

# ORTHODONTICS

## *CURRICULUM*

### **First-Year Summer**

#### **Anatomy: Head & Neck (3 semester hours)**

This course is designed to review basic head and neck anatomy and to cover details that may not have been included in a general anatomy course. Each region is treated by lecture followed by dissection. An optimum faculty-to-student ratio and discussion in the laboratory ensure that the material is understood and learned.

#### **Applied Sciences I Statistical Methods In Health Information (3 semester hours)**

This course provides the advanced student with the opportunity (1) to understand the principles of scientific writing and evaluation of the literature, (2) to use basic principles of research design and methodology, (3) to understand the importance of ethical data acquisition and analysis, and (4) to become acquainted with commonly used non-parametric and parametric biostatistical tests.

#### **Orthodontic Clinic (3 semester hours)**

#### **Topics In Orthodontics I (2 semester hours)**

This advanced course provides the student with the scientific knowledge, biomechanical principles and orthodontic techniques required to diagnose, plan treatment and correct routine and complex malocclusions of growing and skeletally mature patients. Students are required to make oral case presentations of patients diagnosed and treated in the postgraduate clinic. Class time is a combination of lectures, seminars, laboratories and clinical activities. Topics include: orthodontic diagnosis & treatment planning, cephalometrics & radiology, orthodontic & orthodontic appliance design, orthodontic techniques, dentofacial orthopedics, biomechanical principles, interdisciplinary comprehensive care, interdisciplinary care lecture series, clinical photography and clinical orthodontic treatment/case management.

### **First-Year Fall**

#### **Cell/Developmental Biology (1 semester hour)**

This course will familiarize students with principles of molecular biology and provide a basic understanding of genetics and cytogenetics, and a detailed knowledge of development of the craniofacial complex, including formation of the face and the bones of the skull. A review of cell structure and reproduction is included, as well as a session on special techniques the student is likely to encounter in study and/or research.

#### **Oral Biology: Development, Structure & Function For Oral Tissues (1 semester hour)**

Students will be provided with a basic understanding of the developmental anatomy, light and ultrastructural microscopic features, biochemistry and functional properties of oral tissues. In particular, emphasis will be placed on developing and adult mineralized tissues of enamel, dentin, bone and cementum, as well as pulp, periodontium, oral mucosa and salivary glands. Advanced

instruction will include information about current research advances (basic and translational) within each of the topic areas.

### **Oral Biomaterials (2 semester hours)**

This didactic and laboratory course is designed to provide the student with the opportunity to learn the properties of materials used in orthodontics.

### **Interdisciplinary Seminar (1 semester hour)**

Continuation (see description above)

### **Topics In Orthodontics II (4 semester hours)**

Continuation of "Topics in Orthodontics I" (See description above)

### **Orthodontic Clinic I (5 semester hours)**

### **Orthognathic Seminar (1 semester hour)**

The orthognathic conference is jointly presented by faculty from the Departments of Oral and Maxillofacial Surgery and Orthodontics. Weekly presentations will cover the diagnosis, treatment planning and treatment of patients with dentofacial deformities. Topics covered will include orthodontic preparation of patients for orthognathic surgery, surgery procedures, distraction techniques and the management of syndromic patients.

### **Current & Classical Literature In Orthodontics I**

This course reviews current and classical orthodontic literature. Reading assignments are given to each resident. Abstracts of each article are completed by the residents assigned that article. A short question/answer/discussion session follows each abstract presentation. "Topics in Orthodontics I" is a prerequisite for this course.

## **First-Year Spring**

### **Topics In Orthodontics III (4 semester hours)**

Continuation of Topics in Orthodontics II

### **Orthodontic Clinic I (5 semester hours)**

### **Current & Classical Literature In Orthodontics II (1 semester hour)**

Continuation (see description above)

### **Orthognathic Seminar (1 semester hour)**

Continuation (see description above)

### **Craniofacial Growth & Development I (2 semester hours)**

This course will provide the student with a basic understanding of prenatal and postnatal craniofacial growth and development as they relate to orthodontic diagnosis and treatment planning. Topics include: Molecular aspects of prenatal craniofacial patterning, clinical genetics, syndrome delineation, general concepts of physical growth, postnatal development of the cranial vault, cranial base, mid-face and mandible, patterning and control mechanisms during postnatal development, correlative growth and facial growth prediction, and relevant aspects of cognitive, emotional and psychosocial

development. Instruction will use lectures, seminars/discussions and student presentations. "Topics in Orthodontics I" is a prerequisite for this course.

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### **Interdisciplinary Research Seminar (1 semester hour)**

Continuation (see description above)

## **Second-Year Summer**

### **Applied Sciences II (2 semester hours)**

This course provides the advanced student with the opportunity to understand the principles of (1) ethics, (2) jurisprudence and risk management, (3) behavioral sciences and (4) education and teaching methodology.

### **Orthodontic Clinic II (5 semester hours)**

### **Topics In Orthodontics IV (2 semester hours)**

This advanced course provides the student with advanced knowledge in orthodontic diagnosis, analysis/case management, and treatment. Various approaches to routine orthodontic tooth movement, dentofacial orthopedic techniques, surgical-orthodontic techniques, and techniques for managing cleft palate and craniofacial deformities are presented. Instruction in different topic areas consists of a combination of lectures, seminars, laboratories and clinical activities throughout the year. Students are required to make oral case presentations throughout the year on patients they are treating in the postgraduate or craniofacial deformity clinic. At the completion of the course each resident is required to present a comprehensive oral and written case analysis of some or all of their patients to the faculty. "Topics in Orthodontics I" is a prerequisite for this course.

## **Second-Year Fall**

### **Graduate Oral Pathology (2 semester hours)**

This course is comprised of advanced lectures in oral and maxillofacial pathology for students in the various specialties. Topics in this course include the oral manifestations of infectious diseases, inflammatory conditions, odontogenic cysts and neoplasms, selected benign and malignant neoplasms of the soft and hard tissues, salivary gland disorders and mucocutaneous diseases. Emphasis is placed on the pertinent clinical and microscopic findings, treatment and prognosis and differential diagnosis.

### **Current & Classical Literature In Orthodontics III (1 semester hour)**

This course reviews current and classical orthodontic literature. Reading assignments are given to each resident. Abstracts of each article are completed by the resident assigned that article. A short question/answer/discussion session follows each abstract presentation. "Current and Classic Literature in Orthodontics I" is a prerequisite for this course.

### **Topics In Orthodontics V (4 semester hours)**

Continuation of "Topics in Orthodontics IV" (see description above)

### **Orthodontic Clinic II (5 semester hours)**

**Cleft Palate Clinic/Craniofacial Deformities Conference - Growth & Development (2 semester hours)**

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Conferences are held monthly with representatives of all specialties involved in the care of cleft lip and cleft palate patients. Patients are examined, diagnoses are reviewed, and integrated treatment plans are recommended by the specialists in attendance.

#### **Interdisciplinary Research Seminar (1 semester hour)**

#### **Orthognathic Seminar (1 semester hour)**

### **Second-Year Spring**

#### **Topics In Orthodontics VI (4 semester hours)**

Continuation of Topics in Orthodontics V (see description above)

#### **Current & Classical Literature In Orthodontics IV (1 semester hour)**

Continuation (see description above)

#### **Research (2 semester hours)**

Research activity usually includes registration for two to four hours of credit per fall or spring semester, beginning either in the spring of the year preceding graduation or fall of the terminal year. A minimum of four semester hours is required for all degree programs.

#### **Orthodontic Clinic II (5 semester hours)**

#### **Orthodontic Practice Management (1 semester hour)**

This course is intended for the student in the final year of matriculation and will discuss associateship, buying and borrowing, staffing, financial planning-personal, insurance and computerization of the dental office.

#### **Orthognathic Surgery Seminar(1 semester hour)**

Conferences are held monthly with representatives of all specialties involved in the care of cleft lip and cleft palate patients. Patients are examined, diagnoses are reviewed, and integrated treatment plans are recommended by the specialists in attendance.

#### **Graduate Oral Radiology (1 semester hour)**

This course offers an in-depth study of skull and related extraoral radiographic techniques. The resident will be introduced to panoramic radiology as well as direct digital imaging, both intraoral and extraoral. Localization techniques, image manipulation and networking will also be presented in this course.

### **Third-Year Summer**

#### **Orthodontic Clinic III (2 semester hours)**

#### **Research (2 semester hours)**

The student is expected to complete his/her research, complete the thesis and submit a publishable paper to an appropriate journal ("American Journal of Orthodontics and Dentofacial Orthopedics," "Angle Orthodontist," "Journal of Clinical Orthodontics," etc.

#### **Thesis (2 semester hours)**

The student, in consultation with the clinical department chair, selects a research project in a basic science area or clinically applied specialty area as early as possible. The department chair appoints a thesis committee chairman knowledgeable in the area of research chosen. Other members of the committee are chosen by the department chair and the thesis committee chairman.

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