

# DLT 119 Wrought-Ortho Appliances

## COURSE DESCRIPTION:

Prerequisites: DLT-114

Corequisites: None

This course introduces techniques for fabricating removable wrought and orthodontic/pedodontic appliances. Topics include wrought clasps, archwires, orthodontic clasps, orthodontic acrylic, soldering, fabrication, and repair of orthodontic restorations. Upon completion, students should be able to fabricate removable wrought-orthodontic appliances following the dental prescription. Course Hours Per Week: Class, 1. Lab, 9. Semester Hours Credit, 4.

## LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

1. Practice proper infection control procedures.
2. Define terms associated with wrought materials.
3. Identify and locate anatomical landmarks of the oral cavity.
4. Identify materials used in fabricating wrought restorations.
5. Differentiate between ideal, normal and malocclusions.
6. Describe different types of orthodontic appliances and their categorization.
7. Demonstrate an understanding of orthodontic design principles and fabrication procedures.
8. Interpret dental prescriptions for orthodontic appliances.
9. Describe the procedure for orthodontic soldering and welding.
10. Form wrought wire clasps with soldered rests and lugs.
11. Fabricate a plastic orthodontic appliance that includes various types of orthodontic clasps.
12. Perform orthodontic soldering and welding procedures.
13. Fabricate an orthodontic maxillary holding appliance.
14. Fabricate an orthodontic removable lingual arch.
15. Fabricate an orthodontic habit appliance.
16. Outline the steps necessary for repairing orthodontic appliances.
17. Repair a broken orthodontic clasp.
18. Pour and trim orthodontic casts.
19. Research a specific orthodontic appliance and provide a written document and oral presentation.

## OUTLINE OF INSTRUCTION:

- I. Diseases that may be contracted in the dental laboratory
  - a. Lecture: review of infection control
    - i. Presentation
      1. Types of diseases that may be contracted
      2. Various methods that can be taken to reduce the risk of disease
  - b. References:
    - i. Infection Control in the Dental Laboratory – R.R. Runnels
    - ii. NADL – Infection Control program
- II. Wrought wire clasp fabrication
  - a. Lecture:
    - i. Presentation
      1. Define

- a. Wrought metals
    - b. Stress
    - c. Strain
    - d. Elastic limit
  - 2. Advantages of wrought wire clasps
  - 3. Disadvantages of wrought wire clasps
  - 4. Survey and design considerations
  - 5. Contouring the clasp wire
- b. Application
  - i. Demonstration:
    - 1. Technique for contouring wrought clasps
    - 2. Technique for safely cutting wrought wire C.
- c. References:
  - i. Handout, pp. 319-322
  - ii. Laboratory and Clinical Dental Materials. Pp. 130, 131, 139-141
  - iii. Dental Laboratory Technology. Basic Sciences. USAF, Vol. I, pages 35-38, 44, 46

### III. Forming the rest and lug and finishing and polishing the clasp

- a. Lecture:
  - i. Presentation
    - 1. Adapting foil to a rest preparation
    - 2. The lug
    - 3. Assembling the clasp components
    - 4. Investing the assembled clasp
    - 5. Soldering the clasp
      - a. Cardinal rules for soldering
      - b. Requisites for a dental solder
      - c. Procedures for soldering
      - d. Finishing and polishing the soldered clasp
- b. Application
  - i. Demonstration:
    - 1. Adapting foil to rest preparations
    - 2. Forming the lug
    - 3. Assembling the clasp components
    - 4. Investing the assembled clasp
    - 5. Soldering the clasp
    - 6. Finishing and polishing the clasp
- c. Reference: Handout, pp. 326-331

### IV. Wrought wire partial dentures

- a. Lecture:
  - i. Presentation
    - 1. General considerations for wrought clasps
    - 2. Principles of the wrought clasp
    - 3. Procedures for fabrication
- b. Application
  - 1. Demonstration:
    - a. Forming the wrought wire clasp component
    - b. Finishing and polishing the wrought clasps
- c. Reference:
  - i. Handout, pp. 335-339
  - ii. Dental Laboratory Technology, Removable Prosthodontics. USAF. Vol. II, pages

V. Electric soldering unit

- a. Lecture:
  - i. Presentation
    - 1. Principles of electric soldering
    - 2. Cardinal rules for electric soldering
    - 3. Operating procedures for the electric soldering unit
    - 4. Electric soldering the clasp and strengthen bar
- b. Application
  - i. Demonstration:
    - 1. Operating procedures for the electric soldering unit 2) Soldering the lingual bar.
- c. References:
  - i. Handout, Ticonium Form 771-A
  - ii. Handout, pp. 331-338

VI. Orthodontics – introduction and case studies

- a. Lecture:
  - i. Presentation
    - 1. Ideal occlusion
    - 2. Normal occlusion
    - 3. Malocclusion
    - 4. Case studies
    - 5. Dental prescriptions
- b. Application
  - i. No demonstration due to nature of subject matter
- c. References:
  - i. Construction and Repair of Ortho/Pedo Appliances. pp. 1-20.

VII. Orthodontics – the labial and lingual practice archwire (.020)

- a. Lecture:
  - i. Presentation
    - 1. Fundamentals of orthodontic wire bending
    - 2. Contouring Demonstration:
    - 3. Designing
    - 4. Contouring
- b. References:
  - i. Construction and Repair of Ortho/Pedo Appliances. pp. 21-27

VIII. Orthodontics – the circumferential clasp, the Adams clasp, the ball clasp, the labial bow and the Z spring

- a. Lecture:
  - i. Presentation
    - 1. The circumferential clasp (.032)
    - 2. The Adams clasp (.026)
    - 3. The ball clasp (.032)
    - 4. The labial bow (.030)
    - 5. The Z spring (.020)
- b. Application
  - i. Demonstration:
    - 1. Designing

2. Contouring

c. References:

- i. Construction and Repair of Ortho/Pedo Appliances. pp. 28-37

IX. Orthodontics – maxillary removable plastic appliance

a. Lecture:

i. Presentation

1. The orthodontic prescription
2. Positioning the clasps
3. The plastic build-up

b. Application

c. Demonstration:

- i. Assembling the clasps on the cast
- ii. The plastic build-up
- iii. Finishing and polishing

X. References:

- a. Construction and Repair of Ortho/Pedo Appliances. Pp. 50-56

XI. Orthodontics – removable lingual arch

a. Lecture:

i. Presentation

1. The orthodontic electrowelding machine
2. Electrowelding techniques
3. Welding vertical tubes onto molar bands
4. Purpose for the removable lingual arch
5. Contouring the lingual arch wire
6. Soldering the lock wire

b. Application

i. Demonstration:

1. Proper use of the electrowelding machine
2. Contouring the lingual arch wire
3. Soldering the lock wire

c. Reference:

- i. Construction and Repair of Ortho/Pedo Appliances. pp. 46-49 and 66-71.

XII. Orthodontics – the maxillary lingual holding appliance

a. Lecture:

i. Presentation

1. Purpose for a holding appliance
2. Designing a maxillary holding appliance
3. Contouring the palatal wires
4. Stabilizing the wires for soldering
5. Soldering the wires
6. Forming the plastic button
7. Cleaning the solder joints

b. Application

i. Demonstration:

1. Designing the holding appliance
2. Contouring the palatal wires
3. Stabilizing the wires
4. Soldering the wires
5. Forming the plastic button

6. Cleaning the solder joints

c. Reference:

- i. Construction and Repair of Ortho/Pedo Appliances. pp. 57-61

XIII. Orthodontics – the habit appliance

a. Lecture:

i. Presentation

1. Purpose for habit appliances
2. Designing the maxillary habit appliance
3. Contouring the palatal wires
4. Stabilizing the palatal wires
5. Soldering the wires
6. Cleaning and polishing the appliance

b. Application

c. Demonstration:

- i. Designing the habit appliance
- ii. Contouring the palatal wires
- iii. Stabilizing the wires
- iv. Soldering the wires
- v. Cleaning and polishing the appliance

d. Reference:

- i. Construction and Repair of Ortho/Pedo Appliances. pp. 72-75

XIV. Orthodontics – repairing a broken clasp on a maxillary plastic appliance

a. Lecture:

i. Presentation

1. Pouring the cast
2. Forming the clasp
3. Removing the embedded clasp
4. Applying the resin
5. Finishing and polishing the appliance

b. Application

i. Demonstration:

1. Removing the embedded clasp
2. Applying the resin
3. Finishing and polishing the repaired appliance

c. Reference:

- i. Construction and Repair of Ortho/Pedo Appliances. pp. 79-81

**REQUIRED TEXTBOOK AND MATERIAL:**

1. Laboratory and Clinical Dental Materials. University of North Carolina Press.
2. Dental Laboratory Technology. Air Force Manual, Volume I and Volume II. U. S. Government Printing Office, Washington, DC, 2009.
3. Johnson, Patrick, Stokes, Wildgoose and Wood. Basics of Dental Technology: A Step by Step Approach 2<sup>nd</sup> Edition. 2011

**SUGGESTED REFERENCES:**

1. Martinelli. Dental Laboratory Technology. 2<sup>nd</sup> ed. C. V. Mosby Co.
2. Anderson. Practical Orthodontics. 9<sup>th</sup> ed. C. V. Mosby Co.
3. Graber. Current Orthodontic Concepts and Techniques. Volume II. W. B. Saunders.

4. Graber. Orthodontics. 2<sup>nd</sup> ed. W. B. Saunders.
1. Hoge. The Orthodontic Appliance & Reference Manual
  - (a) McIver, James. A Course for Dental Technicians in the Construction and Repair of Orthodontic and Pedodontic Appliances.