



Umm Al-Qura University
Faculty of Dentistry
Vice Deanship
of Academic Development
& Community Service

وحدة تطوير المناهج
Curriculum Development Unit

جامعة أم القرى
كلية طب الأسنان
وكالة الكلية للتطوير الأكاديمي
وخدمة المجتمع



Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CS)

Course Name	Preclinical Operative and Biomaterials	
Course Code	190432006	
Academic Level	3 rd Level	
Semester	1 st & 2 nd	
Study Plan No	33	
Department	Conservative and Restorative Dentistry	
Division	Restorative dentistry, Dental Biomaterials	
Academic Year	2018-2019 AD – 1439 -1440 AH	
Contact hours	Theoretical	4 / week
	Practical	2 / week
	Clinical	Non / week
Total Contact Hrs	6 / week	
Total Credit Hrs	10	

Course Specifications

Institution: Umm Al Qura University	Date of Report: 22/5/2018
College/Department: Faculty of Dentistry / Department of Restorative Dentistry	

A. Course Identification and General Information

1. Course title and code: Preclinical operative and biomaterials / Code: 190432006			
2. Credit hours: 10			
3. Program(s) in which the course is offered: Bachelor Degree of Dental Medicine and Surgery (B.D.S.)			
4. Name of faculty member responsible for the course: Dr. Ahmed Zidan Assistant Prof. of Dental Biomaterials			
5. Level/year at which this course is offered: 3 rd year (first & second semesters).			
6. Pre-requisites for this course: Successful completion of the 2 nd year courses.			
7. Co-requisites for this course: List of courses that are taken concurrently with this course: - In the 1 st semester: Cariology I, Oral Medicine I, and Applied medical science. - In the 2 nd semester: Oral medicine I, Preclinical Periodontology, Introduction to clinical experience, Introduction to biostatistics, and Behavioral management.			
8. Location: Main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input checked="" type="checkbox"/> Yes	What percentage?	<input type="text" value="50"/>
b. Blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. E-learning	<input checked="" type="checkbox"/> Yes	What percentage?	<input type="text" value="10"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. Other	<input checked="" type="checkbox"/> Yes	What percentage?	<input type="text" value="40"/>
Comments:			
a. Traditional classroom: Face to face and interactive lectures and group discussion.			
c. E-learning: On-line assignments and questions.			
f. Other: includes preclinical practical session in phantom lab.			

B Objectives

1. What is the main purpose for this course?

This course is designed so that it will provide an opportunity to the student to consolidate and extend their skills and knowledge in Operative dentistry. Operative dentistry is the discipline that is concerned with the procedures necessary to eliminate the lost tooth structure and provide a biomechanically compatible room for accommodation and retention of a restorative material. This stream builds on the knowledge and skills gained in the dental material course that focuses on understanding the physico-mechanical and chemical properties and clinical applications of all the commonly used direct restorative materials.

2. Briefly describe any plans for developing and improving the course that are being implemented:

a- Increasing the share of On-line assignments and questions.

b- Implementing more advance techniques during practical training that help the students in the upcoming clinical courses.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Didactic		
1- Introduction to operative dentistry and dental biomaterial	1	4
2- Structure of matter 3- Tooth form and occlusion 4- Cavity classification and nomenclature	2	8
5- Physical properties 6- Carious & Non-carious lesions	2	8
7- Mechanical properties 8- Cavity preparation	4	16
9- Instruments 10- Metallurgy 11- Tarnish and corrosion	5	20
12- Introduction to adhesion	2	8
13- Polymers 14- Introduction to indirect restorations	2	8

15- Dental cements 16- Pulp protection therapy	3	12
17- Dental amalgam	3	12
18- Resin composite restorations	4	16
Practical		
1- Introduction and cavity classification and nomenclature.	2	4
2- Principles of cavity prep & outline form (Simple class I and compound Class I and class II)	11	22
3- Hand cutting instruments	1	2
4- Practical: Amalgam restoration for class I and II	4	8
5- Practical: Resin composite cavity preparation (Class I – V)	4	8
6- Practical: Resin composite restoration for class I - V	4	8
7- Practical: Indirect cavity preparation	2	4
Total	Didactic: 28 Practical: 28	Didactic: 112 Practical: 56

2. Course components (total contact and credits hours):						
	Lecture	Tutorial	Laboratory	Practical	Other	Total
Contact Hours	112	--	--	56	--	168
Credit	8	--	--	2	--	10

3. Additional private study/learning hours expected for students per week.	5 hrs / week
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The *National Qualification Framework* provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

Every course is not required to include learning outcomes from each domain.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Recognize the physico-mechanical and chemical properties of different materials used in dentistry.	Interactive lectures Group discussions Practical sessions Assignments	- Quiz I and II - Mid-year written examination. - Final year written examination. - Mid-year and final OSPE - Assignments assessments using rubrics.
1.2	Describe different cavity preparations based on normal tooth form and occlusion.		
2.0	Cognitive Skills		
2.1	Predict indications, limitations and manipulation of different restorative dental materials based on their properties.	Interactive lectures Group discussions Practical sessions Assignments	- Quiz I and II - Mid-year written examination. - Final year written examination. - Mid-year and final OSPE - Assignments and presentation assessments using rubrics
2.2	Correlate the adhesion principles to bonding techniques in different dental situations.		
2.3	Estimate the properties of different classes of materials to the relevant dental situations.		
3.0	Interpersonal Skills & Responsibility		
3.1	Show responsibility and ethics in carrying out tasks.	Group discussion Assignments.	Assignments and presentation assessments using rubrics
3.2	Demonstrate effective communication with colleagues and instructors during group discussions and assignment presentation		

4.0	Communication, Information Technology, Numerical		
4.1	Search electronic journals and databases for obtaining and interpreting appropriate information.	Assignments	- Assignments and presentation assessments using rubrics.
5.0	Psychomotor		
5.1	Draw different curves describing properties of various materials used in dentistry.	Lab demonstrations Practical sessions	First semester competency examination. Mid-year practical examination (OSPE). Second semester competency examination.
5.2	Perform skills of Preparing different cavity designs and applying various restorative materials.		- Final year practical examination (OSPE).

Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
Cognitive Skills	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
Communication, Information Technology, Numerical	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
Psychomotor	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

Suggested **verbs not to use** when writing measurable and assessable learning outcomes are as follows:

Consider Maximize Continue Review Ensure Enlarge Understand
Maintain Reflect Examine Strengthen Explore Encourage Deepen

Some of these verbs can be used if tied to specific actions or quantification.

Suggested assessment methods and teaching strategies are:

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful

for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1-	Assignment I	Week 6	5 %
2-	Quiz I	Week 8	5 %
3-	Mid –year practical exam	Week 16	5 %
4-	Mid –year written examination (MCQ and short Essays)	End of first semester (Week 19)	10 %
5-	Mid –year OSPE	Week 19	5 %
6-	Quiz II	Week 25	5 %
7-	Assignment II	Week 28	5 %
8-	Student presentations (presentations and seminars)	Week 32	5 %
9-	Practical Requirements	Continuous assessment during course, to be delivered by Week 34	5%
10-	Final year practical exam	Week 35	10 %
11-	Final year written examination (MCQ and short Essays)	End of academic year Week 37	30 %
12-	Final year OSPE	Week 37	10%
	Total		100%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

1 hr/week

E. Learning Resources

1. List Required Textbooks

1. Powers JM and Sakaguchi RL: “Craig’s Restorative Dental Materials” 12th ed., Mosby, Elsevier, 2011.
2. Anusavice KJ and Ralph W: “Phillips’ Science of Dental materials” 11th ed., W.B. Saunders Company, 2003.

<p>3. Roberson T, Heymann H and Sturdevant J: "Sturdevant's Art & Science of Operative Dentistry" 6th ed., Mosby, Elsevier, 2013.</p> <p>4. Summitt J, Robbins J, Hilton T and Schwartz R: "Fundamentals of Operative Dentistry" 3rd ed., Quintessence Publishing Co. Inc., 2006.</p>
<p>2. List Essential References Materials (Journals, Reports, etc.)</p> <ul style="list-style-type: none"> - Journal of Dental Materials. - Journal of Operative Dentistry. - Journal of Dental research. - British Dental Journal.
<p>3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)</p> <ol style="list-style-type: none"> 1. McCabe JF & Walls AWG: "Applied Dental Materials" 9th ed., Blackwell Publishing, 2008. 2. O'Brien WJ: "Dental Materials and their selection" 4th ed., Quintessence Publishing Co. Inc., 2008. 3. Freedman G: "Contemporary Esthetic Dentistry" 1st ed., Mosby, Elsevier, 2012. 4. Terry D, Leinfelder K and Geller W: "Aesthetic & Restorative Dentistry" 1st ed., Everest publishing media, Stillwater, 2009.
<p>4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)</p> <ol style="list-style-type: none"> 1. The American Journal of Esthetic Dentistry; Edited by Simonsen RJ. Available at "http://www.quintpub.com/journals/ajed/gp.php?journal_name" 2014 Quintessence Publishing Co Inc. Accessed Jan.2014 2. The International Journal of Prosthodontics, Edited by Zarb GA. Available at "http://www.quintpub.com/journals/ajed/gp.php?journal_name" 2014 Quintessence Publishing Co Inc. Accessed Jan.2014 3. Freedman: Contemporary Esthetic Dentistry, Copyright © 2012 by Mosby, Elsevier available at: "www.ce-dentistry.com" Accessed December 2012. 4. http://www.ncbi.nlm.nih.gov/books/NBK3827/#pubmed 5. http://www.engineeringtoolbox.com/material-properties-t_24.html 6. www.elsevier.com Copyright © 2014 Elsevier B.V.
<p>5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.</p> <p>Power point presentations of lectures in the form of slides show are uploaded to the academic website of the faculty (My UQUDent) before each lecture.</p>

F. Facilities Required

<p>Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)</p>
<p>1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <p>a. Classrooms:</p> <p>Each teaching classroom in the faculty is large enough to accommodate 50 students at one time & it includes enough number of comfortable seats arranged in rows with spaces between them. These classrooms are supplied with audiovisual equipments, data show, a large screen, screen pointers & other equipments needed for the PowerPoint presentation of lectures as well as smart board.</p>

<p>b. Dental simulation laboratory: Laboratory is equipped with 30-40 manikins simulation stations connected to air, vacuum, and water. A master simulation station connected with audio-visual monitor or projector for demonstration purposes by instructors. Individual monitors per simulation stations is optional.</p> <p>c. The lab has an attached room: containing different instruments and materials to issue to students (all dental materials used in the course like amalgam, composites, bases, liners, hand pieces, hand instruments.)</p> <p>d. Refrigerator: To store dental materials</p> <p>e. Laboratory assistant: To issue materials and instruments to students and keep records of them</p>
<p>2. Computing resources (AV, data show, Smart Board, software, etc.) All students will have the opportunity to use computer with internet access in a comfortable place. All the instructors and the students have the opportunity to use smart board and data show during their presentations.</p>
<p>3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Study areas for students to revise their lessons.</p>

G Course Evaluation and Improvement Processes

<p>1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:</p> <ul style="list-style-type: none"> - A course evaluation questionnaire is designed to assess the effectiveness of the course regarding objectives, teaching facilities, instructor, assessment process and resources. It is distributed to all the students at the end of the course, data is analyzed, interpreted and discussed by the course director or committee in order to issue an improvement plan for any difficulties facing the students. - Focus group discussion with the students to validate the questionnaire results.
<p>2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor:</p> <ul style="list-style-type: none"> - A course evaluation questionnaire is designed to assess the effectiveness of the course. It is distributed to instructors who participated in teaching the course at the end of the semester; data is analyzed, interpreted and discussed by the course director or committee. - An annual course report is compiled by the course director or committee in light of the results of students' performance as well the results of the course evaluation questionnaire by students.
<p>3 Processes for Improvement of Teaching:</p> <ul style="list-style-type: none"> - More training on online work through the E-learning unit. - Workshops for staff development
<p>4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution):</p> <ul style="list-style-type: none"> - BLINDED double checking of the students answers by two evaluators.
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement:</p> <p>The course is revised annually after its delivery in light of the results of students' performance (students' grades) and the results of the course evaluation questionnaire by both students and teaching staff. The course director or committee discusses these issues and put an improvement plan for each spotted problem. They revise the course content and intended learning objectives. Any changes in objectives, teaching strategies or assessment methods should be documented in the course specification of the next</p>

year. Major changes should not be considered except after being approved by the curriculum committee.

Faculty or Teaching Staff:

Signature:

Course coordinator: Dr. Ahmed Zidan; Assistant Prof. of Dental Biomaterials.

Course co-coordinator: Dr.Safinaz Abdelwahab; Assistant Prof. of operative Dentistry.

Unit supervisor: Prof. Dr. Ibrahim Hammuda; Prof. of Dental Biomaterials.

Prof. Dr. Nadia Amin Badr; Prof. of Dental Biomaterials.

Dr. Sahar Elmarsafy; Associate Prof. of Operative Dentistry.

Dr. Nada AbdelAlem; Assistant Prof. of Operative Dentistry.

Dr. Yasser Maher ElBouhi; Assistant Prof. of Operative Dentistry.

Dr. Moans Mohamed Hany; Assistant Prof. of Operative Dentistry.

Dr. Reem Ahmed AbdelFattah; Lecturer of Dental Biomaterials.

Date Report Completed:

Received by:

Dean/Department Head Signature:

Date: