

2011 Orthodontic Technique Lab Course Overview

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Purpose

The Orthodontic Technique Lab Course is the introductory level for the first year orthodontic resident. It is designed to develop technical skills necessary for clinical and laboratory procedures. Also, this course provides knowledge of laboratory devices that can be used in conjunction with fixed orthodontic mechanics.

Assignments & Goals

- **Introductory Session:** Designed to introduce first year residents to orthodontic appliances and tour a local commercial laboratory - Great Lakes Orthodontics, Ltd., 200 Cooper Avenue, Tonawanda, NY 14150.
Goals: Understand lab fabrication procedures and importance of information sent for appliance construction.
- **Diagnostic Study Models:** Students are introduced to the clinic and guided through impression taking techniques. Each student requires one high-quality impression. The impression will be used for fabrication of an orthodontic study model that meets ABO standards. Digital models, such as Cadent (OrthoCad) or GeoDigm (emodel) will be briefly reviewed.
Goals: Identify proper impression taking techniques, study model construction procedures, and become familiar with model imaging programs.
- **Laboratory Wirebending Exercises:** Overview of wires and pliers used in the field will take place. Then four drawn pattern designs to initially teach students proper wirebending skills are used. Primarily three lab pliers are used; three prongs, #134 or bird beak, and Jarabak pliers. Students are required to recreate paper pattern forms that meet high standards of instructor. Next, two model exercises are performed to train the resident wire adaptation along a three dimensional surface. Models include snowman model shape and maxillary model for scallop exercise.
Goals: Students are required to recreate wire exercise forms that meet high standards of the instructor.
- **Utility Arch Wirebending Exercises:** Square or rectangular wire is used to recreate three common utility arch paper patterns. Students are required to recreate pattern forms that meet high standards of instructor. Then each student using a dental cast forms a passive utility arch.
Goals: Become familiar with instruments and materials, improve manual dexterity skills, and understand proper wire bending techniques using square or rectangular wire.
- **Indirect Bonding Trays:** Students are instructed to place brackets on upper and lower casts. Dual Biostar/Ministar tray system will be made over both arches. Clinical procedure involving the indirect bonding technique will be reviewed.
Goals: Learn array of bracket designs, bracket positioning for each tooth, fabrication of the transfer tray design, and clinical process of indirect bonding.
- **Retainers & Active Plates:** Detailed instruction of appliance designs, maintenance, and components will be reviewed. Hands-on guidance of wire clasps, labial bows, springs, screw placement, acrylic procedures, trimming and finishing will take place. All students will complete the following appliances:
 - Invisible/Essix Retainer with tooth reset
 - Retainer Plate with Central Incisor Pontic and Arrow Clasps
 - Wraparound Retainer with S-Z Springs
 - ACCO/Cetlin Molar Distalizer
 - Maxillary Soldered Bow to C-Clasps with Anterior Finger Springs
 - Maxillary Schwarz Plate
 - Mandibular Schwarz Plate**Goals:** Learn array of removable plate designs available, fabrication procedures, how they are adjusted, and treatment management of devices.



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- **Orthodontic Soldering Exercises:** A review of soldering materials will occur. Students are required to complete five paper pattern exercises. Completion of all exercises is based on high quality standards of instructor. Then optional participation of miscellaneous soldered auxiliaries used for removable plates, including:
 - Soldered Finger Spring to Labial Bow
 - Lingual Push Springs to Labial Bow
 - Elastic Hooks on Labial Bow
 - C-Clasp to Hawley Labial Bow
 - Labial Bow Soldered to Adams Clasp
 - Labial Bow Soldered to C-Clasps (required for active plate)

Goals: Become familiar with instruments, equipment and materials, improve manual dexterity skills, and understand proper soldering techniques.
- **Soldered/Fixed Appliances:** An array of fixed orthodontic lab appliances will be reviewed as well as required student hands-on fabrication of:
 - Mandibular 3x3 Bonded Lingual Retainer with transfer tray
 - Mandibular 6x6 Lingual Arch
 - Removable Transpalatal Arch (TPA)
 - Quadhelix Expander
 - Molar Distalizing Appliance - ½ Pendulum, ½ Distal Jet
 - Haas RME
 - Hygienic RME (to be included with Cantilever Herbst)

Goals: Learn proper band placement techniques, become familiar with commonly used fixed lab appliances, and understand fabrication procedures.
- **Functional Jaw Orthopedic Devices:** Many lab appliances may be used to treat Class II and Class III malocclusions. These appliances will be discussed as well as hands-on fabrication of a Cantilever Herbst appliance to instructor's standards is required by students.

Goals: Become familiar with array of appliances used for treatment of these malocclusions, construction bite technique, and the fabrication process of a Cantilever Herbst appliance.
- **Tooth Positioners:** Tooth Positioners and Elastodontic appliances will be reviewed.

Goals: Understand state-of-the-art gnathologic tooth positioning concepts and diagnostic set-up requirements for appliance fabrication. Also, they will learn the array of appliance designs.
- **Gnathologic Articulator Mounting & Occlusal Splints:** Facebow and CR bite records will be demonstrated as well as models mounted to the SAM articulator. Commonly used occlusal splint appliances will be reviewed.

Goals: Ability to work with gnathologic articulator system, learn CR and CO bite registration techniques, and variety and use of occlusal splints.
- **Athletic Mouthguards:** Discussion of pressure laminated mouthguard designs will be reviewed. Students are required to fabricate dual laminate mouthguard over orthodontic brackets.

Goals: Learn variety of designs and fabrication procedures using pressure-molding machines.

Evaluation/Grading Process:

Projects are categorized by exercise type or appliance design (see Orthodontic Lab Course - Assignment Grading Form). The categorized projects are subdivided into parts that will be evaluated and graded by the instructor. The average of the graded parts will represent that project grade. The final grade is determined by the average of all projects (in right side box). Grades are as follows for subdivided parts of each project: A = 4pts, B = 3pts, C = 2pts, D = 1pt, F = 0. Final grade point average is: A = 4.0-3.75, A- = <3.75-3.5, B+ = <3.5-3.15, B = <3.15-2.85, B- = <2.85-2.5, C+ = <2.5-2.15, C = <2.15-1.85, C- = <1.85-1.5, D = <1.5-0.75, F = <0.75-0.

Course Schedule: Refer to 2010 Course Schedule Pdf

