



Jordan University of Science and Technology
Faculty of Dentistry
Dental Surgery Department

DENT764 Advanced Dental Materials In Prosthodontics

Second Semester 2023-2024

Course Catalog

1 Credit Hours. This course is designed to provide students with the basics of dental materials science. It also aims to provide a perspective on newly developed materials and on improvements to those currently in use in the field of prosthodontics. This includes the introduction to the main materials applied in the dental services (clinics, labs, hospitals?), their physical properties, handling characteristics, their use in the fabrication of dental appliances or the maintenance of dental materials once they are placed in the mouth. Such knowledge will be applied for the selection and provision of optimal dental care within the dental clinic and is instrumental in educating patients in the home maintenance of restorations and prostheses as well as preventive education and therapy.

Teaching Method: Blended

Text Book

Title	Phillips? Science of Dental Materials
Author(s)	Kenneth J. Anusavice
Edition	13th Edition
Short Name	Ref. No. 1
Other Information	Publisher: Saunders - Elsevier Science, St. Louis

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref. No. 2	Craig?s Restorative Dental Materials	Ronald L. Sakaguchi and John M. Powers	14th Edition	Publisher: Mosby ? Elsevier, St. Louis

Instructor

Name	Dr. Esam Alem
Office Location	-
Office Hours	
Email	ealem@just.edu.jo

Class Schedule & Room

Section 1:
 Lecture Time: Mon : 12:00 - 13:00
 Room: MASTER HALL1

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Introduction to the course. Gypsum materials.	From Ref. No. 1
Week 2	Dental waxes	From Ref. No. 2
Week 3	Dental Amalgam	From Ref. No. 1
Week 4	Impression Materials	From Ref. No. 1 , From Ref. No. 2
Week 5	Dental Cements	From Ref. No. 1
Week 6	Oral cavity considerations; Properties of Dental Materials - I	From Ref. No. 1
Week 7	Properties of Dental Materials - II	From Ref. No. 1
Week 8	Properties of Dental Materials - III Color and Optical Properties	From Ref. No. 1
Week 9	Metals and Alloys - I	
Week 10	Metals and Alloys - II Dental investments	From Ref. No. 1
Week 11	Adhesive Systems and Composites	From Ref. No. 1 , From Ref. No. 2
Week 12	Polymers and Denture Base Resins	From Ref. No. 1
Week 13	Ceramics	From Ref. No. 1

Week 14	Dental Implant Materials	From Ref. No. 1, From Ref. No. 2
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Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Critically evaluate the properties, composition, and classifications of contemporary dental materials, including ceramics, composites, metals, and polymers.	15%	
Apply knowledge of material science principles to predict the clinical performance, durability, and biocompatibility of dental materials used in restorative, prosthetic, and other dental treatments.	15%	
Assess the interactions between dental materials and oral tissues, understanding the factors influencing the safety, toxicity, and long-term behavior of these materials in the oral environment.	15%	
Design simple laboratory experiments to test the mechanical, thermal, chemical, and aesthetic properties of dental materials, demonstrating proficiency in handling advanced testing equipment and protocols.	15%	
Compare and contrast the advancements in dental material innovations, including CAD/CAM materials, nanotechnology-based products, and bioactive materials, while assessing their impact on clinical practices and patient outcomes.	10%	
Analyze the effects of processing, manipulation, and handling techniques on the performance and longevity of various dental materials, including setting reactions, curing mechanisms, and bonding techniques.	15%	
Integrate ethical, economic, and environmental considerations when selecting and recommending dental materials for different patient needs, taking into account sustainability and the principles of responsible material use.	15%	

Relationship to Program Student Outcomes (Out of 100)													
1.1 Scientific Knowledge and Cognitive Skills	1.2 Scientific Knowledge and Cognitive Skills	1.3 Scientific Knowledge and Cognitive Skills	1.4 Scientific Knowledge and Cognitive Skills	1.5 Scientific Knowledge and Cognitive Skills	1.6 Scientific Knowledge and Cognitive Skills	1.7 Scientific Knowledge and Cognitive Skills	2.1 Person-Centred Care	2.2 Person-Centred Care	2.3 Person-Centred Care	2.4 Person-Centred Care	3.1 Responsibility, Communication, Professionalism and Ethics	3.2 Responsibility, Communication, Professionalism and Ethics	3.3 Responsibility, Communication, Professionalism and Ethics

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