

FIRST YEAR RDS 111

DENTAL ANATOMY, MORPHOLOGY AND
INTRODUCTION TO OPERATIVE DENTISTRY

Course Director (DUC)

PROF. ALI M. EL-SAHN

Course Contributors:

*Dr. M. Benhameurlaine, Dr. T. Al Qunaian, Dr. Abdullah Al Jamhan
Dr. H. Al Fawaz, Dr. R. Turkson and Dr. A. Loto*

COURSE DESCRIPTION

Dental Anatomy is provided by the RDS Department in the first semester during the first year of the BDS program. It is a (1+1+0) course, equivalent to 2 credit hours.

FIRST SEMESTER

DENTAL ANATOMY

This component is designed to provide the student with the basic elements of tooth morphology as an essential pre-requisite for other dental courses. The course comprises lectures and practical sessions. Using wax, students restore the missing coronal surfaces of complete tooth models by a wax carving technique. This is designed to reinforce the theoretical knowledge gained in the lectures, as well as contribute towards the development of manual dexterity, a skill which is essential in the practice of dentistry. Identification of natural tooth specimens forms a significant part of the practical component of the course.

COURSE OBJECTIVES : At the end of the 1st semester the students should be able to:

1. Apply the terms and expressions used in dental anatomy and morphology with proficiency.
2. Record teeth, using different notations, but with particular emphasis on the method recommended by the International Dental Federation (FDI).
3. Understand the relationship of teeth to one another as well as the relation between the adjacent and opposing teeth
4. Understand the teeth alignments, articulation and the self-protective feature of the dentition.
5. Distinguish the morphological characteristics of different kinds of teeth. Thus, there are traits which separate the teeth of the upper from the lower arches, the molars from the incisors and the first molar from the second molar.
6. Develop his/her manual skills by carving in wax the different missing surfaces of all teeth.
7. Restore in casting wax, the missing surfaces in Dentoform by carving to normal anatomical and morphological features.
8. Drawing to scale two dimensions of all teeth following the lectures outline, using the table of measurements provided.

Important Note: Each student should collect natural teeth, clean and keep them in 10% formaline. Fail to do this will affect his/her progress and grades.

RECOMMENDED TEXTBOOKS

- Either
1. Wheeler's Dental Anatomy, Physiology and Occlusion
8th edition 2003
ASH and NELSON,
W.B. Saunders Company
 2. Dental Anatomy: Its relevance to Dentistry
Julian B. Woelfel
7th ed. 2007 Lea & Fabiger

**111 RDS
LECTURE SCHEDULE
(DUC)
FIRST SEMESTER**

COURSE DIRECTOR: PROF. ALI EL SAHN

WEEK	DATE	TOPIC
1		Introduction to Dental Morphology
2		Tooth Anatomy and Notation
3		Dental Terminology of Permanent Dentition
4		Descriptive anatomy of Maxillary Permanent incisors
		RAMADAN VACATION
5		Descriptive anatomy of Mandibular Permanent incisors
6		Descriptive anatomy of Maxillary and Mandibular Permanent canines
7		MID-SEMESTER EXAMINATION
8		Articulation of teeth
9		Descriptive anatomy of Maxillary Permanent Premolars
10		Descriptive anatomy of Mandibular Permanent Premolars
11		Descriptive anatomy of Maxillary 1 st Permanent Molars
12		Descriptive anatomy of Maxillary 2 nd & 3 rd Permanent Molars
		HAJ VACATION
13		Descriptive anatomy of Mandibular 1 st Permanent Molar
14		Descriptive anatomy of Mandibular 2 nd & 3 rd Permanent Molars
15		The Deciduous Dentition
16		MID-YEAR WRITTEN EXAMINATION

***All Lectures will be given by the Course Director.**

LECTURE DESCRIPTION

FIRST SEMESTER

1. Introduction to Dental Morphology I

- Outline of the course. Grading system and attendance.
- Structures that form the foundation of teeth “Jaws”
- Teeth – “Primary, Mixed and Permanent Dentition – Development Data (Lobes) “terms of reference in both identification”
 - Dental formula of Permanent Dentition
 - Function of teeth

2. Tooth Anatomy and Notation

- a) The macro anatomy of teeth
 - Crown A/C
 - Neck
 - Root
 - Pulp
 - Enamel Dentin
 - Amelocemental junction
 - Cementum Dentin
 - Chamber and RC
- b) Tooth numbering systems

3. Dental Terminology of Permanent Dentition

- a) Tooth surfaces and divisions of the crown
- b) Landmarks of teeth.
These will include:
 - A) Elevations
 - Cusps
 - Cingulum
 - Ridges
 - B) Depressions
 - Fossae (Central, Marginal) → Pits
 - Grooves → Fissures
 - Tubercle
 - C) Mamelon
- c) Trait categories

4. Descriptive anatomy of Maxillary Permanent incisors from different aspects.

5. Descriptive anatomy of Mandibular Permanent incisors from different aspects.

6. **Descriptive anatomy of Maxillary and Mandibular Permanent canines from different aspects.**
7. **Mid-semester examination.**
8. **Articulation and alignment of teeth.**
9. **Descriptive anatomy of Maxillary Permanent Premolars from different aspects.**
10. **Descriptive anatomy of Mandibular Permanent Premolars from different aspects.**
11. **Descriptive anatomy of Maxillary 1st Permanent Molar from different aspects.**
12. **Descriptive anatomy of Maxillary 2nd & 3rd Permanent Molars from different aspects.**
13. **Descriptive anatomy of Mandibular 1st Permanent Molar from different aspects.**
14. **Descriptive anatomy of 2nd and 3rd mandibular permanent molars from different aspects.**
15. **The deciduous dentition.**
 - **Dental formula of deciduous teeth.**
 - **Morphological differences between deciduous and permanent dentition.**
16. **Mid-year examination.**

**111 RDS
(DUC)
PRACTICAL SESSIONS
FIRST SEMESTER 2007/2008**

WEEK	DATE	ACTIVITY
1		A) Laboratory Orientation: seating arrangement, storage boxes, air gas control. B) Identification of permanent Dentition: Incisors, canines, premolars and molars. "Plaster models"
2		A) The macro anatomy of teeth: Section on a tooth models. B) Numbering systems : Dentiform or plaster models. C) Methods of calibration of anterior and posterior teeth, and introduction to drawing.
3		A) Identification of tooth surfaces and crown divisions B) Landmarks of teeth : Dentiform or plaster models. C) Identification of waxing instruments and uses. D) Demonstration for waxing and carving of the labial aspect of maxillary central incisor "plaster models"
4		Waxing and carving the labial aspect of maxillary central incisor "plaster models"
RAMADAN VACATION		
5		A) Waxing and carving the lingual aspect of maxillary left central incisor "plaster models" B) Identification of permanent central and lateral incisors "natural teeth"
6		A) Waxing and carving the mesial aspect of maxillary left canine "plaster models" B) Identification of permanent maxillary and mandibular canines "natural teeth"
7		MID-SEMESTER LABORATORY ASSESSMENT
8		A) Implementation of the importance of occlusion, contacts, interproximal spaces, Embrasures and contours. B) Full crown waxing and carving of maxillary canine "Dentiform". Dentiform and/or plaster models
9		A) Waxing and carving of maxillary left 2nd premolar "Dentiform"
10		A) Waxing and carving of mandibular 1 st premolar "Dentiform" B) Identification of permanent maxillary and mandibular premolars. "Natural teeth"
11		A) Waxing and carving of maxillary 1 st left molar "Dentiform".
12		A) Catch-up session. B) Identification of maxillary molars. "natural teeth"
HAJ VACATION		
13		A) Waxing and carving of mandibular 1st molar. "Dentiform"
14		A) Waxing and carving of mandibular 2nd molar. "Dentiform" B) Identification of mandibular molars "natural teeth".
15		A) Identification and comparison between permanent and deciduous teeth "Natural teeth or models" B) Revision
16		MID-YEAR LABORATORY ASSESSMENT

- NOTE:**
1. The drawing projects are home assignment, should be checked and graded every week before you start your waxing projects.
 2. Waxing project should be finished and submitted for evaluation and grading by the end of your weekly session.

The continuous practical evaluation will be on the following exercises. (5 Marks each)

- | | |
|--|--------------------------|
| 1. Waxing of labial aspect of maxillary central incisor | ←
Plaster models
← |
| 2. Waxing of lingual aspect of maxillary central incisor | |
| 3. Waxing of mesial aspect of maxillary canine | |
| 4. Waxing of full maxillary canine | ←
Dentoform
← |
| 5. Waxing of maxillary 2 nd premolar | |
| 6. Waxing of mandibular 1 st premolar | |
| 7. Waxing of maxillary 1 st molar | |
| 8. Waxing of mandibular 1 st molar | |
| 9. Waxing of mandibular 2 nd molar | |

Final Laboratory consists of:

1. Waxing of one maxillary tooth on dentoform. Time allowed:
1:15 mins. 10 pts.
2. Ten stations of natural teeth identification. Time allowed:
- 1 1/2 min per station

EVALUATION:

To pass this course successfully, students **must** pass both theoretical and practical component separately.

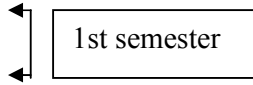
A. THEORY

1. Quizzes (each lecture)

- 2. Mid-sem. Written Examination
- 3. Final Written Examination

B. Practical

- 1. weekly practical projects
- 2. 1st In-Course Practical Examination
- 3. Drawing projects
- 4. Final teeth identification



<u>PRACTICAL</u>	<u>THEORY</u>		
WEEKLY QUIZZES/PRACTICAL 40%	10 %		
DRAWING PROJECTS 10%			
1st IN-COURSE- LAB/Written 20%	30%		
FINAL EXAMINATION- LAB/Written 20%	60%		
}30 FINAL TEETH IDENTIFICATION Lab. <u>10%</u>	—		
T O T A L	100%		100
%			

CHECKLIST: PRACTICAL SESSION #1

PART A - LABORATORY ORIENTATION

1. SEATING ARRANGEMENTS

Divide students into Groups A, B and C as appropriate

Note: Students are requested to sit at the same place for every practical session. Seating chart will be prepared by the third week.

2. STUDENTS' STORAGE BOXES

Students to label their boxes. **NAME** and **GROUP** to be written legibly in English and Arabic.

3. STUDENTS TO PROVIDE THE FOLLOWING ITEMS BY THE NEXT PRACTICAL SESSION:

- i] Old nylon socks
- ii] Tissue paper
- iii] Lighters

4. AIR\GAS CONTROLS

Demonstration including bunsen burners and working lamps.

5. SAFETY PRECAUTIONS

Bunsen burners and working lamps

PART B - TUTORIAL (Small Group Teaching)

This is based on the content of Lecture 1 (Dental Terminology)

- 1. Demonstration of the human skull, mandible and dental arches.
- 2. Identification of the 2 dentitions and classes of teeth: Incisors, Canines, Premolars and Molars.
- 3. Identification of the parts of natural teeth including the hard dental tissues and pulp cavity.

CHECKLIST : PRACTICAL SESSION #2

A. ARMAMENTARIUM

- 1. Drawing pencil, 3H or 4H, sharpened to a fine point.
- 2. Eraser.
- 3. Small millimeter rulers.
- 4. Boley gauge.

B. DEMONSTRATION OF DRAWING OF TEETH

1. Measurement of teeth.
2. Method of calibrating of anterior and posterior teeth.
3. Directions for drawing.
4. Use the following six measurements:

Crown length	Mesiodistal crown	FacioLingual crown
Root length	Mesiodistal cervix	FacioLingual cervix

CHECKLIST : PRACTICAL SESSION #3

A. ARMAMENTARIUM

1. Instruments issue.
2. Give students handouts on waxing instruments; Instrument identification - names and uses.
3. Briefly introduce wax to students - its nature and uses.

B. WAXING TECHNIQUE

1. Sitting position, instrument hold and waxing technique.
2. Demonstration: Waxing technique of labial aspect of maxillary central incisor tooth model #9.
3. Students practice waxing technique as above (no grading).

Note: Grading of weekly projects commences on the 3rd week of semester.

Note: Students are requested to sit at the same place for every practical session. Seating char. will be prepared by the third week

TOOTH IDENTIFICATION

One of the main objectives of this course is that the student should be able to identify natural teeth according to their:

1. SET : Permanent or Deciduous ?

2. CLASS : Incisor, Canine, Premolar or Molar ?
3. ARCH : Maxillary or Mandibular ?
4. TYPE : Incisor (Central or Lateral?) Premolar (first or second?)
Molars (first, second or third ?)
5. QUADRANT : Right or Left ?

A systematic approach is recommended although in naming a tooth anatomically, the order will be different from the sequential steps used in the identification process. For example, it is usual to name a tooth thus:

"Right mandibular first permanent molar" rather than :

"Permanent molar maxillary first right".

It is helpful for the student to ask himself the following questions :

1. DOES THE TOOTH BELONG TO THE DECIDUOUS OR PERMANENT SET OF DENTITION?

Know the differences between permanent and deciduous teeth especially with respect to colour, shape, size, etc.

2. TO WHAT CLASS DOES IT BELONG ?

To be able to do this, you must know the class traits of the various teeth. For example what features do all incisors have in common that distinguish them from other classes of teeth i.e., canines, premolars, or molars ?

SECOND SEMESTER

Introduction to Operative Dentistry

OBJECTIVES

At the end of the second semester, students should be able to :

1. Diagnose lesions of hard tooth tissues and in particular dental caries, excavate carious lesions and cleave unsupported enamel of mounted extracted teeth, using suitable hand instruments
2. Classify carious lesions and recognize approximal caries on a bitewing radiograph.
3. Identify the various hand and rotary instruments used in Operative Dentistry.
4. Know methods of isolation of the operative field and apply the RD.
5. Name the parts of a prepared simple and compound cavities
6. Prepare shapes resemble class I and V for amalgam and manipulate rotary and hand instruments.

FORMAT

The course will comprise practical exercises and seminars. There will be in-course and end-of-course assessments, mostly in the form of objective structured practical examinations (OSPE). The weekly practical exercises will also be assessed.

RECOMMENDED TEXTBOOK

1. Schwartz
Fundamentals of Operative Dentistry: A Contemporary Approach

111 RDS
LECTURE SCHEDULE
(DUC)
SECOND SEMESTER

WEEK	DATE	TOPIC
1		An Introduction to Operative Dentistry
2		Instruments and Instrumentation used in Operative Dentistry (1)
3		Instruments and Instrumentation used in Operative Dentistry (2)
4		Instruments and Instrumentation used in Operative Dentistry (3)
5		Instruments and Instrumentation used in Operative Dentistry (4)
6		Dental Cariology I
7		Dental Cariology II
8		MID-SEMESTER EXAM
9		Instruments used for isolation of operative field (1)
10		Instruments used for isolation of the operative field (2)
11		The general fundamental principles of cavity preparation
12		Steps of cavity preparation
13		The amalgam restoration
14		Class I cavity preparation for amalgam restoration
15		Class V cavity preparation for amalgam restoration

***All Lectures will be given by the Course Director**

LECTURE DESCRIPTION

SECOND SEMESTER

1. An Introduction to Operative Dentistry:

Definition, Scope, and Objective

2. Dental CariologyI

Etiology, epidemiology, classification, spread pattern,

3. Dental CariologyII

Diagnostic methods, preventive measures

4. Instruments used in Operative Dentistry (1):

General classification

Hand instruments (A): design, nomenclature, instrument formula, contra-angling principles, examination instruments, hand cutting instruments direct and lateral cutting instruments, types and uses. instrument grasp.

5. Instrument used in Operative Dentistry (2)

Hand instruments (B): 1. Hand instruments for manipulation of restorative material.

2. Care of hand instruments

6. Instruments used in operative dentistry (3)

Rotary instruments: 1) Historical development, types of hand pieces.

2) General classification

3) Burs

Burs, design, types and uses
Abrasives

7. Instruments used in Operative Dentistry (4):

Rotary instruments (2) Abrasives
 Points, stones, discs
 Sterilization of the instruments

8. Mid-Semester Exam.

9. Instruments used for isolation of the operative field (1):

Rubber dam equipments (Punch, forceps, holder clamps), saliva ejectors, evacuating tips and equipments.

10. Instruments used for isolation of the operative field (2):

Rubber dam application

11. The general fundamental principles of cavity preparations

Cavity classification and nomenclature.
Fundamental principles.

12. Steps of cavity preparation:

Definitions and importance.

13. Class I cavity preparation for amalgam restoration:

Definition, types, characteristics, application of the principles, procedural steps.

14. Class V cavity preparation for amalgam restoration:

Definition, types, modification, characteristics, application of the principles, procedural steps.

**111 RDS
(DUC)
PRACTICAL SESSIONS
SECOND SEMESTER _____**

WEEK	DATE	ACTIVITY
1		Introduction to Phantom Lab. Demonstration on seating positions. Demonstration for mounting natural teeth
2		A) Identification of hand instruments: Parts, formula, contra-angling and instrument grasps. B) Identification of examination and hand cutting instruments.
3		Identification of: A) Instrument used for manipulation B) Care of the hand instruments C) Oral evaluation of the Hand Instrument I
4		A) Identification and description of hand pieces and burs. B) Drawing the student name using hand piece and burs on side of Ivorine teeth.
5		A) Identification and classification of abrasives. B) Oral evaluation of all instruments
6		A) Diagnosis and classification of carious lesions. "Extracted teeth". B) Excavation of soft carious dentin and removal of hard caries. "spoon excavator – large round bur"
7		Showing the different shapes of caries lesions using radiograph films
8		MID-SEMESTER LABORATORY ASSESSMENT
9		Demonstration of rubber dam equipments
10		Demonstration and application of RD on maxillary first molar #16.
11		A) Identification and classification of cavities. "Extracted teeth" B) Cavity nomenclature. "Prepared cavities on plaster models"
12		A) Introduction to instrumentation of Ivorine teeth. "H-shape" B) RD application on mandibular first molar #36.
13		A) Introduction to amalgam restoration B) introduction to instrumentation of ivorine teeth. "Trapizoid"
14		REVISION/FINAL LABORATORY ASSESSMENT
15		FINAL LABORATORY ASSESSMENT

EVALUATION: To pass this course successfully, students **must** pass both theoretical and practical component separately.


A. THEORY

1. Quizzes (each lecture)
2. Mid-semester. Written Examination
3. Final Written Examination

B. Practical

1. Weekly practical projects
2. 1st In-Course Practical Examination
3. Final Practical Examination

	<u>THEORY</u>	<u>PRACTICAL</u>
WEEKLY QUIZZES/PRACTICAL 50%	10 %	
1st IN-COURSE-LAB/Written 20%	30%	
FINAL EXAMINATION- LAB/Written 30%	60%	
TOTAL	<hr style="width: 50px; margin: 0 auto;"/> 100%	<hr style="width: 50px; margin: 0 auto;"/> 100%


 20% 10%

(UPDATED course outline: September 9, 2007)