

THIRD YEAR

**311 RDS**  
**RESTORATIVE PROCEDURES**



Course Director: Dr. Talal Al Qunaian

## COURSE DESCRIPTION

This is the first clinical operative course that builds in the preceding principles and techniques already presented in the pre-clinical courses while expanding the area of diagnosis and treatment planning. Attention is given to efficient utilization of the clinical facilities and the need for proper patient record and clinical record systems. The students are expected to carry out simple restorative procedures under *close staff supervision*.

This course is offered in the 3rd year as one lecture and one clinical in the first half and one clinical in the second half of the year. A total of 14 lectures will be given with a five-minute quiz at the beginning of each lecture.

## COURSE GOALS

The student will be trained to treat the following simple restorative cases: Pit and fissure sealant, PRR, Class I and Class II amalgam, Class I, II, III, IV and V Composite, Glass Ionomer (GI) and Resin Modified Glass Ionomer (RMGI). In order to achieve this, the student will:

1. Be able to describe causes, initiation and progress of the carious lesion, its treatment and prevention.
2. Comprehend the facts and principles involved in the Clinical Protocol.
3. Apply concepts and principles from pre-clinical to new situations in the restorative clinic during treatment of the patient.
4. Be able to clinically record the status of the oral cavity with regard to soft tissues, oral hygiene, gingival inflammation, active and arrested carious lesions and restorations using dental radiographs and dental instruments to arrive at a well established treatment plan based on a problem list.
5. Demonstrate correct usage of equipment, methods, procedures and materials in the restorative projects.

## COURSE REQUIREMENTS

- Attend lectures and all clinical sessions.
- Assigned reading: The Art & Science of Operative Dentistry. Sturdevant, 4<sup>th</sup> Edition (2001), Schwartz's Fundamentals of Operative Dentistry 2nd Ed, 2000, Chapter 10
- Finish the minimum clinical requirements.

## COURSE OBJECTIVES

Upon completion of the course the student should be able to:

- Diagnose oral disease (caries etiology) and identify patient at high risk.
- Diagnose dental pain and make differential diagnosis of dental pain.
- Perform pulp vitality test using different methods.
- Write a proper treatment plan and educate patient on his/her dental needs.
- Oral hygiene motivation and patient education.
- Select proper instruments (hand cutting instruments, burs, etc.) for cavity preparation.
- Perform proper management of carious lesions of simple and moderate depths.  
***Restoration of teeth with very deep caries with or without broken down cusps is not encouraged. Such cases should be properly referred to 411, interns or specialist clinic.***
- Write proper referral signed by the clinical instructor using the prescribed form.
- Design a cavity, for amalgam restoration, to a biologically and mechanically acceptable level.
- Properly select and use bases and liners.
- Correctly use matrices and wedges.
- Perform amalgam restoration to a biologically, physiologically and mechanically acceptable level.
- Do proper finishing and polishing of amalgam restorations.
- Design cavities for composite resin to a biologically and mechanically acceptable level.
- Correctly uses the acid etch technique.
- Manipulate and place light-cured composite restorative resin.
- Manipulate and place the glass ionomer, and RMGI materials.
- Perform proper finishing and polishing of composite resin, G.I., and RMGI restorations.
- Restore non-carious lesions e.g. abrasion, erosion and other defects.

## COURSE EVALUATION

### **CONTINUOUS ASSESSMENT    60%**

Quizzes                      10%

Weekly clinical work    50%

### **FINAL EXAMINATION              40%**

Subjective                  10%

Final written exam      30%

## PRECLINICAL ACTIVITIES

During the first four (4) clinical sessions, the student will not expect to treat any patient. Instead an introduction to the clinic and clinical work will be carried out.

### **First Week:**

1. Cubicle assignment and tour to different sections of the clinical hall, including steri-center, emergency clinic, booking area.
2. Demonstration of the operation procedure of the dental unit and different positions of the chair and light in relation to restorative procedures.
3. Polishing upper teeth on a student partner with rubber cup and pumice to gain experience on how to use the handpiece clinically.
4. Oral examinations and charting on a student partner.
5. Write a problem list based on clinical examination and radiographs. Every student must bring his/her recent bitewing and periapicals radiographs (where appropriate)

### **Second Week:**

1. National day holyday.

### **Third Week:**

1. Write a treatment plan based on a problem list.
2. Gain experience on mixing of different cements.

At the end of the third week, students who pass and complete the previous procedures are permitted to see patients.

### 311 RDS LECTURE SCHEDULE

Lec. #	Date	Camp.	LECTURE TITLE	LECTURER
1		DUC	Introduction to the Course	
2		DUC	Examination, Diagnosis and Treatment Planning I	
3		DUC	Examination, Diagnosis and Treatment Planning II	
4		DUC	Explanation of Clinical Manual	
5		DUC	Dental Caries: Diagnosis and Clinical Manifestation	
6		DUC	Dental Caries: Caries Risk Assessment and Management	
7		DUC	Control of Moisture	
8		DUC	Concepts of Conservative Cavity Design and Management	
9		DUC	Pulp Protection: Bases and Liners	
10		DUC	Tooth Colored Restorations: Part I Adhesive Dentistry	
11		DUC	Tooth-colored Restorations: Part II Anterior composite Restoration	
12		DUC	Tooth-colored Restoration: Part III Posterior composite Restoration	
13		DUC	Tooth Colored Restorations: Part IV Glass Ionomer Cements (GIC)	
14		DUC	Tooth Colored Restorations: Part V Resin Modified GI and Polyacids Modified Composite	
15	<b>FINAL EXAMINATION</b>			

## LECTURE 1

- A. Subject Area: Restorative Dentistry
- B. Lesson Title: Introduction to the Course, Clinical Protocol
- C. Sequence: Lecture 1 of 1 Lecture

1. **Introduction to the Course:**

- a. Attendance requirements.
- b. Evaluation methods.
- c. Quizzes and assessments.
- d. Course grading policy and method of evaluation.
- e. Course requirements.

2. **Clinical protocol in the college Clinic.**

- a. The student will be introduced to a clinical protocol.
- b. To understand what is required in order to facilitate the transition from pre-clinical to clinical setting
- c. Identify the areas where emergency equipment is located
- d. Know the different areas of the clinic.

**Required Reading:**

- 1. Course syllabus.

## LECTURE 2

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Examination, Diagnosis and Treatment Planning.
- C. Sequence: Lecture 1 of 2 Lectures.

- Learn and differentiate between types of dental visit.
- Perform clinical assessment.
- Perform dental examination, charting of teeth/ restoration, and diagnosis.

### **Required Reading:**

1. Chapter 9 - Sturdevant 4th Ed. 2001. Pages 389- 392 and 399- 413

## LECTURE 3

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Examination, Diagnosis and Treatment Planning.
- C. Sequence: Lecture 2 of 2 Lectures.

- Learn about the adjunctive aids for examining teeth and restorations.
- The student will be able to determine the treatment plan according to the urgency of each problem and the sequence of procedures that should be followed.

### **Required Reading:**

1. Chapter 9 - Sturdevant 4th Ed. 2001. Page 414- 416 and 421- 423



## LECTURE 4

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Explanation of Clinical Manual.
- C. Sequence: Lecture 1 of 1 Lecture.

- Understand the coding system of different operative clinical procedures.
- Understand the different forms of the clinical manual.
- Learn how to fill the clinical manual.

### **Required Reading:**

1. Course syllabus.

## LECTURE 5

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Caries Diagnosis.
- C. Sequence: Lecture 1 of 2 Lectures.

- Describe the traditional caries diagnostic methods and discuss their advantages and disadvantages.
- Briefly describe the rationale of the newer caries diagnostic methods, including their limitations.
- Describe the clinical classification of dental caries.

### **Required Reading:**

1. Akpata Textbook of Operative Dentistry. Chapter I, p. 1-10
2. Article: Newbrun E. Problems in caries diagnosis. Int. Dent. J. 1993: 43, p. 133-142

## LECTURE 6

- A. Subject Area: Restorative Dentistry.
  - B. Lesson Title: Caries Risk Assessment and Management.
  - C. Sequence: Lecture 2 of 2 Lectures.
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- Discuss the main factors considered in caries risk assessment.
  - Describe commonly used caries activity tests.
  - Briefly discuss preventive and therapeutic management of dental caries.

### **Required Reading:**

- 1) Akpata: Textbook of Operative Dentistry, Chapter I, p. 10-14

## LECTURE 7

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: The Control of Moisture in Restorative Field.
- C. Sequence: Lecture 1 of 1 Lecture.

- Know the different methods of moisture control.
- Know the purpose, advantages, and disadvantages of the rubber dam.
- Get acquainted with rubber-dam materials, instruments and method of application.
- Know the alternate methods for placing the rubber dam for fixed bridge isolation.
- Know the errors in placing and removal of the rubber dam.

### **Required Reading:**

1. Chapter 10 - Sturdevant 4th Ed. 2001. Page 444- 469

## LECTURE 8

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Concepts of Conservative Cavity Design and Management.
- C. Sequence: Lesson 1 of 1 Lesson.
  - Clinical techniques of Pit and Fissure sealant and PRR.
  - Modern principles of conservative amalgam cavity design and preparation for Class I and II.
  - Revision of Clinical application of amalgam restoration for Class I and II.

### **Reading Requirements:**

1. Handout.

## LECTURE 9

- A. Subject Area: Restorative Dentistry.
  - B. Lesson Title: Pulp Protection: Bases and Liners.
  - C. Sequence: Lecture 1 of 1 Lecture.
- 
- Know the reasons for the need of pulp protection.
  - Know the consequences of the failure of pulp protection.
  - Know the different types and indications of liners and bases.
  - Know the methods of mixing and application of each cement.

### **Required Readings:**

1. Chapter 4 - Sturdevant 4th Ed. 2001. Page 193, Page 170- 176

## LECTURE 10

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part I, Adhesive Dentistry.
- C. Sequence: Lecture 1 of 5 Lectures.

- Know the types of polymers used as restorative materials.
- Know the chemistry of composite resin and the properties of each component.
- Know the different classifications of composite resins.
- Know factors affecting adhesion to enamel and dentine.
- Know the adhesion steps.

### **Required Readings:**

1. Schwartz's Fundamentals of Operative Dentistry 2nd Ed, 2000, Chapter 8.

## LECTURE 11

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part II, Anterior Composite Restorations.
- C. Sequence: Lecture 2 of 5 Lectures.

- Learn clinical application of composite resins.
- Revise the cavity preparation and restoration of class III, IV and V.
- Hints and tips for better esthetic restorations will be given through restoration.

### **Required Readings:**

1. Schwartz's Fundamentals of Operative Dentistry 2nd Ed, 2000. Chapter 9



## LECTURE 12

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part III, Posterior Composite Restorations.
- C. Sequence: Lecture 3 of 5 Lectures.

- Indications, contraindications, advantages, and disadvantages for posterior composite.
- Clinical technique for direct CL I composite restoration.
- Clinical technique for direct CL II composite restoration

### **Required Readings:**

1. Schwartz's Fundamentals of Operative Dentistry 2nd Ed, 2000, Chapter 10

## LECTURE 13

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part IV, Conventional Glass Ionomer Cement.
- C. Sequence: Lecture 4 of 5 Lectures.

- List the advantages and inherent properties of GIC.
- List the types of GIC.
- List the indication and contraindications for GIC.
- Know the procedure of finishing, and polishing of GIC.
- Recognize the causes of failure of GIC and their clinical manifestation.

### **Required Readings:**

1. Handout

## LECTURE 14

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part V, Resin Modified GI and Polyacids Modified Composite (Compomers).
- C. Sequence: Lecture 5 of 5 Lectures.
  - List the advantages and inherent properties of RMGI and PMC (Compomers).
  - List the types and differentiate between GIC, RMGI and Compomers.
  - List the indication and contra-indications for RMGI and Compomers.
  - Know the procedure of restoring class V erosion, abrasion and carious lesions with Compomers.

### **Required Readings:**

1. Handout

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2. Comprehend the facts and principles involved in the Clinical Protocol.
3. Apply concepts and principles from pre-clinical to new situations in the restorative clinic during treatment of the patient.
4. Be able to clinically record the status of the oral cavity with regard to soft tissues, oral hygiene, gingival inflammation, active and arrested carious lesions and restorations using dental radiographs and dental instruments to arrive at a well established treatment plan based on a problem list.
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*Restoration of teeth with very deep caries with or without broken down cusps is not encouraged. Such cases should be properly referred to 411, interns or specialist clinic.*
- Write proper referral signed by the clinical instructor using the prescribed form.
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- Properly select and use bases and liners.
- Correctly use matrices and wedges.
- Perform amalgam restoration to a biologically, physiologically and mechanically acceptable level.
- Do proper finishing and polishing of amalgam restorations.
- Design cavities for composite resin to a biologically and mechanically acceptable level.
- Correctly uses the acid etch technique.
- Manipulate and place light-cured composite restorative resin.
- Manipulate and place the glass ionomer, and RMGI materials.
- Perform proper finishing and polishing of composite resin, G.I., and RMGI restorations.
- Restore non-carious lesions e.g. abrasion, erosion and other defects.

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### **Second Week:**

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7		DUC	Control of Moisture	
8		DUC	Concepts of Conservative Cavity Design and Management	
9		DUC	Pulp Protection: Bases and Liners	
10		DUC	Tooth Colored Restorations: Part I Adhesive Dentistry	
11		DUC	Tooth-colored Restorations: Part II Anterior composite Restoration	
12		DUC	Tooth-colored Restoration: Part III Posterior composite Restoration	
13		DUC	Tooth Colored Restorations: Part IV Glass Ionomer Cements (GIC)	
14		DUC	Tooth Colored Restorations: Part V Resin Modified GI and Polyacids Modified Composite	
15	<b>FINAL EXAMINATION</b>			



## LECTURE 1

- A. Subject Area: Restorative Dentistry
- B. Lesson Title: Introduction to the Course, Clinical Protocol
- C. Sequence: Lecture 1 of 1 Lecture

1. **Introduction to the Course:**

- a. Attendance requirements.
- b. Evaluation methods.
- c. Quizzes and assessments.
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- e. Course requirements.

2. **Clinical protocol in the college Clinic.**

- a. The student will be introduced to a clinical protocol.
- b. To understand what is required in order to facilitate the transition from pre-clinical to clinical setting
- c. Identify the areas where emergency equipment is located
- d. Know the different areas of the clinic.

**Required Reading:**

- 1. Course syllabus.

## LECTURE 2

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Examination, Diagnosis and Treatment Planning.
- C. Sequence: Lecture 1 of 2 Lectures.

- Learn and differentiate between types of dental visit.
- Perform clinical assessment.
- Perform dental examination, charting of teeth/ restoration, and diagnosis.

### **Required Reading:**

1. Chapter 9 - Sturdevant 4th Ed. 2001. Pages 389- 392 and 399- 413

## LECTURE 3

- A. Subject Area: Restorative Dentistry.
  - B. Lesson Title: Examination, Diagnosis and Treatment Planning.
  - C. Sequence: Lecture 2 of 2 Lectures.
- 
- Learn about the adjunctive aids for examining teeth and restorations.
  - The student will be able to determine the treatment plan according to the urgency of each problem and the sequence of procedures that should be followed.

### **Required Reading:**

1. Chapter 9 - Sturdevant 4th Ed. 2001. Page 414- 416 and 421- 423

## LECTURE 4

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Explanation of Clinical Manual.
- C. Sequence: Lecture 1 of 1 Lecture.

- Understand the coding system of different operative clinical procedures.
- Understand the different forms of the clinical manual.
- Learn how to fill the clinical manual.

### **Required Reading:**

1. Course syllabus.

## LECTURE 5

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Caries Diagnosis.
- C. Sequence: Lecture 1 of 2 Lectures.

- Describe the traditional caries diagnostic methods and discuss their advantages and disadvantages.
- Briefly describe the rationale of the newer caries diagnostic methods, including their limitations.
- Describe the clinical classification of dental caries.

### **Required Reading:**

1. Akpata Textbook of Operative Dentistry. Chapter I, p. 1-10
2. Article: Newbrun E. Problems in caries diagnosis. Int. Dent. J. 1993: 43, p. 133-142

## LECTURE 6

- A. Subject Area: Restorative Dentistry.
  - B. Lesson Title: Caries Risk Assessment and Management.
  - C. Sequence: Lecture 2 of 2 Lectures.
- 
- Discuss the main factors considered in caries risk assessment.
  - Describe commonly used caries activity tests.
  - Briefly discuss preventive and therapeutic management of dental caries.

### **Required Reading:**

- 1) Akpata: Textbook of Operative Dentistry, Chapter I, p. 10-14

## LECTURE 7

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: The Control of Moisture in Restorative Field.
- C. Sequence: Lecture 1 of 1 Lecture.

- Know the different methods of moisture control.
- Know the purpose, advantages, and disadvantages of the rubber dam.
- Get acquainted with rubber-dam materials, instruments and method of application.
- Know the alternate methods for placing the rubber dam for fixed bridge isolation.
- Know the errors in placing and removal of the rubber dam.

### **Required Reading:**

1. Chapter 10 - Sturdevant 4th Ed. 2001. Page 444- 469

## LECTURE 8

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Concepts of Conservative Cavity Design and Management.
- C. Sequence: Lesson 1 of 1 Lesson.
  - Clinical techniques of Pit and Fissure sealant and PRR.
  - Modern principles of conservative amalgam cavity design and preparation for Class I and II.
  - Revision of Clinical application of amalgam restoration for Class I and II.

### **Reading Requirements:**

1. Handout.



## LECTURE 9

- A. Subject Area: Restorative Dentistry.
  - B. Lesson Title: Pulp Protection: Bases and Liners.
  - C. Sequence: Lecture 1 of 1 Lecture.
- 
- Know the reasons for the need of pulp protection.
  - Know the consequences of the failure of pulp protection.
  - Know the different types and indications of liners and bases.
  - Know the methods of mixing and application of each cement.

### **Required Readings:**

1. Chapter 4 - Sturdevant 4th Ed. 2001. Page 193, Page 170- 176

## LECTURE 10

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part I, Adhesive Dentistry.
- C. Sequence: Lecture 1 of 5 Lectures.

- Know the types of polymers used as restorative materials.
- Know the chemistry of composite resin and the properties of each component.
- Know the different classifications of composite resins.
- Know factors affecting adhesion to enamel and dentine.
- Know the adhesion steps.

### **Required Readings:**

1. Schwartz's Fundamentals of Operative Dentistry 2nd Ed, 2000, Chapter 8.

## LECTURE 11

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part II, Anterior Composite Restorations.
- C. Sequence: Lecture 2 of 5 Lectures.

- Learn clinical application of composite resins.
- Revise the cavity preparation and restoration of class III, IV and V.
- Hints and tips for better esthetic restorations will be given through restoration.

### **Required Readings:**

1. Schwartz's Fundamentals of Operative Dentistry 2nd Ed, 2000. Chapter 9

## LECTURE 12

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part III, Posterior Composite Restorations.
- C. Sequence: Lecture 3 of 5 Lectures.

- Indications, contraindications, advantages, and disadvantages for posterior composite.
- Clinical technique for direct CL I composite restoration.
- Clinical technique for direct CL II composite restoration

### **Required Readings:**

1. Schwartz's Fundamentals of Operative Dentistry 2nd Ed, 2000, Chapter 10

## LECTURE 13

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part IV, Conventional Glass Ionomer Cement.
- C. Sequence: Lecture 4 of 5 Lectures.

- List the advantages and inherent properties of GIC.
- List the types of GIC.
- List the indication and contraindications for GIC.
- Know the procedure of finishing, and polishing of GIC.
- Recognize the causes of failure of GIC and their clinical manifestation.

### **Required Readings:**

1. Handout

## LECTURE 14

- A. Subject Area: Restorative Dentistry.
- B. Lesson Title: Tooth-colored Restoration: Part V, Resin Modified GI and Polyacids Modified Composite (Compomers).
- C. Sequence: Lecture 5 of 5 Lectures.
  - List the advantages and inherent properties of RMGI and PMC (Compomers).
  - List the types and differentiate between GIC, RMGI and Compomers.
  - List the indication and contra-indications for RMGI and Compomers.
  - Know the procedure of restoring class V erosion, abrasion and carious lesions with Compomers.

### **Required Readings:**

1. Handout