STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

COURSE OUTLINE

DHYG 145: DENTAL RADIOLOGY

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SCHOOL OF SCIENCE, HEALTH & CRIMINAL JUSTICE
DENTAL HYGIENE AAS PROGRAM
MARCH 2015

DHYG 145 – DENTAL RADIOLOGY

A. **TITLE**: DENTAL RADIOLOGY

B. **COURSE NUMBER:** DHYG 145

C. **CREDIT HOURS:** 3

D. **WRITING INTENSIVE COURSE**: NO

E. **COURSE LENGTH:** 15 WEEKS

F. **SEMESTER(S) OFFERED:** FALL

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
2 hours of lecture and 2 hours of lab each week

H. **CATALOG DESCRIPTION:** Students will study the production, characteristics, and legal significance of x-rays and their use in the dental and dental hygiene setting, the safety measures necessary for the protection of the operator and the patient, the exposure, processing, mounting, storage of film, errors in technique and their methods of corrections. A minimum grade of "C" is required.

I. **PRE-REQUISITES/CO-COURSES:** Prerequisite: matriculation in dental hygiene. Student must be enrolled in a section of Radiology lab.

J. **GOALS (STUDENT LEARNING OUTCOMES):** Upon completion of the course, the student will meet the following course learning outcomes which are linked to the institutional learning outcomes. This course provides the foundation knowledge for the student to perform competencies: 1.3, 1.5, 1.12, 1.15, 1.16, 3.7, 6.1, 6.2, 6.3, 6.4, 6.5, 8.1

Student Learning Outcomes	Institutional Outcomes
1. Employ ADA guidelines for prescribing radiographs.	3. Prof Competency
2. Apply radiation safety principles to limit radiation exposure for the patient and the clinician.	2. Critical Thinking 3. Prof Competency
3. Identify the components of an x-ray unit and describe ionizing radiation and its risks.	2. Critical Thinking 3. Prof Competency
4. Demonstrate accurate technique for producing a quality radiographic image while utilizing proper infection control techniques.	3. Prof Competency
5. Utilize proper technique when processing, labeling and mounting radiographs.	3. Prof Competency
6. Accurately identifies head and neck landmarks on a radiograph.	2. Critical Thinking 3. Prof Competency
7. Identify errors and artifacts on a radiograph and describe how they can be corrected.	

* Specific learning objectives will be distributed for each topic.

K. **TEXTS:**
Haring Joan, Jansen Laura, Dental Radiography, 4th Edition, W.B. Saunders.2012

L. **REFERENCES:**
Current Edition of Dental Hygiene Department's Infection Control Manual and Student Handbook

M. **EQUIPMENT:** Each student purchases a RINN kit to be utilized in radiology lab. The student must also utilize their own PPD's and sharpie markers in lab.

N. GRADING METHOD: A – F

Students will be given a letter grade utilizing the following conversion scale. All students must achieve a minimum of a C grade.

A	94 - 100
B+	90 - 93
B	84 - 89
C+	80 - 83
C	75 - 79
D	74 - 70
F	69 or lower

O. MEASUREMENT CRITERIA/METHODS:

All course requirements must be completed for successful completion of dental radiology. The grade is determined by averaging the lecture (70%) and lab (30%) grades together. The student must obtain a minimum grade of 75% in both the lecture and the lab before averaging the two grades together. A failing grade in either section, will result in a failure for the entire course.

Lecture Grade based on:
Homework Assignments
Quizzes
Midterm
Final Exam

Lab Grade based on:
4 manikin BWs (3 adult and 1pedo)
3 manikin FMS
1 adult patient Horizontal BWs
Completion of Lab Packet

P. DETAILED COURSE OUTLINE:

I. Introduction to the Course
- A. Basic Terminology
- B. Radiation History
- C. X-Ray Unit (Tube Head, Control Panel & Extension Arm)
- D. Radiopaque and Radiolucent

II. Dental Radiographs and the Dental Radiographer
- A. Patient Relations
- B. Patient Education
- C. Legal Issues
- D. Radiation Protection/ALARA
- E. Infection Control Standards

III. Types of Films & Film Holding Devices
- A. Horizontal and Vertical Bitewings
- B. Panoramic Films
- C. Occlusal Films
- D. Periapical Films
- E. Film Sizes
- F. Film Contents
- G. Film Storage

IV. Common Pitfalls/Errors

A. Artifacts
B. Processing Errors
C. Operator Errors

V. Film Processing & Darkroom Protocols

A. Dark Room Techniques
B. Safe Light Use
C. Time/Temperature Method
D. Automatic Processing
E. Quality Assurance
F. Density and Contrast

VI. Anatomy

A. Tooth Anatomy
B. Surrounding Structures
C. Anterior/Posterior Anatomy
D. Landmarks

VII. Radiation Characteristics

A. Radiation Physics
B. Unit Head and X-ray Production
C. Paralleling and Bisecting Technique
D. Localization Techniques
E. Ionizing Radiation
F. Inverse Square Law
G. Principles of Shadow Casting
H. MA/KVP
I. Radiation Biology

VIII. Patient Treatment

A. Child Patient
B. Patient with Mixed Dentition
C. Edentulous Patient
D. Pregnant Patient
E. Patients with strong gag reflexes
F. Patients with mandibular tori
G. Special Needs Patient (patients with a mental or physical handicap)

Q. <u>LABORATORY OUTLINE</u>: see below

Lab 1: Introduction to radiology lab (equipment, supplies, requirements, lab packet and process forms, handbook) General x-ray technique discussion. RO/RL and x-ray examples. Tour of radiology wing. *baggy w PPE's, sharpie. Bagging and sterilization of RINNS.

Lab 2: Opening and closing the room. Review of the medical and dental history, seeking informed consent. Pass out patient packet, take inventory of availability for bw partner practice.

Lab 3: Seating the patient. Collect medical history's. Bring RINNS next week.

Lab 4: Demonstration of general cone placement on partner. Learn workspace for bw's. Learn tab placement for 4 horizontal bw's, partner practice. Learn RINN bw setup, bag for autoclaving

Lab 5: Expose 4 horizontal bw's on dexter using the tabs. Expose 4 horizontal and 4 vertical bw's on dexter using RINNS.

Lab 6: Bite wings continued. Review films, learn mounting of bw's, grading form. Partner practice for RINN bw's, set schedule for bw patient. Expose 4 horizontal bw's on patient when instructor grants approval. Document packets.

Lab 7: Learn coin test, quality assurance log, manual tanks. Take grading form for homework, learn FMX workspace set up. Set FMX patient schedule.

Lab 8: Partner practice for review of bite wings, and anterior and posterior RINN set up. FMX "dry run", with sequence.

Lab 9: Set FMX workspace, expose FMX on dexter. Process and mount films, take home grading form for interpretation. Sign up for 2nd outside FMX on dexter.

Lab 10: Continue FMX's on dexter, read/review dexter FMX's. "Dry run" FMX on partner

Lab 11: Expose FMX on patient. Other students will assist, learn manual developing and duplicating. Develop and mount fmx, complete grading form (**NO PATIENT X-RAYS ALLOWED OUT OF RADIOLOGY, CANNOT TAKE HOME)**

Lab 12: Extra time for FMX completion.

Lab 13: Learn bisecting technique with snap a ray, expose pa's on dexter. Learn pedo bw placement on dexter, expose 2 pedo bw's on dexter. Learn occlusal film placement, expose on dexter.

Lab 14: Complete requirements, tally packet grades.