1	Course title	Dental Material II – Theory
2	Course number	1302421
3	Credit hours (theory, practical)	1
	Contact hours (theory, practical)	15
4	Prerequisites/corequisites	1302221
5	Program title	DDS in Dentistry
6	Program code	NA
7	Awarding institution	University of Jordan
8	Faculty	Dentistry
9	Department	Conservative Dentistry
10	Level of course	4th year
11	Year of study and semester (s)	1st semester 2022/2023
12	Final Qualification	DDS
13	Other department (s) involved in teaching the course	Prosthodontics Dentistry Department
14	Language of Instruction	English
15	Date of production/revision	

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Dr.Ayah Alasmar, office hourse…….phone 23552, email-dr.ayahalasmar@yahoo.com

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Dr.Alaa Haddad ,office hours: Tues. 11-1 phone no.23552, E-mail: a.haddad@ju.edu.jo
Dr.Mohammad Rababah ,office hours: Sun. 9-11 phone: 23552,E-mail: malrababah@ju.edu.jo
Dr.Motasum Abu Awwad, office hours…….phone 23552, email: motasum@gmail.com
Dr.Rasha Omoush. office hours……..phone 23552,email:rashaomoush@hotmail.com
Dr.Sari Mahsneh. Email: s.masnesh@ju.edu.jo

18. Course Description:

This course deals with the most common materials used in dentistry. It emphasizes the handling and the appreciation of the various properties of these materials during clinical work. Dental materials related to laboratory work are also discussed, and the student is assisted in understanding and developing good knowledge of these materials used by the technician to satisfy the specific requirements of patients.

19. Course aims and outcomes:

Course aims:

Course objectives are:

- To provide the students with knowledge and understanding of the contemporary science of dental materials.
- To highlight the importance of new innovation in field of dental materials .
- To introduce the students to concept and principles of adhesion and bonding to tooth structure, ceramics and metal alloys .
- To provide the students with in depth knowledge of different applications of wrought wire alloys and their material science.
- To provide the students with in depth knowledge of different applications of casting alloys and their material science
- To provide the students with advanced comprehension of the nature of dental ceramics and their role in modern dental practices .
- To familiarize students with new advancement in dental materials .
- To let the students grasp the biological and environmental implications of restorative materials.

Outcomes:

Successful completion of this module should lead to the following learning outcomes:

- Students should gain essentials of basic knowledge and understanding of the concepts, principles and theories related to contemporary dental materials sciences.
- Students should be able to discuss and explain the interactions between tooth structure and dental materials .
- Students should be able to discuss and explain the concept and bonding to tooth structure and dental materials.
- Students should be able to have the necessary knowledge to discern the best usage of dental materials in evidence based context.
- Students should be able to understand and appreciate the biological implications of restorative materials

A. Knowledge and Understanding:

- Develop a wide range of back-ground knowledge and understanding of dental materials.
- Develop wide range knowledge and understanding of bonding systems, ceramics , metals and metal alloys.
- Have a comprehensive knowledge of endodontic materials.

- Be able to discuss and explain the biological responses of local and systemic tissues to biomaterials
- Be able to discuss and explain the concepts of etch and rinse& self etching adhesives.

B. Intellectual Skills:

- Apply the knowledge of the basic sciences (Chemistry, Biology and Physics) to the science of applied dental materials.
- Understand and relate the properties and behavior of direct and indirect restorative dental materials to actual clinical longevity.
- Understand and appreciate the biological aspects of use of dental materials.
- Integrate the knowledge and understanding of the esthetic, biological and mechanical needs and consideration with the properties and limitations of clinical dental material.

C. Subject-Specific Skills:

- Ability to differentiate between etch-and-rinse and self etching bonding agents.
- Identify and explain the uses of different metal alloys in dental applications.
- Identify the role of dental ceramics in restorative dentistry.
- Gain wide knowledge of endodontic filling materials and sealers.
- Select and explain the principles for handling various restorative dental materials in the restoration of damaged/missing teeth.
- To discuss and explain the biological aspects of new innovations in dental materials .
- To discuss and explain the concepts of esthetic dentistry and color science.

D. Transferrable Skills:

- Utilize the modern sources of information such as the internet and data basis to develop and update the knowledge in the field of applied dental materials.
- Appreciate the importance of clinical and laboratory based research in the development of new categories of restorative dental materials.
- Understand the importance of new advances in dental materials in shaping the future of contemporary dental practice.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Adhesion surface phenomenon	1	Dr.Motasum	*To comprehend the ideal requirements for bonding to tooth structure. *To understand the structural differences between enamel and dentine. *To elaborate on	22 (1+2)	Phillips' Science of Dental Materials, 12t J. Anusavice, Elesvier
Bonding systems I	2	Dr.Motasum	*To elaborate on etch and rinse bonding strategy to tooth structure. *To elaborate on self etching bonding strategy to tooth structure. *To understand bonding to	22 (1+2)	Basic Reading: Phillips' Science of Dental Materials, 12t J. Anusavice, Elesvier Additional reading: *Van Meerbeek et al. State of the

			amalgam		art of self-etch adhesives. Dent Mater. 2011 Jan;27(1):17-28. *Pashley et al :State of the art etch -and-rinse adhesives. Dent Mater. 2011 Jan;27(1):1-16.
Bonding systems II	3	Dr.Motasum	• To understand contemporary bonding techniques to etchable ceramics • To understand contemporary bonding technique to non-etchable (Zirconia)ceramics. To understand bonding to metal alloys	22 (1+2)	Basic Reading: Phillips' Science of Dental Materials, 12t J. Anusavice, Elesvier Additional reading: *Inokoshi M et al: Meta-analysis of bonding effectiveness to zirconia ceramics. J Dent Res. 2014 Apr;93(4):329-34. *Blatz et al Resin-ceramic bonding: a review of the literature. J Prosthet Dent. 2003 Mar;89(3):268-74
• Wrought alloys used in dentistry: •	4	Dr.Wijdan	To compare between wrought alloys and cast alloys. To understand the composition and properties of the most common types of wrought alloys. •	22 (1+2)	-Craig's Restorative Dental Materials by Ronald L. Sakaguchi and John M. Powers. (Dental Materials: Properties & Manipulation (Craig)) 13th Edition - Phillips' Science of Dental Materials, 12e (Anusavice Phillip's Science of Dental Materials)
• Polymeric denture base materials •	5	Dr.Wijdan	• To know the basic requirements of denture base materials • To understand the composition and properties of different types of polymeric resin-based materials used in the construction of denture bases.	22 (1+2)	-Craig's Restorative Dental Materials by Ronald L. Sakaguchi and John M. Powers. (Dental Materials: Properties & Manipulation (Craig)) 13th Edition - Phillips' Science of Dental Materials, 12e (Anusavice Phillip's Science of Dental Materials)
• Metallic denture base materials •	6	Dr.Wijdan	To understand the concept of relining and rebasing of dentures. To know the different types of soft and hard denture relining materials.	22 (1+2)	Craig's Restorative Dental Materials by Ronald L. Sakaguchi and John M. Powers. (Dental Materials: Properties & Manipulation (Craig)) 13th Edition - Phillips' Science of Dental Materials, 12e (Anusavice Phillip's Science of Dental Materials)
• Endodontic materials I •	7	Dr.Sari	•To know the different materials used for root canal disinfection and sterilization. •To know the different indications, methods of usage and shortcomings of each	22 (1+2)	1. Cohen's Pathways of the Pulp, 10th edition, by Hargreaves, Cohen and Berman. 2. Endodontics: Principles and Practice, 4th edition by Mahmoud Torabinejad and Richard E. Walton.

			material.		
• Endodontic materials II •	8	Dr.Sari	•To know the different materials used for root canal disinfection and sterilization. •To know the different indications, methods of usage and shortcomings of each material.	22 (1+2)	1. C ohen's Pathways of the Pulp, 10th edition, by Hargreaves, Cohen and Berman. 2. Endodontics: Principles and Practice, 4th edition by Mahmoud Torabinejad and Richard E. Walton.
• Dental casting alloys I •	9	Dr.Haddad	• To elaborate on types and classification of casting alloys • To understand bonding to metal alloys.	22 (1+2)	Phillips' Science of Dental Materials, 12th Edition : Kenneth J. Anusavice, Elesvier Additional reading:
• Dental casting alloys II •	10	Dr.Haddad	• To elaborate on dental casting alloys used for all metal and ceramo metal crowns and FPDs. • To elaborate on dental casting alloys used for removable prostheses. •	22 (1+2)	Phillips' Science of Dental Materials, 12th Edition : Kenneth J. Anusavice, Elesvier Additional reading: Wataha; Casting Alloys; Dent Clin 2004
• Dental ceramics I	11	Dr.Haddad	• To Classify ceramics used in dentistry • To elaborate on dental ceramics used for ceramometal restorations • To discuss Lithium-disilicate based ceramics •	22 (1+2)	Basic Reading: Phillips' Science of Dental Materials, 12th Edition : Kenneth J. Anusavice, Elesvier Additional reading: Li et al; Ceramic dental biomaterials and CAD/CAM technology: state of the art. J Prosthodont Res. 2014 Oct;58(4):208- Gracis et al ; A new classification system for all-ceramic and ceramic-like restorative materials. . Int J Prosthodont. 2015 May-Jun;28(3)
• Dental ceramics II	12	Dr.Haddad	•To elaborate on zirconia ceramics •To differentiate between bilayered and monolithic ceramics and their applications •To understand the limitations of zirconia ceramics and its alternatives •	22 (1+2)	Basic Reading: Phillips' Science of Dental Materials, 12th Edition : Kenneth J. Anusavice, Elesvier Additional reading: Cavlacanti et al; Y-TZP ceramics: key concepts for clinical application. Oper Dent. 2009 May-Jun;34(3):344-51.
• Biological consideration for dental materials	13	Dr.Rababah	To let the students grasp the biological and environmental implications of restorative materials.	22 (1+2)	Phillips' Science of Dental Materials, 12th Edition : Kenneth J. Anusavice, Elesvier Additional reading:

• New advances in dental materials	14	Dr.Rababah	• Understand the importance of new advances in dental materials in shaping the future of contemporary dental practice.	22 (1+2)	Phillips' Science of Dental Materials, 12th Edition : Kenneth J. Anusavice, Elesvier Additional reading:

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

Teaching methods:

Duration: 16 weeks in 1st (4th year), 16 hours in total
Lectures/Practical Sessions: 16 hours, 1 per week (including one 1-hour midterm exam exams and one 2-hours final exam)

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

1. Midterm exam : 40 points , SMA format
2. Final Exam: 60points, MCQ format

23. Course Policies:

A- Attendance policies:

Lecture attendance is obligatory. The handout and recommended textbook are not comprehensive and additiona material will be covered in lectures. Students are responsible for all material covered in lectures. However, 15% allowed absence is granted for students by the university law.

A- Absences from exams and handing in assignments on time:

According to the roles and regulations of the University of Jordan

C- Health and safety procedures:

According to the roles and regulations of the Faculty of Dentistry

D- Honesty policy regarding cheating, plagiarism, misbehavior:

According to the roles and regulations of the University of Jordan

E- Grading policy:

According to the roles and regulations of curriculum for the academic degree of Doctor of Dental Surgery (DDS)

F- Available university services that support achievement in the course: None

24. Required equipment:

None special

25. References:

A- Required book (s), assigned reading and audio-visuals:

Strongly recommended:

- .Phillips' Science of Dental Materials, Anusavice, 11 edition, Elsevier science USA 2003.
- Dental Materials Journal; the corresponding articles will be provided by course coordinator/instructor.

B- Recommended books, materials, and media:

See course outline

26. Additional information:

Name of Course Coordinator: …… Signature: ---------- Date: ----------

Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: …….. Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------

Copy to:
Head of Department
Assistant Dean for Quality Assurance
Course File