

Republic of Yemen

Ministry of Education & Scientific Research

Council of Academic Accreditation & Quality Assurance of

Higher Education (CAQA)

21 September University for Medical and Applied Sciences



Faculty of Dentistry

Department of Basic Sciences

Bachelor's Program of Dental Surgery, BDS

Course Specification of

Dental Materials 1

Course Code. (09.11.915)

2025



T4: This Template is developed and approved by CAQA-Yemen, 2023

Prepared by:

Reviewed by:

Head of the Department:

Quality Unit:

Dean

Assist. Prof. Omar Ahmed
Al-Doosari

Prof. Abdulwahab Al-kholani

I. General Information:

1.	Course Title:	Dental Materials 1				
2.	Course Code:	09.11.915				
3.	Course Type:	Major course				
4.	Credit Hours: 2	Credit Hours	Theory Contact Hours		Practical Contact Hours	
			Lecture	Tutorial/ Seminar	Lab	Clinical
		3	2	--	2	--
5.	Level/ Semester at which this Course is offered:	Level 2/Semester 1				
6.	Pre–Requisite (if any):	None				
7.	Co-Requisite (if any):	None				
8.	Program (s) in which the Course is Offered:	Dentistry Bachelor's Program				
9.	Language of Teaching the Course:	English and Arabic are in need				
10.	Location of Teaching the Course:	University				
11.	Prepared by:	Assist. Prof. Omar Ahmed Al-Doosari				
12.	Date and Number of Approval by Council:	2025				

II. Course Description:

The course aims to present students 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 operatory as well as to analyze the benefits and limitations of dental materials and enable student to make rational decisions on the selection of dental materials and use in a clinical practice.

III. Course Description:

III. Course Intended Learning Outcomes (CILOs): Upon successful completion of the course, students will be able to:		Referenced PILOs		
A. Knowledge and Understanding:		I, P or M/A		
a1	Description of the main properties of dental materials			A4
a2	Description of the dental applications of dental materials.			A6
B. Intellectual Skills:				
b1	Know the hazards and appropriate precaution procedures related to certain dental materials.			B5
b2	Describe the Rheological and optical properties of dental materials and how they affect material selection.			B5
C. Professional and Practical Skills:				
	None			

D. Transferable Skills:

d1	Commit to continuous education, self-development, and lifelong learning to remain updated with advances in dental practice			D1
d2	Analyze and resolve problems and deal with uncertainty			D8

I= Introduced, P=Practiced or M/A= Mastered/Advanced

IV. Alignment of Course Intended Learning Outcomes

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:

Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
	a1, a2	- Lectures - Assignments. - Tutorials - Presentation	- Quizzes - Mid-Term Exam (theoretical) - Final Exam (theoretical) - Evaluation assignment
	b1, b2	- Active Lectures (Discussion, Case Study, Examples, Brainstorming, Cooperative learning) - Assignments - Tutorials - presentation	- Quizzes - Mid-Term Exam (theoretical) - Final Exam (theoretical) - Evaluation assignment

(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching

Strategies and Assessment Methods:			
Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
	▪ None		
(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:			
Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
	None	▪ None	▪ None
(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:			
Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
d1	d1, d2	▪ Training	▪ Assignments
d2	...	▪ Computer learning	▪ Presentations

V. Course Contents:					
A. Theoretical Aspect:					
No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Introduction	▪ Introduction to Sciences of Dental Material	2	4	a1, a2, b1, b2, d1, d2
2	Structure of Matter	• Fundamental Particles • Fundamental Forces · • Atomic Particles · • Atomic Nomenclature	1	2	a1, a2, b1, b2, d1, d2
3	Mechanical properties.	▪ Physical properties ▪ Thermal properties	2	4	a1, a2, b1, b2, d1, d2
4	Mechanical properties.	▪ Chemical properties ▪ Biological properties	1	2	a1, a2, b1, b2, d1, d2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
5	Physical Properties	▪ Rate of set ▪ Working time ▪ Setting time	1	2	a1, a2, b1, b2, d1, d2
6	Tarnish and Corrosion	▪ Types ▪ Causes ▪ Variables affecting tarnish and corrosion	1	2	a1, a2, b1, b2, d1, d2
7	Metallurgy	▪ Composition ▪ Properties and uses of most dental materials used in the dental field. ▪ Physical and mechanical properties.	1	2	a1, a2, b1, b2, d1, d2
8	Model and Die Materials	• Gypsum • Stone ▪ Die stone	1	2	a1, a2, b1, b2, d1, d2
9	Impression Materials	▪ Hydrocolloid ▪ Non-hydrocolloid ▪ Digital impression (Intra-oral scanner IOS)	2	4	a1, a2, b1, b2, d1, d2
10	– Revision		2	4	a1, a2, b1, b2, d1, d2
11	– Final exam		2	4	a1, a2, b1, b2, d1, d2
Number of Weeks /and Units Per Semester			16	32	

B. Practical Aspect (Lab/Clinical) (if any):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	- Introduction to DM Lab	2	4	a1, a2, b1, b2, c1, d1, d2
2	- Taking a rigid impression	2	4	a1, a2, b1, b2, c1, d1, d2
3	- Taking a hydrocolloid and an Elastomer impression	2	4	a1, a2, b1, b2, c1, d1, d2
4	- Taking a Digital impression (Intra-oral scanner IOS)	2	4	a1, a2, b1, b2, c1, d1, d2
5	- Pouring impression	3	6	a1, a2, b1, b2, c1, d1, d2
6	- Review	3	6	a1, a2, b1, b2, c1, d1, d2
Number of Weeks /and Units Per Semester		14	28	

VI. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	Attendance and participation	1-14	5%	a1, a2, b1, b2, d1, d2
2	Quizzes	6, 12	5%	a1, a2, b1, b2, d1, d2
Total				

VII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance and participation	1-13	10	10%	a1, a2, b1, b2, d1, d2
2	Quizzes	6, 12	10	10%	a1, a2, b1, b2, d1, d2
3	Midterm Theoretical Exam	8	20	20%	a1, a2, b1, b2, d1
4	Final practical Exam	14	20	20%	a1, a2, b1, b2, d1
5	Final Theoretical Exam	16	40	40%	a1, a2, b1, b2, d1
Total			100	100%	

VIII. Learning Resources:

- Written in the following order: Author, Year of publication, Title, Edition, Place of publication, Publisher.

1- Required Textbook(s) (maximum two):

- 1- John J.Mannappallil.Jaypee(2003), Basic Dental Materials, 2nd edition, published by Jiendar PVij.Jaypee Brothers Medical Publisher, New Delhi, India.
- 2- John M.Powers.Ronald L.Sakaguchi(2007), Graigs Restorative Dental Materials, 12th edition, published by Elsevier India Private Limited-New Delhi, India.

2- Essential References:

- 1 Sakguchi RL, Power JM; Craig's Restorative Dental Materials. 13th edition, 2012, Elsevier.
- 2 Anusavice KJ, Shen C, Rawls HR; Phillips' Science of Dental materials. 12th edition, 2013, Elsevier.

3- Electronic Materials and Websites, etc.:

Websites:

- 1- Use Google Engine Search www.google.com

Journals:

- 1-
- 2-

Other Web Sources:

- 1.....

IX. Course Policies: (Based on the Uniform Students' Bylaw (2007))

1	Class Attendance: Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	Tardiness: A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	Exam Attendance/Punctuality: No student shall be allowed into the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	Cheating: Cheating is an act of fraud that results in the cancellation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated in the Uniform Students' Bylaw (2007) shall apply.
6	Forgery and Impersonation: Forgery/Impersonation is an act of fraud that results in the cancellation of the student's exam, assignment, or project. If it takes place in a final exam, the penalties stipulated in the Uniform Students' Bylaw (2007) shall apply.
7	Other policies: The University's official regulations in force will be strictly observed, and students shall comply with all rules and regulations of the examination set by the Department, Faculty, and University Administration.

Faculty of Dentistry

Department of Basic Sciences

Bachelor's Program of Dental Surgery, BDS

Course Plan (Syllabus) of Dental Material (1)

Course Code.09.11.915

I. Information about the Faculty Member Responsible for the Course:						
Name of Faculty Member:	Assis. Prof. Omar Ahmed Aldoosari		Office Hours			
Location& Telephone No.:	Sana'a 777751077		18			
E-mail:	omarik2003@gmail.com		SAT	SUN	MON	TUE WED THU

2024/2025

II. Course Identification and General Information:

13.	Course Title:	Dental Materials 1				
14.	Course Code:	09.11.915				
15.	Course Type:	Major course				
16.	Credit Hours: 2	Credit Hours	Theory Contact Hours		Practical Contact Hours	
			Lecture	Tutorial/ Seminar	Lab	Clinical
		3	2	--	2	--
17.	Level/ Semester at which this Course is offered:	Level 2/Semester 1				
18.	Pre–Requisite (if any):	None				
19.	Co-Requisite (if any):	None				
20.	Program (s) in which the Course is Offered:	Dentistry Bachelor's Program				
21.	Language of Teaching the Course:	English and Arabic are in need				
22.	Location of Teaching the Course:	University				
23.	Prepared by:	Assist. Prof. Omar Ahmed Al-Doosari				
24.	Date and Number of Approval by Council:	2025				

1.	Course Title:	Dental Materials 1			
2.	Course Code:	09.11.915			
3.	Course Type:	Major course			
4.	Credit Hours: 2	Credit	Theory Contact		Practical Contact

		Hours	Hours		Hours	
			Lecture	Tutorial/ Seminar	Lab	Clinical
		3	2	--	2	--
5.	Level/ Semester at which this Course is offered:	Level 2/Semester 1				
6.	Pre-Requisite (if any):	None				
7.	Co-Requisite (if any):	None				
8.	Program (s) in which the Course is Offered:	Dentistry Bachelor's Program				
9.	Language of Teaching the Course:	English and Arabic are in need				
10.	Location of Teaching the Course:	University				
11.	Prepared by:	Assist. Prof. Omar Ahmed Al-Doosari				
12.	Date and Number of Approval by Council:	2025				

III. Course Description:

The course aims to present students 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 as well as to analyze the benefits and limitations of dental materials and enable student to make rational decisions on the selection of dental materials and use in a clinical practice.

IV. Course Intended Learning Outcomes (CILOs):

Upon successful completion of the Course, the student will be able to:	
	A. Knowledge and Understanding:
a1	Description of the main properties of dental materials
a2	Description of the dental applications of dental materials.
	B. Intellectual Skills:
b1	Know the hazards and appropriate precaution procedures related to certain dental materials.
b2	Describe the Rheological and optical properties of dental materials and how they affect material selection.
	C. Professional and Practical Skills:
	None
	D. Transferable Skills:
d1	Commit to continuous education, self-development, and lifelong learning to remain updated with advances in dental practice
d2	Analyze and resolve problems and deal with uncertainty
I= Int rod uce d, P= Pra ctic ed or M/ A= Ma ste red /Ad van ced	

V. Course Contents:				
A. Theoretical Aspect:				
No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	Introduction	Introduction to Sciences of Dental Material	2	4
2	Structure of Matter	- Fundamental Particles - Fundamental Forces - Atomic Particles - Atomic Nomenclature	1	2
3	Mechanical properties.	- Physical properties - Thermal properties	2	4
4	Mechanical properties.	- Chemical properties - Biological properties	1	2
5	Physical Properties	- Rate of set - Working time - Setting time	1	2
6	Tarnish and Corrosion	- Types - Causes - Variables affecting tarnish and corrosion	1	2
7	Metallurgy	- Composition - Properties and uses of most dental materials used in the dental field. - Physical and mechanical properties.	1	2
8	Model and Die Materials	- Gypsum - Stone - Die stone	1	2
9	Impression Materials	- Hydrocolloid - Non-hydrocolloid - Digital impression (Intra-oral scanner IOS)	2	4
10	– Revision		2	4
11	– Final exam		2	4

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	
Number of Weeks /and Units Per Semester			16	32	
No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Introduction	Introduction to Sciences of Dental Material	2	4	a1, a2, b1, b2, d1, d2
2	Structure of Matter	- Fundamental Particles - Fundamental Forces - Atomic Particles - Atomic Nomenclature	1	2	a1, a2, b1, b2, d1, d2
3	Mechanical properties.	- Physical properties - Thermal properties	2	4	a1, a2, b1, b2, d1, d2
4	Mechanical properties.	- Chemical properties - Biological properties	1	2	a1, a2, b1, b2, d1, d2
5	Physical Properties	- Rate of set - Working time - Setting time	1	2	a1, a2, b1, b2, d1, d2
6	Tarnish and Corrosion	- Types - Causes - Variables affecting tarnish and corrosion	1	2	a1, a2, b1, b2, d1, d2
7	Metallurgy	- Composition - Properties and uses of most dental materials used in the dental field. - Physical and mechanical properties.	1	2	a1, a2, b1, b2, d1, d2
8	Model and Die Materials	- Gypsum - Stone - Die stone	1	2	a1, a2, b1, b2, d1, d2
9	Impression Materials	- Hydrocolloid - Non-hydrocolloid - Digital impression (Intra-oral scanner IOS)	2	4	a1, a2, b1, b2, d1, d2
10	– Revision		2	4	a1, a2, b1, b2, d1, d2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
11	– Final exam		2	4	a1, a2, b1, b2, d1, d2
Number of Weeks /and Units Per Semester			16	32	

B. Case Studies and Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1	Introduction to DM Lab	2	4
2	Taking a rigid impression	2	4
3	Taking a hydrocolloid and an Elastomer impression	2	4
4	Taking a Digital impression (Intra-oral scanner IOS)	2	4
5	Pouring impression	3	6
6	Review	3	6
Number of Weeks /and Units Per Semester		14	28

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1	- Introduction to DM Lab	2	4
2	- Taking a rigid impression	2	4
3	- Taking a hydrocolloid and an Elastomer impression	2	4
4	- Taking a Digital impression (Intra-oral scanner IOS)	2	4
5	- Pouring impression	3	6
6	- Review	3	6

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
Number of Weeks /and Units Per Semester		14	28

خطأ! لم يتم العثور على مصدر المرجع.

VI. Teaching Strategies of the Course:

VII. Assessment Methods of the Course:

خطأ! لم يتم العثور على مصدر المرجع.

VIII. Assignments:

خطأ! لم يتم العثور على مصدر المرجع.

IX. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Attendance and participation	1-13	10	10%
2	Quizzes	6, 12	10	10%
3	Midterm Theoretical Exam	8	20	20%
4	Final practical Exam	14	20	20%
5	Final Theoretical Exam	16	40	40%
Total			100	100%

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Attendance and participation	1-13	10	10%
2	Quizzes	6, 12	10	10%
3	Midterm Theoretical Exam	8	20	20%
4	Final practical Exam	14	20	20%
5	Final Theoretical Exam	16	40	40%

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
Total			100	100%

X. Learning Resources:

- Written in the following order: Author, Year of publication, Title, Edition, Place of publication, Publisher.

1- Required Textbook(s) (maximum two):

- 3- John J.Mannappallil.Jaypee(2003), Basic Dental Materials, 2nd edition, published by Jiendar PVij.Jaypee Brothers Medical Publisher, New Delhi, India.
John M.Powers.Ronald L.Sakaguchi(2007), Graigs Restorative Dental Materials, 12th edition, published by Elsevier India Private Limited-New Delhi, India.

2- Essential References:

- 3 Sakguchi RL, Power JM; Craig's Restorative Dental Materials. 13th edition, 2012, Elsevier.
- 4- Anusavice KJ, Shen C, Rawls HR; Phillips' Science of Dental materials. 12th edition, 2013, Elsevier.

3- Electronic Materials and Websites, etc.:

Websites:

- 2- Use Google Engine Search www.google.com
- 3- Journals:
- 4-
- 5-
- 6- [Other](#) Web Sources:
- 7- 1.....

XI. Course Policies: (Based on the Uniform Students' Bylaw (2007))

1	Class Attendance:
	Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	Tardiness:
	A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	Exam Attendance/Punctuality:
	No student shall be allowed into the exam hall after 30 minutes of the start time, and shall not

	leave the hall before half of the exam time has passed.
4	Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	Cheating: Cheating is an act of fraud that results in the cancellation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated in the Uniform Students' Bylaw (2007) shall apply.
6	Forgery and Impersonation: Forgery/Impersonation is an act of fraud that results in the cancellation of the student's exam, assignment, or project. If it takes place in a final exam, the penalties stipulated in the Uniform Students' Bylaw (2007) shall apply.
7	Other policies: The University's official regulations in force will be strictly observed, and students shall comply with all rules and regulations of the examination set by the Department, Faculty, and University Administration.