

DEN7762L: Clinical Radiology 1: Radiographic Technique and Interpretation 1

Fall 2020

Course Description:

During the time in the radiology clinic, the student will develop skills outlined in the clinical and behavioral competencies that will provide them with adequate experience for providing the patients with quality dental care.

- Conduct appropriate radiographic examinations and distinguish hard and soft tissue abnormalities.
- Assess the risk of radiation exposure and diagnostic benefits of radiographs required for a diagnosis.
- Apply the principles of ethical behavior in decision making, in interactions with patients and staff, and in professional and personal conduct.
- Apply principles of radiation biology and physics compatible with current radiation safety principles.
- Expose and evaluate diagnostic quality periapical, bitewing, and panoramic radiographs.
- Utilize universal precautions in preventing transmission of infectious diseases.
- Recognize the role of lifelong learning, self-assessment, and continuous improvement in maintaining competency

I. General Information

Course Director:

Anita Gohel

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Phone: (352) 273-7625

Course Credits: 2

Semester: Fall

Contributing Faculty and Residents

Deeba Kashtwari (352) 273-6692

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Radiology Residents

Support Staff

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II. Course Goals

The goal of the clinical radiology course is to contribute to the development of student competency in prescribing, performing, and interpreting a radiographic examination appropriate for the patient.

III. Course Overview

This is a clinical radiology patient care rotation with written case-based quizzes that must be completed each semester.

Students are to expose, mount, and critique radiographic surveys for assigned patients during screening/radiology rotations and for assigned comprehensive care patients needing radiographs through semester 8.

- The students need to do a self-critique for radiographic technique at the time of approving the images and grade themselves in the self-evaluation form in axiUm.
- The form will then be held for evaluation by radiology faculty. All the radiographs acquired in Radiology must be approved by the radiology technicians.
- Additionally, students are to write via computer programs provided, a formal written interpretation of all assigned patients' radiographs stating a preamble (quality of radiographs), findings, and conclusions. These are individually reviewed with radiology faculty.

Students will generate daily grades and complete written quizzes each semester to be awarded a course grade.

IV. Course Outline

- Students attend Radiology Clinic (D1-85) by 8:00 a.m. or 2:00 p.m. on assigned days and complete at least 10-12 FMX series on assigned screening and/or comprehensive care patients.
- Students must successfully pass the competency on Radiographic Technique and Interpretation by semester 8.
- Students must continue in the radiographic technique rotation through semester 9.
- Students are expected to continue completing radiographic interpretations on all comprehensive care patients through semester 10 & 11 in DEN8765L: Clinical Radiology 2: Radiographic Technique & Interpretation 2.

V. Course Material

White and Pharoah's Oral Radiology – Principles and Interpretation, 8th Ed. ISBN: 032343839
(an e-version of 7th edition is also available at HSC dental library catalog.

UFCD Criteria of Radiographic Acceptability (See Document Section)

Various Web Sites listed in **CANVAS** for diagnosis. (i.e. ORAD)

Optional resource:

HSC Dental Library Guide

VI. Course Objectives

Professional Behavior:

1. Demonstrate professional behaviors and attitudes expected of a dentist.
2. Demonstrate cultural sensitivity during interactions with patients, families, providers, and staff.
3. Demonstrate ethical and legal behaviors essential to the practice of dentistry.
4. Identifying when a referral is indicated.

Knowledge:

1. Explain the biological effects of radiation and methods to minimize exposure to patient, operator and environment.
2. Adhere to clinical radiation hygiene and quality assurance procedures.
3. Understand common techniques of intraoral and selected extra-oral

radiographs.

4. Expose intraoral and panoramic radiographs appropriately, identify technical problems and correct them.
5. Discuss the fundamental principles in radiographic interpretation, including normal anatomic structures of teeth and jaws in children and adults.
6. Demonstrate competence in the diagnosis of caries, periodontal, pulpal and periapical changes on radiographs.
7. Explain the appearance abnormal and unusual pathology, including developmental and congenital abnormalities, cysts, tumors, trauma and manifestations of systemic diseases.

Skills:

1. Prescribe appropriate films specific to the patient and providers diagnostic needs.
 2. Set or confirm technique factors (mA, time, kVp), distance (inverse square law), filtration, and collimation on the x-ray beam for the image.
 3. Perform the exposure, scanning, and mounting of digital images using proper sterilization/disinfection and barrier protection techniques.
 4. Produce a clinically acceptable digital image: Routine periapical and bitewing radiographs should be evaluated according to the criteria listed below:
 - Right area: Right teeth seen in the radiograph: Determined by proper horizontal receptor placement.
 - Entire crown and root visible in periapical radiographs. This is determined by proper vertical receptor placement.
 - Periapical area: At least 1-2 mm of bone should be visible beyond the apices of teeth.
 - Minimal elongation and foreshortening: Determined by proper vertical angulation (VA).
 - Bitewings should have open contacts: Determined by proper horizontal angulation (HA).
 - Good radiographic density.
 - Proper radiographic contrast.
 - Good detail: Determined by degree of immobilization of sensor, patient and x-ray tubehead.
 - No artifacts
 5. Arrange radiographic image(s) in the appropriate template.
 6. Identify normal and abnormal anatomic structures on radiographic images.
 7. Compare previous radiographs in order to evaluate disease progression.
 8. Document differential diagnosis or radiologic impression of findings.
- Complete a radiographic technique and interpretation assessment integrating the above objectives.

VII. Course Competencies

This course teaches to the following competencies in the "Competencies for the New Dental Graduate".

1: Critical Thinking: Use critical thinking and problem-solving, including their use in the comprehensive care of patients, scientific inquiry and research methodology.

2: Evidence-Based Patient Care: Access, critically appraise, apply and communicate scientific and lay literature as it relates to providing evidence-based patient care.

3: Apply biomedical science knowledge in the delivery of patient care.

4: Ethical Standards: Apply principles of ethical decision making and professional responsibility.

5: Legal Standards: Apply legal and regulatory concepts related to the provision and/or support of oral health care services.

6: Appropriate Referral Provide oral health care within the scope of general dentistry to include recognizing the complexity of patient treatment and identifying when a referral is indicated.

12: Patient Assessment, Diagnosis, Treatment Planning and Informed Consent: Provide oral health care within the scope of general dentistry to include patient assessment, diagnosis, comprehensive treatment planning, prognosis, and informed consent.

26: Provide oral health care within the scope of general dentistry to include screening and risk assessment for head and neck cancer.

This course assesses the following competencies in the "Competencies for the New Dental Graduate".

26: Provide oral health care within the scope of general dentistry to include screening and risk assessment for head and neck cancer.

VIII. Evaluation

Daily Grading

Students will perform intra & extraoral radiographic procedures through semester 8. Each student must have a minimum of one radiology rotation each semester for a course grade to be issued.

Grading Criteria: Radiographic Technique

4 = *Completed patient images (both extraoral and/or intraoral with NO retakes and:

(a). Demonstrated proper patient management and treatment during the procedure at all times.

- (b). Student demonstrates proper radiation hygiene for himself/herself and his/her patient (lead aprons if requested) at all times.
- (c). Demonstrated proper barrier technique at all times in the clinic and "dim room" (digital) as outlined in the clinic manual "Infection Control Policy."
(Improper barrier technique will result in automatic failure for that case.)
- (d). Demonstrated proper judgment and reasoning to declare an image clinically acceptable even though not "ideal" as outlined in "Criteria of Radiographic Acceptability.
- (e). Answered all related questions on technique and normal radiographic anatomy that was asked by faculty.

3 =*Completed patient images with minimal retakes [2 images for FMS] but was able to recognize the need for retake(s) and successfully identified error type(s).

*Completed retakes successfully without assistance.

*Satisfied (a), (b), (c) above.

*Was able to answer all questions(e).

2 =*Completed patient images with minimal retakes (less than 10%) but failed to recognize need for retake(s) or could not determine error type(s).

*Completed retakes without assistance.

*Satisfied (a), (b), (c) above.

*Was able to answer most questions (e).

1 = The student will get a failing grade if any or all of the following critical errors are present

*Completed patient images with greater than 10% retake rate. Did not recognize the need for retake(s) or could not determine error(s).

*Needed assistance for retakes that were not recognized and/or result(s) lead to additional retake(s).

*Did not satisfy (a) or (b) above and/or could not answer any questions posed concerning technique and/or anatomy.

*Did not complete patient images or obtained a large number of retakes due to gross errors in judgment, technique, or patient management.

*Did not maintain proper infection control barrier techniques (c).

*Determined that student was ill-prepared to attend rotation.

Grading Criteria: Radiographic Interpretation

4=

(a) Completed the radiologic interpretation/consult on all baseline radiographic surveys in your patient pool.

(b) Images were properly arranged.

(c) Demonstrated thorough knowledge of radiographic normal anatomy.

(d) Described all findings for maxillary sinuses, jaws, and teeth as requested in Undergraduate Interp Form.

(e) Described, when appropriate, the size, shape, borders, and relative radiodensity of all lesions.

(f) Described all abnormalities of dentition including tooth number(s), surface(s), and/or quadrants.

(g) When appropriate, provided differential diagnoses and was able to provide an explanation when asked.

3=

*Demonstrated a thorough knowledge of normal radiologic anatomy.

*Interpretation needed minimal modification of findings, descriptions(s) or differentials(s) as described above in (d), (e), (f), and (g).

*Was able to provide MOST explanations(s) when asked about differential diagnoses.

*Satisfied (a) and (b) above.

2=

*Demonstrated a basic knowledge of normal radiologic anatomy.

*Interpretation needed moderate modification of findings, descriptions(s) or differentials(s) as described above in (d), (e), (f), and (g).

1=The student will get a failing grade if any or all of the following critical errors are present

*Interpretation needed a great deal of modification.

*Did not provide a differential diagnosis or was unable to provide adequate explanations when asked about differential diagnosis.

*Failed to satisfy (b) above.

*Demonstrated little knowledge of normal radiologic anatomy.

*Failed to recognize or describe adequately radiologic findings on images.

After the student "writes-up" the interpretation on the Undergraduate Interpretation Form, the student will review with radiology faculty on a one-to-one basis. A grade will be given in Axium

Grade Weights:

- Daily Radiographic technique & Interpretation=50% (minimum of 1 each semester)
- Semester quiz in Canvas by due date=50%

Competency Assessment:

Students must complete a minimum of 3 FMS (min of 10 radiographs), 5 Pantomographs, 10 standardized case interpretations and 3 Radiographic Interpretations of FMS or FMS/Pan with faculty or OMR residents prior to being eligible to challenge the competency assessment.

Competency Grading is Pass/Fail.

Fail= Critical errors as mentioned above for technique and/or interpretation sections. The student must pass the Competency assessment by March 1 in Semester 8.

Course Remediation:

Students that receive an "E" grade in the course must meet with the Course Director and complete additional technique assignments.

Competency Remediation: Students that do not successfully complete the Radiology Technique and Interpretation Competency Assessment must remediate this assessment by selecting and taking radiographs on another patient until it can be performed at a satisfactory level without assistance.

IX. Administrative Practices

Administrative practices for all UFCD courses are universally applied. Exceptions to or deviations from these practices are stated in the individual syllabi by the course director. When not individually stated in the syllabus, course administrative practices default to those identified under "Course Policies" on the DMD Student Website:

<https://dental.ufl.edu/education/dmd-program/course-policies/>

X. Grade Scale

DEN7762L Grade Scale

Method Letter Grade

Scale 4

Tolerance 0 (Final letter grades within this range will be rounded up.)

A 3.5 - 4

A- 3.25 - 3.5

B+ 3 - 3.25

B 2.75 - 3

B- 2.5 - 2.75

C+ 2.25 - 2.5

C 2 - 2.25

E 0 - 2