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Dental Hygiene (DNLT) 2132 Dental Materials (2 Units) CSU
[formerly Dental Hygiene 32]

Prerequisite: Successful completion of all first and second semester Dental Hygiene Program courses with a grade of “C” or better

Advisory: None

Total Hours: 32 hours lecture; 11 hours lab 64 Outside of Class hours.(107 Total Student Learning Hours).

Catalog Description: This course provides an in-depth exploration of the composition, properties, and application of various dental materials, with a focus on their impact on dental hygiene procedures and overall oral health. It will emphasize materials utilized by registered dental hygienists, with attention to how these materials can support diverse patient needs and promote equitable care in dental practices.

Type of Class/Course: Degree Credit

Text: Eakle and Bastin, *Dental Materials - Clinical Applications for Dental Assistants and Dental Hygienists*, 4th Edition, Elsevier, 2021 Print.

Additional Required Materials: None

Course Objectives and Goals:

By the end of the course, a successful student will be able to:

1. understand the basic physical properties of dental restorative materials and the rationale and effectiveness of their use,
2. understand the relationship between dental materials and the oral environment,
3. demonstrate the ability to mix alginate impression materials to proper consistency within the working time,
4. take an accurate alginate impression pour a suitable model and fabricate a set of functional bleaching trays,
5. describe the indications for the use of glass ionomer as an interim therapeutic restorative material,
6. fabricate and place a provisional restorations on a prepared typodont tooth,
7. discuss dental resins and their uses in dentistry,

8. discuss the indications/contraindications in the placement of interim therapeutic restorations.

DNTL2132 Dental Materials - Student Learning Outcomes (SLO's)
1. Understand basic properties of dental restorative materials and the rationale for their use.
2. Demonstrate the technique for taking an alginate impression and fabrication of bleaching trays.
3. Place a pit and fissure sealant material for the purpose of caries prevention

Course Scope and Content: (Lecture)

- Unit I Introduction to Dental Materials
 - A. Role of the Allied Oral Health Practitioner and Dental Materials
 - B. Evidence-Based Decision Making
 - C. Historical Development of Dental Materials
 - D. Agencies Responsible for Standards

- Unit II Oral Environment and Patient Considerations
 - A. Biocompatibility
 - B. Biomechanics
 - C. Force and Stress
 - D. Moisture and Acid Levels
 - E. Galvanism
 - F. Temperature
 - G. Retention
 - H. Microleakage
 - I. Esthetics
 - J. Detection of Restorative Materials

- Unit III Physical Properties of Dental Materials
 - A. Physical Structure
 - B. Application
 - C. Composition
 - D. Reaction
 - E. Manipulation

- Unit IV General Handling and Safety
 - A. Materials Hazards in the Dental Environment
 - B. Chemical Safety in the Dental Office
 - C. Acute and Chronic Chemical Toxicity
 - D. Personal Chemical Protection
 - E. Control of Chemical Spills
 - F. General Precautions for Storing Chemicals

- G. Disposal of Chemicals
 - H. Occupational Safety and Health Administration (OSHA) Hazard Communication Standard
 - I. Bio-Aerosols in the Dental Setting
 - J. Patient Safety
- Unit V Principles of Bonding
- A. Basic Principles of Bonding
 - B. Clinical Applications of Bonding
- Unit VI Composites, Glass Ionomers and Compomers
- A. Composite Resin and Other Direct-Placement Esthetic Restorative Materials
 - B. Indirect-Placement Esthetic Restorative Materials
- Unit VII Preventive and Bleaching Materials
- A. Fluoride
 - B. Pit and Fissure Sealants
 - C. Desensitizing Agents
 - D. Sports Guards and Bruxism Guards (Splints)
 - E. Teeth Bleaching
- Unit VIII Dental Ceramics
- A. Dental Ceramics (Porcelain)
 - B. Shade Taking
- Unit IX Dental Amalgam
- A. Composition
 - B. Properties
 - C. Utilization
- Unit X Casting Metals, Solders, Wrought Metal Alloys
- A. Casting Alloys
 - B. Solders
 - C. Wrought Metal Alloys
 - D. Metals Used in Orthodontics
 - E. Endodontic Posts
- Unit XI Dental Implants
- A. Implant Materials
 - B. Types and Utilization
- Unit XII Abrasion, Finishing and Polishing
- A. Finishing and Polishing
 - B. Finishing and Polishing Procedures
 - C. Polishing During an Oral Prophylaxis (Coronal Polish)
 - D. Safety/Infection Control
 - E. Patient Education

- Unit XIII Dental Cement
 - A. Uses of Dental Cements
 - B. Properties of Dental Cements
 - C. Manipulation
 - D. Dental Cements

- Unit XIV Impression Materials
 - A. Impression Trays
 - B. Elastic Impression Materials
 - C. Inelastic Impression Materials
 - D. Disinfecting Impressions

- Unit XV Gypsum Products
 - A. Properties and Behaviors of Gypsum Products
 - B. Classification of Gypsum Products
 - C. Manipulation

- Unit XVI Polymers for Prosthetic Dentistry
 - A. Review of Polymer Formation
 - B. Acrylic Resins (Plastics)
 - C. Denture Liners
 - D. Plastic (Acrylic) Teeth
 - E. Characterization of Dentures
 - F. Plastics for Maxillofacial Prostheses
 - G. Denture Repair
 - H. Custom Impression Trays and Record Bases
 - I. Care of Acrylic Resin Dentures

- Unit XVII Provisional Restorations
 - A. Dental Procedures That May Require Provisional Coverage
 - B. Criteria for Provisional Coverage
 - C. Properties of Provisional Materials
 - D. Provisional Materials
 - E. Intracoronar Cement Provisionals
 - F. Interim Therapeutic Restorations
 - G. Patient Education

- Unit XVIII Alternative Approaches to Caries Management and Prevention
 - A. Definition of Caries
 - B. Glass Ionomer as a Therapeutic Agent
 - C. Pit and Fissure Sealants
 - D. Resin Infiltration
 - E. Dietary Considerations
 - F. Arginine
 - G. Chlorhexidine Varnish
 - H. Fluoride Delivery Options



- I. Silver Diamine Fluoride
- J. pH and Caries Susceptibility Testing
- K. Amorphous Calcium Phosphate

Course Scope and Content (Laboratory):

- Unit I Preventive Materials
 - A. Placement of Sealants
 - B. Application of Fluoride Varnish
- Unit II Impressions and Gypsum Materials
 - A. Alginate Impressions on Partners
 - B. Bleaching Tray Model Fabrication
 - C. Bleaching Tray Model Trimming
- Unit III Abrasion/Polishing
 - A. Polishing Compounds
 - B. Amalgam Polishing
- Unit IV Interim Restorations
 - A. Fabrication of Tin/Silver Molar Provisional Crown

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 4 hours per week outside of the regular class time doing the following:

- 1. Independent study and assigned reading
- 2. Observing procedures demonstrated via internet links provided
- 3.

Methods of Instruction:

- 1. Laboratory projects
- 2. Lecture and audio-visual presentations
- 3. Class discussions
- 4. Laboratory Demonstrations on typodont teeth
- 5. Examination of patient-student partners.
- 6. Handouts and links to video demonstrations utilized in this course will be available on Canvas

Methods of Evaluation:

- 1. Examinations and quizzes, including, but not limited to:
 - a. multiple choice questions
 - b. matching questions
 - c. true/false questions
 - d. short answer questions
- 2. Performance evaluation of laboratory assignments and final project (Study models).

Laboratory Category: Extensive Laboratory

Pre delivery criteria: All of the following criteria are met by this lab.

1. Curriculum development for each lab.
2. Published schedule of individual laboratory activities.
3. Published laboratory activity objectives.
4. Published methods of evaluation

Supervision of equipment maintenance, laboratory setup, and acquisition of lab materials and supplies.

During laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is physically present in lab when students are performing lab activities.
2. Instructor is responsible for active facilitation of laboratory learning.
3. Instructor is responsible for active delivery of curriculum.
4. Instructor is required for safety and mentoring of lab activities.
5. Instructor is responsible for presentation of significant evaluation.

Post laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is responsible for personal evaluation of significant student outcomes (lab exercises, exams, practicals, notebooks, portfolios, etc.) that become a component of the student grade that cover the majority of lab exercises performed during the course.
2. Instructor is responsible for supervision of laboratory clean up of equipment and materials.

Supplemental Data:

TOP Code:	124020: Dental Hygienist
SAM Priority Code:	C: Clearly Occupational
Distance Education:	Not Applicable
Funding Agency:	Y: Not Applicable(funds not used)
Program Status:	1: Program Applicable
Noncredit Category:	Y: Not Applicable, Credit Course
Special Class Status:	N: Course is not a special class

Basic Skills Status:	N: Course is not a basic skills course
Prior to College Level:	Y: Not applicable
Cooperative Work Experience:	N: Is not part of a cooperative work experience education program
Eligible for Credit by Exam:	NO
Eligible for Pass/No Pass:	NO
Taft College General Education:	NONE
Discipline:	Dental Technology