor 1.5 credits [ECTS: 3]
- 3.1.10 Pharmacology
Magnús Jóhannsson, professor & others 4.5 credits [ECTS: 9]

4.1 Fourth year, Fifth year, Sixth year

- 4.1.1 Cariology (1 term)
Sigfús Þór Elíasson, professor & Peter Holbrook, professor.
2 credits. [ECTS: 4]
- 4.1.2 Anaesthesia I (1 term)
Sigurjón H. Ólafsson, dósent. 0.5 credits [ECTS: 1]
- 4.1.3 Occlusion/TMJ, theoretical and clinical (3 terms)
Karl Örn Karlsson lektor 4.5 credits [ECTS: 9]

- 4.1.4 Radiological Diagnosis (1 term)
Jón Viðar Arnórsson, lektor. 0.5 credits [ECTS: 1]
- 4.1.5 Internal Medicine (1 term)
Ársæll Jónsson, dósent. 3 credits [ECTS: 6]
- 4.1.6 Periodontics I (2 terms)
Sigurjón Arnlaugsson, lektor & Ingólfur Eldjárn, asist. teacher
2.5 credits [ECTS: 5]
- 4.1.7 Endodontics theoretical and clinical (4 terms; 4 & 5 year)
Björn Ragnarsson, lektor 3.5 credits [ECTS: 7]
- 4.1.8 Operative Dentistry – theoretical & clinical (6 terms)
Sigfús Þór Elíasson, professor, Halla Sigurjóns, dósent, Inga B.
Árnadóttir, lektor, Helgi Magnússon, aðjúnkt.
14 credits [ECTS: 28]
- 4.1.9 Removeable prosthetics, theoretical and practical (6 terms)
Einar Ragnarsson, dósent, Elín Sigurgeirsdóttir, lektor.
Svend Richter, aðjúnkt, Sigurgeir Steingrímsson, assist. teacher Björgvin
Jónsson, aðjúnkt,
Full dentures 11 credits [ECTS: 22]
Partial dentures 6 credits [ECTS: 12]
- 4.1.10 Anaesthetics II (1 term)
Sigurjón H. Ólafsson, dósent, Ólafur Höskuldsson, lektor & Þorsteinn Sv.
Stefánsson, dósent
1 credit [ECTS: 2]
- 4.1.11 Fixed prosthetics, theoretical & clinical (6 terms)
Einar Ragnarsson, dósent, Elín Sigurgeirsdóttir, lektor, Svend Richter,
aðjúnkt, Sigurgeir Steingrímsson, assist. teacher, Björgvin Jónsson,
aðjúnkt. 7.5 credits · [ECTS: 15]
- 4.1.12 Common Clinical Courses Relating to Dentistry (3 terms)
Supervision by the teaching committee
3 credits [ECTS: 6]
- 4.1.13 Periodontics II, theoretical and clinical (4 terms)
Sigurjón Arnlaugsson, lektor & Ingólfur Eldjárn, asist. teacher
7.5 credits [ECTS: 15]
- 4.1.14 Oral Surgery theoretical and clinical (3 terms)
Sigurjón H. Ólafsson, dósent, Jón Viðar Arnórsson, lektor & Peter
Holbrook, professor.
7.0 credits [ECTS: 14]

- 4.1.15 Orthodontics theoretical and clinical (4 terms)
 Árni Þórðarson, lektor.
 6.5 credits [ECTS: 13]
- 4.1.16 Pedodontics theoretical and clinical (4 terms)
 Ólafur Höskuldsson lektor 8 credits [ECTS: 16]
- 4.1.17 Oral Diagnosis (2 terms)
 Jón Viðar Arnórsson, lektor, Peter Holbrook, professor, Árni Þórðarson,
 lektor 2 credits [ECTS: 4]
- 4.1.18 Continuing Education Clinical Program
 Teachers in the clinical subjects according to need
 Credits according to time worked
- 4.1.19 Optional Course in Oral Medicine (1 term)
 Peter Holbrook, professor 2 credits [ECTS: 4]
- 4.1.20 Research Project (optional)
 Various teachers approx 6 credits [ECTS:12]

Strengths of the dental course in Reykjavík

- School is small but this allows for very close supervision of students and problems are quickly recognised and corrected. A high clinical standard is expected and usually achieved.
- It is hoped that a friendly atmosphere pervades, lines of communication from student to staff, faculty administration and the University are short and students are represented at all levels of University administration.
- All permanent staff are recognised specialists and clinical staff are active in their specialty.
- Clinical and technical facilities are of a high standard and are well maintained.
- Because of the international background of the staff with respect to further training, there is a broad outlook which aims to incorporate the best of clinical dentistry from Europe and North America.

Weaknesses of the dental course in Reykjavík

- Small size limits possibilities for specialist teaching in all areas of dentistry, especially the preclinical and paraclinical subjects.
- Shortage of patients in some disciplines, such as paedodontics and minor oral surgery.
- Difficulties in a small clinic of running a course in integrated patient care.
- Funding is inadequate to develop the course as the Faculty would like (see below).

1.4 Student numbers

As of 26th July 2000 the University student Registration Office has applications from 7 male and 14 female students to join the first year dentistry course in September this year. From these 21 students the top six will be selected to continue into the second term after a competitive examination held in December. A total of 33 students are registered in years 2-6 giving a total of 54 students and this includes three registered for postgraduate courses. The total number of students registered with the Faculty in January of each of the preceding three years was: 1998- 46; 1999- 41; and 2000- 50.

1.5 Position of the Faculty in the Health Service

Difficulties continue to arise because dentistry is not recognised as being a part of the hospital service in Iceland, except for oral surgery. No hospital dentistry exists and dental care for the institutionalised is minimal. Furthermore the clinical work carried out in the Faculty is not recognised by the Health Authorities and State-run health

insurance scheme. Patients who qualify for financial support for dental treatment cannot, therefore, attend the dental school as they would lose this support. At present the Faculty is not allowed to appoint a dental surgeon to take care of patients' needs that fall outwith those strictly required for teaching purposes. Once those aspects of a patient's treatment are completed that meet the teaching needs of the Faculty there is no guarantee that the patient will be able to complete his or her treatment in the Faculty. Clearly the ethics of this position are dubious and the Faculty has been trying to change the rules for many years. Similarly teachers in the Faculty are not allowed to run a specialist clinical service or faculty practice. **Consequently this work is carried out in private practice where remuneration is also much higher than in the University but there is a clear financial, clinical and academic loss to the Faculty with this state of affairs. These problems form the most serious limitations to expansion of the Faculty in the direction of specialist and further training and they pose a serious threat to the financial well-being of the Faculty in the future.**

Visitors Comments

Lack of links to the health service resulted in a shortage of patients in Paediatric Dentistry and Complete Dentures for learning. This is due to the state not allowing reimbursement of treatment carried out at the Dental School. The visitors found it difficult to understand this, particularly in view of the importance of patient generated income to the economics of the Dental School. It should also be noted that the lack of child patients restricts the education of the students. Lack of cooperation with the National Health Service also limits the student experience in the important areas of special needs and treatment of medically compromised patients.

1.5.1 Patient data

A small survey was carried out in the the autumn of 1999 and covering the two academic years 1997-1999, into the profile of new patients attending the Faculty for dental treatment. A total of 330 patients attended the inspection/diagnosis clinic each year: 208 required periodontal treatment, 120 required endodontics, 230 operative dentistry, 140 needed crowns or bridges, 49 partial dentures, 53 required full dentures, 158 attended for extractions or minor oral surgery, and 40 patients attended for orthodontics or with occlusal problems. Most patients had more than one complaint. Of these patients 11.5% completed treatment, 20.1% stopped attending before treatment was complete, 27.5% were still undergoing treatment and 40.8% of patients could not be offered any treatment but were retained on file.

Best practices

- Good ratio of one teacher to six students.
- All teaching is virtually small-group teaching.
- Informal assessment of students at a staff meeting each term to spot problems before they become too serious.
- Student assessment of staff performance.
- Regular participation in the annual Dentsply Student Presentation in Copenhagen.

SECTION 2 FACILITIES

2.1 Clinical facilities

There is one main clinic with 17 dental units. Adjoining it are 4 chairs in a room that can be closed off from the main clinic and in addition are two dental units, each in its separate room. One of these latter units is used by the school for dental nurses as a simulation dental clinic, the other being used for consultations and for oral surgery. Adjacent is a small curtained-off recovery bay.

The central sterilization room has an instrument washer and two autoclaves and operates a cassette system for most clinical procedures. One x-ray machine for intra-oral radiography is sited close to the clinic and an automatic developing machine is available. There is also another manual developing box in a clinic side-room. The main radiography suite has a cephalometric x-ray machine, orthopantomographic machine and two other machines for intra-oral radiography. There is one automatic developing machine capable of taking various film sizes. The clinical facilities are well maintained and care of this equipment is emphasised to the students.

Patients attend the reception desk in the waiting room and are then taken by the student or dental assistant to the clinic. Overshoes or indoor shoes are always worn in the clinic and sterilization areas. There is a computerised system of recording patients' details but clinic notes are still hand written. Patient notes are stored in locked cabinets in the reception area.

Innovations

A programme of equipment renewal is now underway funded by income from the clinic (clinic charges are approximately 20% of the State Health Insurance scale of fees). Six dental chairs will be replaced at the end of this year, another 6 in 2003 and a further 6 in 2006. The orthopan radiographic equipment will be replaced also this year and it is intended to digitalise the system in the near future but this will depend on how quickly the University and dentists in private practice can modernise their computer facilities. Dentists already use the radiological service in the Faculty for some of their patients.

2.2 Teaching facilities

The Faculty has one lecture theatre for up to 40 people and two seminar rooms that seat 10-12 persons. There are facilities for video, overhead projection and slide presentations. Equipment for Power Point presentations is being purchased. In addition the Faculty has access to any of the teaching facilities of the University of Iceland subject to availability. (First year lectures held jointly with the medical students, for example, are housed in the University cinema complex.) It is also possible to show

overhead transparencies and slides in the two technical teaching laboratories. Teaching facilities in the Faculty are shared with the schools for dental technicians and dental nurses.

2.3 Teaching laboratories

The Faculty has access to laboratories in the Faculty of Science and the Faculty of Medicine for those subjects that are taught by those respective Faculties (chemistry, anatomy, biochemistry, physiology, cell biology). Within the Faculty of Odontology is a research laboratory for microbiology that is also used for teaching purposes i.e. practicals and demonstrations in the two courses in microbiology. There is a laboratory with nine phantom heads for teaching the courses in preclinical restorative and prosthetic dentistry. This shares some facilities with the adjoining technical laboratory which seats 18 and is used by the students in their clinical years to carry out some of the technical procedures required for their patients. A tutor dental technician is appointed to supervise and assist the students in this latter laboratory whilst most of the teaching in the preclinical training laboratory is undertaken by part-time teachers.

The laboratories are well equipped and there has been some renewal of equipment in recent years. They are designed to be multi-purpose and a few facilities are shared with the school for dental technicians.

2.4 Research laboratories

The main research laboratory has recently been expanded and serves mainly as a microbiology research unit. Some routine service work is carried out, both diagnostic microbiology on patient samples and a scheme for regular testing of dental sterilizers (autoclaves and hot-air ovens) is run from the laboratory. One part-time technician is employed on grant money and income from services. The laboratory has an anaerobic cabinet for research into periodontal pathogens and is reasonably equipped for the projects that are undertaken. There is an office for a visiting scientist in the laboratory suite. Computing facilities in the laboratory are in need of renewal.

Small ante-rooms to the offices of most teachers were originally designed as research laboratories. These rooms have largely functioned as planned when the teacher has been involved in data collection and epidemiological research. Data can be stored and processed there and they have been used to house research assistants.

2.5 Reading rooms and computing facilities

There are reading rooms for students who wish to do their private study in the building. Dental students have priority over one room and the medical students another. Each

student has a table with book shelf and they are able to keep their own books and papers there. The rooms are open, as indeed is the technical laboratory, until 21.00 but students who require access to the reading rooms after that time may obtain a key. A computer room, intended for medical and dental students working in the building, is situated on the third floor. Equipped with PC's and linked to the net and to printers this teaching resource is open from 8.00 until 21.00 daily.

A small reading room with computer facilities has been set up to display recent issues of dental journals bought by the University. These may be kept in the building for two years and then are returned to the main library. This was done because of difficulties experienced with access to the main library by staff and students when the opening hours were curtailed and also because of the distance to the library which makes it impossible to browse at the current literature during a normal working day. The rotation of issues of the journals is under the supervision of one of the office staff. There are also facilities for teachers and students to prepare teaching or research material including a computer, scanner, printers and a photocopier.

2.6 Library

The following section has been prepared from material supplied by the National and University Library of Iceland where the Faculty's contact person is Halldora Thorsteinsdottir.

The National and University Library of Iceland is situated in the Þjóðarbókhlaða, at Arngrímmsgata 3, and is open to all persons 17 years of age and older. There are, in addition, branch libraries in various University departmental buildings, including Lögberg, the law building; VR-II, the science and engineering building; Jarðfræðahús, the geology building; and Líffræðistofnun, the biology research institute. The library performs many functions. Amongst other things, the library must:

- * gather together, as well as possible, all Icelandic published materials, and ensure the upkeep and protection of the library collection
- * preserve the manuscript collection
- * make a catalogue of all Icelandic books, manuscripts, and recordings and publish the National Bibliography
- * collect together all published materials, both printed and in other forms, and make them available to the public
- * provide for the needs of teaching and research activities at the University of Iceland
- * provide library and information services for the benefit of industry, government, and research

- * provide library users with the possibility of working facilities and easy access to library materials
- * operate a Union Catalogue for Icelandic libraries
- * operate the national office for the international standard book number system (ISBN)
- * support scholarly and cultural activities

Opening Hours

The library is open the following hours:

September-May:

Monday-Thurs	8:15 - 22:00
Friday	8:15 - 19:00
Saturday	9:00 - 17:00
Sunday	11:00 - 17:00

June-August:

Monday-Friday	9:00 - 17:00
Saturday	10:00 -14:00,

Library Cards

All residents of Iceland, 17 years of age and over, who have an Icelandic national identity number are eligible for borrowing privileges. Foreign citizens staying in Iceland for shorter periods of time may apply for temporary borrowers cards.

Information Services

The main reference desk is in the reference area on the 2nd floor of the library, Tel:525-5685. Requests may also be sent to the following e-mail address: upplys@bok.hi.is. The library's homepage can be found at <http://www.bok.hi.is>.

The Library Collection

There are in the National and University Library approximately 750,000 works, including books, periodicals and other materials. By far the majority of the collection is comprised of foreign materials. In addition, the library has 15,000 manuscripts.

- * The circulating copies of Icelandic and foreign books are on the 4th floor.
- * The Circulation desk is on the 2nd floor.
- * Newspapers and periodicals (including microforms) are, for the most part, on the 3rd floor and are not available for loan.

- * The Icelandic national collection is on the 1st floor, and is only to be used in the reading room.
- * The manuscript collection is on the 1st floor, and may only be used on the premises.
- * The library's collection of reference works is on the 2nd floor
- * The Icelandic thesis collection is on the 3rd floor
- * The course reserve collection is on the 4th floor
- * The Audio-visual department is on the 4th floor.

Catalogues

Gegnir is the name given to the library's automated system. In Gegnir there are actually two separate databases, Gegnir and Greinir. Gegnir provides information concerning the library holdings of the National and University Library (books, periodicals, video recordings, sound recordings, microforms, etc.), together with the holdings of several other libraries in Iceland. Greinir, on the other hand, is an article database providing information about the contents of approximately 210 Icelandic journals.

Circulation

The library's circulation system is automated. Most books may be borrowed for 4 weeks, but some, including journals, reference works and BA-theses are not available for loan. Fines are charged for late returns. The borrower bears full responsibility for all items which he/she has on loan from the library.

Inter-library Loans

It is possible to get photocopies and/or books from other libraries, both domestic and foreign, for a fee.

Databases

In the reference department on the 2nd floor there are, in addition to Gegnir and Greinir, computers which allow access to various CD-ROM databases, the Internet, the Morgunblað database, the national registry, and Fengur, the database of the City Library and the National Hospital.

Online Searches

When it is not possible to find the information needed using the available library resources, it is possible, for a fee, to have searches made in commercial information databases.

Working Facilities

The library offers a variety of working facilities including: group work-rooms, classrooms, closed carrels, desks with personal computers, micro-form readers, individual desks and larger tables. There are, all together, approx. 700 seats for guests on the library's four floors.

Group Workrooms

There are two workrooms for group use in the library, one on the 3rd floor and one on the 4th floor. These rooms accommodate groups of up to eight people.

Closed Carrels

There are 26 closed carrels on the 3rd and 4th floors of the library which are intended, first and foremost, for scholars, students at the post-graduate level, and others working on special projects who need to use library re-sources for that purpose. In addition, there is one carrel specially equipped for use by the physically handicapped, and another for use by the visually handicapped.

University Reading Rooms

Vatnsmýrarvegur 16 (Medical and Dental students) 80 seats

Most of these reading rooms are open 8am-10pm weekdays, but with generally shorter hours on weekends. The exact opening hours in each case are determined by the rules governing the building in which it is located.

Photocopying

Photocopying machines for the use of library guests can be found on all floors of the building

Personal Computers

There are, on the 1st, 3rd and 4th floors of the library, 38 PC's for the use of library guests. Most of them allow access to the Gegnir and Greinir databases, word-processing, and, for those that have access to the University net, the possibility of Internet connections.

Visitors Comments

The visitors found the clinical facilities to be very impressive. For the present curriculum

the number of chairs seems adequate for the number of students, however if the students were introduced into the clinic earlier there may be a shortage of chairs. The visitors noted that the chairs were 17 years old. Despite this, they were very well maintained and efficient. The visitors were informed that there was a programme of replacement starting this year.

The library facilities are unusual in that this is a National as well as a University library. The stock of textbooks appears old and inadequate. It was explained to the visitors that the library budget for the Dental School is consumed by journal acquisitions leaving no funds for textbook acquisition. The visitors would recommend that additional funds be made available for textbook acquisition to rectify this. The recommended texts should be included within the School in addition to those available in the library.

SECTION 3: ADMINISTRATION AND ORGANISATION

Peter Holbrook: phol@rhi.hi.is

The modern Icelandic system of higher education dates back to the foundation of the University of Iceland in 1911. The University of Iceland remains the principal institution of higher learning in Iceland, but over the last three decades new institutions of higher education have emerged with a more specialised focus, creating greater diversity on the higher education level.

University Education

A new law on higher education, enacted in 1997, establishes the general framework for the activities of these institutions. Under the law, the Icelandic term "háskoli" is used to refer both to traditional universities and institutions which do not have research responsibilities. According to the law the Minister of Education, Science and Culture determines whether and to what extent institutions shall engage in research and he is responsible for establishing rules on quality evaluation and recognition of all degrees offered. The role of each higher education institution is further defined in separate legislation on their activities. They have full authority on all academic matters.

The law does not make a distinction between universities that conduct research and those institutions that do not. All higher education institutions offer

university degrees Presently there are seven "*haskoli*" in the country. Two of those are private, but are run with state support. The universities are: The University of Iceland, the University College of Education, the Icelandic College of Engineering and Technology, the Co-operative College of Iceland, the Hvanneyri Department of Agricultural Science, and the Reykjavik School of Business that has been called the University of Reykjavík (*Haskolinn í Reykjavík*). In addition there are three art colleges that are being upgraded and have been merged into one university institution, the Icelandic Academy of Arts, that will offer university degrees in the arts. These colleges are: The Reykjavik School of Music, the Icelandic College of Arts and Crafts and the Icelandic Drama School.

Admission Requirements

Students entering a university are required to have passed the Icelandic matriculation examination (*studentspróf*: upper-secondary school leaving examination) or to have completed other equivalent education. Also, admission can be given to those who have acquired equivalent maturity and knowledge according to the evaluation of the institution in question. Universities can impose further admission requirements, including admission examinations. For most courses of study there are no general restrictions on admission for those who have passed the matriculation examination. However, in health programmes, medicine, pharmacy, nursing, physiotherapy, and dentistry admission is restricted by numerus clausus, where a competitive examination is held at the end of the first semester and a limited number of students with the highest grades are allowed to continue in the programme. Also, in pharmacy and the natural sciences, and in some technical programmes students are required to have matriculated from a mathematics, physics, or natural sciences branch of study of an upper secondary school. For teacher training programmes and some business and computer science programmes, students are selected on the basis of their grades on the matriculation examination and priority may be given to students with particular work experience

Visitors Comments

Students are brought into the Dental School at 20 years of age and follow a course of study over one term. An examination at the end of this term includes science subjects and a dental morphology practical. The 6 students with the highest mean score in this examination are selected for Dental School. The strength of this approach is that students from schools of different levels have an opportunity to compete for entry.

Fees/Financial Support for Students

There are no tuition fees at state-run institutions of higher education, but the institutions charge registration fees. Privately run colleges charge tuition fees. Icelandic students attending institutions of higher education are eligible for student loans from the Icelandic Student Loan Fund. The total loan received per annum depends upon the income of the student (and his/her spouse, as appropriate). Repayments commence two years after completion or discontinuation of studies. Individuals from EU member states and the EFTA countries, who have worked in Iceland at their trade or profession for at

least one year, are entitled to apply for a student loan. The Ministry of Education, Science and Culture annually offers a limited number of scholarships to foreign students to pursue studies in Icelandic language and literature at the University of Iceland. Grants are available for post-graduate, research-oriented studies at universities in Iceland.

Academic Year

In most institutions of higher education the academic year lasts from September to May and is divided into two semesters, autumn and spring. The autumn semester starts at the beginning of September and lasts until late December. The spring semester lasts from the beginning of January until the end of May.

Assessment, Grades, Credit System

Student assessment is generally based on written, oral or practical examinations, semester papers and assignments carried out throughout the whole course of study. Teachers are responsible for evaluation, but each university or college department provides the overall organisation of the examinations within the regulatory framework of the institution. In some cases there are external examiners. Examinations are generally held at the end of each semester. Students can normally enter for re-sit of examination once, after which, in certain cases, dispensation may be given for one further re-sit. Normally a programme of study comprises one major subject (2/3) along with one or more minor subjects. As a general rule grades are expressed on the 0-10 scale, where the passing grades is 5 and above, or with the assessment pass/fail. Course grades are usually given in increments of 0.5, and averages computed to two decimal places. For most higher institutions courses a combined average of 5, or a minimum grade of 5 in each subject is required to pass. In some institutions average grade points are not calculated and in individual courses the minimum grade can be higher than 5. According to regulations in most institutions, a student may sit for examination in a given course twice. When a student's grade-point average is calculated, failing grades (marked F) are not included in the calculation.

In most institutions studies are divided into study credits, 30 credits corresponding to one academic year of full-time studies, 15 credits corresponding to one semester of full-time studies. As a general rule, 30 (Icelandic) credits equal 60 ECTS credits.

Programmes and Qualifications

Icelandic is the language of instruction in higher education institutions in Iceland but most dental textbooks are in English.

The degree awarded in dentistry is *candidatus odontologiae*. A *candidatus* degree qualifies the holder for a special office or profession. It is an academic/professional degree in the fields of theology, medicine, pharmacy, midwifery, law, business administration, engineering and dentistry. The *candidatus* programmes last from four to six years.

Masters degrees (M.A., M.S.) are awarded after two years of successful completion of post-graduate study in the fields of theology, humanities, law, economics, business administration, social sciences, education, natural sciences, engineering, medicine, dentistry, nursing, fishery studies and environmental studies. A major thesis or research project is a substantial part of the programme. A doctorate degree (e.g. dr.odont./Ph.D) is awarded by the University of Iceland to those who have successfully completed a doctorate programme and defended a doctoral thesis in Icelandic literature,

Icelandic language and Icelandic history, theology, law, medicine, pharmacy, dentistry, engineering and social sciences.

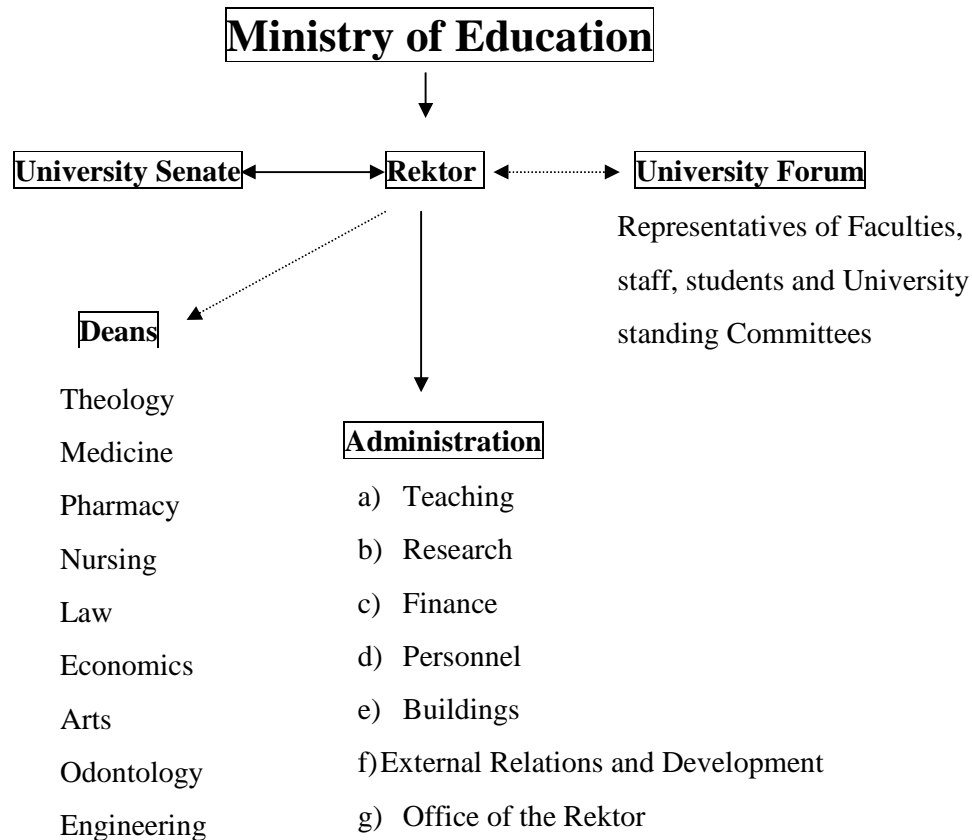
Administration of the University

The new laws on the University level of education and the University of Iceland give a fair degree of autonomy to the Universities. Previously much of this power, for example covering appointments, was vested in the Minister of Education. Now the University of Iceland appoints staff, can set up new faculties and close others, divides up its own budget and effectively governs its own affairs. The Rektor is appointed for a five-year term by the Minister of Education but on the advice of the University Senate following an election. The Rektor is head of the University administration and appoints academic staff on the recommendation of the respective Faculty following a lengthy selection procedure by a committee appointed for each vacancy.

The ruling body of the University is the Senate that is chaired by the Rektor and has four representatives elected from four faculty groups, including one for the health science faculties (medicine, dentistry, nursing and pharmacy). In addition there are two representatives drawn from outside the University and appointed by the Minister of Education and two representatives of the student body.

As well as the Senate there is a University Forum that has wider representation and meets once per term to discuss broad policy issues. This body is advisory to the Senate but in the short period since the Forum was set up it would appear that the two bodies will work in a complementary manner. Because the present administrative structure no longer gives faculty deans an automatic seat on the governing body of the University the present Rektor has called regular monthly meetings of deans and key administrative personnel to discuss matters of importance. These meetings have proved useful and it is likely that they will continue.

Schematic representation of the organisation of the University of Iceland



Funding

Government funding to the University is now calculated according to a formula agreed with the Ministries of Education and Finance worked out on the number of students in each course taking the examination the number of students. The University Senate agrees to the division of the University budget between faculties and other areas of the University following a presentation by the Finance Committee. Dentistry is placed in the highest rated group with respect to the funding per student. At present the formula agreed with the Government does not cover University research but this is being negotiated. It is fair to say that direct research funding to the University is at a very low level as is funding for basic research through the Icelandic Council of Science, *Rannís*. Recent OECD figures show that the funding for University level education in Iceland is about half of the OECD average.

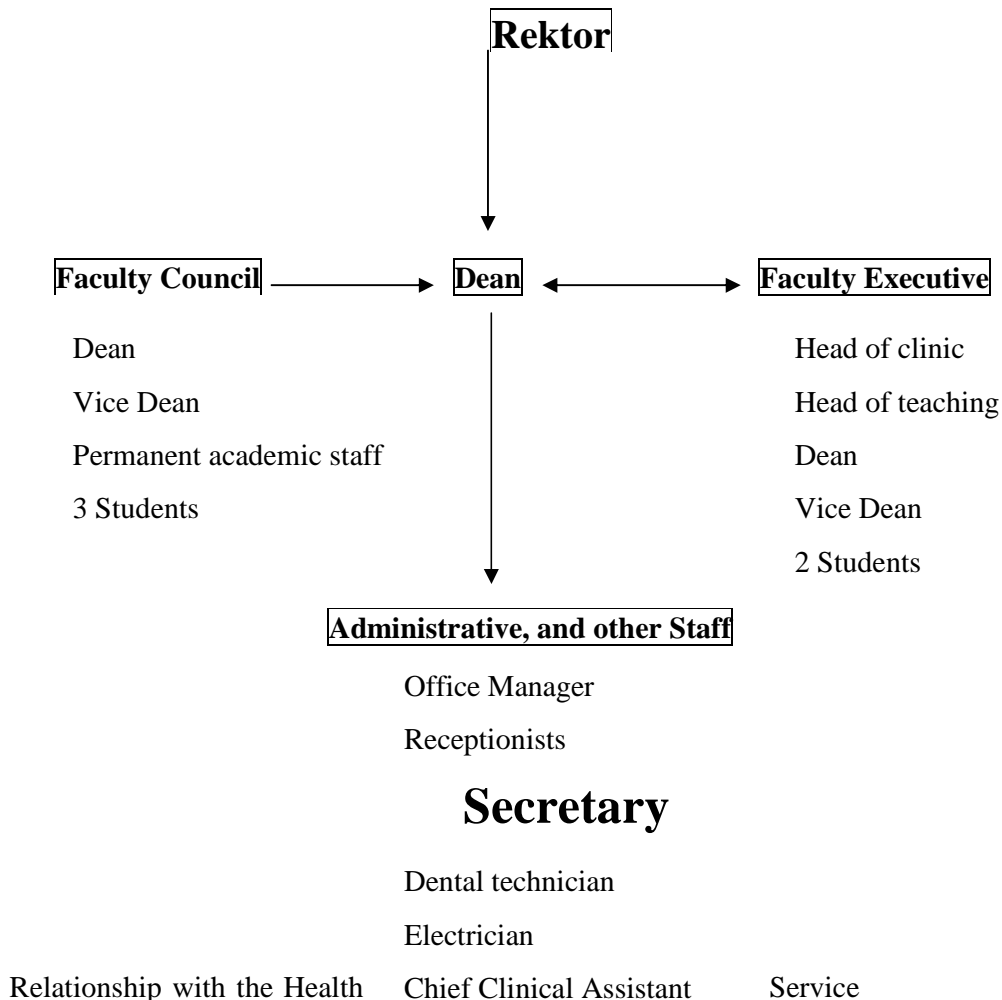
Faculty Administration

The Faculty of Odontology is administered by the Dean assisted by a Vice-Dean. They are elected by the governing body of the Faculty, the Faculty Council which comprises all teachers in full-time positions (and will now include also teachers in permanent but part-time positions, according to the new law) and three students. The Dean is responsible to the Rektor and the Faculty in all matters of daily running of the Faculty and the Dean and the Office Manager prepare the budget, the teaching prospectus and timetable all of which have to be approved by the Faculty. It is the responsibility of the Dean to keep the Faculty within budget. The Faculty's governing body is the Faculty Council but there is also an executive body that meets more frequently, comprising the Dean, Vice-Dean, chairman of the teaching committee, staff member responsible for the clinic and two students. This executive may refer matters to a full Council meeting but is empowered by the Council to administer some aspects of Faculty business. A committee to discuss academic affairs with two staff and two student members is the main standing committee of the Faculty. There is also a scientific committee that is concerned with postgraduate student matters on an ad hoc basis and there are two Boards with Faculty representation to

oversee respectively the schools for dental technicians and dental nurses.

There is an office manager and a part-time secretary. The clinic reception and record office has two part-time staff. There are four dental surgery assistants, two are part-time, and a dental technician. The Faculty also employs an electrician who is responsible for maintenance of all equipment.

Schematic representation of the organisation of the Faculty of Odontology



This has been

section 1.4.

covered in

University Computing Service and Network

The University has a computing service (Reiknistofnun) that has set up a University-wide

network and administers computer matters in the University. The Faculty building is now part of this University network but in addition there is an older network exclusively for Apple Macintosh computers that continues to serve the Faculty building. Slowly the Faculty of Odontology is switching from Apple computers to PC. Advice and service for the Faculty's computers is available from the central computing service which also administers the students' computing facility in the building. A separate system of computers and a programme (*Tannsi*) is used for patient records and this is not connected to the University network.

Visitors Comments

This dental school may be unique in that critical decisions can be made within the Dental School structure itself. Faculty Executive and Faculty Council are the critical decision making bodies within the school who then represent decisions through the Dean to the University. The Rektor through his committees (University Senate and University Forum) is the final arbiter of policy. This seems a very efficient system.

SECTION 4: STAFFING

Peter Holbrook, phol@rhi.hi.isGuðrún Ívars, givars@rhi.hi.is

4.1 Staffing levels

Academic

Professor	2
Professors emeriti (active in research)	2
Dosent (associate professor time)	4 (1 part-
Lektor (assistant professor time)	9 (2 part-
Adjunkt (part-time teacher contract)	4 (with
Assistant teachers a term basis)	4 (appointed on

Clinic

Dental surgery assistants time)	4 (2 part-
Dental technician	1 (part-time)
Electrician /maintenance	1

Research

Microbiologist	1
Technician	1 (part-time)

Office

Office manager	1
Secretary	1 (part-time)
Reception/records	2 (part-time)

4.2 Profile of Academic and Research Staff

Professor

**Sigfús Thor Elíasson, cand odont , MSD,
specialist in operative dentistry**

**W Peter Holbrook, BDS, PhD, FDS, FRCPath,
specialist in oral microbiology**

Professor Emeritus (active in research)

**Gudjón Axelsson, cand odont, specialist in
prosthodontics**

**Thordur Eydal Magnússon, cand odont, dr
odont, specialist in orthodontics**

Dosent (associate professor)

**Ársæll Jónsson, cand med et chir, FRCP (part-
time), specialist in internal medicine**

**Einar Ragnarsson, cand odont, specialist in
prosthodontics**

**Hala Sigurjóns, cand odont, MSD, specialist in
operative dentistry**

**Sigurjón H Ólafsson, cand odont, MSD, specialist
in oral surgery**

Lektor (assistant professor)

Árni Thordarson cand odont, specialist in orthodontics

Björn Ragnarsson, cand odont, MSD, specialist in endodontics

Elin Sigurgeirsdóttir, cand odont, MS

Inga B Árnadóttir, cand odont, MPH

Jón Vidar Arnórsson, cand odont, MSc (part-time), specialist in oral surgery

Karl Örn Karlsson, cand odont, specialist in occlusion and TMJ

Ólafur Höskuldsson, cand odont, specialist in paedodontics

Sigfús Nikulásson, cand med et chir (part-time), specialist in general pathology

Sigurjón Arnlaugsson, cand odont, MSD, specialist in periodontology

Adjunkt (part-time teachers with contract)

Björgvin Jónsson, cand odont

Helgi Magnússon, cand odont

Sigurgeir Steingrímsson, cand odont

Svend Richter, cand odont

Assistant teacher (appointed on a term-by-term basis)

Gunnar Leifsson, cand odont

Helga Th. Gunnarsdóttir, cand odont

Ingólfur Eldjárn, cand odont, MS

**Sigurdur Rúnar Sæmundsson, cand odont, MPH,
PhD (honorary research fellow)**

Research staff

**Gunnsteinn Haraldsson, MS, microbiologist
Margrét O. Magnúsdóttir, BS, technician**

Visitors Comments

The only method of appointing academics is the amount of teaching time needed. This significantly restricts academic growth and research. As a result young enthusiastic researchers cannot get a University appointment. This limits academic activity in the Dental School

The administration in the Dental School may not be sufficient to allow concentration of the academic staff on their research. Nevertheless the current staff, although few, seem extremely efficient.

SECTIONS 5-16 THE DENTAL CURRICULUM

Note that the numbering of the courses follows that given in section 1.3 “Overview of the Courses in the Faculty of Odontology”

4. Chemistry I

This course is taught by the Faculty of Science to medical and dental students. The course covers: (i) general and specific features of chemical bonds and the construction of molecules; (ii) chemical reactions; (iii) gases, fluids, solids and solutions; (iv) energy involved in, and speed of chemical reactions; (v) chemical balance: acid-alkali, precipitation, complex- and reduction; (vi) electrochemistry; (vii) nuclear chemistry.

Textbook: S.S. Zumdahl: Chemistry 4. Ed. 1997, chapters 1 – 17 and 21.

1.1.2 Introduction to Anatomy and Physiology.

Person in school who will explain and show the visitors:

Name: Hannes Blöndal

e-mail: hannesbl@hi.is

- a) The course is designed as an introduction to general embryology, general macro- and microscopic anatomy, cell biology and physiology for first semester (Sept.-Dec.) medical, dental and physiotherapy students. What follows refers to the embryology and anatomy parts of the course.
- b) The primary aims of the course are two:
 - the first is stated in the name of the course and explained in paragraph 1, i.e. to introduce the students to the basic principles of the subjects mentioned above in preparation for subsequent studies.
 - the second is to provide a basis for selection of the academically best qualified students for the limited posts available in the respective disciplines.

1. The general objectives of the course are:

- to provide the students with general knowledge of the origin, structure and function of the human body at the macro- and microscopy level.
- introduction of the students to medical terminology and its use.

Total number of lecture hours (45 min. each) in the course is 76. The lectures given in general embryology and macro-anatomy are 22.

The teaching method is exclusively formal lectures.

Assessment of student knowledge and understanding is made at the end of the course in December of the first academic year by a 4 hour long examination composed of multiple choice and correct-incorrect questions.

1. The strengths of this course are few and it is to be terminated one year from now.
2. The heterogeneous background of the students, the large number of students attending the course and the exclusive use of lectures dictated by the large number of students.
3. This course will have to be re-evaluated before the Faculty of Medicine introduces an entrance examination in fall of 2001.
4. See paragraph 9.

Visitors Comments

This is taught in 3 courses. (1.1.2 Introduction to Anatomy and Physiology, 1.2.4 Anatomy 1 and 2.1.1 Anatomy 2).

The introduction to anatomy was part of the competitive first term and included embryology. This course is now being abandoned. The faculty of medicine are replacing it with an entrance examination prior to year 1. This may not be in the best interests of the Dental School. Perhaps an approach to student entry encompassing interviews and manual dexterity assessment as well as theoretical knowledge can be adopted.

Anatomy 1 is General Anatomy. It is a more abbreviated course than that done by the Medical School and perhaps suffers because of no dissection by dental students and lack of 3-dimensional anatomical teaching aids.

Anatomy 2.1.1 is the Head and Neck Anatomy. Again there is a lack of 3-dimensional teaching aids but the use of interactive computer assisted learning is an innovative development.

Overall the visitors were concerned that anatomy was assessed purely theoretically rather than practically. The visitors were also concerned about the future placement of relevant course content when the first term in the first year is changed, such as embryology.

1.1.3 & 1.1.4 Dental Morphology.

Person in school who will explain and show the visitors:

Name: Karl Örn Karlsson

email: kok@hi.is

First term:	Dental Morphology (26 L + 209 P) 14 ECTS.
Second term:	Introduction to Occlusion (13 L + 60 P) 6 ECTS.
Fourth term:	Oral Neurophysiology (12 L) as part of general physiology.
Sixth term:	Preclinical Occlusion (13 L + 39 P)
Seventh and Eighth term:	Management of Temporomandibular Disorders and Orofacial Pain. (13 L + 26 D + 52 C)
Fifth, sixth year:	Integration with other courses as needed.

General comments.

By having the same person assume the teaching responsibilities for these subjects, a unique opportunity (envied by foreign colleagues!) is provided for guiding the dental student in a systematic way through the morphology of individual teeth, to their role as a functional unit in dental occlusion, reference positions and simulated movements in a dental articulator, to the neurophysiological principles that govern and modify the simplistic and mechanical principles learnt during the first year, to the assessment of normal orofacial function and to the diagnosis and management of temporomandibular disorders and orofacial pain. The role of dental morphology and occlusion is fundamental to general dentistry but the role of occlusion in TMD and orofacial pain is usually minor so during the final years principles from general medicine, neurology, behavioural therapy, rheumatology, sleep medicine, psychology and physiotherapy are stressed. The emphasis is on diagnostic criteria according to the International Headache Society and the International Association for the Study of Pain. The curriculum is intended to serve as a basis that integrates relevant knowledge of stomatognathic function and stability with all dental diagnosis and treatment procedures. Necessary referral and cooperation with medical colleagues is stressed.

Dental Morphology. (First term:14 ECTS)

4. The teaching of dental morphology includes a detailed study of the macro-morphological characteristics of the permanent and primary teeth. This basic and fundamental component of dental education also includes an introduction to dental terminology in English as well as Icelandic as medical jargon is quite incomprehensible to Icelandic patients. Dental technology students also take this course.
5. At the completion of the course in dental morphology the student should be able to demonstrate knowledge in the morphologic characteristics of all the teeth. This knowledge will be used in the identification, diagnosis, and treatment planning of dental tooth pathology.
The student should be able to demonstrate knowledge and skills of dental morphology. This is shown through the manipulation of wax that reproduces sound anatomical tooth form. These skills along with tooth identification are necessary to

demonstrate adequate ability to replace missing tooth structure as indicated in clinical restoration procedures.

6. Cognitive skills. At the completion of the course in dental morphology the student will be able to demonstrate the following cognitive skills by achieving a satisfactory level of performance (60%) on a written examination .
 1. Demonstrate knowledge in and successfully communicate using appropriate dental terminology.
 2. Describe the detailed morphology of the permanent teeth
 3. Describe the detailed morphology of the primary dentition.
 4. Describe the morphological differences between the primary and permanent dentition.
 5. Describe morphological characteristics of the dental pulp for each of the permanent teeth.
 6. Describe common tooth anomalies of the human dentition.
 7. Correctly identify at least 50% of 20 extracted teeth at first sight.

Psychomotor skills. At the completion of the course in dental morphology the student will have demonstrated psychomotor skills through the manipulation of wax by having reproduced accurate morphological characteristics of the following permanent teeth under supervision: upper central incisor, lower lateral incisor, upper and lower canines, upper and lower first premolars, upper and lower first molars and in addition on the last day one tooth without teacher or 3D feedback within five hours.

7. Dental morphology is presented by 26 formal lectures and approximately 109 contact hours of practical work, demonstrations, videos and tooth identification in small groups during the first term.
8. The lectures are formatted to supplement rather than duplicate the text book (Dental Morphology by Ole Carlsson, Munksgaard) by showing a lot of pictures to exemplify dental terminology and variations in tooth morphology. The pace of lectures is adjusted according to that of the practical work. Practical work in wax reproductions of natural teeth is supplemented by having the students work in groups on tooth identification under the supervision of teachers and supported by video tapes on tooth identification.
9. Summative evaluation is carried out at the end of first term and is threefold; by means of an 4 hour written examination that consists of short-answer questions and essays (a pass mark of 60% will apply), tooth identification test to correctly identify at least 50% of 20 teeth at first sight within 10 minutes (counts as 10% of the written examination) and five hour tooth reproduction in wax without teacher feedback. Formative evaluation is carried out independently by each teacher throughout the course according to a five point scale. At the end of term, notes are compared and any discrepancies between teachers discussed and corrected ("expert validity") and a final practical mark is given. Within each five groups (excellent (10, 9.5, 9.0), very good (8.5, 8.0, 7.5), good (7.0, 6.5, 6.0), poor (5.5, 5.0) and miserable (<5.0) students are compared and awarded final marks relative to each other on a 20 point scale as stipulated by the University. A pass mark of 6.0 has recently been adopted by the Dental School.

10. As this course is the students first encounter with dentistry and the course is part of the selection process, the students are highly motivated. This also provides the opportunity for an early exclusion of those few who have "a thumb on each finger" as well as to award high marks for exceptional manual dexterity. As the first year dental technology students also participate in this course, this provides a basis for future cooperation between dentists and dental technicians.
11. The number of students varies each year as well as the number of "second or third comers" which make it difficult for students to compete for place at the dental school on completely even basis. As with any practical learning, the wax carvings consume a lot of time for the students from theoretical learning. The proper balance between theory and praxis will probably never be agreed upon by everyone.
12. The development of interactive CAL packages and CD ROM programmes for use by individual students at their own pace is far too expensive in the Icelandic setting. However appropriate internet links are being collected as well as foreign videos and CD ROMs have been purchased for use by the students. A glossary of morphological terms in Icelandic along with definitions has been compiled for use by the students.
13. The scope of the course on Dental Morphology as been more or less unchanged during the last 20 years. Any changes will probably be part of future overall changes in the admission procedures for the Dental School, possibly as a part of the development of a future Division of Health Education.

1.2.1 Cell Biology

Person in school who will explain and show the visitors:

Name: Helga M. Ögmundsdóttir

e-mail: helgam@krabb.is

- a) General course in cell biology taught during first year. The first half, in the autumn term, forms part of the course towards a highly competitive examination in December when about 20% of the students get through to second term. There is no fixed pass mark, the top 6 dental students are allowed to continue. The teaching is joint with first-year medical students.
- b) The primary aim is to give the students basic knowledge about the structure and function of the cell which will help them in understanding the physiology and pathology taught later and contribute to the biological way of thinking that is necessary for all clinical professions.
- c) Main objectives:
 4. To provide a concise overview of the subject.
 5. To bring the students to the forefront of current knowledge in the subject.
 6. To bring students from widely varying school backgrounds to the same level and train them in academic thought.
 7. To give the students necessary background for further reading.
 8. To introduce the students to primary scientific writing and show them the way of extracting knowledge without necessarily knowing all technical details.
 9. To introduce the students to the practices of a scientific laboratory.
- d) Twenty lectures in the autumn term, 16 in the spring term.
- e) The bulk of the teaching is in large group lectures. In the spring term the students read one original, current scientific article from a top class journal. The paper is divided up and students discuss among themselves in small groups. Each group then gives a short report to the whole class and the teacher leads a joint discussion. In the spring we also have one visit to the Molecular and Cell Biology Laboratory at the Icelandic Cancer Society. Again the students are divided into groups of 6-8, they are introduced to one particular laboratory method and write a one-page report.
- f) Autumn term: Multiple choice examination. Spring term: Written examination with one short essay and several short notes. One additional essay question is from the original paper (see paragraph 5). The student are given the topics a week beforehand and write down their thought-out answer during the exam. The report on the practical/laboratory visit counts for 20%.
- g) The emphasis on forefront knowledge and introduction to scientific thought and writing as well as the visit to a scientific laboratory.
- h) The autumn term is conducted in the very difficult atmosphere of a competitive exam which leads the student to obsessive learning-by-heart of minute details and it is very difficult to maintain a level of dynamic thinking in broad terms.

- i) Reading and discussing a topical, original paper. Visit to scientific laboratory.
- j) Plans for the future are at the moment determined by the Faculty of Medicine. If the Faculty of Dentistry decides to run its own first-year teaching this would give scope for more tutorial-type teaching with a small group of students.

Visitors Comments

The teacher was extremely progressive and welcomed the obsolescence of the first term of the first year which she described as fraught, educationally inferior and not conducive to developing critical thinking. In the change, she would envisage the following improvements: fewer lectures and more small group teaching, more emphasis on the dynamic nature of the subject, more emphasis on critical thinking and literature appraisal, that the dental curriculum should not conform to the medical model if it is inappropriate, that dental students should have scheduled time for a research project during their training.

1.2.2 Chemistry II

A course for medical and dental students covering: (i) the basics of biochemistry; (ii) chemical bonds, the construction and three-dimensional layout of organic molecules, (iii) properties, chemical construction and chemical reactions of major chemical groups; (iv) procedure of biochemical reactions. Emphasis is on organic compounds, reactions and processes that are important in biochemistry, enzyme accelerated reactions and medicine in general.

Textbook: J. McMurry: Fundamentals of Organic Chemistry. 1998

1.2.3 Chemistry III

Person in school who will explain and show the visitors:

Name: dr Sigríður Jónsdóttir

e-mail: sigga@raunvis.hi.is

This is a laboratory course taken concurrently with chemistry II.

The aim is to acquaint the students with common laboratory practice in general and organic chemistry.

The objectives are to carry out a quantitative analysis of a simple inorganic substance and calculate yield; analyse ions in urine; observe and analyse the physical properties of substances; acid-base properties; titrations and pH measurements; determine the equilibrium constant in a chemical reaction and use spectrophotometric methods to analyse quantitatively iron in an iron depot tablet. Furthermore chemical synthesis of some organic substances using substitution reactions, alkylations and aldol condensation will be attempted. Organic function groups will be analysed using derivatives and TLC.

The course is a combination of laboratory practical work (5 hours) and a lecture (1 hour) for each of 12 exercises. All students work individually and must finish all experiments and write a simple report about their results.

Lectures combine practical work and the theoretical basis. Students largely use the textbook and work in groups of 12 with a laboratory instructor but execute all exercises individually. Students have a laboratory space, materials and glassware which are provided but for which they are responsible.

The course finishes with a 2-hour written examination. A laboratory assessment of each student is also made and counts for 1/3 of the final mark.

Strengths: The students have already the theoretical background when they come to the practicals. The exercises are fundamental and are known to work so that a student will get results and experience of everyday laboratory working methods.

Weaknesses: too many students in the group for one instructor.

The course has evolved since 1990 and the exercises improved over the years.

There are no current plans for future change.

1.2.4 Anatomy I

Person in school who will explain and show the visitors:

Name: Jóhann Arnfinnsson

e-mail: jarn@hi.is

- 1 Anatomy I, is a course for dental students in gross anatomy and histology of the internal organ systems in relation to function.
This course is given in the second semester for first years students in dentistry.
- 2 The primary aims of this course are to give students with little knowledge of the human body a solid overview of the gross anatomy and histology of the internal organ systems.
- 3 The main objectives of the course are to ensure clear understanding of:
 1. a three-dimensional the arrangement of the organs in the body cavities.
 2. gross anatomy of the brain and the spinal cord and their arrangement in the dorsal body cavity.
 3. the arrangement of the heart and principal organs in the mediastinum.
 4. the three-dimensions of the lungs in the thoracic cavity and their structure and function.
 5. the gross anatomy of the cardiovascular system and the lymphatic system and their connections to other organ systems.
 6. arrangement of the organs in the abdomino-pelvic cavity.
 7. histology of the main internal organs.
3. The number of formal lecture hours is 34 and 10 hours are devoted to practical histology lab.
4. The method of teaching is lectures with transparencies and projector slides, demonstrations of models and plastinated organs. Histology slides are viewed by students in microscopes and demonstrated on television monitor.
5. Assessment method. 4 hours of short question examination.
6. Strengths. The course is designed for a limited number of dental students, which makes it possible to combine lectures in gross anatomy with demonstrations of models, viewing of histology slides and discussion.
7. Weakness of the course is:
The limited demonstration material like models and plastinated organs available in the Department of Anatomy.
8. Innovations. There are plans to supply the course with computer teaching programs. The best practices are provision of diverse learning opportunities within a structured framework.
9. At the moment there are no plans for future changes.

1.2.5 & 1.2.6 Introduction to Occlusion

Person in school who will explain and show the visitors:

Name: Karl Örn Karlsson

email: kok@hi.is

- a) The second term course in occlusion is directed towards developing knowledge and understanding of the adult dentition, the simulation of dental occlusion, and mandibular positions and movements. The subject of occlusion applies knowledge of oral anatomy and biomechanical principles of jaw motion to the maintenance and restoration of the physiologic relationships within the stomatognathic system that permit proper function during normal activities such as mastication, swallowing and speech. The learning of this course is applied in all the programmes of prosthodontics, restorative dentistry and periodontology. During this course an overview of the anatomy of the masticatory system is given to the students, the static factors of occlusion as they apply to the use of the Dentatus articulator. Incorporation of occlusal concepts into all aspects of dental care and recognition of pathology within the masticatory system is a fundamental basis for dental practice.

- b) The general goals of the occlusion curriculum are to enable dental and dental technician students to attain a comprehensive understanding of static and dynamic aspects of occlusion and mandibular positions and (border)movements This knowledge is basic to clinical dentistry and will be used in oral diagnosis and oral medicine, radiology, periodontics operative, fixed partial prosthodontics and removable prosthodontics as optimal occlusal relationships have to be established in the restorations to properly transfer stress in teeth, periodontal tissue and supporting structures of the stomatognathic system.
The student should be able to demonstrate knowledge and skills of occlusal morphology. This is shown through the manipulation of wax that reproduces sound occlusal form through the application of functional wax adding techniques These skills are necessary to demonstrate adequate ability to replace missing tooth structure as indicated in clinical restoration procedures.

- c) Cognitive skills. At the completion of the course in occlusion the student will be able to demonstrate the following cognitive skills by achieving a satisfactory level of performance (50%) on a written examination .
 4. Demonstrate an understanding of the anatomy of the stomatognathic system as related to function.
 5. Understand the normal range of masticatory biomechanics and use accepted terminology to describe the various (border)movements and positions.
 6. Understand concepts of alignment and occlusion of the dentition as necessary for oral rehabilitation and demonstrate appropriate applications as related to intercuspal position, cusp-fossa, cusp-marginal ridge contact schemes and normal variation of occlusal contacts in intact dentitions.
 7. Describe the evolution of occlusal concepts to the present day
 8. Understand and apply occlusal morphology as related to normal and abnormal ranges of mandibular movement.
 9. Understand and apply a semi-adjustable articulator in reproducing occlusal contacts and study cast analysis as well as the clinical limitations of such an instrumentation in diagnosis and treatment.

Psychomotor skills. At the completion of the course in occlusion the student will have demonstrated psychomotor skills through the manipulation of wax by having reproduced accurate morphological characteristics of the occlusal surfaces of opposing premolars and first molars by the technique of wax adding, using the Dentatus articulator.

11. Occlusion is presented by 13 formal lectures and approximately 50 contact hours of practical work, demonstrations and videos during the second term. In addition groups of 3-4 students read literature assignments, perform a pilot study and present the results to the rest of the group on the subjects of (i) maximum mandibular movements, (ii) tooth contacts in the intercuspal position, (iii) tooth contacts on the working and non-working side.
12. The lectures are formatted to supplement rather than duplicate the text book (Selected chapters from A Textbook of Occlusion by Mohl/Zarb/Carlsson/Rugh, Quintessence). Practical work in articulator handling and adjustments and wax reproductions of occlusal morphology is supported by video tapes on handling of the Dentatus articulator. An introduction to research methods is obtained by reading assignments and a practical pilot study.
13. Summative evaluation is carried out at the end of second term by means of an 4 hour written examination that consists of short-answer questions and essays (a pass mark of 50% will apply). Formative evaluation is carried out independently by each teacher throughout the course according to a five point scale. At the end of term, notes are compared and any discrepancies between teachers discussed and corrected ("expert validity") and a final practical mark is given. Within each five groups (excellent (10, 9.5, 9.0), very good (8.5, 8.0, 7.5), good (7.0, 6.5, 6.0), poor (5.5, 5.0) and miserable (<5.0) students are compared and awarded final marks relative to each other on a 20 point scale as stipulated by the University. A pass mark of 5.0 is used. The groups oral presentation is included in this evaluation.
14. As this course is early in the dental education process, the students are highly motivated. As the first year dental technology students also participate in this course, this provides a basis for future cooperation between dentists and dental technicians.
15. This course is rather limited to mechanical factors of occlusion as the students lack the necessary prerequisites of anatomy, histology, physiology etc. to fully appreciate the role of occlusion in oral function.
16. The development of interactive CAL packages and CD ROM programmes for use by individual students at their own pace is far to expensive in the Icelandic setting. However appropriate internet links are being collected as well as foreign videos and CD ROMs have been purchased for use by the students. A glossary of occlusal terms in Icelandic along with definitions has been compiled for use by the students. This will be made available through the internet as a part of an interactive Icelandic Dental Dictionary.

17. The scope of this introductory course on Occlusion as been more or less unchanged during the last 20 years although textbooks come and go. Any future changes will probably go hand in hand with changes in the Dental Morphology course.

1.2.7 Statistics

Person in school who will explain and show the visitors:

Name: Sigurdur Runar Sæmundsson

email: tanssi@centrum.is

The Statistics course is in the first year, second semester. Its primary aims are to introduce elementary statistics to dental students and to provide dental students with an understanding of ways to apply statistics in dentistry and dental science.

The objective is to emphasize understanding, enlighten and inform, and less emphasis is placed on actual application and proficiency in the use of the statistical methods discussed.

The method of teaching is in the lecture format, with a total of 16 lectures (16 x 35min) over one semester. Assessment is by a written test at the end of the semester. The teaching of statistics in the lecture format has its shortcomings. The lack of hours devoted to training the students in the use of the methods described, limits realistic expectations of their competence in the use of the methods. The fact that the statistics course is very early in the curriculum is another disadvantage. Students have very little understanding of what dentistry is all about until in their clinical years. It is difficult to provide students with an understanding of how statistics may be beneficial to dental professionals if they only have a limited knowledge of dentistry.

It is not in my power to change the course in the future. I do however, have some suggestions. Statistics, Epidemiology and Dental Public Health belong together in a dental curriculum. At present the statistics are taught in the first year, Dental Epidemiology and Dental Public Health is scattered through courses in Cariology, in the mid part of the course, and Paediatric Dentistry in the latter part of the curriculum. This may be more efficiently approached by consolidating these topics.

Visitors Comments

Strong consideration should be given to better integrating statistics into subjects such as Public Dental Health

1.2.8 Introduction to Dentistry.

Person in school who will explain and show the visitors:

Name: Karl Örn Karlsson

email: kok@hi.is

Clinical dentistry is introduced at the start of the dental undergraduate course by a short overview of each major clinical subject. This course is supervised by the study committee.

The primary aims are to motivate dental students at the start of their studies by giving them some insights into clinical dentistry.

The students are given an orientation in each clinical dental speciality presented later during their final clinical years.

Total contact hours are approximately 10 during the second term. Teaching is largely by formal lectures. No formal assessment is made but the students are required to attend.

The Introduction to Dentistry course should ideally also include an orientation on the dental curriculum as a whole, about dentistry in general and the potential for future development. In order to stress that knowledge is gained through a counter play between research and clinical work, a course on the scientific method should also be included. Existing university courses on learning and study techniques as well as library service should be formally utilized in order to train the students in information handling as a tool for learning. Currently library instruction and the use of their databases is voluntary. Training in MEDLINE searches and other databases should result in more effective studies and motivate students to accept the necessity of continuing education and a lifetime of learning and professional development. In the future this course will be expanded to include formal courses in the behavioural sciences and communications as well as preventive dentistry.

2.1.1 Anatomy IIa

Person in school who will explain and show the visitors:

Name: Hannes Blöndal

e-mail: hannesbl@hi.is

12. The course is intended for medical, dental and physiotherapy students. The course is taught in the first semester (September-December) of the second year and covers the gross anatomy of head and neck.
13. The emphasis in the course is on topographical anatomy. The principal aim is to make the student well acquainted with normal human head and neck structure. A second main aim is to relate it and the development of head and neck structures to clinical problems.
14. The main objectives are knowledge and comprehension
 - of the main features of the skull, especially facial anatomy
 - of the cavities of the head (cranial, nasal, sinuses, oral) and their medical importance
 - of fascial compartmentalization of the neck and its importance in clinical terms
 - of arrangement and function of the musculo-skeletal structures of the head and neck and their clinical importance
 - of the distribution of principal vascular structures (arteries, veins, lymphatics) of head and neck and the relevance of that knowledge to infections and vascular diseases
 - of cranial nerves and autonomic nervous system of head and neck.
 - of the anatomy of mastication, swallowing and phonation and speech
 - of the structure of the eye and lachrymal apparatus and its functional implications
 - of the structure of external and internal ear and their relevance to hearing and balance
15. Eight formal lectures outlining the main features of head and neck structure. These are followed up by structured computerized teaching material 18 hours per student (9 two hour computer sessions allotted to each student) and 12 hours per student of seminar time.
16. See paragraph 4.
17. A three hour written examination is held in December comprising short essay type questions and multiple choice questions.
18. The variable learning opportunities (lectures, computer material, seminars) offered to the students.
19. The principal weakness of the course is that there are three different groups of students, each with their own specific needs, that have to be addressed as one. A course designed specially for each of the three student groups would be the ideal

situation. Another weakness is the lack of real serially dissected plastinated specimens for student use.

20. At the moment there are no plans for innovations other than problem based learning (see paragraph 10). Effort will be made to equip the course with adequate number of serially dissected plastinated specimens as soon as the necessary facilities for their production becomes available (expected within the next 12 months). In general terms the best practices are provision of diverse learning opportunities within a structured framework.
21. At the present time problem based learning is a teaching format being actively promoted by the 'Teaching Committee (Kennslunefnd)' of the Medical School Faculty. This form of teaching will probably be tried out in the head and neck course to some extent in the academic year 2000-2001.

2.1.2 Anatomy IIb Oral histology

Person in school who will explain and show the visitors:

Name: Björn Ragnarsson

e-mail:

This course covers the histology of the hard and soft oral tissues. The course is in the form of lectures illustrated with slides. The recommended textbook is AR Ten Cate, Oral Histology. There is a written examination in December of the second year.

Visitors Comments

The teacher of oral histology is involved in this discipline due to the retirement of the previous Professor. The course would benefit from practical microscopy sessions. The course runs during the first term of the second year and is delivered by traditional methods.

2.1.3 Radiology (physics)

Person in school who will explain and show the visitors:

Name: Jón Viðar Arnórsson,

e-mail: jonvidar@hi.is

The radiology teaching starts at the beginning of the second year of study. It is combined with practical teaching. In the beginning the emphasis is laid on the radiographic techniques, intra-oral periapical and bite-wing radiographs and basic x-ray protection. The nature and biological hazards of ionising radiation is discussed together with the make-up of the x-ray machine and the production of the x-rays and their interaction with matter. The nature of the x-ray film and the handling of it and the processing of the latent image is taught together with practical exercises in film handling.

Towards the end of the course the more complicated radiographic methods of radiographic diagnosis of the head and neck region are discussed. The course ends with a written examination.

The primary aims are to give the student early, basic skill in applying intra-oral radiographic techniques. To understand the nature and danger of ionising radiation and the importance of radiographic protection and the possible biological consequences of irradiation.

1. Main objectives

4. The student is going to be capable to take all intraoral x-rays
5. The student has a sound knowledge of the physics of ionising radiation
6. The student understands the properties and limits of the x-ray film and is able to process and handle it appropriately.
7. The student is familiar with the construction and function of the radiographic appliance and how the x-rays are produced.
8. The student understands the harmful effects of ionising radiation on living tissues.
9. The student respects radiation protections and is aware of the national rules and regulations in this respects.(Code of practice for Radiological Protection)
10. The student is familiar with the various diagnostic modalities in maxillofacial radiography, their nature and application.

1. Hours in the Curriculum:

Year 2. – One lecture a week, total of 13 lectures.

Year 2. - practical simulations 6 hours, followed by practice for 3 hours.

Year 2 to 6 – all intraoral radiographs necessary for the treatment of patients are taken by the relevant students themselves.

2. Lectures, simulations, group seminars, practical exercises and practical clinical experience. It should be re-emphasized that the students take all the intraoral radiographs in the practical clinical parts of the study , themselves

3. The individual radiographs are assessed as they are being taken, but at the end of the course there is a 2 hour written examination.
 4. The students group is small , which gives a good opportunity for individual attention and a close supervision of the progress of the study and an early intervention if necessary.
 5. The size of the student group is also a weakness as it does not allow for a special diagnostic department and limits the available facilities.
 6. Close cooperation with the other specialties and the opportunity of practical clinical experience at the diagnostic clinic.
 7. The application of digital technology in radiography, both intra- and extra-orally.
Renewal of equipments accordingly.
- a)
- b) Jón Viðar Arnórsson, lektor, cand. odont., MSc.(London),
The Dental Faculty, Univ. of Iceland.
Reykjavík, Iceland.

Visitors Comments

In the second year the emphasis is on the teaching of the physics and techniques of radiography. It is at this stage that the students in second year observe at the diagnostic clinic. The delivery of this course in the fourth year is closely related to the teaching of diagnosis. The visitors are aware of the opportunity of greater integration as suggested by the teacher of radiography.

2.1.4 Biochemistry I. General Biochemistry and Molecular Biology

Person in school who will explain and show the visitors:

Name: Hörður Filippusson

e-mail: hfil@hi.is

4. The course which is taken in the 3rd semester (autumn semester, year 2) covers protein chemistry, enzymology, nucleic acids, protein synthesis and carbohydrate and lipid metabolism.
5. The primary aims are to give the student a basic understanding of structural biochemistry, molecular biology and energy metabolism.
6. The student should be able to do the following:
 - a) To correlate protein structure and function with haemoglobin and collagen as prime examples.
 - b) To explain how enzymes work, what information enzyme kinetics provide, and how the activity of enzymes is regulated.
 - c) To understand the structure and function of nucleic acids, explain replication, transcription and translation.
 - d) To explain how DNA damage is repaired, how gene expression is controlled and the principles and applications of recombinant DNA technology.
 - e) To give an account of the main metabolic pathways of carbohydrates and lipids, how they are controlled and what their significance is for whole body metabolism and in disease states.
3. Four lectures per week, six practicals of four hours each.
4. Traditional lectures and practicals, supported by handouts.
5. Written examination.
6. Good handouts with detailed course outline, attempts to give relevant examples and relate metabolic pathways to bodily function.
7. Some of the topics covered may at first seem very abstract to the student. The textbooks are not always followed rigidly. The course may lack coherence since metabolism is divided between two courses.
8. Good introductory text in Icelandic on the structure of biomolecules and recombinant DNA technology.
9. The course may be modified to follow the recommended textbooks. It would be desirable if students could take part in seminars. It might be useful to include more examples from the biochemistry of exercise. Topics may be moved between the courses.
- 11.

4. Hörður Filippusson, Ph. D., Department of Biochemistry, Science Institute, the University of Iceland, Dunhagi 3, IS-107 Reykjavík, Iceland.

Visitors Comments

Biochemistry is taught in 2 courses, the later one is taught in partnership with a dental staff member in an attempt to make it more contextual.

2.2.1 Physiology

Person in school who will explain and show the visitors:

Stefan B. Sigurdsson, professor

e-mail: stefsig@hi.is

1. Physiology of the human body. Essentials of human physiology with emphasis on subjects related to dental studies. The course is taught during 3rd and 4th semester (2nd year) of the dental studies.
2. To increase the knowledge of basic functions of the human body and skills in applying this knowledge. Special efforts on the functions related to the mouth and on the physiology behind the perception of pain.

3. Main Objectives

Physiology of the nervous system, initiation and transport of nerve impulses and role of neurotransmitters.

Muscle physiology, mechanism and regulation of contraction and contractile force.

Sensory physiology, sensory receptors in the skin with special effort on pain. The special senses with emphasis on taste and smell..

Circulatory physiology, special emphasis on effect of stress on these systems.

Respiratory physiology, special emphasis on effect of stress on these systems

Renal physiology with emphasis on water intake and urine formation

Gastrointestinal physiology with emphasis on the role of the mouth and stomach.

Endocrine systems with emphasis on homeostasis.

3-4 lectures or seminars a week during 26 weeks in 3rd and 4th semester, totally about 100 teaching hours during the course. 7 laboratory assignments (about 4-6 hours each) during both semesters: skeletal and smooth muscle, EMG, sensory physiology, ECG, blood pressure regulation, exercise physiology, urine formation.

Lectures, seminars, discussion groups, problem based learning (new) and laboratory assignments.

Three hours examination (written) at the end of 4th semester, about 15-20 essay questions (85%). Reports from labs (15%).

Low number of students (5-6) which makes all communications relatively easy.

Time period of course is rather long, could be more concentrated.

To increase the active role of students in the course by using "student oriented problem based learning". Students get problems and have to search for knowledge from lectures, textbooks, articles, Internet etc. to be able to solve the problems.

These changes will be slowly incorporated into the curriculum during the next three years.

10.

11. Lectures, seminars and discussion groups are given and administered by staff with PhD degree in Physiology and at least several years of teaching experience. Labs taught by graduate students under supervision of lecturers.

Visitors Comments

The Professor is very well motivated and the course is partly held jointly with the medical students and in part separately depending on the topic covered. The course benefits from having practical sessions however at present there appears to be little integration with other disciplines. The visitors understand that there is a move towards a Problem Based Learning curriculum in the Medical School (which may be followed in future by the Dental School) involving integration of Anatomy, Biochemistry and Physiology. This innovation would significantly enhance the students learning in these fields.

2.2.2 Oral Diagnosis

see course 4.1.17

2.2.3 Biochemistry II Physiological, Oral and Dental Biochemistry

Person in school who will explain and show the visitors

Name: Baldur Símonarson (W. Peter Holbrook, oral and dental part)

e-mail: bsim@hi.is

The course which is taken in the 4th semester (spring semester, year 2) covers nitrogen metabolism, the integration of metabolism, physiological chemistry and oral and dental biochemistry.

The primary aims are to give the student a basic understanding of the integration of metabolism and the principles of physiological, oral and dental biochemistry.

The student should be able to do the following:

To give an overview of the metabolism of nitrogen compounds.

To explain how various metabolic pathways work in different circumstances (hunger, exercise, diabetes) and the metabolic functions of various organs.

To give an account of the digestion and absorption of foodstuffs.

To understand the concepts of human nutrition as applied to dental health.

To understand the processes of blood coagulation and fibrinolysis.

To explain the functions of blood, transport of blood gases and acid-base control.

To give an account of the principles of hormone action, particularly those that regulate calcium metabolism.

To understand the principles of oral and dental biochemistry.

To explain the role of fluoride, the properties of enamel and saliva, to give an account of plaque formation and dental caries.

Four lectures per week.

Traditional lectures, handouts with detailed course outline. Student seminars.

Written examination.

Good handouts and supplementary material, attempts to give relevant examples and relate biochemistry to whole body function.

The textbooks are not always followed rigidly. The course may lack coherence since a lot of different aspects are covered.

Seminars given by students on blood, nutrition and dental health and calcium metabolism. The seminar topics cover 25% of the written examination.

The course may be modified to follow the recommended textbooks. Topics may be moved between the two courses.

11.

Baldur Símonarson, Ph. D., Department of Biochemistry, Science Institute, the University of Iceland, Dunhagi 3, IS-107 Reykjavík, Iceland.

W. Peter Holbrook, B.D.S., Ph.D., F.D.S., F.R.C.Path. (oral and dental part).

Visitors Comments

Biochemistry is taught in 2 courses, the later one is taught in partnership with a dental staff member in an attempt to make it more contextual.

2.2.4 Microbiology and Immunology I

Person in school who will explain and show the visitors:

Name: W Peter Holbrook

e-mail: phol@rhi.hi.is

1. The course in microbiology and immunology takes place in the spring term of second year. It is fully integrated with the course in oral microbiology and immunology that is held in the autumn term of third year

2. Students should be able to appreciate the occurrence of microorganisms in the environment and on the body and to understand the principles of growth and metabolism of bacteria, fungi and viruses. Methods for sterilization, disinfection and prevention of the spread of infection are covered and the function of the immune system, particularly in response to infection should be acquired.

Main objectives

To learn the structure, metabolism and classification of microorganisms of general and medical importance

To learn methods of isolation and identification of important microorganisms

To learn the principles of sterilization, disinfection, pathogenicity and the spread of infection

To learn about the body's defences against infection, innate immunity and acquired immunity as well as immune dysfunction (allergy, hypersensitivity, autoimmunity, immune deficiency), particularly with respect to dentistry

Several specific microorganisms and diseases of medical importance are described

Students have an opportunity to isolate and culture some microorganisms and study them in the microscope

The course comprises 26 lectures and 6 hours of practical demonstration/ instruction.

Most of the teaching is in the form of traditional lectures but the small number of students allows for considerable student-teacher interaction. Practical

classes are conducted in a well-equipped laboratory where there is also technical assistance.

There is a written examination at the end of the course. The student is required to answer a number of questions requiring medium or short answers and one or two essays.

Teaching such a small group is undoubtedly a strength of this course as with most others in this faculty. The teacher is both a dentist and a microbiologist and this, hopefully, makes the course more relevant for students. There is now a well equipped laboratory for practical classes and demonstrations.

More time especially for practical classes would be helpful. The course is under-financed and technical help, for example, is paid for out of research funds. The students do not find the course relevant until the second course taught at the beginning of third year. They have a lack of knowledge of medical and dental disease at this stage in their training that makes some concepts difficult to grasp. More could, perhaps, be made of the clinical exposure students have in second year in order to reinforce some of the principles of microbiology taught in this course.

Instruction on sterilization and disinfection is both theoretical and practical with direct exposure to the Sterilization unit in the faculty. Spore tests for autoclave function as carried out by practising dentists are used to illustrate the need for quality control in this area.

At present there are no plans for change as the teacher is serving as Dean and most of the course is taught by a part-time microbiologist. Re-assessment will be made in 2001-2 at the end of the present Deanship term.

Professor Peter Holbrook. Gunsteinn Haraldsson,
MSc, microbiologist

Visitors Comments

The visitors were pleased that practical tests were employed in the assessment of dental students. Otherwise the course was well organised and comprehensive.

2.2.5 Pathology, general

Person in school who will explain and show the visitors:

Name: Sigfús Nikulásson

e-mail: sigfusn@rsp.is

1. An introductory single paragraph explaining the course and its timing in the curriculum.

The course in general pathology focuses on the general principles and mechanisms of disease in humans with particular emphasis on their causes and development, the resultant morphological changes and their relevance to the patient, and clinical-pathologic-correlation.

2. Primary Aims.

- 1) To emphasise that a knowledge of pathology provides insides into the mechanism and dynamics of the clinical manifestations of organic disease and gives you the tools for clinical problem-solving.
- 2) Develop and intellectual curiosity about the causation and mechanisms of disease.

3. Main objectives.

- 1) To help develop a positive attitude toward a knowledge of pathology as being of clinical usefulness.
- 2) An appreciation of the many variations of disease and the changing clinical pattern with its evaluation.
- 3) To help acquire intellectual skills in interpreting disease changes in gross and microscopic specimens in the major and representative diseases.
- 4) To relate the etiology and pathogenesis of disease to tissue changes.
- 5) Be able to correlate signs and symptoms with the underlying anatomic changes.
- 6) To help gain knowledge of the terminology associated with the basic disease processes and with the common diseases.
- 7) Understand the abnormal aspects of cell and organ biology which relate to basic disease processes and specific.
- 8) Support problem solving skills based on the application of anatomic and clinical pathologic data to the differential diagnosis of diseases.

4. Hours in the curriculum:

N-A.

5. Method of learning - teaching:

The program includes lectures and informal discussions.

6. Assessment methods:

As in all other courses students are evaluated for appropriate behaviour as well as academic performance. One exam is given at the end of the course.

7. Strengths:

Small group of students which enables "one on one" discussions and a more personal teacher student interaction.

8. Weaknesses:

Lack of pathology laboratory sessions.

9. Innovations and best practices.**10 Plans for future changes:****Visitors Comments**

These are traditional curricula (General and Oral Pathology) which have not changed much over the last 10 years. The school is fortunate to have a dedicated teacher in these areas and whilst the amount of time allocated is adequate and the timing appears to be appropriate in relation to the students clinical exposure, the lack of microscopes hampers the implementation of practical sessions. This may be overcome by organisational measures such as bringing the dental students to the pathology department. It was evident to the visitors that it would be beneficial if there were better cooperation between the medical and the dental faculties.

2.2.6 Propadeutical philosophy (Philosophical Introduction to the Sciences)

Introduction

Philosophical Introduction to the Sciences has been taught at the University of Iceland since it was founded in 1911. The main subjects matters of the course were basic issues in logic and main lines in the history of ideas. Every student of the University was obliged to take the course. Around 1980 the course was changed. Now a separate course was taught in each department of the University, unless the department decided no to offer it to its students. All the courses had a common core of issues (such as critical thinking, the nature of scientific theory and practice), but each course should be adapted to the interests and needs of the different disciplines (e.g. philosophy of law in the law faculty, philosophy of religion in the faculty of theology). The courses are designed and taught by professors at the department of philosophy.

Aims and objectives

The main objectives of Philosophical Introduction to the Sciences is to motivate students to think critically about science and scientific activity in general and about the particular field of the study that they have chosen to pursue. Students are to become acquainted with the nature and limitations of scientific thought and about its influence upon contemporary culture. They are to be aware of the ethical questions that arise in relation to their field of study and learn means to deal with them.

Subject matter

As a rule, the course starts with a brief discussion about critical thinking, the nature of scientific theory, and the relationship between science and ethics. After this general introduction, the course turns to more specific topics in the ethics of medicine and health care. Among the topics for analysis are ethical codes in the health professions, the patient-professional relationship, the right of patients ethics of research, and just health care.

Methods of learning/teaching

The method of teaching has been a combination of lectures and discussions. When dealing with ethical issues in health care, we have designed practical examples that the students analyze and discuss. This is an exercise in ethical analysis, reasoning and decision-making.

Assessment methods

There is no grade for the course and no formal assessment. The only requirement for completing the course is regular attendance.

Strengths of course

I believe that the major strengths of the course lie in the fact that this may be the only opportunity for students in their six years of study to critically reflect upon their area of study, to discuss and analyze ethical scenarios and to place their technical expertise in a broader "humanistic" context.

Weaknesses

The weaknesses of the course are twofold. First, it is too short. It is very hard to do anything substantial in twelve hours of study. Secondly, and even more importantly is the

SUMMARY REPORT OF THE DENTED VISITATION TO THE REYKJAVIK DENTAL SCHOOL

September 23rd to 26th 2000

The visitors would like to thank the Rektor, the academic and administrative staff of the university of Reykjavik, as well as the Dean, staff and students of the Dental School for inviting us to make this important DentEd visitation. DentEd is a thematic network supported by the European Union's Directorate for Education and Culture. The aim of DentEd is to establish a network of Dental Schools through Europe and through a process of information exchange and international peer visitation bring about convergence of standards of dental education. DentEd is neither an accreditation system nor a precursor to one, nor does it aim to impose a single curriculum or educational approach. The emphasis of the project is on self-reflection, exchange of ideas, innovation and best practices.

The Dental School in Reykjavik is small in comparison to many other Dental Schools in Europe and includes 6 dental students per year, 12 nursing students and 3 student technicians. The size of this Dental School is appropriate given the population of Iceland. Although it is acknowledged that dental education on this scale is expensive, this disadvantage is far outweighed by the benefits of Icelandic students learning in the Icelandic context. Moreover the resources allocated to the Dental School are used not only for the training of dentists, but also for the training of dental nurses and technicians. In addition, the facility and academic staff serve as a resource for Continuing Dental Education.

Unlike many schools in Europe the Dental School is independent of the Medical Faculty. The Dean of the Dental School has direct access to University Administration. The budget for the Dental School is controlled by the Dean who is accountable to the Rektor of the University. Funds for Dental School staff salaries are allocated on the basis of teaching need. This may be a disadvantage for developing research in the Dental School, as a talented young potential faculty cannot be employed unless a teaching need can be defined. This factor seriously restrains growth in research output.

The curriculum at Reykjavik is six years in duration whereas that of most European odontological schools is five years. It was explained to the visitors that this has arisen for historical and economic reasons. The students expressed concern at this and urged reconsideration to allow a five-year curriculum.

Another unusual feature of dental education in Iceland is the lack of Cupertino between the National Health Service and the University Dental School. This lack of Cupertino has many practical repercussions. The visitors were concerned, for instance, that paedodontic patients and prosthodontic patients were very difficult for students in the Dental School to obtain because the school cannot compete with outside practice. The reason for this is that patients treated in outside practice are reimbursed from the National Health Service whereas those treated in the Dental School are not. Another serious repercussion of this lack of co-operation is that the students in the Dental School are not sufficiently exposed to the oral care of patients who are medically compromised. This also applies to older institutionalised individuals where the need is

growing with an increasingly ageing population. In this regard, the visitors feel that investment may have the highest return if a dental hygiene school were to be incorporated within the Dental School.

The visitors were impressed with the standard of the education the students are receiving. The number of clinical procedures each student achieves is particularly impressive. However, the range of treatments to which the students were exposed in the Dental School tended to exclude the more complex procedures, such as certain oral surgical procedures. The students gain some exposure to these more complex procedures by visiting outside practices. The students work during their 5th to 6th year summer vacation in outside dental practices. The visitors thought that this was a very innovative approach.

The students should commence patient treatment earlier than in the fourth dental year. In this light the content and extent of the pre-clinical curriculum should be reviewed in terms of context and pertinence of the final product, i.e. a competent dentist.

In general the facilities were very well maintained although much of the equipment may be approaching obsolescence. The visitors are concerned that lack of facilities for on-site intramural practice, together with inadequate salaries may be hampering research productivity amongst the full-time staff.

In conclusion the DentEd visitors were impressed with the high quality of the Dental School at Reykjavik. We wish to thank everybody involved in the organisation of the visit and to congratulate the enthusiastic staff for their achievements.

Reykjavik, September 26th 2000

Visitors

Antonio Carassi (Chairperson)

Paul Dowling (Rapporteur)

Vera Hubkova

Irmtrud Jonas

Noel Claffey