DLT 123
CROWN AND BRIDGE

COURSE DESCRIPTION:

Prerequisites: DLT 111 and DLT 114
Corequisites: None

This course introduces techniques for fabricating cast gold restorations. Topics include infection control, pouring impressions with removable dies, trimming margins, articulating, waxing of single and multiple units, overdenture copings, soldering, and principles of occlusion. Upon completion, students should be able to fabricate single and multiple unit cast gold fixed restorations. Course Hours Per Week: Class, 2. Lab, 12. Semester Hours Credit, 6.

LEARNING OUTCOMES:

The student will:

a. Explain procedures for infection control.
b. Explain procedures for cast crowns and inlays.
c. Analyze impressions for accuracy or imperfections.
d. Pour up impressions.
e. Make removable dies.
f. Examine and identify margins.
g. Trim and mark margins.
h. Demonstrate an understanding of occlusion.
i. Articulate casts.
j. Incorporate principles of occlusion.
k. Identify material used in fabricating crowns and bridges.
l. Form wax inlays, crowns. And hader bar.
m. Sprue wax patterns.
n. Invest wax patterns.
o. Burn-out wax patterns.
p. Cast gold alloy.
q. Finish and polish gold castings.
r. Construct casts and dies for multiple unit restorations.
s. Explain the process for fabricating bridgework.
t. Form wax patterns for multiple restorations that include various pontic forms.
u. Describe the procedure for soldering crowns and bridges.
v. Join fixed bridge units by soldering.
w. Seat cast restorations on respective dies and adjust occlusion.

OUTLINE OF INSTRUCTION:

I. Diseases that may be contracted in the dental laboratory
- A. Lecture - review of infection control
  - 1) Presentation
    - (a.) Types of diseases that may be contracted
    - (b.) Various methods that can be taken to reduce the risk of disease
  - 2) Application
- B. References
  - 1) Infection Control in the Dental Laboratory - R.R. Runnels
  - 2) NADL – Infection Control Program

II. Occlusion
- A. Principles of occlusion
- B. Determinants of occlusal morphology and physiology
- C. Physiology of the mandibular movements as they relate to the fabrication of dental restorations
- D. References
  - 1) Air Force Manual 162-6 Vol. III
    - (a.) Pages 49-61
  - 2) UNC Fixed Restorative
    - (a.) Pages 91-102, pages 102-111
  - 3) UNC Dental Anatomy
    - (a.) Pages 84-95

III. Fundamentals of tooth preparations and pouring impressions
- A. Classroom lecture - one hour
  - 1) Presentation
    - (a.) Types of preparations
    - (b.) Types of margins
    - (c.) Types of impressions
    - (d.) Removable dies
    - (e.) Materials used
    - (f.) Procedures (including articulating casts and occlusal restorations)
  - 2) Application
- B. Laboratory demonstration - two hours
  - 1) Procedures for pouring an accurate impression
  - 2) Procedures for placing dowel pins for individual dies
  - 3) Articulating master casts in plan line articulator
- C. References
  - 1) Fixed Restorative Techniques
  - 2) Air Force Manual, pages 8-10, 21-27, 33-36

IV. Fundamental for making indirect wax patterns
- A. Classroom lecture - one hour
  - 1) Presentation
    - (a.) Purpose for wax patterns
    - (b.) Stress and distortion in wax patterns
    - (c.) Care of wax patterns
    - (d.) Procedures for waxing indirect

2) Application
B. Laboratory demonstration - two hours
1) Procedures for trimming dies
2) Forming the wax patterns
(a.) Standard wax-up procedure
(b.) Drop wax technique
3) Care of wax patterns
C. References
1) Fixed Restorative Techniques, UNC
2) Air Force Manual, pages 45-57

V. Fundamentals of spruing and preparation for investing
A. Classroom lecture - one hour
1) Presentation
(a.) Objective of casting
(b.) Spruing
(c.) Location of pattern in casting ring
(d.) Lining the casting ring
2) Application
B. Laboratory demonstration - two hours
1) Steps and procedures for spruing
2) Location of patterns in ring
3) Placement of liners in ring
C. References
1) Fixed Restorative Techniques, UNC
2) Air Force Manual, pages 62-68

VI. Fundamentals of investing
A. Classroom lecture - one hour
1) Presentation
(a.) Investments
(b.) Types of Expansion
2) Application
B. Laboratory demonstration - two hours
1) Investment procedures
2) Materials and equipment used
C. References
1) Fixed Restorative Techniques, UNC
2) Air Force Manual, pages 69-71

VII. Fundamentals of burnout, casting, finishing, and polishing inlays and crowns
A. Classroom lecture - two hours
1) Presentation
(a.) Burnout
(b.) Melting gold alloy
(c.) Casting
(d.) Cleaning and heat treatment of gold alloy
(e.) Finishing and polishing the casting
2) Application

B. Laboratory demonstration - two hours
   1) Preparing mold the burnout
   2) Burnout
   3) Melting gold alloy
   4) Casting
   5) Finishing and polishing
C. References
   1) Fixed Restorative Techniques, UNC, pages 167-178
   2) Air Force Manual, pages 71-78

VIII. Introduction to cast bridgework
A. Classroom lecture
   1) Presentation
      (a.) Definition
      (b.) Objectives
      (c.) Responsibilities
      (d.) Components
      (e.) Materials
      (f.) Equipment
      (g.) Fabrication
   2) Application
B. Laboratory demonstration
   1) Equipment
   2) Safety procedures
C. References
   1) Fixed Restorative Techniques, UNC
   2) Dental Laboratory Technology, USAF
   3) Handouts

IX. Pontic design
A. Classroom lecture
   1) Presentation
      (a.) Types of pontics
      (b.) Description and use of each
      (c.) Materials used
      (d.) How to establish embrasures with abutments
   2) Application
B. References
   1) Fixed Restorative Techniques, UNC, pages 19-20
   2) Dental Laboratory Technology, USAF, pages 79-86

X. Waxing bridge with pontic
A. Classroom lecture
   1) Presentation
      (a.) Recognizing path of insertion
      (b.) Relieving ridge
      (c.) Types of pontics
      (d.) Determining contour, occlusion
      (e.) Wax abutments, pontics
      (f.) Join bridge components, connectors

(g.) Relieving stress before spruing
2) Application

B. Laboratory demonstration
1) Wax-up, pontic
2) Connecting pontic
3) Relieving stress

C. References
1) Fixed Restorative Techniques, UNC, pages 243-252
2) Dental Labroatry Technology, USAF, pages 80-85

XI. Spruing and investing

A. Classroom lecture
1) Presentation
(a.) Sprue location and number
(b.) Use of plastic and wax sprues
(c.) Prevention of induced stress
(d.) Investing (hygroscopic technique) vacuum investor
(e.) Burn-out
2) Application

B. Laboratory demonstration
1) Spruing
2) Hygroscopic investing using the Whip Mix Vacuum Investor

C. References
1) Fixed Restorative Techniques, UNC, pages 149-165
2) Dental Laboratory Technology, USAF, pages 62-75

XII. Finishing and polishing

A. Classroom lecture
1) Presentation
(a.) Sprue cut-off
(b.) Grind sprue area
(c.) Fit abutments
(d.) Fit bridge
(e.) Fit contact area
(f.) Rubber wheel - polish
(g.) Final polish
2) Application

B. Laboratory demonstration
1) Cut-off sprue
2) Fit abutments
3) Fit bridge
4) Contacts
5) Finishing and polishing

C. References
1) Fixed Restorative Techniques, UNC, pages 181-196
2) Dental Laboratory Technology, USAF, pages 74-79

XIII. Soldering

A. Classroom lecture
1) Presentation

(a.) Applications
(b.) Preparation
(c.) Matrix-stone or plastic transfer
(d.) Investing
(e.) Wax removal
(f.) Preheat investment
(g.) Soldering units or holes or contacts
(h.) Finish-polish

2) Application

B. Laboratory demonstration
1) Position components
2) Investing - wax removal
3) Soldering

C. References
1) Fixed Restorative Techniques, UNC, pages 197-212
2) Dental Laboratory Technology, USAF, pages 84-93

REQUIRED TEXTBOOKS AND MATERIALS:

Dental Laboratory Technology. Department of the Air Force. Air Force Manual 162-6. 1991.
Sowter, J. Fixed Restorative Techniques. University of North Carolina.
Various Handouts
Student Instrument Kit (Durham Tech)
One ounce Type III gold alloy

SUGGESTED REFERENCES:

NADL, Journal of Dental Technology
Mosby, Journal of Prosthetic Dentistry

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 919-536-7207, ext. 1413 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1209.