Course Specification
Student Version

Course Title:	Dental Material Science I
Course Code:	RDC 331
Department:	Dentistry
Program:	Bachelor of Dentistry
College:	Vision College in Riyadh
Institution:	Vision College in Riyadh
Revised:	July 2025

A. Course Identification

1. Credit hours: 1 (1+0+0)
2. Level/year at which this course is offered: Level 5/Year 3
3. Pre-requisites for this course (if any): RDC 211
4. Co-requisites for this course (if any): None

B. Teaching Methods

1	Lecture

C. Course Description and Objectives

This is the first course in dental biomaterials science. It consists of a theoretical part only. Dental Biomaterials deal with the different materials used in dentistry, in the physical and chemical properties of dental biomaterials are discussed and how they are handled, and which characteristics determine their selection and clinical application.

2. Main course Objective

This course aims to teach the students of dental biomaterials and to develop an appropriate understanding of the criteria for the selection of materials for specific dental procedures.

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

1. Discuss the basic physical, chemical and mechanical properties of all dental materials and relate these to clinical applications.
2. Develop an appropriate understanding of how materials fail in the oral cavity.
3. Characterize each material (its proper selection and intended use).
4. Describe the correct manipulation of each material and the necessary technical considerations
5. List of laboratory and/or clinical advantages and disadvantages for each material.

3. Course Objectives

By the end of this course, students should be able to:

- Discuss the biological, chemical, physical and mechanical properties of various dental materials.
- Identify characteristics, manufacturing methods, composition, indications and contraindications of classic and modern materials used in dentistry.
- Analyze and discuss the biological, chemical, physical and mechanical properties of various dental materials.
- Establish collaborative teamwork and leadership responsibility

D. Course Content

No	List of Topics
1	Introduction-Materials in dentistry and crystal structure.
2	Physical properties
3	Applied Surface Phenomena & Bonding to dental substrate
4	Mechanical properties
5	Nature of metals and alloys
6	Dental adhesion
7	Dental Cements
8	Dental composite
9	Dental Amalgam

E. Assessment Tools

#	Assessment task	Percentage of Total Assessment Score
1	**Written Exam (Midterm)**	30%
2	**Written Exam (Quizzes)**	15%
3	**Assignments**	15%
4	**Written Exam (Final)**	40%
	Total	**100%**

F. Learning Resources

Essential References	• Restorative Dental Materials, 14th edition edited by Robert G. Craig and John M. Powers, 2016. • Phillips' Science of Dental Materials, 12th ed. Eugene W. Skinner, Ralph W. Phillips, 2018. • Materials, Properties and Manipulation. 9th edition edited by John M. Powers and John. powers- Wataha, 2018.
Supportive References	Dental Materials Journal
Electronic Materials	1. http://people.eku.edu/retching/301 syl.html 2. http://free-ed.net/freeed/HealthCare/physiology/default.asp 3. http://www.unomaha.edu/hpa. Dentistry Online YouTube channel.
Other Learning Materials	Computer-based programs/CD, professional standards or regulations and software.