

Faculty of Oral & Dental Medicine

Biomaterials

Information :

Course Code : PROS 241

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Faculty of Oral & Dental Medicine

Instructor Information :

Title	Name	Office hours
Associate Professor	Mostafa Ahmad Abd El Atif Eldessouky	25
Lecturer	MOHAMED MAHMOUD ABDEL FATAH AMMAR	11
Assistant Lecturer	WALAA MOSTAFA NEMR BAYAA	4
Teaching Assistant	Ahmed Mohamed Abdelaleem Mohamed elsaid Shhatah	4

Area Of Study :

• To present the basic properties of dental materials as they are related to clinical manipulation by the dentist.
• To bridge the gap between the knowledge obtained in the basic course in materials science, chemistry, and physics and the dental operator.

Description :

Structure of matter Basic Mechanical, Physical & Biological properties
bonding and applied surface phenomena, polymers, metallurgy, tarnish and corruptions

Course outcomes :

a. Knowledge and Understanding: :

1 -	Identify the change of state, the interatomic bonds and the crystalline and non crystalline structure.
2 -	Define the different physical properties.
3 -	Define the different mechanical properties
4 -	Recognize the different testing methodology for the different properties.
5 -	Discuss the biocompatibility of dental materials
6 -	Define adhesion and cohesion and the factors affecting them
7 -	Explain enamel and dentin bonding mechanisms
8 -	Recognize the different classification of polymers and their structure
9 -	Explain the polymerization mechanisms
10 -	Define copolymerization, cross linking and plasticizers
11 -	Outline the physical properties of polymers
12 -	List the applications of polymers in dentistry
13 -	Describe metals and alloys

14 -	Explain solidification, and microstructure of metals	
15 -	Distinguish wrought metals	
16 -	Relate between microstructure of metals and mechanical properties	
17 -	Define coring and homogenization	
18 -	State the different methods of altering mechanical properties of alloys	
19 -	List the different solid state reactions occurring in alloys.	
20 -	Define tarnish and corrosion, state the different types.	
21 -	Explain the electrochemical corrosion, identify the different types and its	application in dentistry.
22 -	Discuss protection against corrosion	
b. Intellectual Skills: :		
1 -	Demonstrate appropriate professional attitudes and behavior in dealing with staff members & helping personnel.	
2 -	Apply the information technology as a mean of communication for data collection and analysis and for life-long learning..	
c. Professional and Practical Skills: :		
1 -	Categorize the different materials according to their microstructure.	
2 -	Determine the use of different materials consistent with their physical, chemical properties.	mechanical, biological, and
3 -	Recognize the different testing machine and their use.	
4 -	Find out the behavior of different materials during service in oral cavity.	
d. General and Transferable Skills: :		
1 -	Communicate effectively with colleagues, staff members and helping	personnel
2 -	Demonstrate appropriate professional attitude and behavior in different	situations

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction	4	Introduction	Introduction
Structure of Matter	4	Structure of Matter	Structure of Matter
Mechanical properties.	4	Mechanical properties.	Mechanical properties.
Mechanical properties.	4	Mechanical properties.	Mechanical properties.
Mechanical properties.	4	Mechanical properties.	Mechanical properties.
Physical Properties	4	Physical Properties	Physical Properties
Physical Properties	4	Physical Properties	Physical Properties
Adhesion	4	Adhesion	Adhesion

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Polymers	4	Polymers	Polymers
Metallurgy	4	Metallurgy	Metallurgy
Metallurgy	4	Metallurgy	Metallurgy
Metallurgy	4	Metallurgy	Metallurgy
Tarnish and Corrosion	4	Tarnish and Corrosion	Tarnish and Corrosion

Teaching And Learning Methodologies :

Lectures

Practical

small group sessions.

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final written Examination	25.00	10	assess knowledge and understanding
first mid term	30.00	6	assess knowledge and understanding
Oral Examination	10.00	14	assess knowledge and understanding
Practical Examination	15.00	15	assess practical skills
Semester Work	20.00		assess practical skills

Course Notes :

Hand out : available for students from the department

Recommended books :

Restorative Dental materials edited by RG Craig.
Phillips' Science of Dental materials.

Periodicals :

Web Sites