

SYLLABUS

COURSE: DENF 2703 Oral and Maxillofacial Radiology I
Introduction to X-radiation & Intraoral Techniques
SEMESTER: Fall
CREDIT HOUR: 1.5

REVISED: 2006
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COURSE DIRECTOR: Kenneth Abramovitch, D.D.S., M.S.

GOAL

The purpose of this course is to introduce the student to the basic principles of oral and maxillofacial radiology. The radiographic examination plays an integral role in the diagnostic process in dentistry in conjunction with the clinical examination. Only those conditions and disease states which are suspected or detected by the patient examination can be addressed. The practicing dentist must, therefore, possess a sound knowledge of radiographic principles and be highly proficient in dental radiography in order to be a competent diagnostician.

Dental practitioners are their "own radiologists" and require an understanding of the basic concepts of intraoral radiography in order to maximize the diagnostic potential of these procedures. The preclinical laboratory sessions are designed to perfect your technical skills and familiarize you with the variability of normal radiographic anatomy.

OBJECTIVES

I. HISTORY OF ORAL RADIOLOGY

1. State the contribution made to radiology by each of these individuals.
 - 1.1 Wilhelm Conrad Von Roentgen
 - 1.2 Otto Von Walkhoff
 - 1.3 Edmund Kells
2. Briefly state the role of each component in the evolution of radiology.
 - 2.1 focus tube
 - 2.2 gas tube
 - 2.3 transformers and rectifiers
 - 2.4 shockproof x-ray unit
 - 2.5 X-ray film
 - 2.6 film processing

II. RADIATION PHYSICS

1. Describe the composition of matter with regard to the following:
 - 1.1 atomic structure and binding energy
 - 1.2 ionization
2. Define particulate radiation and state some of its properties.
3. Define electromagnetic radiation and state its properties.
4. Identify and state the purpose of the following components of the x-ray tube and x-ray tube head:
 - 4.1 Cathode
 - 4.1.1 molybdenum (focusing) cup
 - 4.1.2 tungsten filament
 - 4.2 Anode
 - 4.2.1 tungsten target (focal spot)
 - 4.2.2 copper stem
 - 4.3 Leaded glass housing (glass envelope)
 - 4.4 Collimator
 - 4.5 Window
 - 4.6 Positioning-Indicating Device (PID, a.k.a. BID)
 - 4.7 Aluminum Disks (Filters)
5. Define thermionic emission and state its function in x-ray production
6. Describe the functions of the following components of the x-ray tube head machine.
 - 6.1 step-up (filament) transformer
 - 6.2 step-down (high voltage) transformer
 - 6.3 auto transformer
 - 6.4 rectifier - half-wave
- full-wave (constant potential)

7. State the significance of the tube rating and duty cycle.
8. Describe how x-radiation is produced with regard to
 - 8.1 Bremsstrahlung (braking)
 - 8.2 characteristic radiation.
9. List the advantages and disadvantages of tungsten as the material of choice in the target of an x-ray tube.
10. Briefly discuss how the following factors affect the x-ray beam.
 - 10.1 tube voltage
 - 10.2 exposure time
 - 10.3 tube current
 - 10.4 filtration
 - 10.5 collimation
 - 10.6 inverse square law
11. Interactions of x-rays with matter.
 - 11.1 Compare coherent scattering with photoelectric and Compton effects.
 - 11.2 Describe briefly the characteristics of beam attenuation and differentiate between monochromatic and polychromatic radiation.
12. Define the following conventional units of radiation:
 - 12.1 exposure
 - 12.2 roentgen
 - 12.3 rad
 - 12.4 REM
 - 12.5 RBE
 - 12.6 quality factor
 - 12.7 curie
13. Define these international units of radiation measurement:
 - 13.1 Coulomb per kilogram (C/kg)
 - 13.2 Gray (Gy)
 - 13.3 Sievert (Sv)
 - 13.4 Becquerel (Bq)
14. Convert conventional units of radiation measurement to international units.
15. Define "Effective Dose Equivalence" and state its significance.

III. RADIATION BIOLOGY

1. Describe briefly the actions of radiation on living systems.
 - 1.1 Differentiate between deterministic and stochastic biological effects.
 - 1.2 List the steps involved for direct alteration of biologic molecules by ionizing radiation.
 - 1.3 Describe the mechanism by which peroxy radicals are formed in biologic molecules.
 - 1.4 Compare the direct and indirect effects of ionizing radiation on tissue.

2. Discuss radiation effects with respect to the following:
 - 2.1 biological molecules
 - 2.2 cellular structures
 - 2.3 cellular kinetics
3. State the relationship between radiosensitivity and the type of cell irradiated.
4. Given a list of tissues, arrange them in order of their relative sensitivity to ionizing radiation.
5. Explain the short and long-term effects of ionizing radiation on living tissues.
6. Differentiate between short-term and long-term radiation effects; then state the factors that can modify the effects.
7. State the effects of radiation on the following oral tissues.
 - 7.1 mucous membranes
 - 7.2 taste buds
 - 7.3 salivary glands
 - 7.4 teeth
 - 7.5 bone
8. State the effects of whole-body irradiation and the Acute Radiation Syndrome with regard to the following stages:
 - 8.1 prodromal syndrome
 - 8.2 bone marrow
 - 8.3 gastrointestinal system
 - 8.4 central nervous system
9. State the most sensitive period in humans for inducing developmental abnormalities to the embryo or fetus.
10. Describe late somatic effects of radiation in terms of
 - 10.1 carcinogenesis
 - 10.1.1 thyroid
 - 10.1.2 esophageal
 - 10.1.3 central nervous system
 - 10.1.4 salivary
 - 10.2 growth and development
 - 10.3 mental retardation
 - 10.4 lenticular
11. Discuss the significance of:
 - 11.1 genetic effects of radiation on humans
 - 11.2 doubling dose

IV. HEALTH PHYSICS

1. List the sources and average effective dose/year of background or natural radiation exposure to the population of the USA.
2. List the sources and average effective dose/year of artificial radiation exposure to the population of the USA.
3. State the recommended NCRP dose limits of radiation exposure to:
 - 3.1 Occupationally exposed individuals
 - 3.2 Non-occupationally exposed individuals
4. Describe the typical radiation doses from dental radiographic procedures to the following tissues:
 - 4.1 bone marrow
 - 4.2 thyroid
 - 4.3 gonads
5. Compare the effective radiation dose for varying intraoral procedures and to various extraoral procedures.
6. Compare the risk estimates from dental radiology procedures to the following situations:
 - 6.1 gastrointestinal radiation surveys
 - 6.2 living at high elevations
 - 6.3 base rates for cancers
 - 6.4 risks in everyday life
7. Describe recommendations made by various advisory agencies to minimize radiation exposure to patients and clinicians with respect to the following:
 - 7.1 image receptors
 - 7.2 focal spot to film distance (FSFD)
 - 7.3 beam collimation
 - 7.4 beam filtration
 - 7.5 leaded aprons and collars
8. Differentiate between the paralleling technique and bisecting angle technique with respect to patient exposure.
9. List the advantages of film holding devices in intraoral radiography.
10. Describe the radiation safety measures that can reduce radiation exposure with respect to:
 - 10.1 high kV
 - 10.2 fully rectified x-ray machines
 - 10.3 mA and phototiming
 - 10.4 film processing
 - 10.5 film viewing conditions
11. State the purpose of personnel monitoring devices.
12. State minimum distances and operator locations relative to the x-ray beam for dental radiography.

V. GUIDELINES FOR PRESCRIBING RADIOGRAPHS

1. Identify four patient characteristics used to determine radiographic examination.
2. List the factors used to determine radiographic examinations on patients.
3. Describe how the following can affect the decision to perform a radiographic examination on patients.
 - 3.1 caries
 - 3.2 periodontal disease
 - 3.3 dental anomalies
 - 3.4 growth and development and dental malocclusion
 - 3.5 occult disease
 - 3.6 jaw pathology
 - 3.7 temporomandibular joint
 - 3.8 implants
 - 3.9 paranasal sinuses
 - 3.10 trauma
4. Describe the radiographic procedures recommended for the following patients.
 - 4.1 new patient
 - 4.1.1 child
 - 4.1.2 adolescent
 - 4.1.3 adult
 - 4.2 recall patient: high caries risk
 - 4.2.1 child
 - 4.2.2 adolescent
 - 4.2.3 adult
 - 4.3 recall patient: low caries risk
 - 4.3.1 child
 - 4.3.2 adolescent
 - 4.3.3 adult
 - 4.4 recall patient: periodontal disease
 - 4.4.1 child
 - 4.4.2 adolescent
 - 4.4.3 adult
 - 4.5 growth and development

VI. NORMAL RADIOGRAPHIC ANATOMY

1. Given a complete (20 film) full mouth survey, identify the anatomical landmarks revealed in each view.
 - 1.1 Anterior Region

Maxilla

- 1.1.1 border of nasal cavity, septum, and anterior spine
- 1.1.2 canine eminence / lateral fossa
- 1.1.3 incisive (nasopalatine) foramen
- 1.1.4 incisive canal - left and right walls
- 1.1.5 median palatal (intermaxillary) suture
- 1.1.6 nasal conchae
- 1.1.7 nasal fossa
- 1.1.8 nasal membrane
- 1.1.9 soft tissue of the nose (tip and ala)
- 1.1.10 genial tubercles

Mandible

- 1.1.11 lingual foramen
- 1.1.12 lower / inferior border of mandible
- 1.1.13 mental fossa
- 1.1.14 mental ridge / protuberance

Maxilla and Mandible

- 1.1.15 soft tissue of lip

1.2 Posterior Region

Maxilla

- 1.2.1 coronoid process
- 1.2.2 hamulus
- 1.2.3 maxillary sinus, septa, walls and membrane
- 1.2.4 maxillary tuberosity
- 1.2.5 nasolabial fold
- 1.2.6 posterior superior alveolar (PSA) canal
- 1.2.7 pterygoid plate
- 1.2.8 zygomatic arch,
 - zygomatic (malar) bone,
 - zygomatic (malar) process of maxilla

Mandible

- 1.2.9 external oblique ridge
- 1.2.10 internal (mylohyoid) ridge
- 1.2.11 mandibular (inferior alveolar) canal
- 1.2.12 mental foramen
- 1.2.13 submandibular fossa

1.3 Anterior and Posterior Areas

- 1.3.1 alveolar crest
- 1.3.2 cancellous bone
 - normal variations of trabecular bone pattern
- 1.3.3 cementum
- 1.3.4 dentin
- 1.3.5 enamel
- 1.3.6 lamina dura
- 1.3.7 nutrient canals
- 1.3.8 periodontal ligament space
- 1.3.9 pulp

2. Describe briefly the importance of an intact lamina dura.

3. Compare the radiographic appearance, as seen in periapical films, of:
 - 3.1 the trabecular patterns of the maxilla and mandible
 - 3.2 the alveolar crest in the anterior and posterior regions of the jaws.
4. List four radiopaque and four radiolucent examples of restorative materials.

VII. RECOGNITION OF RESTORATIVE MATERIALS

1. Describe the radiographic appearance of the following restorative materials and be able to identify them on periapical films:
 - 1.1 RADIOPAQUE RESTORATIVE MATERIALS
 - 1.1.1 amalgam
 - 1.1.2 calcium hydroxide paste
 - 1.1.3 cements
 - 1.1.4 composite resins (microfills and hybrids)
 - 1.1.5 glass ionomers
 - 1.1.6 gold
 - 1.1.7 gutta percha
 - 1.1.8 orthodontic appliances
 - 1.1.9 porcelain
 - 1.1.10 silver points
 - 1.1.11 titanium
 - 1.2 RADIOLUCENT RESTORATIVE MATERIALS
 - 1.2.1 acrylic resins
 - 1.2.2 composite resins (old formulations)

VIII. PROJECTION GEOMETRY

1. Define the terms “sharpness” and “resolution” and state the influencing factors of each.
2. Define “penumbra” and list three ways in which it may be reduced.
3. State the methods in which image size distortion (magnification) may be minimized.
4. Define “image shape distortion” and cite two methods in which it can be minimized.
5. State the type of image shape distortion that occurs.
6. Compare the bisecting angle technique with the paralleling technique.
7. Describe briefly the paralleling technique and state two of its advantages.
8. Describe briefly how the horizontal and vertical angulation of the tube head influences an image.

IX. INTRAORAL RADIOGRAPHIC EXAMINATIONS

1. List the criteria that can be used to measure the diagnostic quality of a radiographic image.
2. List the eight general steps to follow for making a proper radiographic exposure.
3. Describe the paralleling technique for a complete (20 film) survey with respect to:
 - 3.1 image field
 - 3.2 film placement
 - 3.3 projection of central ray
 - 3.4 point of entry
4. For the paralleling technique, compare the maxillary and mandibular molar projections respectively with the “distal oblique” projection and state the benefit of this last projection.
5. Describe the bitewing examination techniques (premolar and molar) with respect to:
 - 5.1 image field
 - 5.2 film placement
 - 5.3 projection of the central ray
 - 5.4 point of entry
6. State the procedure to follow for proper patient management of children during radiographic examinations.
7. State the radiographic films required for full mouth coverage in a child between the ages of:
 - 7.1 primary dentition (3 to 6 years)
 - 7.2 mixed dentition (7 to 12 years)
8. State the procedure to follow for proper patient management of the edentulous patient.

X. DENTAL FILM, DIGITAL SENSORS, IMAGING PRINCIPLES AND IMAGE PROCESSING

1. Identify the components of an intraoral film packet.
2. List the component layers that make up:
 - 2.1 a sheet of dental film.
 - 2.2 charge coupled device
 - 2.3 phosphor image plate
3. Differentiate between the sizes and speeds of commercially available intraoral film and digital sensors.
4. Name the three types of intraoral projections and describe their clinical applications.
5. Define radiographic *density* and list the factors that affect it.
6. Define the plot axes of a film’s characteristic curve and discuss its significance.
7. Define radiographic *contrast* and list the factors that affect it.
8. State the significance of film *speed*.

9. With respect to x-ray film, state how mottle and artifact are related to noise and list examples of each.
10. List the factors that contribute to radiographic blurring
11. Define the "latent image."
12. List the major components and their functions for:
 - 12.1 x-ray developer solution
 - 12.2 x-ray fixer solution
13. List the sequential steps for manual and automatic processing of x-ray films.
14. List the requirements of an efficient darkroom.
15. State the requirements for proper darkroom safelights.
16. Identify the two methods for acquiring direct radiographic images in digital form.
17. Describe the mechanism of image formation for the following direct digital radiography systems:
 - 17.1 charge coupled device
 - 17.2 phosphor image plate
18. Define the following digital detector characteristics
 - 18.1 Contrast resolution
 - 18.2 Spatial resolution
 - 18.3 Detector latitude
 - 18.4 Detector Sensitivity
19. List and describe the two types of digital image displays
 - 19.1 CRT
 - 19.2 TFT
20. Identify and correct technical errors on intraoral film and sensors that are related to:
 - 20.1 film positioning
 - 20.2 film exposure
 - 20.3 film handling
 - 20.4 film processing
21. List the hazards from which;
 - 21.1 dental film must be protected during storage.
 - 21.2 PhotoStimulable phosphor plates must be protected during storage
22. Identify advantages and disadvantages of digital technology as it relates to radiology.
23. List the different image enhancement tools available for digital image formats.

XI. INFECTION CONTROL

1. State the primary goal of infection control procedures in radiology.
2. Briefly discuss each of the radiographic infection control measures listed below:
 - 2.1 x-ray film packaging
 - 2.2 disinfection of working surfaces
 - 2.3 lead apron disinfection
 - 2.4 x-ray tube head disinfection
 - 2.5 barrier protection for working surfaces
 - 2.6 film processing

XII. RADIOGRAPHIC QUALITY ASSURANCE

1. Define quality assurance as it relates to dental radiology.
2. Describe each of the following categories with respect to quality assurance.
 - 2.1 quality administration
 - 2.2 quality control
3. List a summary of quality maintenance and monitoring procedures used in a dental office.
4. Identify the components of a radiology quality control kit.
5. List the quality control tests performed in reference to the following:
 - 5.1 x-ray machine
 - 5.2 darkroom / processing

RESOURCES

I. Media Resources

A. Printed Media

1. Required textbook

White, S.C. and Pharoah, M.J.
Oral Radiology: Principles and Interpretation, 6th Ed.
Mosby, Inc., 2009

Langlais, R.P.
Exercises in Oral Radiology and Interpretation, 4th Ed.
W.B. Saunders Co., 2004

2. Supplemental textbooks

Langland, O. E., Langlais, R.P. and Preece, J.W.
Principles of Dental Imaging, 2nd Ed
Williams and Wilkins, 2002

Haring, J.I. and Lind, L.J.
Radiographic Interpretation for the Dental Hygienist
W.B. Saunders Co., 1993

Iannucci J. and Howerton L. J.
Dental Radiography. Principles and Techniques, 3rd ed.
W.B. Saunders Company 2006, 526p.

Successful Intraoral Radiography
Eastman Kodak Company, 1990

3. Monograph

Kenneth Abramovitch, D.D.S., M.S.
Oral and Maxillofacial Radiology
University of Texas Dental Branch, 2001

B. Videotapes

Intraoral Radiographic Technique: Maxillary and Bitewing Views
Tape #1485 (13 min.)

Intraoral Radiographic Technique: Mandibular Views
Tape #1486 (8 min.)

II. Human Resources

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Radiology Faculty

Inga-Lill Leon, CDA, LRT
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Email: Inga-Lill.K.Leon@uth.tmc.edu

Lab Coordinator

Anita B. Rodriguez, CDA
Phone: 713-500-4043 (Room 1.072)
Email: Anita.B.Rodriguez@uth.tmc.edu

Sr. Support Specialist

STUDY PLANS AND REQUIREMENTS

This course is to be completed by the end of the fall semester during your Second Year. While this course is based on the **required** textbook, *Oral Radiology: Principles and Interpretation*, 2004 by White, S.C. and Pharoah, M.J., the course sequence differs from the text.

ATTENDANCE

You must attend all lectures and the lab sessions to which you are assigned. Punctuality is essential.

There are limited lab facilities and the scheduling is complex. We therefore regret that the laboratory sessions cannot be re-assigned. The lab sessions require two hours to complete.

You will be penalized for any unexcused absence as stipulated in the evaluation methods. Students must also be on time. Late arrivals are disruptive. Consequently, for students arriving later than 10 minutes after the hour, their attendance will be counted as an unexcused absence.

The schedules for the lectures and lab sessions are listed on the following two pages. All laboratory sessions will be held in the Radiology Clinic area.

To prepare for this course:

1. Review the objectives.
2. Study the appropriate sections in *Oral Radiology: Principles and Interpretation*, 2004 by White, S.C. and Pharoah, M.J and answer all objectives.
3. Pay particular attention to all illustrations found in these sections of your text.
4. Review the anatomic landmarks on the radiographic views taken during your laboratory sessions.

**DENF 2703 ORAL AND MAXILLOFACIAL RADIOLOGY I
2009 Fall Semester Lecture Schedule**

Sessions: Thursday, 1-1:50 pm; Room 132
See schedule for exceptions in **bold**

DATE	SESSION TOPICS	REFERENCE PAGES
Aug 20	History of X-Radiation and the Physics of X-Rays	1) Chap. 1
Aug 27	Production of X-Rays	1) Chap. 1
Sep 3	The X-ray Machine	1) Chap. 1
Sep 10	Radiation Biology	1) Chap. 1 & 2
Sep 17	Radiation Risks, Protection and Guidelines for Prescribing Radiographs	1) Chap. 3 & 15
Sep 24 2:00 - 3:30	1) Lab Quiz 2) Mid-Term Exam Room 207	
Oct 1 2:00 - 3:50	Normal Radiographic Anatomy – Maxilla Normal Radiographic Anatomy – Mandible	1) Chap. 10 2) Part One: 1
Oct 8	Radiographic Images of Restorative Materials	1) Chap. 10
Oct 15	X-ray film and Image Characteristics	1) Chap. 5
Oct 22 3-3:50 pm	Slide Exam (Material covered: Anatomy and Film Recognition) Room 207	
Oct 29	Intraoral Techniques and Projection Geometry	1) Chap. 9 2) Part One: 3
Nov 5	Image Receptors: Film	1) Chap. 5 & 6
Nov 12	Image Receptors: Digital	1) Chap. 7 2) Part One: 5 3) Kodak manual
Nov 19 2:00 - 3:50	Analysis of Technical Errors and Artifacts - Part I Analysis of Technical Errors and Artifacts - Part II	1) Chap. 6 & 7 2) Part One: 4 3) Kodak manual
Nov 26	<i>Thanksgiving Holiday</i>	
Dec 3	Analysis of Technical Errors and Artifacts - Part III	1) Chap. 6 & 7 2) Part One: 4 3) Kodak manual
Tue, Dec 8 8-9:50 am	COMPREHENSIVE FINAL EXAMINATION Room 207	

Textbooks: 1) *Oral Radiology: Principles and Interpretation*
 2) *Exercises in Oral Radiology and Interpretation*

**DENF 2703 ORAL AND MAXILLOFACIAL RADIOLOGY I
LABORATORY SCHEDULE
Fall Semester 2009**

Day/Time: Friday afternoons 1-2:50 pm or 3-4:50 - see schedule.
Place: All laboratory sessions will be held in the Radiology Clinic area.

	Groups 1 & 3	Groups 2 & 4
<u>Lab A</u>		
	Fri, Aug 21 Group 1 1-2:50 pm Group 3 3-4:50 pm	Fri, Aug 28 Group 2 1-2:50 pm Group 4 3-4:50 pm
<u>Lab B</u>		
	Fri, Sep 4 Group 3 1-2:50 pm Group 1 3-4:50 pm	Fri, Sep 11 Group 4 1-2:50 pm Group 2 3-4:50 pm
<u>Lab C</u>		
	Fri, Sep 18 Group 1 1-2:50 pm Group 3 3-4:50 pm	Fri, Sep 25 Group 2 1-2:50 pm Group 4 3-4:50 pm
<u>Lab D</u>		
	Fri, Oct 2 Group 3 1-2:50 pm Group 1 3-4:50 pm	Fri, Oct 9 Group 4 1-2:50 pm Group 2 3-4:50 pm
<u>Lab E</u>		
	Fri, Oct 16 Group 1 1-2:50 pm Group 3 3-4:50 pm	Fri, Oct 23 Group 2 1-2:50 pm Group 4 3-4:50 pm
<u>Lab F</u>		
	Fri, Oct 30 Group 3 1-2:50 pm Group 1 3-4:50 pm	Fri, Nov 6 Group 4 1-2:50 pm Group 2 3-4:50 pm
<u>Lab G</u>		
	Thu, Nov 13 Group 1 1-2:50 pm Group 3 3-4:50 pm	Fri, Nov 20 Group 2 1-2:50 pm Group 4 3-4:50 pm
<u>MAKEUP SESSION</u>		
By appointment only	Dec 4	Dec 4

CLINIC ATTIRE MUST BE WORN AS A MANDATORY REQUISITE FOR ATTENDANCE DURING ALL LAB SESSIONS AND DURING THE LAB PRACTICAL EXAMINATION.

YOU WILL NOT BE PERMITTED TO ATTEND THE LAB SESSIONS OR THE PRACTICAL EXAM WITHOUT PROPER CLINIC ATTIRE.

Lab Practical examination group assignments will NOT be assigned by original lab groups. Time assignment will be determined based on the time students finish the 2703 written final exam on Dec 8th and the 2562 final exam on Dec 10th.

**DENF 2703 ORAL AND MAXILLOFACIAL RADIOLOGY I
LABORATORY DESCRIPTION
Fall Semester 2009**

LAB	PROCEDURE
A	<ol style="list-style-type: none"> 1) Demonstration of x-ray tube head, Dental X-ray Teaching and Training Replica (DXTTR), control panel, exposure factors, processors and darkroom. 2) Demonstration of film exposure exercise. 3) Using F-Speed film with eXtension Cone Paralleling (XCP) instruments, expose the RIGHT & LEFT maxillary and mandibular anterior periapical views, including the central incisor views. 4) Process and mount
B	<ol style="list-style-type: none"> 1) Demonstration 2) Using F-Speed film with XCP, expose the RIGHT & LEFT maxillary and mandibular premolar and molar periapical views. 3) Process and mount
C	<ol style="list-style-type: none"> 1) Demonstration 2) Using F-Speed film with XCP, expose the RIGHT & LEFT premolar and molar bitewing (BW) views. 3) Process and mount 4) Evaluate and turn in first completed Full Mouth Survey (FMS) by 5:00PM.
D	<p>YOU WILL BE ASSIGNED A GRADE ON THIS FMS TAKEN DURING LAB D & LAB E</p> <ol style="list-style-type: none"> 1) Introduction to Electronic Patient Record (EPR) and MiPACS. 2) You will be assigned a Pseudo-Patient file in EPR for digital radiology lab exercise procedure. 3) Using PhotoStimulable Phosphor (PSP) Plates with XCP, expose the RIGHT maxillary and mandibular periapical views, including central incisor and BW views 4) Scan and mount in MiPACS, then save in the local temporary (radiology) database / server. 5) Obtain approval of images from a technician and save to the EPR permanent database / server. After this step images can be retrieved from the EPR.
E	<ol style="list-style-type: none"> 1) Demonstration 2) Using PSP Plates with XCP, expose the LEFT maxillary and mandibular periapical views and BW views. 3) Scan and mount in MiPACS, then save in the local temporary (radiology) database / server. 4) Obtain approval of images from a technician and save to the EPR permanent database / server. After this step images can be retrieved from the EPR. 5) Evaluate, print and turn in second completed FMS by 5:00PM. You will be graded on this FMS.
F	<ol style="list-style-type: none"> 1) Demonstration 2) Using PSP Plates with Stabe® biteblocks and BW tabs, expose the RIGHT maxillary and mandibular anterior periapical views, including the central incisor views and premolar and molar BW views. 3) Scan and mount.

G	<ol style="list-style-type: none"> 1) Demonstration 2) Using PSP Plates with Snap-A-Ray® film holder and Stabe® biteblocks, expose the RIGHT maxillary and mandibular premolar and molar periapical views. 3) Scan and mount. 4) Evaluate and turn in third completed FMS (½ ONLY) by 5:00PM.
	<p>Practical Examination: This examination will consist of exposing and mounting a partial FMS taken on a DXTTR. This practical examination must be turned in no later than the end of the exam time period. Room and time assignments will NOT be assigned by original lab groups. Time assignment will be determined based on the time students finish the 2703 written final exam on Dec 8th and the 2562 final exam on Dec 10th. ALL ASSIGNMENTS MUST BE COMPLETED AND TURNED IN PRIOR TO TAKING LAB PRACTICAL EXAMINATION.</p>

**DENS 2703 Oral Maxillofacial Radiology I Laboratory
Group Assignments**

Group 1	Group 2	Group 3	Group 4
ALLEN, Daniel	FROST, Angela	MATWIJECKY, Carla	SAGREDO, Carla
ANVER, Tamir	FUNK, Jeremiah	MCCLINTOCK, Mason	SALAZAR, Elizabeth
ARREDONDO, Henry	GARTIN, Sierra	MOON, Audrey	SANDERS, Leslie
BAHAR , Giti	GINDY, Holly	MOORANI, Zeeshan	SAWYER, Robert
BARRERA, Krystelle	GOLDEN, Lauren	MOORE, Jacob	SENG, Luke
BASSI, Megha	GUTIERREZ, Erin	NALLEY, Andrew	SHATTUCK, William
BASSOO, Sonja	HALL, Valerie	NGUYEN, Kim	SHIN, Jee
BRANNOCK, Richard	HAMMOND, Asiya	NGUYEN, Kimchi	SHISLER, Adam
BRAUD , Brandon	HAWKINS, Kasey	NIKAHD , Mohammad	SMITHERMAN, Ashley
BRISTOW, Heather	HEATON, Travis	O'BRIEN, Rachael	STEVENSON, Christopher
BROBERG, Eric	HINAHON, Christopher	ORMSON, Jon	TAHVILIAN , Nadia
BUSTOS, Olivia	HOFFPAUIR, Christopher	PAGEL, Kenneth	THANG, Christopher
CANTU, Mark	HORNBERGER, John	PEDLAR, Christopher	THIBODEAUX, Tammie
CARTER, John	IONESCU, Alexander	PEREZ, Veronica	TRAN, Andrew
CARTER, Kassi	JOHNSON, Laura	PETERSEN, Bethany	TRAN, Hien
CETTIE, Evan	JOY, Regan	REDMAN, Darren	URBACH , Alan
DANG, Minh-triet	KIM, Son	ROBERTS, Laura	VU, James
DIENNA, Jaclyn	KNOWLES, Joshua	ROLLO, Lori	VU, Stephanie
DOH, Hae	LEE, John	ROMERO, Mirelle	WESTMORELAND, Kimberly
EUBANK, Sarah	LIM, Jee	RUBIN, Vanessa	WILLIAMS, Christopher
	LUONG, Myduyen		WONG, Cindy
	MARTIN , Curt		WRIGHT, Sanam

EVALUATION METHODS

LECTURE

There will be two comprehensive mid-term examinations and a final comprehensive examination for this course. The material on the examinations will include all information pertinent to Oral and Maxillofacial Radiology as covered in the lecture series and reference pages.

LABORATORY

Prior to the first lab, it is strongly recommended that students view and are familiar with the contents of the Rinn XCP Training video (available on BlackBoard). This material will also be tested during the first mid-term examination.

Students must complete the assignment for each lab. The laboratory exercises must be turned in by 5:00 PM in order to receive credit. Certain procedures will be graded as indicated in the GRADES section below.

Students must attend the lab period to which they have been assigned by the Office of Academic Affairs. If a student cannot attend an assigned lab period due to medical reasons, they may be able to switch a lab period with a consenting classmate. Such changes must be approved by the Lab Coordinator no later than twenty-four (24) hours prior to the scheduled lab. In all lab sessions, students are expected to look and act in a professional manner. This includes following the clinic dress code. Proper clinical attire is listed in the Dental Branch Clinic Manual.

ATTENDANCE

Attendance is mandatory for all lectures and lab sessions. A student will be penalized for any lecture or lab session missed without an excused absence as determined by the *Student Guide to Academic Studies*. Students must also be on time. Late arrivals are disruptive. Consequently, for students arriving later than 10 minutes after the hour, their attendance will be counted as an unexcused absence.

GRADES

The course grade will be assigned according to the following criteria:

Lecture (80%)	1)	Exam I	20%
	2)	Exam II (Slide exam)	15%
	3)	Final comprehensive exam	55%
	4)	<u>Attendance</u>	10%
		Total	100%
Lab: (20%)	1)	Lab quiz	15%
	2)	Lab exercise (Labs D & E)	25%
	3)	Lab practical	50%
	4)	<u>Attendance</u>	10%
		Total	100%

Students must pass both the lecture and the lab components for successful completion of the course in order to perform patient radiographic procedures. Students with a failing grade in either component are required to remediate the specific component and attain a passing grade.