

DLT 217
CERAMIC TECHNIQUES

COURSE DESCRIPTION:

Prerequisites: DLT 126

Corequisites: None

This course includes the physical properties of metals and ceramics as well as the fabrication of porcelain fused to metal crowns, including porcelain shoulder margins. Emphasis is on infection control, model and die fabrication, metal substructure fabrication, build up, firing, and finishing of ceramic crowns. Upon completion, students should be able to complete single unit ceramic crowns. Course Hours Per Week: Class, 2. Lab, 9. Semester Hours Credit, 5.

LEARNING OUTCOMES:

The student will:

- a. Practice proper infection control procedures.
- b. Distinguish the different anatomic landmarks of the adult dentition.
- c. Show an understanding of the materials used during the manufacturing of a porcelain restoration.
- d. Demonstrate familiarity with the fabrication processes used in dental ceramics.
- e. Identify tooth preparations and types of margins for porcelain fused to metal crowns.
- f. Fabricate model and die.
- g. Apply principles of occlusion in the construction of porcelain restorations.
- h. Articulate models.
- i. Block out undercuts and trim dies.
- j. Form wax patterns for single copings for porcelain fused to metal substructure.
- k. Sprue and invest wax copings.
- l. Burn-out, cast, and finish metal copings.
- m. Apply The Color Theory to the characterization of ceramic restorations
- n. Degass and opaque metal copings.
- o. Complete porcelain build up on metal substructure.
- p. Fire porcelain.
- q. Grind to shape the fired crown.
- r. Glaze the porcelain restoration.
- s. Finish and polish metal portion of the crown.

OUTLINE OF INSTRUCTION:

- I. Introduction to porcelain fused to metal restorations
 - A. Classroom lecture
 - 1.) Presentation
 - (a.) Definitions

- (b.) Objectives
 - (c.) Model and die review
 - 2.) Application
 - B. Diseases that may be contracted in the dental laboratory
 - 1.) Lecture - review of infection control
 - (a.) Types of diseases that may be contracted
 - (b.) Various methods that can be taken to reduce the risk of disease
 - C. Reference:
 - 1.) Infection Control in the Dental Laboratory - R.R. Runnels
 - 2.) NADL_– Infection control program
 - 3.) Handout
- II. Tooth preparations and wax copings for porcelain crown restorations
- A. Classroom lecture
 - 1.) Presentation
 - (a.) Preparation procedures
 - (b.) Types of margins
 - (c.) Space needed for crown
 - (d.) Blocking out undercuts
 - (e.) Trimming dies
 - 2.) Application
 - B. Laboratory demonstration
 - 1.) Blocking out undercuts
 - 2.) Trimming the dies
 - C. Reference: Dental Laboratory Technology, USAF, Volume III, page 33-36
- III. The substructure wax-up, spruing and investing
- A. Classroom lecture
 - 1.) Presentation
 - (a.) Methods of waxing single copings
 - (b.) Spruing techniques
 - (c.) Investing procedures
- Application
- B. Laboratory demonstration
 - 1.) The wax-up
 - 2.) Spruing techniques
 - 3.) Investing single units
 - C. References
 - 1.) Dental Laboratory Technology, USAF, Volume III, pages 107-117
- IV. Burnout, casting and finishing
- A. Classroom lecture
 - 1.) Presentation
 - (a.) Burnout
 - (b.) Casting procedure
 - (c.) Devesting and finishing

- B. Laboratory demonstration
 - 1.) Burnout and casting
 - 2.) Devesting and finishing
 - C. References
 - 1.) Dental Laboratory Technology, USAF, Volume III, pages 118-122
- V. Porcelain build up
- A. Classroom lecture
 - 1.) Presentation
 - (a.) Metal conditioning
 - (b.) Applying opaque
 - (c.) Firing the opaque
 - (d.) Applying body porcelain
 - (e.) Cutting and applying incisal porcelain
 - (f.) Firing the crown
 - (g.) Grinding and finishing porcelain crown
 - (h.) Preparing for the glazing bake
 - 2.) Application
 - B. Laboratory demonstration
 - 1.) Degassing coping
 - 2.) Opaque coping
 - 3.) Building porcelain
 - 4.) Firing the crown
 - 5.) Grinding in of crown
 - 6.) Prepare crown for glaze
 - (a.) References: Dental laboratory Technology, USAF, Vol. III pages 122-144
- VI. Finishing and polishing metal collar
- A. Classroom lecture
 - 1.) Presentation
 - (a.) Rubber wheel metal
 - (b.) High shine
 - 2.) Application
 - B. Laboratory demonstration
 - 1.) Rubber wheel
 - 2.) High shine
- VII. Occlusion
- A. Lecture
 - 1.) Review principles of occlusion and determinants of occlusal morphology and physiology
 - 2.) Physiology of mandibular movements as they relate to the fabrication of dental restorations

B. References:

- 1.) Air Force Manual 162-6, Vol. III
- 2.) Pages 49-61
- 3.) UNC Fixed Restorative section 9

REQUIRED TEXTBOOKS AND MATERIALS:

Introduction to Metal Ceramic Technology, Naylor

All equipment in the dental lab kit (in good shape)

Required porcelain equipment

Dental Laboratory Technology, Department of Air Force, Volume III, 1991.

Technical Handouts provided by course requirements.

SUGGESTED REFERENCES:

NADL, Journal of Dental Technology

Mosby, The Journal of Prosthetic Dentistry

Montage, Practical Periodontics & Aesthetic 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 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.