



Beni-Suef University  
Faculty of Dentistry  
Quality Assurance Unit  
**Course Specification**



University: **Beni-Suef** Faculty: **Dentistry**  
Course Title: **Dental biomaterials** Course code: **DBM**  
Program on which the course is given: **Bachelor's degree in Dentistry, Graduate program**  
Department offering the course: **Dental biomaterial department**  
Academic year: **1<sup>st</sup> year 2023/2024**  
Date of specification approval: **September 2023**

### **A-Basic Information**

Academic Year:	2023-2024
Course Code:	DBM
Course Theoretical (contact hours)	2 hours*30w
Practical (contact hours)	2 hours*30w
Total Hours: -	4 hours

### **B-Professional Information**

#### **1-Overall aims of course**

The course aims to introduce knowledge to pregraduate students to the basic structure and properties of materials such as physical, mechanical and other properties and describe their clinical significance in the dental field, also the basic information of different classes of materials such as polymers and metals beside different modes of failure of these materials. Additionally the students will gain knowledge about different dental biomaterials used for restorations, also removable and fixed prosthodontics.

## **2-Intended learning outcomes of course (ILOs)**

### **a. Knowledge and understanding**

a1-Understand atomic structure of matter, different types of bonds, and different crystalline structures.

a2- Identify different physical properties including optical, thermal and electrical ones.

a3-Understand different mechanical properties.

a4-Understand structure of polymers, their classification, polymerization mechanisms and their different properties.

a5-Identify different types of adhesion and factors affecting it.

a6-Understand tarnish and corrosion

a7-Describe structure of metals, their properties and mechanism of solidification.

a8-Describe impression materials classification and its different types, their properties and uses.

a9-Identify different types of model and die materials.

a10-Understand different denture base materials composition, properties and manipulation.

a11-Identify different types of dental casting alloys, their classification, properties and uses.

a12-Describe different types of restorations and their properties, classification and manipulation.

a13-Identify different types of dental cements and their properties, classification and manipulation.

a14-Describe dental porcelain and all ceramic classification and their manipulation, also requirements of metal-ceramic restorations and methods of its bonding, methods of strengthening of ceramics.

**b. Intellectual skills**

b1-Differentiate between different types of impression materials.

b2-Compare between proper and improper manipulation of different denture base materials used.

b3-Distinguish different types of restorations used.

b4-Distinguish different types of dental cements.

b5-Differentiate between different types of all ceramics used for fixed prosthodontics.

**c. Professional and practical skills**

c1-Manipulate different impression materials properly.

c2-Manipulate different denture base materials properly

c3-Manipulate different restorations properly

c4-Manipulate different cements properly

c5-Investigate proper manipulation of porcelain and all ceramic restorations

c6-Use dental biomaterials in an adequate manner

**d. General and transferable skills**

d1-Be aware that dental biomaterials is developing rapidly, therefore a continuous update with regard to knowledge and skills is needed, as well as the ways to achieve these.

d2-Use of modern technology such as computer and the internet to search for data and/ or preparing scientific presentations.

### **3-Contents:**

<b>Topic</b>	<b>lecturer</b>	<b>Number of <u>Lecture</u> sessions covering the topic</b>	<b>Numberof <u>Practical</u> sessions number covering the topic</b>	<b>Total hours</b>	<b>Weighing of the topic</b>	<b><u>Teaching method</u> used for this topic</b>	<b><u>Assessment</u> <u>methods</u> used for this topic</b>
Structure of matter	Dr/Hadia	1	1	2	5%	Interactive lecture Demonstration videos	Course work , final, practical
Physical properties	Dr/Hadia	2	2	4	5%	Interactive lecture Demonstration videos	Course work , final, practical
Mechanical properties	Dr/Hadia	2	2	4	10%	Interactive lecture Demonstration Small group discussion / Brain storming	Course work , final, practical
Polymers	Dr/Hadia	1	1	2	5%	Interactive lecture Demonstration	Course work final, practical
Surface phenomenon (online)	Dr/Hadia	1	1	2	5%	Interactive lecture Demonstration	Course work , final, practical
Failure of dental biomaterials	Dr/Hadia	1	1	2	10%	Interactive lecture Demonstration Small group discussion / Brain storming	Course work , final, practical
Metallurgy	Dr/Hadia	2	2	4	5%	Online Small group discussion / Brain storming	Course work , final, practical

Dental casting alloys	Dr/Hadia	2	1	2	7.5%	Online Small group discussion / Brain storming	Course work , final, practical
Impression materials Model and die materials	Dr/Hadia	4	4	8	7.5%	Interactive lecture Demonstration videos	Midterm, final, practical
Denture base materials (online)	Dr/Hadia	2	2	4	12.5%	Interactive lecture Demonstration videos	Midterm, final, practical
Dental cements	Dr/Hadia	2	2	2	7.5%	Online Demonstration videos Small group discussion / Brain storming	Course work , final, practical
Dental Amalgam	Dr/Hadia	1	1	2	7.5%	Interactive lecture Small group discussion / Brain storming	Course work , final, practical
Dental composites and dentin bonding agents	Dr/Hadia	2	2	4	7.5%	Online Demonstration videos Small group discussion / Brain storming	Course work , final, practical
Dental porcelain and all ceramic restorations	Dr/Hadia	1	1	2	5%	Interactive lecture Demonstration	Course work , final, practical

#### **4- Teaching and learning methods**

Interactive lecture	<b>Yes</b>
Demonstration videos	<b>Yes</b>
Small group discussion / Brain storming	<b>Yes</b>
Demonstrations	<b>Yes</b>
Online	<b>Yes</b>

#### **5- Student assessment methods**

a. Written and short answer question.	<b>Yes</b>
b. Multiple choice questions (MCQ)	<b>Yes</b>
c. Complete the following	<b>Yes</b>
d. True or False with justifying answer	<b>Yes</b>
e. Give reason	<b>Yes</b>

#### **Assessment schedule**

Assignment	Time
Quiz	December 2023
Practical exam	May 2024
Oral exam	June 2024
Final exam	June 2024

#### **Weighting of assessments**

	Written	Practical	Oral Exam	Quizzes and course work	Total
Final Exam	70	30	20	30	150

#### **- List of reference;**

- 1- Power Point of lectures
- 2-Text books

- Craig RG: restorative Dental Materials 14<sup>th</sup> edition 2019
- Philips' Science of Dental Materials 12<sup>th</sup> edition 2022

**Facilities required for teaching and learning**

Materials, equipment and devices are needed for more learning requirements

Course director: **Dr/Diaa Elmwafy**

Head of department: **prof. Ahmed Nabil Fahmy**

Date: **September 2023**