Major in Oral and Maxillofacial Radiology

Programme Curriculum

The number of credits required for the programme

At least 41 credits

Curriculum Structure

The programme is set according to the Ministry of Education Announcement titled "Standard criteria for Graduate Studies 2005", with specified Plan A(2) curriculum.

19.2.1 Core Courses	7	credits
19.2.2 Required Courses (Majors)	20-21	credits
19.2.3 Elective Courses no less than	1-2	credits
19.2.4 Thesis	12	credits
Total no less than	**41**	**credits**

Course Requirements

1. Core Courses (7 credits)

			Credits(Lecture-Lab)
DTID	514	Research Methodology	2(2-0)
DTID	515 *	Oral Biology I	2(2-0)
DTID	517 *	Orofacial Anomaly and Oncology	1(1-0)
DTID	518 *	Oral Pathophysiology and Dental Oncology	1(1-0)
GRID	603	Biostatistics	3(3-0)
DTID	602 *	Applied Oral Science	2(2-0)

*** choose 2 credits from core courses**

2. Major in Oral and Maxillofacial Radiology

				Credits(Lecture-Lab)
*	DTRD	540	Radiation Biology	1(1-0)
	DTRD	532	Radiation Physics	2(2-0)
*	DTRD	542	Radiographic Technology and Interpretation	2(2-0)
*	DTRD	543	Case Analysis Seminar in Oral and Maxillofacial Radiology I	1(1-0)
*	DTRD	544	Oral and Maxillofacial Radiology Seminar I	1(1-0)
*	DTRD	646	Case Analysis Seminar in Oral and Maxillofacial Radiology II	1(1-0)
*	DTRD	647	Oral and Maxillofacial Radiology Seminar II	1(1-0)
*	DTRD	663	Oral and Maxillofacial Radiology Clinic I	3(0-9)
*	DTRD	664	Oral and Maxillofacial Radiology Clinic II	3(0-9)
*	DTRD	665	Oral and Maxillofacial Radiology Clinic III	3(0-9)
*	DTRD	666	Oral and Maxillofacial Radiology Clinic IV	3(0-9)

TOTAL 21

3. Elective Courses (at least 1-2 credits)

				Credits(Lecture-Lab)
*	DTAN	541	Extracellular Matrices and Mineralized Tissues	1(1-0)
	DTAN	601	Applied Anatomy of Head and Neck	1(1-0)
*	DTBC	540	Molecular Biology in Dentistry	1(1-0)
	DTHD	692	Clinical Photography	1(1—0)
	DTHD	693	Computer in Dentistry	1(1-0)
*	DTID	601	Neurobiology of Pain	1(1-0)
*	DTID	550	Laboratory Techniques in Oral Science	1(0-3)
*	DTID	603	Principle Techniques in Oral Science	1(1-0)
*	DTID	604	Physiology of the Dental Pulp	1(1-0)
*	DTID	606	Oral Physiology	1(1-0)
*	DTID	608	Multidisciplinary Seminar	1 (1-0)
*	DTID	609	Oral Photography	1(1-0)
*	DTID	610	Fundamentals of Dental Biomaterials	1(1-0)
	DTID	624	Laboratory Techniques in Oral Biology Research	2(2-0)
*	DTID	633	Testing Methods for Dental Biomaterials Research	1(1-0)
	DTID	625	Using Statistical Software for Dental Research	1(0-3)
*	DTID	630	Computer Application in Dental Education	1(0-3)
*	DTID	631	Psychology and Professional Ethics	1(1-0)
*	DTMD	675	Dental Implant	1(1-0)
*	DTMI	613	Microbiological Techniques in Oral Science	1(0-3)
*	DTMI	614	Dental Microbiology and Immunology	1(1-0)
*	DTMI	615	Immunological Aspects of Oral Diseases	1(1-0)
	DTOP	676	Applied Operative Dentistry	2(1-3)
*	DTPA	612	Oral Pathology	1(1-0)
*	DTPD	626	Seminar in Pediatric Patient Care	1(1-0)
*	DTPM	610	Pharmacology and Dental Therapeutics	1(1-0)
	DTPT	500	Craniofacial and Body Prostheses	1(1-0)
	DTPT	505	Maxillofacial Prosthetic and Dental Oncology Seminar I	2(2-0)
*	DTPT	640	Maxillofacial Prosthetic and Dental Oncology Clinic I	2(0-6)
*	DTPT	641	Maxillofacial Prosthetic and Dental Oncology Clinic II	2(0-6)
*	DTPT	642	Maxillofacial Prosthetic and Dental Oncology Clinic III	2(0-6)
*	DTPT	643	Basic to Advanced Prosthodontics I	2(2-0)
*	DTPT	644	Basic to Advanced Prosthodontics II	1(1-0)

4. Thesis (12 credits)

	Credits(Lecture-Lab)
DTRD 698 Thesis	12(0—36)

Study Plan Major in Oral and Maxillofacial Radiology

Year	Semester 1			Semester 2		
1	DTID 514	Research Methodology	2(2-0)	GRID 603	Biostatistics	3(3-0)
	DTID 515	Oral Biology I	2(2-0)	DTRD 542	Radiographic Technology and Interpretation	2(2-0)
	DTRD 540	Radiation Biology	1(1-0)	DTRD 544	Oral and Maxillofacial Radiology Seminar I	1(1-0)
	DTRD 532	Radiation Physics	2(2-0)	DTRD 664	Oral and Maxillofacial Radiology Clinic II	3(0-9)
	DTRD 663	Oral and Maxillofacial Radiology Clinic I	3(0-9)	DTRD 698	Thesis	3(0-9)
	Total 10 credits			Total 12 credits		
2	DTRD 543	Case Analysis Seminar in Oral and Maxillofacial Radiology I	1(1-0)	DTRD 646	Case Analysis Seminar in Oral and Maxillofacial Radiology II	1(1-0)
	DTRD 647	Oral and Maxillofacial Radiology Seminar II	1(1-0)	DTRD 666	Oral and Maxillofacial Radiology Clinic IV	3(0-9)
	DTRD 665	Oral and Maxillofacial Radiology Clinic III	3(0-9)	DTRD 698	Thesis	6(0-18)
	DTRD 698	Thesis	3(0-9)			
		Elective	3			
	Total 11 credits			Total 10 credits		

Course Description

1. Core Courses

	Credits(Lecture-Lab)
DTID 514 Reseach Methodology	2(2 - 0)

Principle of health science research, research methodology for laboratory research and applied research e.g. clinical research and epidemiological research, research designs, research proposal writing, hypothesis testing, data collection and manipulation, scientific paper critique, research statistics, research ethics, report writing.

Credits(Lecture-Lab)

DTID 515 Oral Biology I 2(2 - 0)

Development, structure, biology and function of oral tissues and related organs in healthy and pathological status. Microbiology in oral cavity. Host immune responses. Dental pain and dental hypersensitivity. Update common drugs used in dental practice.

DTID 517 Orofacial Anomaly and Oncology 1(1-0)

The fundamental studies of embryology, physiology, and oncology related to craniofacial deformities. Principal and theoretical foundations of the causes of craniofacial anomaly such as cleft lip and palate, differentiation of oral cancer, and others. Specification and classifications of both systemic and localized diseases, related to head and neck rehabilitation, multiple therapeutic regimens.

DTID 518 Oral Pathophysiology and Dental Oncology 1(1—0)

Anatomical structures of head and neck including histological perspectives as well and the interrelated organs. The origin of tumors, both benign and malignant, and surgical interventions involved with cancer therapies, hematologic diseases and therapies involved in relation to oral management, irradiated tissue structures and orofacial therapies.

DTID 602 Applied Oral Sciences 2(2-0)

Anatomy and histology of oral and related structure, masticatory system, differential diagnosis of oral lesion related to dental prostheses, inflammation and wound healing, allergic reaction of oral mucosa, tissue reaction to implant, structure and pathogenesis of periodontium, dental pulp and periapical tissue, biology of bone, benign and malignant lesions that related to denture, oral manifestation of systemic diseases, normal oral flora and ecology, biology and pathogenesis of Candida species, antifungal agents in the treatment of oral candidosis, analgesics, dental and orofacial pain and management of pain, and pharmacological effect on oral tissue.

GRID 603 Biostatistics 3(3-0)

The basic knowledge on statistic as population and sample, analysis of data, measures of central tendency, measures of dispersion, descriptive statistics, probability of sample, probability distributions, standard error, estimation, hypothesis testing, analysis of variance, linear regression and correlation, nonparametric statistical analysis based on medical data. The application of biostatistics to medical research and related work.

2. Required Courses (Major)

Major in Oral and Maxillofacial Radiology **Credits(Lecture-Lab)**

DTRD 540 Radiation Biology 1(1-0)

Biological radiation effects including chemical reaction and biological reaction. The relationship between radiation dose and cell cycle. Sensitivity of cells and organs to radiation. Acute and chronic effect from radiation in adult, children and fetus. Genetic disorders and cancer from radiation.

DTRD 532 Radiation Physics 2(2-0)

Basic nuclear physics. Structures and important functions of atoms and nuclei. Disintegration theory of radioactive materials. Production of x-rays. Nuclear reaction. Reaction between radiation and matter. Advanced diagnostic imaging technology.

DTRD 542 Radiographic Technology and Interpretation 2(2-0)

Intraoral and extraoral radiographic techniques. Digital imaging. Tomography. Dental computed tomography. Medical computed tomography. Magnetic resonance imaging. Radiographic interpretation of oral and maxillofacial diseases, developmental anomalies, trauma, including maxillary sinus and temporomandibular joints. Forensic odontology.

DTRD 543 Case Analysis Seminar in Oral and Maxillofacial Radiology I 1(1-0)

Presentation of interesting radiographs from enrolled patients, journals, or internet. The radiographic appearances are discussed and differential diagnosed.

DTRD 544 Oral and Maxillofacial Radiology Seminar I 1(1-0)

Classical literature reviews of radiation physics, radiation biology, and radiation protection. Current literature reviews of advanced imaging technology and its applications including tomography, dental computed tomography and magnetic resonance imaging.

DTRD 646 Case Analysis Seminar in Oral and Maxillofacial Radiology II 1(1-0)

Presentation of difficult cases from enrolled patients, journals, or internet. The radiographic appearances are discussed and differential diagnosed.

DTRD 647 Oral and Maxillofacial Radiology Seminar II 1(1-0)

Current literature reviews of interesting cyst, benign tumor, malignant tumor, systemic disease, fibroosseous lesion, soft tissue radiopacities, and diseases involved maxillary sinus. Literature review of techniques for radiographic quality controls and assurance.

Credits(Lecture-Lab)

DTRD 663 Oral and Maxillofacial Radiology Clinic I 3(0-9)

A clinical course involves the basic and advanced radiographic imaging techniques and radiographic interpretation of the oral and maxillofacial diseases. Skill and experience in using dental x-ray machine and processor including ethically clinical performance. Quality control.

DTRD 664 Oral and Maxillofacial Radiology Clinic II 3(0-9)

A clinical course involves the basic and advanced radiographic imaging techniques. Select suitable radiographic techniques for each patient with ethically clinical performance. Radiographic interpretation of the oral and maxillofacial diseases.

DTRD 665 Oral and Maxillofacial Radiology Clinic III 3(0-9)

A clinical course involves the advanced radiographic imaging techniques with ethically clinical performance and radiographic interpretation of the oral and maxillofacial diseases.

DTRD 666 Oral and Maxillofacial Radiology Clinic IV 3(0-9)

Ethical selection and application of the basic and advanced radiographic imaging techniques for oral and maxillofacial problems and/or conditions, including their radiographic interpretation.

19.6.3 Elective Courses

Credits(Lecture-Lab)

DTAN 541 Extracellular Matrices and Mineralized Tissues 1(1-0)

Structure and functions of connective tissue. The biosynthesis of fibrous elements, collagen, elastin, and the glycosaminoglycan. Biochemistry of organic matrices and the mineralized component of bone and teeth. The normal endocrine regulation of bone metabolism, bone induction, growth and remodeling. Various molecular and cellular events of pathological processes, involving connective tissue in general and craniofacial region in particular.

DTAN 601 Applied Anatomy of Head and Neck 1(1-0)

Structures and functions of human head and neck, focused on craniofacial and related structures to apply for advanced clinical approaches.

Credits(Lecture-Lab)

DTBC 540 Molecular Biology in Dentisry 1(1-0)

Introduction to basic molecular biology. Study of cell components including genes, molecular genetics, protein synthesis, gene cloning, regulation of gene expression, basic principles of molecular biology techniques and its application in the field of dentistry.

DTHD 692 Clinical Photography 1(1-0)

General principles of photography, selection of cameras, lens, films, facial and intraoral photography, film processing, slide production and computer aids for presentation.

DTHD 693 Computer in Dentistry 1(1-0)

Study on computer and its supportive system and accessory equipment such as scanner, digital camera for application in dentistry. Use of computer in searching for medical information and management of retrieved data. Creation of graphics and media for communication including development of dental service through computer system.

DTID 601 Neurobiology of Pain 1(1-0)

Neurobiology of pain sensation. Peripheral and central mechanisms of pain, The pathophysiology of damage perpheral nerves, The psychological aspects of pain, Pain assessments in animal and man, Mechanism and management of orofacial pain.

DTID 550 Laboratory Techniques in Oral Science 1(0-3)

Laboratory practice in techniques currently used in oral biology research.

DTID 603 Principle Techniques in Oral Science 1(1-0)

Basic principles, theory of techniques currently used in oral biology research.

DTID 604 Physiology of the Dental Pulp 1(1-0)

Macro and microcirculation of the dental pulp, Methods used for measuring the pulp tissue fluid pressure, Physiology of the pulpo-dentine complexes, Physiology of the pulp in normal and inflammatory stages, Neurophysiology of the dental pulp, Dentine hypersensitivity

DTID 606 Oral Physiology 1(1-0)

Neurophysiology of oral sensorimotor system, basic understanding of the sensory and motor system of orofacial region including orofacial pain mechanism.

Credits(Lecture-Lab)

DTID 608 Multidisciplinary Seminar 1(1-0)

A one-hour weekly seminar, a "multi-use" course within the graduate dental curriculum, viewed as an enrichment opportunity to relate developing expertise to a comprehensive dental care setting, specifically designed to accommodate and promote evidence-based, multi-disciplinary interaction among advanced education students involved in clinical patient care.

DTID 609 Oral Photography 1(1-0)

Knowledge of varieties component of regular and digital camera including film and lens. Students are able to take good photograph for presentation

DTID 610 Fundamentals of Dental Biomaterials 1(1-0)

The structure, chemistry, properties and handling of metallic, ceramic, polymer, and composite materials used for dental and medical applications. Recent advances in the development of dental biomaterials, technology and devices.

DTID 624 Laboratory Techniques in Oral Biology Research 2(2-0)

Theory of sample preparation, instruction in the operation of research instruments and modern techniques currently used in oral biology research. Techniques covered include spectroscopy, ion analysis, centrifugation, cell culture, separation and analysis by chromatography, electrophoresis, microbiological techniques, immunological techniques, Laser Doppler technique, scanning electron microscopy and basic principles of molecular biology techniques as well as interpretation of results.

DTID 633 Testing Methods for Dental Biomaterials Research 1(1-0)

Basic concepts, principles and techniques commonly used in *in vivo* and *in vitro* study in research including dental biomaterials, mineralized tissues, oral hygiene products and instruments.

DTID 625 Using Statistical Software for Dental Research 1(0-3)

Computer practice using a statistical computer software, such as SPSS, to carry out data analysis, interpretation and presentation. Working knowledge of some selected statistical techniques commonly used in clinical and clinically related laboratory research and design of a research project with the appropriate statistical investigation is also provided.

Credits(Lecture-Lab)

DTID 630 Computer Application in Dental Education 1(0-3)

Applied computer in dentistry, searching literature, database, graphic management, presentation program and thesis writing.

DTID 631 Psychology and Ethics for Dentists 1(1-0)

Study of psychology of dental patients focuses on the doctor-patient relationship as well as the physician's relationship to society and colleagues leading to establish morality human values and innermost feeling promote the importance of listening, observing, and caring for the patients.

DTMD 675 Dental Implant 1(1-0)

Scientific basis of dental implant, surgical periodontal and prosthetic consideration in implant dentistry diagnosis and treatment plan, complication and maintenance of implant patients.

DTMI 613 Microbiological Techniques in Oral Science 1(0-3)

Laboratory exercises and experiments concerning methods used in Oral Microbiology and Immunology research. Detection and identification of oral bacteria by cultivation, i.e., cariogenic bacteria, periodontal bacteria, Candida. Caries activity tests. Detection and identification of oral bacteria by non-culturing methods, i.e., DNA probe analyses, PCR, immunological assays, i.e., immunofluorescence, flow cytometry, ELISA, Western blotting, latex agglutination, serological assays. Application

DTMI 614 Dental Microbiology and Immunology 1(1-0)

Ecology of oral microflora. Oral biofilms and roles in oral infections. Microorganisms responsible for dental caries, periodontal disease and other important oral infections. Immune responses against oral pathogens.

DTMI 615 Immunological Aspects of Oral Diseases 1(1-0)

Basic structure of immunoglobulins. Immunoglobulin classes. Immunity to infections; innate and acquired immunity. Oral immunity; oral lymphoid tissues, saliva and secretory IgA, gingival crevicular fluid. Immunology of dental caries. Immunology of periodontal disease. Immunology of oral candidiasis. Immunology of viral infections. Immunization

Credits(Lecture-Lab)

DTOP 676 Applied Operative Dentistry 2(1-3)

The theories of various restorative treatments including materials and techniques used and evaluation methods of the restorations after treatment are studied in this course. Laboratory practice on these techniques is included.

DTPA 612 Oral Pathology 1(1-0)

Principle of oral diagnosis, laboratory technique and interpretation, forensic science and oral biology, diseases of salivary gland, connective tissue and bone, abnormal craniofacial development, oral cancer, oral lesions in elderly and hormone deficiency and oral immunopathology

DTPD 626 Seminar in Pediatric Patient Care 1(1-0)

The course affords the opportunity to share variety of the patients' challenging behavioral/dental/ medical problems and limitations through case presentation and discussion based on current clinical principles/concepts of dental care in children.

DTPM 610 Pharmacology and Dental Therapeutics 1(1-0)

Principle of clinical pharmacology. Experimental therapeutics and rationale introduction of new drugs. Drugs for prevention and treatment of oral diseases, such as antimicrobial agents, anti-inflammatory drugs, analgesics, local anesthetics, neuromuscular blocking agents and CNS drugs. Adverse drug reactions affecting the mouth and associated structures.

DTPT 500 Craniofacial and Body Prostheses 1(1-0)

The use and selection of materials in relation to fabrication of craniofacial and body prostheses. The various technical processes involved from impression, molding formulation, processing prosthesis will be discussed. Case selections and design of different types of prosthesis for any indicated defects will be extensively explained in detail.

DTPT 505 Maxillofacial Prosthetic and Dental Oncology Seminar I 2(2-0)

The seminars in maxillofacial prosthetic and dental oncology topics are mainly concentrated in both classical and recent research literatures. The discussions are based upon selected topics in historical perspective concepts and modern research methodology. Reviewed articles are also divided into various related fields such as maxillofacial prosthetics, maxillofacial surgery, orthodontics, psychological issues that have their relevancy in treating cranio – and orofacial deformed patients.

Credits(Lecture-Lab)

DTPT 640 Maxillofacial Prosthetic and Dental Oncology Clinic I 2(0-6)

Ethically clinical practice with diagnosis and treatment planning for congenital and acquired cranio – and orofacial defect patients. Practice including a basic dental treatment, emergency treatment, and others.

DTPT 641 Maxillofacial Prosthetic and Dental Oncology Clinic II 2(0-6)

Ethically clinical practice on patients with cancer therapies, such as radiation, chemotherapy, or surgical procedure.

DTPT 642 Maxillofacial Prosthetic and Dental Oncology Clinic III 2(0-6)

Maxillofacial defect patients examined and treated ethically. Prosthetic treatments mainly concentrated on complicated intraoral defects.

DTPT 643 Basic to Advanced Prosthodontics I 2(2-0)

Introduction to the basic understanding of prosthodontics and the progress into advance restoration to maintain oral function in an optimal masticatory processes. Clinical care for complete and partial edentulism. Standardized care in both removable and fixed restoration prior to study more complicated procedures of dental prostheses.

DTPT 644 Basic to Advanced Prosthodontics II 1(1-0)

Continuation of basic to advance dental therapies to obtain and optimal masticatiry function using more complicated therapies such as implant retaired prosthesis.

19.6.4 Thesis 12 credits

DTRD 698 Thesis 12(0–36)

Digital radiographic imaging, Dental computed tomography, Advanced radiographic imaging techniques, Radiographic appearances of the oral and maxillofacial diseases.