

Details of Orthodontic Courses

A. Courses Offered by Graduate Orthodontics

Orthodontics 750. Digital Orthodontics

In this digital technology course, intraoral scanning and 3D printing hardware and software will be introduced.

Orthodontics 752. Treatment with Removable Clear Aligners

Biomechanics and tooth movement using removable clear aligners will be presented with emphasis on Treat software program.

Orthodontics 753. Principles of Orthodontics

An introductory course on gathering diagnostic records leading to the diagnosis and treatment planning of the orthodontic patient.

Orthodontics 754. Orthognathic Surgery

The fundamental diagnostic and treatment features of maxillofacial, developmental, and acquired deformities treated by orthognathic surgery are presented by faculty from oral and maxillofacial surgery and orthodontics. Preoperative and postoperative orthodontics as well as the spectrum of corrective surgical procedures are also presented. Correction of occlusal dysfunction and skeletal disharmony in both jaws in all three planes of space is included.

Orthodontics 755. Introduction to Master's Thesis Research

Various topics, methodology and presentations by research mentors and senior residents provide a basis for Master's research thesis.

Orthodontics 756. History of Orthodontics

A survey of orthodontics, the oldest dental specialty is led in a seminar format. The development of various techniques, theories, and practices of orthodontics and the leading historical figures including Angle, Case, Broadbent, and Tweed are discussed.

Orthodontics 757. Foundations in Orthodontics I

The objective of this course is to develop a strong foundation in the fundamental principles and biological basis of orthodontics using Proffit's Contemporary Orthodontics textbook. Seminars will involve discussion of the salient features of each assigned chapter.

Orthodontics 759. Biology of Tooth Movement

This course will cover the histologic, cellular, and molecular basis for orthodontic tooth movement, root resorption and dentofacial orthopedics using historic and current findings in general bone biology, orthopedics and orthodontics.

Orthodontics 760. Clinical Orthodontics

Clinical experience treating orthodontic patients with a variety of problems is provided. Experience is gained using standard edgewise appliances as well as preadjusted appliances. Experience using functional appliances such as the Herbst, Twin Block, and the MARA appliance is attained. In addition, various orthopedic appliances, including the facial mask, rapid maxillary expander, and the chin cup may be incorporated into specific treatment protocols.

Patients are treated in the Robert W. Browne Graduate Orthodontic Clinic each weekday afternoon.

Orthodontics 761. Orthodontic Techniques

This course includes lectures, demonstrations, and laboratory experiences to teach theory, construction, and manipulation of the wide variety of appliances used in orthodontic and dentofacial orthopedic therapy. Principles of banding and bonding are stressed, as is the use of fixed and removable auxiliary appliances including functional appliances and rapid maxillary expansion. The participant also will be introduced to presentation and other computer technology, including PowerPoint, Photoshop, Endnotes, as well as various morphing programs.

Orthodontics 762. Seminar in Orthodontics

A wide variety of topics are presented that are based on the private practice and university experience of the clinical faculty. These topics include:

- **Diagnosis:** The principles of orthodontic diagnosis are taught in a systematic fashion and applied to patients under treatment.
- **Treatment Planning:** Orthodontic treatment is taught using the records of patients being treated in the clinic as well as those treated previously.
- **Case Assessment:** Methods are taught to critically evaluate the response of patients to treatment.
- **Orthodontic Problem Solving:** Specific methods of addressing common orthodontic problems and how they may be solved are discussed.

Orthodontics 764. Treatment of the Dentally Compromised Patient

This interdisciplinary course is for graduate students in orthodontics, periodontics, prosthodontics, and restorative dentistry. The treatment of patients with complex dental and skeletal problems that require input from a variety of dental specialties is considered. The teaching format includes formal lectures, case presentations, spontaneous discussions, and resident presentations on interdisciplinary topics.

Orthodontics 765. Review of Current Literature

A critical review of articles appearing in orthodontic and related journals is presented using a seminar format.

Orthodontics 766. Research in Orthodontics

This is a global course that encompasses research efforts of residents during their topic identification and thesis preparation. The research project will be supervised by a faculty member of the Department of Orthodontics and Pediatric Dentistry or from another department. The topic of the research must be approved by the thesis committee of the orthodontic resident.

Orthodontics 769. Orthodontic Biomechanics

A study of the principles of biomechanics as applied to orthodontic treatment. Special emphasis is placed on relevant aspects of biomaterial science, principles of mechanics applied to the analysis of force delivery systems, and the biologic response of tissues to applied forces.

Orthodontics 770. Principles of Occlusal Development

The establishment, maturation, and maintenance of dental occlusion. Emphasis is placed on the relationship of occlusal development and facial growth. The etiology of malocclusion is discussed.

Orthodontics 771. Adolescent Psychology

Patient cooperation is a must with orthodontic treatment. Various techniques to motivate and enhance patient cooperation are available; however recognizing which technique is most appropriate for the patient you are treating is essential. Background information into patient motivational assessment methods is covered. In addition, multiple evidence based methods techniques of patient motivation are discussed.

Orthodontics 772. Introduction to Cephalometrics

An introduction to the measurement of the lateral and posteroanterior head film is provided. This lecture and laboratory course introduces the student to various methods of cephalometric analysis.

Orthodontics 773. Advanced Diagnosis and Treatment Planning

This course is intended for second-year orthodontic graduate students but may be also taken by other graduate students who have completed specialty training in orthodontics. A comprehensive review of the principles and practices of orthodontic treatment will be provided. In addition, the participant will prepare orthodontic case reports for case display at the annual AAO meeting. Basic and applied principles of photography and advances in computer technology are integral to this course.

Orthodontics 777. Methodology and Problems in Clinical Research

An advanced course for orthodontic graduate students in which the nature of hypothesis testing, the process of clinical decision making, and the statistical methodology to be employed in each student's thesis research is discussed.

Orthodontics 778. Management of Children with Craniofacial Anomalies

Patients are seen in both Mott's Children's Hospital and in the Robert W. Browne Orthodontic Clinic. This course combines the orthodontic treatment of patients with craniofacial anomalies with the comprehensive team treatment provided by the University of Michigan Craniofacial Anomalies Team.

Orthodontics 779. Practice Management

The course consists of an alternating series of classroom seminars and visits to the private practice offices of adjunct orthodontic faculty members. From the lecture series, residents will be able to understand the basic principles of starting an orthodontic practice versus entering into an existing practice. Seminars will address such topics as developing a financial office plan, legal implications of contracts, practice valuation and many other topics relevant to building and maintaining a practice.

Orthodontics 780. Foundations in Orthodontics II

A comprehensive review of fundamental principles and subject matter relating to the science and practice of orthodontics. The purpose of the course is to integrate core information in the field of orthodontics and serve to assist in the preparation for the written examination of the American Board of Orthodontics.

Orthodontics 781. Treatment in Progress

Class consists of case presentations with pre-treatment and progress records. A detailed discussion of diagnosis, treatment plans (pros/cons), treatment choice and rationale, treatment mechanics, progress and outcomes to date is performed. The selected cases are reviewed critically to assess the effect treatment planning, treatment mechanics, and patient compliance has on the treatment outcome.

Orthodontics 782. Temporomandibular Disorders

This overview course will present information regarding the evaluation, diagnosis and management of Temporomandibular Disorders. The course will consist of four lectures and one clinical session to perform a comprehensive orofacial examination. The information provided in this overview course will allow the orthodontic graduate student to understand the dentist's role in managing temporomandibular problems.

Orthodontics 783. Imaging in Orthodontics

The objectives of this course will be to review types of images, scanners and software and understand clinical problems and applications using CBCT and DICOM images.

B. Core Curriculum Offered by School of Dentistry**Biomat 577. Orthodontic Materials**

Developing an understanding of the mechanical properties of the various orthodontic materials enables the student and practitioner to make treatment decisions from a logical and scientific perspective. The properties that make one wire better for a given situation may make the same wire worse for other clinical situations. An understanding of stress, strain, and other mechanical properties will be discussed to assist in getting the most from each wire.

Dent Ed 602. Neural Basis of Oral and Facial Function

This course is intended for the graduate dental student. Various facial functions are discussed, including mastication, facial expression, pain sensation and disorders, taste, smell, and parafunctional habits.

Dent Ed 603. Advanced Postnatal Facial Growth

An examination of the predominant theories, concepts, and methods used in the study of human ontogeny. Special emphasis is given to the analysis of craniofacial biology.

Dent Ed 610. Research Methods in Grad Oral Health Sciences

The objectives of this course is to facilitate the first phase of the graduate students' research project to the point of protocol preparation.

Dent Ed 612. Molecular Biology in Clinical Dentistry

This molecular biology class is intended for the graduate dental student. A review of cellular and molecular biology will be presented, followed by student presentations of the current relevant literature.

Dent Ed 614 Oral and Maxillofacial Pathology

Focus of this course will be on recognition of oral manifestations of local and systemic disease processes. The formulation of a logical and complete differential diagnosis and subsequent management of these processes will be stressed.

Ant/OMFS 555 Surgical Anatomy

This is an anatomy laboratory course using cadaver heads to investigate various surgical approaches to the facial skeleton. Osteotomies and placement of TAD will also be performed by the student.

Restorative 860. Advanced Topics in Orofacial Function

This course will provide the graduate student with an advanced understanding of orofacial function, parafunction and dysfunction; differential diagnosis; current topics in research; and clinical examination procedures.