

**411 RDS**

**Clinical Operative Dentistry II**

**Course Director (DUC)**

**PROF. KHAMIS HASSAN**

## COURSE INFORMATION

### ▪ COURSE/CREDIT HOURS

First Semester	and	Second Semester
1 + 0 + 1		0 + 0 + 1

This course is given in the fourth year in two semesters as the final operative course. In the first semester there will be one lecture and one clinical session and in the second semester there will be one clinical session.

### ▪ COURSE OBJECTIVE

All lectures are aimed towards the reinforcement of the previous knowledge gained in the early courses and help in updating the students' information. It will be directed towards the clinical applications of the principles of different cavity preparation as well as the different types of restorative materials. In addition the student will be introduced to various treatment modalities in the area of esthetic dentistry in anterior and posterior teeth.

### ▪ READING ASSIGNMENT

Textbook of Operative Dentistry, Baum, Philips, Lund, 3<sup>rd</sup> edition  
The Art and Science of Operative Dentistry, Sturdevant, 3<sup>rd</sup> edition  
Fundamentals of Operative Dentistry, Schwartz, 2<sup>nd</sup> edition

### ▪ Grade Distribution

Theory Component	-	40%
*Quizzes	-	10%
Final Exam	-	25%
Subjective	-	5%
Clinical Component (Weekly Clinical Works)	-	60%

## COURSE DESCRIPTION

### I. THEORY COMPONENT

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\* At the beginning of each lecture

Lecture	Date	Topic	Faculty
1		Introduction	
2		Adhesion to tooth structure	
3		Direct anterior composite resin restorations	
4		Direct posterior composite resin restorations	
5		Restoration of cervical lesions ~ I	
6		Restoration of cervical lesions ~ II	
7		Restoration of badly broken down teeth ~ I	
8		Restoration of badly broken down teeth ~ II	
		<b>Mid-Term Written Exam</b>	
9		Restoration of endodontically treated teeth	
10		Cast gold restorations	
11		Tooth colored inlays and onlays ~ I	
12		Tooth colored inlays and onlays ~ II	
13		Esthetic dentistry ~ I	
14		Esthetic dentistry - II	
15		Esthetic dentistry III	
	TBD	FINAL WRITTEN EXAM	

## II. CLINICAL COMPONENT

This clinical course will be a continuation of the first clinical course given in the third year. One clinical session in each semester, students have to finish the assigned requirements and to be evaluated according to the current evaluation criteria (subjective and objective) set by the Division.

Students are expected to perform all their clinical practice to the highest professional level. All operative procedures are expected to be performed successfully in this course with high standards of quality under full faculty supervision. Students are responsible for scheduling their patients under the supervision of their instructors and in coordination with the Booking Office.

**For every patient:** Files should be present, mounted recent radiographs and other relevant diagnostic aids, if required, before starting the treatment. Treatment plan should be discussed and approved by the instructor before the commencement of treatment. Grades for appearance, attitude, punctuality, attendance, and successful management will be counted. Professionalism, in general is our main objective.

### MINIMUM CLINICAL REQUIREMENTS

Students have to successfully finish the following minimum requirements:

Treatment Plan	Class I Amalgam	Class II Amalgam	Amalgam Build-up	Anterior Composite Resin	Class I Composite	Class II Composite	PRR	Glass Ionomer	TOTAL
3	3	7	4*	7 (3) III, (1)IV, (3)V	4	4	2	4 Class. V	38

### IMPORTANT CLINICAL INFORMATION

- Requirements are mandatory for passing the course.
- Anterior composites:** The student must complete all preparation types which include 3 class III, 1 class IV & 3 class V of composite resin restorations.  
Direct access class II composite resin restorations are considered class V.  
**Large composites:** More than half of the tooth is missing.
- Sandwich technique (glass ionomer + composite resin) is considered as composite restoration.

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\* 2 with pins or direct post

4. **Glass ionomer cement:** Experience with different GIC materials (conventional GIC, resin modified GIC and compomer) is essential.
5. Class II mesial and distal boxes in the same tooth are considered as two separate restorations. The same is true for separate class I and II restorations in a simple tooth (e.g.: upper first molar)
6. **Amalgam build-up:** This procedure is defined as building the tooth up with amalgam. This would mean that at least one major cusp is lost and auxiliary means of retention is incorporated within the preparation for retaining the amalgam (**pin, slot, direct post, bonded amalgam, amalgam pin**).

The restoration should be clinically acceptable to be considered as final restoration and not as foundation for crown or a pretreatment for endodontic procedures.

7. Polishing of amalgam is mandatory. If amalgam restoration is not polished then **20%** of the points for the restoration will be deducted. As a general policy students will not be allowed to start a new restoration unless polishing of the previous one was done.
8. Students must complete their requirements; otherwise 2% deduction will be applied for each restoration requirement not complete and 3% for each missing treatment plan. For each completed case, the student will get 2% credit.
9. **Special skill requirement:** This will be awarded as extra point and it could be any of the following:
  - Casting (onlay, three quarter crown, seven eight crown)
  - Indirect composite inlay or onlay (with cusp reduction)
  - Porcelain inlays or onlays (with cusp reduction)
  - Selection and approval of the special skill case should be done in the beginning of the second semester. The student is required to write and submit a report about the case containing a detailed account of the treatment procedure. The deadline for starting the case is the first week of April.
  - Porcelain veneer cases will be approved by the Course Director in special circumstances.

## GUIDELINES

1. Each week you have to enter the date, patient information, works attempted or completed, and have your instructor sign for you. You absolutely must account for your clinical time.
2. By the end of the academic year, you should have at least three (3) cases of completed comprehensive operative treatment.
3. If you do three (3) or more teeth for any emergency or single appointment patient, you must have a treatment plan for that case.
4. Remember, you cannot do more than one (1) build-up per instructor.
5. Attached to your evaluation for (before periapicals) and (after bitewings) radiographs for all build-up and special skill cases.
6. Do not write on the (finished and polished requirements) page of your evaluation forms, it is for instructor's use only.
7. Make sure you complete all the information on your evaluation forms. Also, do not scratch out or erase the information you entered, if the wrong information is filled-out, please start on another line.
8. Finish all the restorations you started.
9. The special skill case must be approved before end of March 2006.

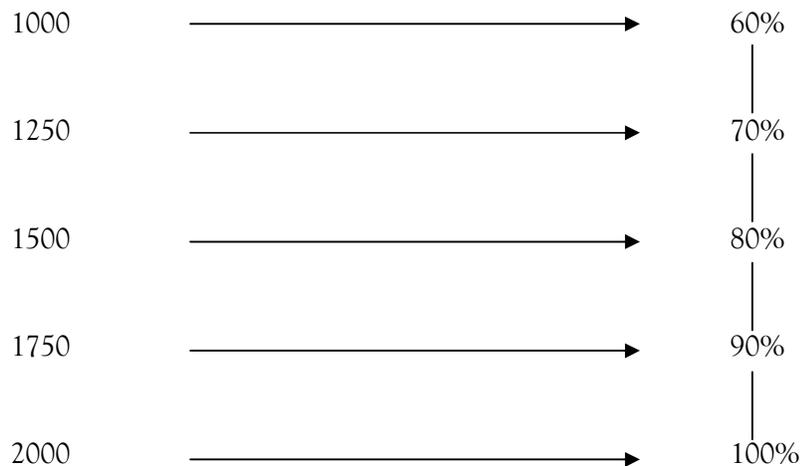
You should make at least three (3) copies of the case report as follows:

1. Course Director
2. Supervising Instructor
3. You

Why 1000 points is considered as the passing grade (60%) ?

	3	7	4	4	4	3	1	3	2	4	3	38
<b>Requirement</b>	Class I Amalgam	Class II Amalgam	Amalgam Build-up	Class I Composite	Class II Composite	Class III Composite	Class IV Composite	Class V Composite	PRR	GI C	TX Pln	TOTAL
Average Difficulty Factor	3	5.5	9	3	5	3.5	4	3.5	2	3.5	3	-
Multiplied by Requirement	9	38.5	36	12	20	10.5	4	10.5	4	14	9	167.5
Multiplied by Passing Grade 60%	54	231	216	72	120	63	24	63	24	84	54	1000

Student who collects 1000 points will get 60% of the clinical part (60 grades). Starting from 60% and above each 25 points equals to 1%, according to the following scale:



Example: If student X collected 1300 points, then:

1250 = 70% (the student still has 50 points more)

Each 25 points = 1% (50 points = 2%)

Total percentage = 72%

The total grade = 0.72 x 60 = 43.2 (out of 60)

## LECTURE 1

**CONTENTS:**

- A. Subject Area : Restorative Dentistry
- B. Lesson : Introduction and Course Description
- C. Sequence : Lecture 1 of 1 lecture
- D. Content
  - 1. Introduction to 411 RDS course.
  - 2. Explain the course rules and regulations.
  - 3. Explain how to enter information and complete the clinical progress book.

**Required Reading:**

- 1. Lecture presentation

## CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Adhesion to Tooth Structure
- C. Sequence : Lecture 1 of 1 lecture
- D. Content
  - 1. Compare bonding of enamel to bonding to dentin.
  - 2. Discuss the impediments to resin bonding with dentin.
  - 3. Know the different generations of DBA & characteristics of the 4<sup>th</sup>, 5<sup>th</sup> & 6<sup>th</sup> generations.
  - 4. Discuss the dentin acid etching technique, its mechanism and safety.
  - 5. Explain the characteristics of the resin/dentin inter-phase and define the hybrid & hybridoid layers.
  - 6. Explain the concept of wet bonding (collapse & re-expansion of the collagen network) and the overwet phenomenon.
  - 7. Know the types of primers (acetone-based, water-based and self-etching)
  - 8. Introduce the students to new concepts (direct pulp capping with adhesives and treating dentin adhesives with DBA).

## Required Reading:

- 1. The Science of Bonding: from first to sixth generation  
Kugel G, Ferrari M., JADA 2000; 131, pages 208-255
- 2. Dentin Bonding State of the Art 1999  
Perdigao J, Lopes M., Compendium 1999; 20, pages 1151-1162

## LECTURE 3

### CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Direct Anterior Composite Resin Restorations
- C. Sequence : Lecture 1 of 1 lecture
- D. Content
  - 1. Review classification of composites.
  - 2. A quick overview of direct anterior restorations with composite resins (class III & IV).
  - 3. Restoration of large cavities with emphasis on the layering technique for different shades of composites and staining using composite stains to achieve esthetic results.
  - 4. A quick review of incremental placement technique.
  - 5. Review of composite polishing tools and technique.

### Required Reading:

- 1. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapter 9, pages 236-259
- 2. Color Atlas of Dental Medicine: Esthetic Dentistry  
Joseph Schmitseder  
Pages 125-142

## LECTURE 4

### CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Direct Posterior Composite Resin Restorations
- C. Sequence : Lecture 1 of 1 lecture
- D. Content
1. To know the indications for placing composite resin in posterior occlusal cavities.
  2. To know the limitations of the materials and the techniques used to counteract their effects.
  3. To discuss in detail the clinical steps of placing composite resin restorations.
  4. To know the advantages and disadvantages of packable composites.
  5. To know technique for tunnel preparations and its advantages and limitations.
  6. Discuss flowable composites their uses, advantages & disadvantages.
  7. Discuss advantages of composite surface sealants.

**Required Reading:**

1. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapters 10, pages 260-305
2. Handout based on current literature

**LECTURE 5**

**CONTENTS:**

- A. Subject Area : Restorative Dentistry

- B. Lesson : Restoration of Cervical Lesions I
- C. Sequence : Lecture 1 of 2 lectures
- D. Content
1. Briefly discuss etiology of cervical lesion carious and non-carious, and the assessment of the risk factors associated with it.
  2. To understand the methods of isolation of such cavities including 212 clamp and surgical isolation.
  3. To know the scope of materials available for such restorations and the indications for each (composite, conventional GIC, resin modified GIC, compomer & amalgam)
  4. Quick review of chemistry, advantages & disadvantages of the different materials.

**Required Reading:**

1. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapter 12, page 365-376; chapter 13, pages 377-385 & chapter 14,  
pages 386-400

**LECTURE 6**

**CONTENTS:**

- A. Subject Area : Restorative Dentistry

- B. Lesson : Restoration of Cervical Lesions II
- C. Sequence : Lecture 2 of 2 lectures
- D. Content
  - 1. To know the placement technique of the different materials and their finishing & polishing procedures.
  - 2. To know the steps for incremental placement technique and the veneering technique.
  - 3. To understand the indications for the sandwich technique in class III, IV & V and how it is done.
  - 4. Briefly discuss the etiology and treatment of cemental sensitivity.

**Required Reading:**

- 1. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapters 12, 13 & 14

**LECTURE 7**

**CONTENTS:**

- A. Subject Area : Restorative Dentistry
- B. Lesson : Restoration of Badly Broken Down Teeth
- C. Sequence : Lecture 1 of 2 lectures

D. Content

4. Understand the management of deep carious lesions, diagnosis and treatment options (pre-operative assessment).
5. Know the methods of step wise excavation of carious lesions.
6. Understand the difference between indirect and direct pulp capping.
7. Know the dynamics of indirect pulp capping and the steps of treatment for direct pulp capping.
8. Know and evaluate the rate of success in both direct and indirect pulp capping
9. Know how to determine the appropriate treatment for severely broken down teeth and the factors that must be taken into consideration.
10. Know how and when to use alternative retentive features (like slot, amalgapins, boxes, etc.) to restore badly broken down teeth.
11. Know the causes of restoration failure.

**Required Reading:**

2. The Art and Sciences of Operative Dentistry  
3<sup>rd</sup> edition, Sturdevant  
Chapter 15, pages 500-533  
4<sup>th</sup> edition, chapter 19, pages 763-797
2. Textbook of Operative Dentistry  
3<sup>rd</sup> edition, Baum, Philips & Lund  
Chapter 8, pages 161-173 & 176-184
3. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz Chapters 5, pages 98-107

## LECTURE 8

### CONTENTS:

- II
- A. Subject Area : Restorative Dentistry
  - B. Lesson : Restoration of Badly Broken Down Teeth
  - C. Sequence : Lecture 2 of 2 lectures
  - D. Content
    - 1. To know the different kind of pins available for use with large amalgam restoration.
    - 2. To know when and where to use pin retained amalgam restorations and their clinical technique.
    - 3. To understand the steps of the TMS pin retention method.
    - 4. To know the causes and management of failure in pin retained amalgam.
    - 5. To understand the techniques of bonding amalgam to tooth structure and its clinical procedures.

### Required Reading:

- 1. The Art and Sciences of Operative Dentistry  
3<sup>rd</sup> edition, Sturdevant  
Chapter 15, pages 500-533  
4<sup>th</sup> edition, chapter 19, pages 763-797
- 2. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapters 11, pages 321-360

## LECTURE 9

### CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Restoration of Endodontically Treated Teeth
- C. Sequence : Lecture 1 of 1 lecture
- D. Content
  - 1. Understand the importance of proper management of endodontically treated teeth in restorative dentistry.
  - 2. How to diagnose and determine the level of treatment in case of badly broken down teeth.
  - 3. Understand and know the different technique in managing anterior endodontically treated teeth.
  - 4. Understand and know the different technique in managing posterior endodontically treated teeth.

### **Required Reading:**

- 1. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapter 21, pages 546-566

## LECTURE 10

### CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Cast Gold Restorations
- C. Sequence : Lecture 1 of 1 lecture
- D. Content
  - 1. Indication and contraindication of onlays & partial veneer castings.
  - 2. Understand the concept of using gold casting.
  - 3. Know and understand the steps of preparing partial veneer and onlay preparations.
  - 4. Understand the different designs, preparation, & importance of tissue management.
  - 5. Acquaint the student with the proper selection of impression material and cements used during the clinical procedure.
  - 6. Know and understand the steps of temporization and cementation.

### Required Reading:

- 1. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, J. Summitt, J. Robbins, R. Schwartz  
Chapter 21, pages 500-525
- 2. The Art & Science of Operative Dentistry  
4<sup>th</sup> edition, Sturdevant  
Chapter 120, pages 799-869

## LECTURES 11 & 12

### CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Tooth Colored Inlays and Onlays
- C. Sequence : Lecture 1 & 2 of 2 lectures
- D. Content
  - 1. To understand indications and contraindication to tooth colored inlays and onlays.
  - 2. To know the different systems of constructing tooth colored inlays and onlays.
    - a. Composite resin inlay and onlays
    - b. Conventional porcelain inlays
    - c. Glass ceramic inlays and onlays (castable, injection molded, CAD-CAM and copy milled materials)
  - 3. To know the indications and advantages for each system.
  - 4. The clinical and laboratory steps of this technique will be presented.
  - 5. Cementation using resin-luting agents will be discussed in details.

### Required Reading:

- 1. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapters 18, pages 476-499
- 2. Handout based on current literature

## LECTURE 13

### CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Esthetic Dentistry I
- C. Sequence : Lecture 1 of 3 lectures
- D. Content
  - 1. To know the different treatment modalities to restore conservatively discolored teeth and slightly malformed or spaced teeth according to the following:
    - a. Tooth whitening. Bleaching (vital):
      - 1. Chairside (in-office)
      - 2. Home bleaching
  - 2. Indications and contraindications
  - 3. Step-by-step clinical approach.

### Required Reading:

- 1. Fundamentals of Operative Dentistry: A Contemporary Approach  
Schwartz  
Chapter 15, pages 401-426

## LECTURE 14

### CONTENTS:

- A. Subject Area : Restorative Dentistry
- B. Lesson : Esthetic Dentistry II
- C. Sequence : Lecture 2 & 3 of 3 lectures
- D. Content
  - 1. To know the different treatment modalities to restore conservatively discolored teeth and slightly malformed or spaced teeth according to the following:
    - a. Enamel micro-abrasion
    - b. Enameloplasty
    - c. Diastema closure using composite resin
  - 2. Indications and contraindications
  - 3. Step-by-step clinical approach.
  - 4. To know how to manage discolored malformed or spaced teeth that did not respond to the treatment options listed in Part I and II.
    - Laminate veneers:
      - Direct (composite resins)
      - Indirect

### Required Reading:

- 1. Handout based on current literature
- 2. Fundamentals of Operative Dentistry: A Contemporary Approach  
2<sup>nd</sup> edition, Schwartz  
Chapters 16, pages 427-450