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	MOHAMED MAHMOUD ABDELFATAH AMMAR	12
Teaching Assistant	Ahmed Mohamed Abdelaleem Mohamed elsaid Shhatah	4

Area Of Study :

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

Description :

Structure of matter Basic Mechanical, Physical & Biological properties
bonding and applied surface phenomena, plymers , metallergy , tarnish and corrisions

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 mechamisms
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, mechanical, biological, and chemical properties.
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
Polymers	4	Polymers	Polymers
Metallurgy	4	Metallurgy	Metallurgy

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
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 :

ÅRestorative Dental materials edited by RG Craig.
ÅPhillips' Science of Dental materials.

Periodicals :

Web Sites