

ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS
PROGRAM SYLLABI

BUIDRE

2008-2009

OR 803: Craniofacial Growth and Development

Course Instructor: Dr. Elif Keser

Office Hours: Sunday - Thursday, 9:00 am to 4:00 pm

Credit Hours: 1

Prerequisites: None

Corequisites: None

Course Description: This course offers a clinically relevant understanding of craniofacial growth and development. Topics include how malocclusion develops and how growth can be modified during treatment of malocclusion. Attention is focused on growth and development of the face, the occlusion and the dental arches, and biomechanical strategies used to facilitate optimal growth outcomes.

Intended Learning Outcomes:

1. Describe how growth impacts the development of the face, occlusion and dental arches.
2. Incorporate growth & development principles into the diagnoses & treatment plans of clinical orthodontic cases.

Course Topics and Content:

The Nature of Growth

Growth stages, differential growth

Craniofacial Formation

Facial formation prenatal weeks 1-14

Brachial arch contributions

Morphology of facial development

The Biology of Growth & Change

Neurocranial, cranial base and facial growth

Craniofacial Growth

Movements

Remodeling

Growth vector

Displacement

Craniofacial Growth Theories

Growth Aberrations

Craniosynostosis, frontonasal dysplasia, holoprosencephaly, & hemifacial microsomia

Growth and Facial Patterns

Skeletal hand-wrist analysis
Rotations

Growth and Pattern of Occlusion/Malocclusion

Consistency of occlusion pattern development

Growth and Dental Arch Pattern/Malocclusion

Dental arch transition phase
Dental arch dimensional changes during growth

Development of Dental Arch Malocclusion & Assessment

Tooth/arch size imbalance & mixed dentition space analysis

Assignments and Due Dates: None

Methods and Dates of Student Evaluation: Grade based on class participation.

Teaching and Learning Methodologies: Power Point presentations

Course Texts, Recommended Reading, Material, and Resources: Department of Orthodontics Growth and Development monograph, selected reading from Department Reading List.

OR 805.1: Orientation to Orthodontics

Course Instructor:	Dr. Elif Keser
Office Hours:	Sunday - Thursday, 9:00 am to 4:00 pm
Credit Hours:	2 credits
Prerequisites:	None
Co-requisites:	None

Course Description: Orientation of incoming students to the orthodontic specialty. This course is designed to orient the new student to the orthodontics as a specialty practice by reading and understanding the contents of the textbook “*Contemporary Orthodontics.*” Clinically relevant issues pertaining to treatment of malocclusion are reviewed and discussed.

Intended Learning Outcomes:

By the end of the course the student should be able to:

- 1) Describe malocclusion in terms of diagnosis and treatment planning.
- 2) Trace and analyze cephalometric x-rays
- 3) Take accurate orthodontic impressions
- 4) Take and download extra and intraoral photographs
- 5) Treatment plan and write up orthodontic cases using basic concepts of anchorage and mechanotherapy
- 6) Bend orthodontic archwires with various loops, etc.

Course Topics and Content:

Week 1:	Sample case reviews and discussion Introduction to cephalometrics Impression technique
Week 2:	Cephalometric tracing & Steiner space analysis Diagnosis & treatment planning, Write-up process Intra and extraoral photographic technique Wire bending
Weeks 2-6:	Long form case write-up.

Assignments and Due Dates:

Expectations of Students: Students are expected to prepare for each seminar session by reading comprehensively and understanding the assigned textbook reading (and handouts if provided) PRIOR to class time. Although all students must read all chapters, each student is responsible for at least two

chapters and must prepare a PowerPoint presentation to review the salient issues related to each of the textbook chapters assigned for presentation.

- Trim and polish 5 sets of orthodontic models – open due date
- Complete wire bending exercise
- Write up 5 assigned cases as per Long Form Write-up format (Ortho Handbook)

Methods and Dates of Student Evaluation: Satisfactory completion of wire bending and model trimming assignment and completion of long form write-ups.

Teaching and Learning Methodologies: Power Point presentations, handouts, hands-on clinical and laboratory exercises

Course Texts, Recommended Reading, Material, and Resources:

Introduction to Orthodontics department monograph; *Contemporary Orthodontics*, 3rd edition, William R. Proffit (Mosby, 2000).

OR 805.2 Biomechanics Course

Course Instructor:	Dr. Elif Keser
Office Hours:	Sunday - Thursday, 9:00 am to 4:00 pm
Credit Hours:	1
Prerequisites:	None
Co-requisites:	None

Course Description: Theories and principles of orthodontic biomechanics and dentofacial orthopedics.

This course is designed to orient the orthodontic student to and develop an understanding of orthodontic biomechanics. Both theoretical and applied biomechanics are discussed in the context of delivery of orthodontic and orthopedic level force systems. Overall, the student should be able to do the following by the end of the course:

- 1) Describe basic biomechanical principles as related to orthodontic force application.
- 2) Describe basic biomechanical principles as related to orthopedic force application

Intended Learning Outcomes:

Student should be able to:

- 1) Describe basic biomechanical principles related to orthodontic force application.
- 2) Describe basic biomechanical principles related to orthopedic force application.

Course Topics and Content:

Weeks 1 & 2: Basics of Biomechanics

- Terminology
- Vectors
- Moments
- Laws of Newton
- Center of resistance
- Center of rotation
- Moment/force ratio
- Force distribution in PDL
- Friction

Weeks 3 & 4: Couples

One-bracket systems
Intrusion & Extrusion
V bends
Trans-palatal and Utility Arches

Week 5: Extra Oral Forces
Headgears and Reverse headgears

Week 6: Torque and asymmetric mechanics

Week 7: Review

Assignments and Due Dates: No out of class assignments

Methods and Dates of Student Evaluation Attendance and class participation.
100-92=A, 91-90=B+, 89-82=B, 81-80=B-; 79-70=C; <70=F

Teaching and Learning Methodologies: Power Point presentations.

Course Texts, Recommended Reading, Material, and Resources:
Department of Orthodontics Biomechanics Monograph

OR 805.3: Diagnosis and Treatment Planning

Course Instructor: Dr. Elif Keser

Office Hours: Sunday – Thursday, 9:00 am to 4 pm.

Credit Hours: 4

Prerequisites: None

Co-requisites: None

Course Description: Diagnosis & Treatment Planning: Developing basic skills in orthodontic diagnosis & treatment planning.

Intended Learning Outcomes:

Overall, the student should be able to do the following by the end of the course:

- Demonstrate competency with basic skills in orthodontic diagnosis and treatment planning,

Course Topics and Content: Cases treated and completed are presented.

Assignments: Each case is chosen to illustrate at least one specific fact. These include non-extraction, mutilated dentition, lower incisor extraction, functional malocclusions, Class 3 non-surgical, surgical, patients who refused a surgical approach, small upper laterals and others. Students review pre-treatment records: one student is asked to diagnose the photographs, another student is asked to diagnosis the panoramic radiograph, a third the cephalometric radiograph and study models and is asked to state the most important diagnostic criteria that will go into the treatment planning. Role playing is emphasized in the course. Finally, all students write down their own treatment plan and why they have chosen that approach. Each student then states and defends their treatment plan. How the case was treated is then revealed and a rationale is offered and discussed. Final patient treatment records are then reviewed.

Methods of Student Evaluation: Students will be graded on quality of case presentation and class participation.

Teaching and Learning Methodologies: Instructor-guided and student-led seminars.

Course Texts, Recommended Reading, Material and Resources: Photographs, radiographs and study models from treated cases.

OR 805.4 Scope of Orthodontics

Course Instructor:	Dr. Elif Keser
Office Hours:	Sunday - Thursday, 9:00 am to 4:00 pm
Credit Hours:	5
Prerequisites:	None
Co-requisites:	None

Course Description: The purpose of the course is to give the first year orthodontic student a detailed overview of the Orthodontic specialty. As such, the full scope of orthodontics is covered from a specialty perspective.

Intended Learning Outcomes: The student should be able to do the following by the end of the course:

- 1) Explain the rationale for clinically managing the orthodontic patient by synthesizing orthodontic knowledge learned in the course.

Course Topics and Content:

Weeks 1 & 2 –Cephalometrics

Weeks 3 & 4 - Patient evaluation and treatment planning –
Clinical evaluation of the patient
Evaluation of occlusion
Record taking
Synthesizing information and individualized treatment planning
Treatment planning

Weeks 5 - 7 - Mechanics of Orthodontics

Band placement
Band cementation
Attachments
Tubes:
Brackets
Archwires

Week 8 & 9 - Interrelationships of treatment planning and mechanics

Non-Extraction
Extraction

Week 10 - "Functional" Malocclusions

"Functional" anterior crossbites (pseudo Class III malocclusion)

Extraction Seminar

Week 11 - Rationale for Extraction Therapy

Weeks 12 & 13 - Mixed Dentition Treatment

Arch length problems

Skeletal problems

Weeks 14 & 15 - Growth and Development

Osseous tissues

Growth of maxilla and mandible

Inter-relationship of mechanics and growth

Week 16 – Habits

Week 17 - Contraindications to Orthodontic Treatment

Systemic and local problems

Side effects of orthodontic treatment

Weeks 18 & 19 - Retention

Theories and “Rules” of retention

Finishing and finishing appliances

Third molars

Weeks 20 & 21 - Adult Orthodontics

Adult malocclusion and considerations

Orthodontics as adjunctive treatment

Periodontal considerations

Restorative considerations

Week 22 - Cleft lip and palate

Pathogenesis

Classification

Assignments and Due Dates: None

Methods and Dates of Student Evaluation: Grade based on class participation.

Teaching and Learning Methodologies: Seminar and Lecture format

Course Texts, Recommended Reading, Material, and Resources: Reading list to be distributed.

OR 821.1 Case Review

Course Instructor: Dr. Elif Keser

Office Hours: Sun - Thurs. 9:00 am to 4:00 pm

Credit Hours: 4

Prerequisites: Completion of course # OR 805.3 – Diagnosis and Treatment Planning

Co-requisites: None

Course Description: Review of active and completed cases. Students present cases with supporting records, cephalometric superimpositions and case write-ups.

Intended Learning Outcomes: Developing proficiency with clinical orthodontic reassessment, ongoing treatment planning and treatment modification. Overall, the students should be able to do the following by the end of the course:

1. Demonstrate proficiency in ongoing case evaluation and final outcome assessment.
2. Evaluate changes in clinical presentation over the course of treatment.
3. Assess the need for change and modify treatment modalities as required.
4. Critically examine final treatment outcomes.

Course Topics and Content: Cases treated and/or completed are presented by Students are presented each week.

Assignments and Due Dates: One student is selected each week to present his or her case.

Methods and Dates of Student Evaluation: Class participation.

Teaching and Learning Methodologies: Students Power Point case presentations.

Course Texts, Recommended Reading Material, and Resources:

Selected literature relevant to the case being presented from the Department of Orthodontics Reading List.

OR 821.2 Practice Alternatives after Graduation

Course Instructor: Dr. Elif Keser / Guest Lecturers

Office Hours: Sunday - Thursday 9:00 am to 4:00 pm

Credit Hours: 1

Prerequisites: None

Co-requisites: None

Course Description: The intent of this course is to prepare the student to establish a solo practice, to associate, to enter a partnership with another orthodontist(s) or to join a group practice.

Intended Learning Outcomes: Overall, the student should be able to do the following by the end of the course:

- 1) Describe how to establish an orthodontic practice.
- 2) Describe the basic aspects of associateships, partnerships and joining a group practice.

Course Topics and Content:

Outline of Topics

Where Am I Going to Go? Selecting an Area.
What Am I Going to Do? Practice Alternatives.

Ownership Options

Associateship Leading to Partnership

Solo Practice – Advantages and Disadvantages

Purchasing a Practice:

From doctor who will stay < 2 years

From doctor who will; stay 2 to 5 years

From and Estate

Establishing Your Own Practice

Ownership or Non-Ownership Options

Office Sharing

Group Practice

Non-Ownership Options

Corporate Employee – Group Practices, Franchises, etc.

Government practice

Employee - Private Practice

Employee
Military
Education

Establishing Your Own Practice
Selecting a Community
Selecting a Community within an Area
The Lease
Building Your Practice – Internal Marketing

Support Personnel
Accountant
Banker
Lawyer

Assignments and Due Dates: None

Methods and Dates of Student Evaluation: Grade will be based on class participation.

Teaching and Learning Methodologies: Lectures and discussion.

Course Texts, Recommended Reading, Material, and Resources: Practice Alternatives, American Association of Orthodontics publication

OR 821.3 Practice Management

Course Instructor:	Dr. Elif Keser
Office Hours:	Sunday - Thursday 9:00 am to 4:00 pm
Credit Hours:	1
Prerequisites:	None
Co-requisites:	None

Course Description: The intent of this course is to prepare the students so that, once they have established or joined a practice, they will be able to successfully run that practice. Reviewed and discussed is how an efficient orthodontic private practice is managed.

Intended Learning Outcomes: Overall, the students should be able to do the following by the end of the course:

- 1) Describe how to manage an efficient orthodontic practice.

Course Topics and Content:

Office Procedures and Forms, Patient Communication

- Week 1 - Before the patient arrives
- Week 2 - The initial visit
- Week 3 - Records
- Week 4 - Presentation
- Week 5 - Treatment
- Week 6 - Debanding and retention
- Week 7 - Problems during treatment
- Week 8 - Recalls

Communicating with Dentists

- Week 9 - Personal visits, telephone calls and referral records
- Week 10 - Other letters

Practice Management

- Week 11 - Building a practice by internal marketing
- Week 12 - Scheduling
- Week 13 - Establishing a fee schedule
- Week 14 - Billing and collections; dealing with insurance companies
- Week 15 - Establishing a prevention/motivation program
- Week 16 - Auxiliaries – hiring, training, staff meetings
- Week 17 - Inventory control

Week 18 - Office manual

Week 19 - Information necessary to evaluate a practice

Assignments and Due Dates: None

Methods and Dates of Student Evaluation: Class participation.

Teaching and Learning Methodologies: Seminar format

Course Texts, Recommended Reading, Material, and Resources: Handouts

OR 821.4 Non-Bracket Therapy

Course Instructor: Dr. Elif Keser

Office Hours: Sunday - Thursday 9:00 am to 4:00 pm

Credit Hours: 1 credit

Prerequisites: None

Co-requisites: None

Course Description: Invisalign: Diagnosis and treatment planning, record taking, impressions, management of Clincheck.

Intended Learning Outcomes: To be comfortable with the Invisalign technique upon graduation.

Course Topics and Content:

Week 1: Invisalign seminar – introduction and review
Weeks 2-5: Diagnosis and planning for Invisalign
Week 6: Invisalign impression taking
Week 7, 8: Management of Clincheck

Assignments and Due Dates: No assignments.

Methods and Dates of Student Evaluation: Cases are graded at the end of treatment.

Teaching and Learning Methodologies: Seminars, lab (taking impressions on each other) and clinic.

Course Texts, Recommended Reading, Material, and Resources:

- Handouts
- Text: The Invisalign System, Tuncay, Orhan C., Quintessence Publishing

OR 822 Surgical Orthodontics

Course Instructor:	Dr. Dietz
Office Hours:	By appointment or via e-mail
Credit Hours:	2
Prerequisites:	None
Co-requisites:	None

Course Description: Diagnosis, treatment planning, and treatment of dentofacial deformities. Emphasis is on differentiating skeletal from dental malocclusion and the application of orthodontic and surgical strategies for the most efficacious surgical-orthodontic patient care.

Intended Learning Outcomes: Overall, the student should be able to do the following by the end of the course:

- 1) Comprehensively diagnose and treatment plan any complex skeletal malocclusion.
- 2) Describe pre-surgery orthodontic management strategies for efficient preparation of the patient for surgery.
- 3) Describe post surgery orthodontic management strategies for efficient resolution of post-op malocclusion.
- 4) Defend the rationale for clinically managing the surgical-orthodontic patient on a biological basis.

Course Topics and Content:

Week 1 – Diagnosis

- Criteria for diagnosis
- Components of dentofacial imbalance
- Degree of severity; camouflage vs. surgery
- Non-surgical treatment potential for improvement

Week 2 - Treatment Planning

- Components
- Cephalometrics
- Surgical techniques and their effect on soft tissue
- Orthodontic treatment objectives
- Space analysis in surgical cases

Week 3 - Class Mandibular Advancement

- Differential diagnosis
- Characteristics
- Maxillary lip position and nasolabial angle
- Bite depth and face height considerations

- Extraction considerations
- Case presentations
- Week 4 - Vertical Maxillary Excess
 - Characteristics
 - Mandibular component
 - Role of incisor visibility
 - Rules for leveling
 - Case presentations
- Week 5 – Asymmetries
 - Etiology
 - Growth factor
 - Condylar considerations
 - Limitations
 - Case presentations
- Week 6 – Class III
 - Characteristics
 - Maxillary and mandibular considerations
 - Growth & timing of treatment
 - Case presentations
- Week 7 – Complications
- Week 8 - Review

Assignments and Due Dates: Class attendance and participation is required

Methods and Dates of Student Evaluation: Class participation; Exam

Teaching and Learning Methodologies: Power Point presentations

Course Texts, Recommended Reading, Material, and Resources:

- Surgical Orthodontics Department Monograph, Surgical Correction of Dentofacial Deformities, Bell, Proffit & White, W.B. Saunders, Philadelphia, 1980.
- Relevant literature from Department Reading List.

OR 911, 912, 913: Orthodontic Clinical Practice

Course Instructor: Dr. Elif Keser

Office Hours: Sunday – Thursday, 9:00 am to 4:00 pm

Credit Hours: 12 credits, 1st, 2nd, 3rd, 4th semester;
16 credits 5th and 6th semester.

Prerequisites: None

Co-requisites: None

Course Description: Supervised clinical practice in orthodontics and in outpatient orthodontic clinic. (Offered throughout the clinical training program.)

Intended Learning Outcomes: Overall, the student should be able to do the following by the end of the course:

- 1) Diagnose and treatment-plan any dental and/or skeletal malocclusion.
- 2) Describe orthodontic management strategies for efficient resolution of malocclusion.
- 3) Defend the rationale for clinically managing the orthodontic patient on a biological basis.

Course Topics and Content: This is the clinical portion of the orthodontic program. Students are assigned patients for orthodontic consultation, diagnosis and treatment. The Program Coordinator is responsible for patient assignment.

Assignments and Due Dates: Students are expected to be in the clinical facility on all assigned days. If a student has no assigned patient for a specific clinic session he or she is expected to assist a classmate in patient care.

Methods of Student Evaluation:

1. Clinical Evaluation of Students
2. Mock Phase-3 ABO Boards
3. Completed Cases
4. Assessment Examination

All faculty evaluate the students semi-annually. The final grade for each year will be based on the semi-annual faculty evaluations.

Teaching and Learning Methodologies: Mentored clinical patient care

Course Text, Recommended Reading, Material, and Resources: No required text for this course.

OR 920, 921 Seminar: Literature Review

Course Instructor: Dr. Elif Keser

Office Hours: Sunday – Thursday 9:00 am to 5:00 pm

Credit Hours: 6

Prerequisites: None

Co-requisites: None

Course Description: A weekly seminar concentrating on critical evaluation of current and classical orthodontic literature. Provides students with the foundation necessary to take the American Board of Orthodontics exam.

Intended Learning Outcomes: Overall, the student should be able to do the following by the end of the course:

1. To critically read orthodontic literature.
2. To appreciate how orthodontics has progressed in the areas of craniofacial growth and development and in the biomechanical principles used daily to accomplish the desired too movements.
3. To identify the biologic processes which influence orthodontics both in treatment planning and then in the accomplishment of the treatment.

Course Topics and Content:

Dental Arch Growth and Development

Normal changes;

Changes with: Lingual arch, Lip Bumper treatment, Functional appliances, RPE;

Serial extraction.

Mandibular Growth and Development

General morphologic changes;

Concept of rotation;

Role of the condyle in mandibular growth;

Functional matrix theory-skeletal and capsular matrices;

Mandibular orthopedics-functional appliances: Animal studies, Clinical studies, Timing of tx;

Chin cup therapy; Timing of treatment.

Maxillary Growth and Development

General morphologic changes;

Role of the sutures and nasal septum;
Maxillary rotation;
Maxillary orthopedics: Headgears, Timing of treatment, Maxillary protraction, Timing of tx.

Changes in Facial Topography During Growth

Differential growth and its effects on facial form;
Facial pattern changes during growth;
Growth prediction.

Breathing Pattern and Facial Growth

Growth of the nasopharynx and lymphoid tissues;
Normal breathing pattern and method" to identify breathing patterns -Adenoid facies;
Head posture and breathing pattern;
Post adenoidectomy changes in facial growth.

Excess Vertical Dimension - Open Bites

Characteristics of hyperdivergent patterns;
Open bites;
ODI index;
Epidemiology: Incidence of pain, Clicks, Diagnosis and etiology, Intracapsular problems, Extracapsular problems.
Treatment of open bites: Magnets (AVC), Bite blocks, Vertical pull chin cup, TMD;
Treatment and success rates: Pain, Disc displacements;
Relationship of TMD and occlusion;
Relationship of TMD and orthodontic treatment.

Tooth Movement

Bone and ligament bio-dynamics;
Tissue changes incident to tooth movement: Bone, Ligament, Gingiva;
Molecular biology of tooth movement: Endocrine, nervous and immune system reactions;
Pharmacologic agents and tooth movement;
Root resorption.

Forces and Techniques

Forces, moments and M/F ratios;
Optimal force theory;
Friction and tooth movement;
Sectional arch technique;
Tweed technique;
Straight wire;
Ricketts technique;
Tip edge technique.

Muscle

Force magnitudes generated by the periooral muscles and tongue;

Adaptability of muscle;
Tongue thrust swallow and treatment;
Habits and treatment.

Soft Tissue

Growth and development of facial soft tissues;
Age changes in facial soft tissues;
Soft tissue changes and extraction treatment;
Soft tissue changes and non extraction treatment;
Soft tissue changes after surgical treatment.

Retention

Retention protocols and retention periods;
Fixed and removable retainers;
Relapse of: Lower arch crowding, Overjet, overbite, Class II molar correction;
Rotation correction with and without fiberotomy;
Predictors of relapse;
Relationship between 3rd molars and lower incisor crowding.

Assignments and Due Dates: Seminar leaders are assigned for each topic. Articles are assigned to students by topic on a rotating basis. Appropriate articles are reviewed and critiqued at the seminars. Seminar leaders are required to compile summaries of the topics and articles discussed.

Methods and Dates of Student Evaluation: Class participation.

Teaching and Learning Methodologies: Seminar format.

Course Texts, Recommended Reading, Material, and Resources: Periodical literature as per the Department of Orthodontics Reading List.

OR 990, 991, 992: Research: Orthodontics

Course Instructor:	Dr. Elif Keser / Faculty
Office Hours:	Sunday – Thursday, 9:00am to 4:00 pm.
Credit Hours:	6 credits 1st, 2nd, 3rd, 4th semester; 8 credits 5th and 6th semester.
Prerequisites:	None
Co-requisites:	None

Course Description: The Orthodontic CAGS/MSD program requires a research project be completed during the training program. The CAGS/MSD program research is guided by faculty and entails a critical review of the literature, developing a hypothesis, statistical analysis and interpretation of data. A written research paper partially satisfies requirements for the CAGS/MSD.

Intended Learning Outcomes: Overall, the student should be able to do the following by the end of the course:

1. Identify a research problem
2. Review pertinent scientific literature related to the problem
3. Write a research protocol
4. Design a research project
5. Collect data that can be objectively analyzed
6. Analyze data and interpret the statistical results
7. Report the research in a written paper

Course Topics and Content:

1. Choosing a Topic
2. Reviewing the Literature
3. Writing a Research Proposal
4. Research Design
5. Collecting Data
6. Analyzing Data
7. Writing in Research
8. The Final Draft

Assignments and Due Dates: There are no specific assignments. However it is generally expected that the student will have developed a research topic and done a literature review by the end of the first year, made substantial progress on the research by the end of the second year and have written and defended a thesis by April of the third year.

Methods and Dates of Student Evaluations: The student will meet with the research advisor on a regular basis to seek guidance and to review progress. The advisor will submit a grade annually based on student progress and comprehension of the material.

Teaching and Learning Methodologies: The accomplishment of a research project is highly individualized and methods will vary. Research seminars and periodic meetings with the research advisor will be a part of the learning process.

