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Dental Hygiene (DNLT) 1511 Oral Radiology (2 Units) CSU
[formerly Dental Hygiene 11]

Prerequisite: Acceptance into Dental Hygiene Program

Total Hours: 24 hours lecture; 32 hours lab (56 hours total)

Catalog Description: This course teaches the fundamentals of radiation equipment and avoidance of radiation exposure hazards along with clinical application of procedures involved in exposing, processing, mounting and interpretation of dental radiographs and digital images.

Type of Class/Course: Degree Credit

Text:

Johnson, Orlen, and Evelyn M. Thompson. *Essentials of Dental Radiography for the Dental Assistants and Hygienists*. 9th ed. Upper Saddle River: Pearson, 2012. Print.

Haring, Joen, and Laura Lind. *Radiographic Interpretation for the Dental Hygienist*. Philadelphia: Saunders, 1993. Print.

Additional Required Materials: None

Course Objectives:

By the end of the course, a successful student will be able to:

1. Explain the history of x-radiation,
2. Describe the fundamentals of radiation exposure and the possible hazards to the patient and operator when using radiation,
3. Operate an x-ray unit according to the safety standards of the State and Federal Departments of Public Health and the National Bureau of Standards,
4. Explain the component parts and workings of the dental x-ray machine and explain the production of x-radiation,
5. Demonstrate the proper method to produce quality radiographs/digital images,
6. Demonstrate proper infection control procedures,
7. Interpret and critique radiographs/digital images for anatomical landmarks, pathological conditions, and restorative evaluation,
8. Identify and correct undiagnostic radiographs/digital images,

9. Explain the factors affecting the quality of the x-ray beam and the radiograph/digital image,
10. Compare and contrast various film sizes and film speeds,
11. Compare and contrast different aids used to produce quality radiographs/digital images,
12. Demonstrate the use and operation of dark room apparatus equipment,
13. Demonstrate the procedures involved in exposing, processing, mounting, and interpreting quality dental radiographs.
14. Explain the basic differences between digital images and conventional radiographs,
15. Explain the components of radiation protection, and
16. Access individual patient's need for radiographs.

Course Scope and Content: (Lecture)

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| Unit I | <p>Historical Perspective and Radiation Basics</p> <p>A. History of Dental Radiography</p> <p>B. Characteristics and Measurement of Radiation</p> <p>C. The Dental X-ray Machine: Components and Functions</p> <p>D. Producing Quality Radiographs</p> |
| Unit II | <p>Biological Effects of Radiation and Radiation Protection</p> <p>A. Effects of Radiation Exposure</p> <p>B. Radiation Protection</p> |
| Unit III | <p>Dental X-ray Image Receptors and Film Processing Techniques</p> <p>A. Dental X-ray Film</p> <p>B. Dental X-ray Film Processing</p> <p>C. Digital Radiography</p> |
| Unit IV | <p>Dental Radiography Fundamentals</p> <p>A. Infection Control</p> <p>B. Legal and Ethical Responsibilities</p> <p>C. Guidelines for Radiographic Decision Making</p> |
| Unit V | <p>Intraoral Techniques</p> <p>A. Intraoral Radiographic Procedures</p> <p>B. The Periapical Examination – Paralleling Technique</p> <p>C. The Periapical Examination – Bisecting Technique</p> <p>D. The Bitewing Examination</p> <p>E. The Occlusal Examination</p> |
| Unit VI | <p>Radiographic Errors and Quality Assurance</p> <p>A. Identifying and Correcting Non-diagnostic Radiographs</p> <p>B. Safety and Environmental Responsibilities in Dental Radiography</p> |
| Unit VII | <p>Mounting and Viewing Dental Radiographs</p> <p>A. Mounting and Introduction to Interpretation</p> <p>B. Recognizing Normal Radiographic Anatomy</p> <p>C. Recognizing Deviations from Normal Radiographic Anatomy</p> <p>D. The Use of Radiographs in the Detection of Dental Caries</p> <p>E. The Use of Radiographs in the Evaluation of Periodontal Diseases</p> |



Unit VIII Patient Management and Supplemental Techniques
A. Radiographic Techniques for Children
B. Managing Patients with Special Needs
C. Supplemental Radiographic Techniques

Unit IX Extraoral Techniques
A. Panoramic Radiography
B. Interpretation of Panoramic images

Course Scope and Content: (Laboratory)

Unit I Introduction to the Radiology Clinic
A. Radiology equipment and operating procedures
B. Infection control
C. Radiation safety

Unit II Producing Intraoral Radiographs
A. Procedures for producing quality radiographs/digital images
B. Mounting and interpretation
C. Techniques

Unit III Producing Extraoral Radiographs
A. Procedures for producing quality panoramic radiographs/images
B. Interpretation

Unit IV Assessing a patient's radiographic needs
A. Radiographs for new patients
B. Frequency of Radiographs for patients with previous radiographs

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 4 hours per week outside of the regular class time doing the following:

1. Independent Reading and Study
2. Critique and interpret radiographs and digital images
3. Practice exposing radiographs and digital images on mannequins

Methods of Instruction:

1. Lecture
2. Class discussions
3. Audio-visual presentations
4. Laboratory demonstrations
5. Assigned reading

Methods of Evaluation:

1. Examinations and quizzes, including:
 - a. multiple choice questions



- b. true/false questions
 - c. identification of anatomy, pathology and restorations on radiographs/digital images
2. Expose and process radiographs/digital images on a mannequin and on live patients
 3. Written critiques
 - a. Interpretation of radiographs/digital images for quality, anatomy, pathology and restorations
 4. Lab Practicum

Laboratory Category: Extensive Laboratory

Pre delivery criteria: All of the following criteria are met by this lab.

1. Curriculum development for each lab.
2. Published schedule of individual laboratory activities.
3. Published laboratory activity objectives.
4. Published methods of evaluation.
5. Supervision of equipment maintenance, laboratory setup, and acquisition of lab materials and supplies.

During laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is physically present in lab when students are performing lab activities.
2. Instructor is responsible for active facilitation of laboratory learning.
3. Instructor is responsible for active delivery of curriculum.
4. Instructor is required for safety and mentoring of lab activities.
5. Instructor is responsible for presentation of significant evaluation.

Post laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is responsible for personal evaluation of significant student outcomes (lab exercises, exams, practical's, notebooks, portfolios, etc.) that become a component of the student grade that cover the majority of lab exercises performed during the course.
2. Instructor is responsible for supervision of laboratory clean-up of equipment and materials.

Supplemental Data:

TOP Code:	124020: Dental Hygienist
SAM Priority Code:	C: Clearly Occupational
Distance Education:	Not Applicable
Funding Agency:	Y: Not Applicable(funds not used)

Program Status:	1: Program Applicable
Noncredit Category:	Y: Not Applicable, Credit Course
Special Class Status:	N: Course is not a special class
Basic Skills Status:	N: Course is not a basic skills course
Prior to College Level:	Y: Not applicable
Cooperative Work Experience:	N: Is not part of a cooperative work experience education program
Eligible for Credit by Exam:	NO
Eligible for Pass/No Pass:	NO
Taft College General Education:	NONE