

**Masters in Biomedical Science
Graduate School, RHBS**

Course Title: Fundamentals of Dental Material Science (DENT 5025Q)

Semester Offered: Spring 2016

Hours: 30 (9-11 pm)

Course Director: Dr. Anil Ardeshtna
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Day of the Week: Friday

Room: Medical Sciences Building lecture hall B554?

Course Description: Introduction to dental biomaterials, and integration with the basic principles of engineering science and clinical dentistry.

Course Format: For each 2hr hour weekly seminar, material will be covered based on either lectures by the instructor or assigned literature to be reviewed and discussed by the students. Evaluation shall be by four quizzes and an examination at the end of the course.

Course Goals: To provide a scientific framework for the use of biomaterials in the clinical treatment of patients. To expose the student to the different types of materials currently used in dentistry and make them aware of the basic and clinical properties that make them suitable for use. To increase awareness of the future directions of innovations that dental products may take.

Course Objectives: At the conclusion of the course the student should be able to:

- a. Understand the fundamental principles of material science
- b. Provide a rationale for the selection and use of specific materials in dentistry
- c. Describe the composition and properties of commonly used materials
- d. Distinguish between materials of the same type and discuss advantages and disadvantages of their use
- e. Critically evaluate dental manufactures' product claims

Required Textbook

Introduction to Dental Materials. Richard Van Noort. 4th Edition 2013, ISBN: 978-0723436591
Mosby Ltd.

Recommended Textbook

Fundamentals of Materials Science and Engineering: An Integrated Approach. William D. Callister, David G. Rethwisch. 4th Edition: 2012. ISBN: 978-1118061602

<i>Date</i>	Lecture	Title	Reading
1/8/2016	1a	Course Outline and Policy	
	1b	Introduction to Dental Materials	1.1 Pg 3
1/15/2016	2	Atomic Building Blocks	1.2 Pg 7
		Atomic Structure; Atomic Bonding in Solids; Crystal Structures	
1/22/2016	3	Structure of Ceramics	1.3
		Quiz 1	
1/29/2016	4	Structure of Metals and Alloys	1.4
2/5/2016	5	Structure of Polymers	1.5
		Quiz 2	
2/12/2016	6	Mechanical Properties	1.6
2/19/2016	7	Physical Properties	1.7
2/26/2016	8	Chemical Properties	1.8
		Quiz 3	
3/4/2016	9	Principles of Adhesion	1.9
3/11/2016	10	Dental Amalgam	2.1
		Casting Alloys	3.3
		Steel; NiTi	3.9
3/18/2016	11	Dental Ceramics	3.4
		Quiz 4	
4/1/2016	12	Enamel and dentine bonding	2.5
		Composites	2.2
4/8/2016	13	Impression materials	2.7
		Denture Resins	3.2
4/15/2016	14	Review /Exam	
	15		