

**College of San Mateo**  
**Official Course Outline**

1. **COURSE ID:** DENT 721    **TITLE:** Dental Materials I    **C-ID:** DENA 105X (DENT 721 & 722)  
**Units:** 3.0 units    **Hours/Semester:** 32.0-36.0 Lecture hours; 48.0-54.0 Lab hours; and 64.0-72.0 Homework hours

**Method of Grading:** Letter Grade Only

**Prerequisite:** Acceptance to the Dental Assisting Program

2. **COURSE DESIGNATION:**

**Degree Credit**

**Transfer credit:** none

3. **COURSE DESCRIPTIONS:**

**Catalog Description:**

Introduces the student to the vast subject of dental materials and dental laboratory procedures and equipment. Safety measures and protocols are taught in a laboratory setting. Provides instruction in dental cements, restorative materials, impression materials, gypsum products, and their physical and chemical properties. Students develop the skills necessary for materials manipulation in both the dental laboratory and the treatment room. (Fall only.)

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**

Upon successful completion of this course, a student will meet the following outcomes:

1. Identify and describe how the properties of the oral cavity relate to dental material selection.
2. Identify the uses, indications and contraindications of dental cements in dentistry for medications, bases, luting agents, restorative agents.
3. Demonstrate the technique for taking alginate impression and bite registrations.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**

Upon successful completion of this course, a student will be able to:

1. Describe the uses of the most commonly utilized dental cements including their manipulation.
2. Identify and describe how the properties of the oral cavity relate to dental material selection.
3. Demonstrate obtaining maxillary and mandibular alginate impressions for study.

6. **COURSE CONTENT:**

**Lecture Content:**

1. Introduction to Dental Materials
  - A. Safety factors
  - B. Lab equipment
  - C. Physical properties
  - D. Requirements of dental materials
2. Dental Cements
  - A. Uses
  - B. Bases and liners
  - C. Temporary cements
  - D. Final cements
  - E. Restorative cements
  - F. Special applications
    - a. Root canal sealer
    - b. Gingival tissue pack
    - c. Surgical dressing
    - d. Cementation of orthodontic bands
    - e. Orthodontic direct bonding
    - f. Cementation of resin-bonding bridges
3. Cavity Varnishes
4. Restorative Materials
  - A. Amalgam
    - a. Properties
    - b. Examples

- i. Pre-measured
      - ii. Filings
      - iii. Pellets
    - c. Uses
    - d. Proportioning of mercury and alloy
    - e. Methods and factors in mixing
    - f. Mercury handling
  - B. Direct esthetic restorative materials
    - a. Composite restoratives
      - i. Self-polymerizing
      - ii. Heat
      - iii. Light-polymerizing
    - b. Acid etch/bonding
    - c. Ionomer restoratives
  - C. Preventive dental materials
  - D. Gold and nonprecious alloys
    - 1. Gold foil
    - 2. Introduction to casting alloys
5. Impression Materials
  - A. Classifications
  - B. Hydrocolloids
    - a. Packaging
    - b. Properties
    - c. Manipulation
    - d. Equipment
  - C. Polysulfide rubber impression materials
    - a. Composition
    - b. Properties
    - c. Manipulation
  - D. Silicone rubber impression materials
    - a. Composition
    - b. Properties
    - c. Manipulation
  - E. Polyether rubber impression material
    - a. Composition and setting reaction
    - b. Properties
    - c. Manipulation
  - F. Vinyl polysiloxane
    - a. Composition
    - b. Properties
    - c. Manipulation
6. Gypsum Products
  - A. Model plaster
  - B. Dental stone
  - C. Dental stone high-strength
  - D. Chemical and physical nature
  - E. Properties
  - F. Manipulation
  - G. Trimming
  - H. Polishing

**Lab Content:**

- 1. Identification of Dental Materials Lab
  - A. Safety factors
  - B. Lab equipment
- 2. Mixing Dental Cements
  - A. Identification
  - B. Measurement
  - C. Manipulation
- 3. Identifying Cavity Varnishes
  - a. Application

4. Identifying Restorative Materials
  - a. Amalgam
  - b. Pre-measured
    - i. Methods and factors in mixing
    - ii. Mercury handling
5. Identifying Composite Restoratives
  - a. Self-polymerizing
  - b. Heat
  - c. Light-polymerizing
  - d. Acid etch/bonding
6. Identifying Impression Materials
  - A. Hydrocolloids
    - a. Packaging
    - b. Manipulation
    - c. Equipment
  - B. Polysulfide rubber impression materials
    - a. Composition
    - b. Manipulation
  - C. Silicone rubber impression materials
    - a. Composition
    - b. Manipulation
  - D. Polyether rubber impression material
    - a. Composition and setting reaction
    - b. Manipulation
  - E. Vinyl Polysiloxane
    - a. Composition
    - b. Manipulation
7. Utilizing Gypsum Products
  - A. Model plaster
  - B. Dental stone
  - C. Dental stone high-strength
  - D. Chemical and physical nature
  - E. Manipulation
  - F. Trimming
  - G. Polishing

#### 7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

- A. Lecture
- B. Lab
- C. Discussion
- D. Other (Specify): Lectures, power point presentations, videos, group discussions, demonstrations in lab.

#### 8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

##### **Writing Assignments:**

Weekly workbook assignments assigned to correspond to the reading assignments

##### **Reading Assignments:**

Weekly reading assignments from the text (8-15 pages) along with workbook assignments

#### 9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Class Participation
- B. Exams/Tests
- C. Homework
- D. Lab Activities
- E. Quizzes
- F. Written examination
- G. Students will be evaluated as based on participation in class (both lecture and lab), completion of workbook and worksheet homework assignments, quizzes, competencies on lab work and skills, lab

projects with and without lab partners, and final examinations.

10. **REPRESENTATIVE TEXT(S):**

Possible textbooks include:

- A. Bird, D. and Robinson, D.. *Modern Dental Assisting*, 12th ed. Elsevier, 2018

**Origination Date:** November 2021

**Curriculum Committee Approval Date:** March 2022

**Effective Term:** Fall 2022

**Course Originator:** Beth LaRochelle