# El Paso Community College
# Syllabus
# Part II
# Official Course Description

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| **SUBJECT AREA** | **Dental Assisting** |
| **COURSE RUBRIC AND NUMBER** | **DNTA 1305** |
| **COURSE TITLE** | **Dental Radiology** |
| **COURSE CREDIT HOURS** | **3 (Credits) 2 (Lec) : 4 (Lab)** |

## I. Catalog Description

Introduction to radiation physics, radiation protection, and the operation of radiographic equipment. Instruction in exposure, processing and mounting of dental radiographs, and study of federal and state safety and standard practices for the classroom and lab settings. A grade of "C" or better is required in this course to take the next course. **(2:4). Lab fee.**

## II. Course Objectives

### Theory

The theory section of this syllabus corresponds to the parts and chapters found in the text.

Part I: History Perspective and Radiation Basics

A. Unit I: Introduction and History of Dental Radiography
1. State who discovered x-rays and the date.
2. Name the pioneers of radiography and identify their contributions.
3. Discuss the history of dental x-ray equipment.
4. Identify the two technique used in making dental radiographs.
5. List the uses of dental radiographs.
6. Define all related terminology.

B. Unit 2: Characteristics and Measurement of Radiation
1. Draw and label a typical atom.
2. Describe the process of ionization.
3. Explain radioactivity.
4. Discuss the difference between particulate radiation and electromagnetic radiation and give two examples of each.
5. List the properties of electromagnetic radiation.
6. Compare x-ray wavelength to its penetrating power.
7. List the properties of x-rays.
8. Explain how x-rays are produced.
9. List and describe the possible interactions of dental x-rays with matter.
10. Define the terms used to measure x-radiation
11. Explain background radiation.

12. Define all related terminology.

C. Unit 3: The Dental x-ray machine components and functions.
1. Identify the major components of an x-ray machine.
2. List the four controls on most dental x-ray machine.
3. List the components of the tube head.
4. Draw and label a typical dental x-ray tube.
5. Discuss the principles of x-ray tube operation.
6. Explain the function of the mA, kVp, and timer control devices.
7. Name the three transformers, describe their functions, and state their locations.
8. Identify in sequence the steps that must be followed in operating the dental x-ray machine.
9. Define all related terminology.

D. Unit 4: Producing Quality Radiographs
1. Identify the basic requirements of an acceptable diagnostic radiograph.
2. Differentiate between radiolucent and radiopaque areas on a dental radiograph and give an example of each.
3. Describe radiographic density and contrast.
4. Summarize the factors affecting the radiographic image.
5. Differentiate between subject contrast and film contrast.
6. List the rules of casting a shadow image.
7. List the factors that influence magnification and distortion.
8. Describe how mA, kVp, and exposure time affect film density.
9. Discuss how kVp affects contrast.
10. Differentiate between short-scale contrast and long-scale distances.
11. Explain target-surface, object-film, and target-film distances.
12. Explain the inverse square law and give two examples where it is used.
13. Define all related terminology.

Part II: Biological Effects of Radiation and Radiation Protection

E. Unit 5: Effects of Radiation Exposure
1. Compare the theories of biological damage and the possible effect of radiation on somatic and genetic cells.
2. Identify the body cells in the order of their radiosensitivity.
3. Identify the factors that determine radiation injuries.
4. List the sequence of events that may follow exposure to radiation.
5. Identify the three areas in the head and neck that are most affected by radiation.
6. List the possible short and long-term effects of irradiation.
7. Discuss the risk versus benefit of dental radiographs.
8. Identify the effects of oral radiation therapy.
9. Discuss all related terminology.

F. Unit 6: Radiation Protection
1. Explain the ALARA concept.
2. Summarize the radiation protection methods for the patient.
3. Summarize the radiation protection methods for the operator.
4. Describe a collimator, discuss its use, and state the recommended diameter of the beam at the patient's skin.
5. Describe a filter; discuss its use, and state filtration requirements above and below 70 kVp.
6. Explain inherent, added, and total filtration.
7. Discuss the use of the lead apron and thyroid collar.
8. Discuss the importance of film handling and processing.
9. Describe personnel monitoring devices use to detect radiation.
10. Discuss maximum permissible dose (MPD) and state the MPD for radiation workers and for the general public.

11. Define all related terminology

Part III: Dental X-ray Image Receptors and Film Processing Techniques

G. Units 7: Dental X-ray Films
1. Discuss the composition of dental x-ray film.
2. Describe latent image formation.
3. Differentiate between screen and nonscreen films.
4. Identify the contents in dental x-ray film packets.
5. Identify and compare the various intraoral films according to size, customary usage and film speed.
6. Differentiate between intraoral and extraoral films.
7. Identify the parts and intended use of the extraoral cassette.
8. Describe duplicating film.
9. Discuss correct methods of film storage and protection.
10. Define all related terminology.

H. Unit 8: Dental x-ray film processing
1. Explain how a latent image becomes a visible image.
2. List in sequence the steps in processing dental films.
3. List and describe the four (4) chemicals in the developer and fixing solutions and explain the function of each ingredient.
4. List the necessary equipment items in the darkroom for film processing.
5. Discuss safelights and safelight filters.
6. List and discuss the step-by-step procedures for manual film processing.
7. Discuss rapid film processing procedures.
8. Discuss the advantages and disadvantages of automatic film processing.
9. Discuss the disposal of radiographic processing chemicals and film waste.
10. Define all related terminology.

I. Unit 9: Digital Radiography
1. Explain the fundamental concept of digital radiography
2. Differentiate between direct and indirect digital imaging.
3. List the equipment used in digital imaging.
4. List and describe three types of digital image receptors.
5. Discuss digital radiography's effect on radiation exposure.
6. List and describe five software features used to enhance digital image interpretation.
7. Identify advantages and limitations of digital radiography.
8. Define all related terminology

Part IV: Dental Radiographer Fundamentals

J. Unit 10: Infection Control
This unit is a review of basic infection control protocol with emphasis on infection control protocols found in radiology.

K. Unit 11: Legal and Ethical Responsibilities
1. Discuss the federal and state regulations concerning the use of dental x-ray equipment.
2. Describe licensure requirements for exposing dental radiographs.
3. Identify specific risk management strategies for radiography
4. Discuss and demonstrate the use of all items that must be documented in the patient's record to include, but not exclusive, to: informed consent, medical history, etc.
5. Discuss what should be discussed with a patient who refuses radiographs.
6. Identify the role professional ethics play in guiding the radiographer's behavior.
7. Define all related terminology.

L. Unit 12: Patient Relations and Education
1. Explain the necessity for patient education in radiology.
2. Identify the benefits that the patient derives from preventive radiation procedures
3. Describe three (3) methods by which the patient can be educated to appreciate the value of dental radiography.
4. Identify the goals of the dental radiographer.
5. Define all related terminology.

Part V: Intraoral Techniques

M. Unit 13: Intraoral Radiographic Procedures
1. Identify the three (3) intraoral x-ray examinations.
2. List the five (5) rules of shadow casting.
3. Discuss the principles of the paralleling technique.
4. Discuss the principles of the bisecting technique.
5. Compare the paralleling and bisecting technique.
6. Locate the points of entry on the face.
7. Explain the proper patient seating position.
8. Explain horizontal and vertical angulation.
9. Define all related terminology.

N. Unit 14: The Periapical Examination – Paralleling Technique
1. Select the type and number of films required to make a complete periapical survey.
2. Discuss the principles of the paralleling technique.
3. List the advantages and disadvantages of the paralleling technique.
4. Discuss film retention for paralleling procedures.
5. Identify and be able to assemble and position image receptor holders for use with the paralleling technique.
6. Explain the importance of achieving accurate horizontal and vertical angulation in obtaining quality diagnostic radiographs using the paralleling technique.
7. Identify vertical angulation errors made when using the paralleling technique.
8. Define all related terminology.

O. Unit 15: The Periapical Examination - Bisecting Technique
1. Discuss the principles of bisecting technique.
2. List the advantages and disadvantages of using the bisecting technique.
3. Identify and be able to assemble and position image receptor holders for use with the bisecting technique and be able to distinguish these holders from those used in the paralleling technique.
4. Explain the importance of achieving accurate horizontal and vertical angulation in obtaining quality diagnostic radiographs using the bisecting technique.
5. List the recommended predetermined vertical angulation setting used with the bisecting technique.
6. Identify vertical angulation errors mad when using the bisecting technique.
7. Locate facial landmarks used for determining the points of entry used with the bisecting technique.
8. Define all related terminology.

P. Unit 16: The Bitewing Examination
1. State the purpose of the bitewing examination.
2. Compare the difference between periapical and bitewing radiographs.
3. List the four (4) sizes of film that can be used for bitewing surveys.
4. Identify the size and number of films required to make an adult bitewing survey.
5. Explain horizontal angulation.
6. Explain positive and negative vertical angulation.
7. State the recommended vertical angulation for bitewing exposures.

8. Compare the methods of holding the bitewing film in position.
9. Describe the film placements for the posterior bitewing examination.
10. Describe the film placements for the anterior bitewing examination.
11. Define all rated terminology.

Q. Unit 17: The Occlusal Examination
1. State the purpose of the occlusal examination.
2. List the reasons for making occlusal radiographs.
3. Discuss the technical considerations for the occlusal examination.
4. Compare the topographical with the cross-sectional technique.
5. State the sequence of steps for the maxillary and mandibular topographical surveys.
6. State the sequence of steps for the maxillary and mandibular cross-sectional surveys.
7. Define all related terminology.

Part IV; Radiographic Errors and Quality Assurance

R. Unit 18: Identifying and Correcting Undiagnostic Radiographs
1. Identify the types of radiographic errors caused by faulty exposure techniques.
2. Identify the types of radiographic errors caused by incorrect film positioning and angulation of the central ray.
3. Identify the types of radiographic errors caused by faulty processing techniques.
4. Identify the types of radiographic errors caused by chemical contamination.
5. Identify the types of radiographic errors caused by film handling.
6. Identify problems caused by outdated film.
7. Identify problems caused by faulty safelight conditions.
8. Define all related terminology.

S. Unit 19: Quality Assurance In Dental Radiography
1. Differentiate between quality assurance and quality control.
2. List the four objectives of quality control tests.
3. Discuss the use of a step wedge.
4. Describe how to test for light leaks in the darkroom.
5. Describe the safelight test.
6. Describe two daily tests for the automatic processor.
7. Discuss the test for developer solution strength using a step wedge device.
8. Discuss three causes of light radiographs and correction measures.
9. Discuss three causes of dark radiographs and correction measures.
10. List five problems with film surface marks, their cause and correction.
11. Describe who benefits from quality assurance programs.
12. Define all related terminology.

T. Unit 20: Safety and Environmental Responsibilities in Dental Radiography
1. Identify agencies responsible for regulations regarding safe handling of hazardous radiographic materials
2. Use MSDSs to identify proper handling and disposal of chemicals and materials associated with radiographic procedures.
3. Identify radiographic wastes that are considered hazardous to personnel and harmful to the environment.
4. Define all related terminology.

Part V: Mounting and Viewing Dental Radiographs

U. Unit 21: Unit 12.Mounting and Introduction to Interpretation
1. List the five (5) advantages of mounting radiographs.
2. Discuss the use and importance of the identification dot.
3. List the recommended order for mounting radiographs

4. List and describe the set by step procedures for mounting radiographs.
5. List five (5) items to be carefully checked after the radiographs are mounted.
6. Describe the optimal conditions for viewing radiographs.
7. Describe how to block our excess light during film viewing.
8. Define all related terminology.

V. Unit 22: Recognizing Normal Radiographic Anatomy

1. Why is it important to recognize and identify normal anatomical lankmarks of the face and head.
2. Recognize and identify the facial and cranial bones on a radiograph.
3. Name all of the anatomical landmarks of the maxilla and mandible found on a radiograph.
4. Differentiate between the terms radiopaque and radiolucent.
5. Differentiate between cortical and cancellous bone.
6. Recognize and describe the radiographic appearance of all structures of the teeth and the alveolus.
7. Name and identify all landmarks or structures normally seen on radiographs of the maxillary and mandibular tooth areas.
8. Define all related terminology.

W. Unit 23: Recognizing Deviations from Normal Radiographic Anatomy

1. Identify the radiographic appearance of dental materials.
2. Identify the radiographic appearance of developmental anomalies.
3. Identify the radiographic appearance of periapical abscesses, cysts and granulomas.
4. Identify the radiographic appearance of external and internal tooth resportion.
5. Identify the radiographic appearance of calcifications and ossifications.
6. Identify the radiographic appearance of odontogenic tumors.
7. Identify the radiographic appearance of nonodontogic tumors.
8. Identify the radiographic appearance of fractures.
9. Define all related terminology.

X. Unit 24: The Use of Radiographs in the Detection of Dental Caries

1. Explain why caries appear radiolucent on the radiograph.
2. Discuss both the clinical examination and the radiographic examination for the detection of dental caries.
3. List the five (5) locations of dental caries and discuss their radiographic appearance.
4. List three (3) conditions that resemble dental caries.
5. Define all related terminology.

Y. Unit 25: The Use of Radiographs in the Evaluation of Periodontal Diseases

1. Discuss the use of radiographs in the assessment of periodontal disease.
2. Differentiate between horizontal and vertical bone loss.
3. Identify the three local contributing factors for periodontal disease that radiographs can help locate.
4. Describe the radiographic appearance of healthy periodontium.
5. Describe the radiographic appearance of periodontal disease.
6. List the (4) four ADA Case Types and describe their radiographic appearance.
7. Discuss the radiographic examination for periodontal disease.
8. Describe the type of radiographs used to interpret periodontal disease and the preferred technique.
9. Describe the limitations of the radiograph in the detection of periodontal disease.
10. Define all related terminology.

Part VIII: Patient Management and Supplemental Techniques

Z. Unit 26: Radiographic Techniques for Children

1. Discuss the importance of making radiographic examinations on children.

2. Identify the factors that determine when radiographs on children should be made.
3. Discuss the suggested techniques for pediatric radiography.
4. Discuss the film requirements for the pediatric survey.
5. Explain the bitewing and periapical procedures for exposing radiographs on children.
6. Define all related terminology.

AA. Unit 27: Managing Patients with Special Needs

1. List all areas of the oral cavity that are most likely to initiate the gag reflex.
2. List the two (2) stimuli that commonly initiate the gag reflex.
3. Describe seven (7) methods to reduce psychogenic stimuli to control gag reflex.
4. Describe four (4) methods to reduce tactile stimuli to control the gag reflex.
5. Describe the procedures for managing the wheel-chair bound patient.
6. Discuss the procedure for managing visually and hearing impaired patients.
7. Discuss the procedures for managing the apprehensive patient.
8. Discuss the procedures for film placement in patients with maxillary and mandibular tori.
9. Discuss the procedures for film placement in patients with low palatal vaults.
10. Discuss necessary radiograph for cancer patients.
11. Discuss necessary radiographs for the pregnant patient.
12. Define all related terminology.

BB. Unit 28: Supplemental Radiographic Techniques

1. Discuss and demonstrate the ability to adapt standard techniques when necessary.
2. Discuss and demonstrate appropriate adaptions in image receptor placement to avoid overlap.
3. Explain the need to alter vertical angulation in the presence of a shallow palatal vault.
4. Discuss the procedure for image receptor placement in patients with edentulous areas.
5. Discuss the procedure for image receptor placement during endodontic procedures.
6. List three methods of location.
7. Utilize the buccal-object rule to identify the location of a foreign object.
8. Describe the difference between a standard molar perioapical radiograph and a disto-oblique periapical radiograph.
9. List four reasons to duplicate a radiograph.
10. Define all related terminology.

Part IX: Extraoral Techniques

CC. Unit 29: Extraoral Radiograph and Alternate Imaging Modalities

1. Describe the purpose and use of extraoral radiographs.
2. Identify the types of film used in extraoral radiography.
3. Give three reasons for making extraoral exposures.
4. Identify the types of projections that can be performed extraorally.
5. State the purpose and describe the procedure for each extraoral projection.
6. Explain the role of intensifying screens play in producing a radiograph image.
7. Define all related terminology.

DD. Unit 30: Panoramic Radiography

1. State the purpose and use of panoramic radiography.
2. Differentiate between a conventional and a panoramic x-ray machine.
3. Identify the main factor that determines the width of the focal tough.
4. Identify the major factors that affect the geometry of the image.
5. Identify the planes used to position the head correctly.
6. Identify in sequence the basic steps in operating a panoramic x-ray unit.
7. Compare the advantages and disadvantages of panoramic versus intraoral radiographic surveys.
8. Identify five (5) major head-positioning errors that result in faulty panoramic radiographs.
9. List and identify the anatomic landmarks of the maxilla and surrounding tissues as viewed on a panoramic radiograph.

10. List and identify the anatomic landmarks of the mandible and surrounding tissues as viewed on a panoramic radiograph.
11. List and identify four (4) soft tissue images as viewed on a panoramic radiograph.
12. List and identify three (3) air space images as viewed on a panoramic radiograph.
13. Define all related terminology.

**Laboratory**

The laboratory portion of this course is designed to enhance the theory portion. Unit objectives, in the laboratory portion, match the objectives found in the theory portion. However, objectives may or may not be addressed the same day as the lecture.

A. Unit I: Introduction and History of Dental Radiography
Refer to lab calendar

B. Unit 2: Characteristics of Radiation
Refer to lab calendar

C. Unit 3: The Dental x-ray machine components and functions.
1. Demonstrate the function of the mA, kVp, and timer control devices.
2. Demonstrate the sequence the steps that must be followed in operating the dental x-ray machine.

D. Unit 4: Producing Quality Radiographs
1. Identify the basic requirements of an acceptable diagnostic radiograph.
2. Differentiate between radiolucent and radiopaque areas on a dental radiograph and give an example of each.
3. Demonstrate and identify radiographic density and contrast.
4. Demonstrate how mA, kVp, and exposure time affect film density.

Part II: Biological Effects of Radiation and Radiation Protection

E. Unit 5: Effects of Radiation Exposure
Refer to lab calendar

F. Unit 6: Radiation Protection
1. Demonstrate radiation protection methods for the patient.
2. Demonstrate radiation protection methods for the operator.
3. Demonstrate the use of the lead apron and thyroid collar. .
1. Demonstrate of film handling and processing.

Part III: Dental X-ray Film and Processing Techniques

G. Units 7: Dental X-ray Films
1. Identify the contents in dental x-ray film packets.
2. Identify and compare the various intraoral films according to size, customary usage and film speed.
3. Differentiate and demonstrate the use of intraoral and extraoral films.
4. Identify and demonstrate use of the extraoral cassette.
5. Demonstrate the use of duplicating film.
6. Demonstrate correct methods of film storage and protection.

H. Unit 8: Dental x-ray film processing
1. Demonstrate the sequence of steps in processing dental films.
2. Discuss and demonstrate the equipment used in the darkroom for film processing.

3. Identify and discuss safelights and safelight filters.
4. Demonstrate the step-by-step procedures for manual film processing.
5. Demonstrate rapid film processing procedures.
6. Demonstrate the step-by-step procedures of automatic film processing.
7. Discuss the disposal of radiographic processing chemicals and film waste.

I. Unit 9: Digital Radiography
Refer to lab calendar

Part IV: Dental Radiographer Fundamentals

J. Unit 10: Infection Control
Demonstrate infection control protocols at all time in radiology.

K. Unit 11: Legal and Ethical Responsibilities
1. Demonstrate the use of all items that must be documented in the patient's record to include, but not inclusive to: informed consent, medical history, etc.

L. Unit 12: Patient Relations and Education
1. Demonstrate patient education in radiology.
2. Explain the show-tell-do method of communication.
3. Discuss the benefits that the patient derives from preventive radiation procedures with patients.
4. Discuss methods of non-verbal communication.

Part V: Intraoral Techniques

M. Unit 13: Intraoral Radiographic Procedures
1. Demonstrate the three types of intraoral x-ray examinations.
2. Demonstrate the principles of the paralleling technique.
3. Demonstrate the principles of the bisecting technique.
4. Compare the paralleling and bisecting technique.
5. Locate the points of entry on the face.
6. Demonstrate the proper patient seating position.
7. Demonstrate horizontal and vertical angulation.

N. Unit 14: The Periapical Examination – Paralleling Technique
1. Select the type and number of films required to make a complete periapical survey.
2. Identify and be able to assemble and position film holders for the paralleling and bisecting techniques.
3. Demonstrate film retention for paralleling procedures.
4. Demonstrate patient preparation for the paralleling technique.
5. Demonstrate image receptor positioning for maxillary and mandibular periapical exposures using the paralleling technique

O. Unit 15: the Periapical Examination – Bisecting Technique
1. Demonstrate film retention for bisecting procedures.
2. Demonstrate image receptor positioning for maxillary and mandibular periapical exposures using the bisecting technique
3. Differentiate between conventional periapical film placement and endodontic film placement techniques

P. Unit 16: The Bitewing Examination
1. State the purpose of the bitewing examination.
2. Compare the difference between periapical and bitewing radiographs.
3. Identify the four (4) sizes of film that can be used for bitewing surveys.

4. Identify the size and number of films required to make an adult bitewing survey.
5. Demonstrate horizontal angulation.
6. Demonstrate positive and negative vertical angulation.
7. Demonstrate the recommended vertical angulation for bitewing exposures.
8. Compare the methods of holding the bitewing film in position.
9. Demonstrate the film placements for the posterior bitewing examination.
10. Demonstrate the film placements for the anterior bitewing examination.

Q. Unit 17: The Occlusal Examination
1. State the purpose of the occlusal examination.
2. List the reasons for making occlusal radiographs.
3. Demonstrate the occlusal examination.
4. Compare the topographical with the cross-sectional technique.
5. Demonstrate of steps for the maxillary and mandibular topographical surveys.
6. Demonstrate of steps for the maxillary and mandibular cross-sectional surveys.

Part IV: Radiographic Errors and Quality Assurance

R. Unit 18: Identifying and Correcting Undiagnostic Radiographs
1. Identify the types of radiographic errors caused by faulty exposure techniques.
2. Identify the types of radiographic errors caused by incorrect film positioning and angulation of the central ray.
3. Identify the types of radiographic errors caused by faulty processing techniques.
4. Identify the types of radiographic errors caused by chemical contamination.
5. Identify the types of radiographic errors caused by film handling.
6. Identify problems caused by outdated film.
7. Identify problems caused by faulty safelight conditions.

S. Unit 19: Quality Assurance in Dental Radiography
1. Differentiate between quality assurance and quality control.
2. Demonstrate use of a step wedge.
3. Demonstrate the procedure of testing for light leaks in the darkroom.
4. Demonstrate the procedure of testing the safelight.
5. Demonstrate the two daily tests for the automatic processor.
6. Demonstrate the test for developer solution strength using a step wedge device.

T. Unit 20: Safety and Environmental Responsibilities in Dental Radiography
Demonstrate a safe and environmentally responsible working radiology area.

Part V: Mounting and Viewing Dental Radiographs

U. Unit 21: Mounting and Introduction to Interpretation
1. Demonstrate recommended order for mounting radiographs
2. Demonstrate mounting radiographs according to the steps provided.
3. List considerations for reading digital radiographic images not encountered when reading film-based radiographs.
4. Demonstrate viewing radiographs according to the suggested steps presented.
5. Demonstrate methods used to localize objects in the jaws by applying the buccal-object rule (SLOB Rule)
6. Differentiate between preliminary interpretation and diagnosis of the radiographs.
7. Identify all radiopaque and radiolucent.
8. Identify all radiopaque and radiolucent appearing restorative materials.

V. Unit 22: Recognizing Normal Radiographic Anatomy
1. Recognize and identify normal anatomical lankmarks of the face and head.
2. Recognize and identify the facial and cranial bones on a radiograph.

3. Differentiate between the terms radiopaque and radiolucent.
4. Differentiate between cortical and cancellous bone.
5. Identify the radiographic appearance of all structures of the teeth and the alveolus.
6. Identify all landmarks or structures normally seen on radiographs of the maxillary and mandibular tooth areas.

W. Unit 23: Recognizing Deviations From Normal Radiographic Anatomy
1. Identify the radiographic appearance of dental materials.
2. Identify the radiographic appearance of developmental anomalies.
3. Identify the radiographic appearance of periapical abscesses, cysts and granulomas.
4. Identify the radiographic appearance of external and internal tooth resportion.
5. Identify the radiographic appearance of calcifications and ossifications.
6. Identify the radiographic appearance of odontogenic tumors.
7. Identify the radiographic appearance of nonodontogic tumors.
8. Identify the radiographic appearance of fractures.

X: Unit 24: The Use of Radiographs in the Detection of Dental Caries
1. Explain why caries appear radiolucent on the radiograph.
2. Discuss both the clinical examination and the radiographic examination for the detection of dental caries.
3. List the five (5) locations of dental caries and discuss their radiographic appearance.
4. List three (3) conditions that resemble dental caries.

Y. Unit 25: The Use of Radiographs in the Evaluation of Periodontal Disease
1. Describe the radiographic appearance of healthy periodontium.
2. Describe the radiographic appearance of periodontal disease.
3. Discuss the radiographic examination for periodontal disease.
4. Describe the type of radiographs used to interpret periodontal disease and the preferred technique.
5. Describe the limitations of the radiograph in the detection of periodontal disease.

Part VII: Patient Management and Supplemental Techniques

Z. Unit 26: Radiographic Techniques for children
1. Demonstrate taking radiographic examinations on children.
2. Determine when radiographs on children should be made.
3. Demonstrate techniques for pediatric radiography.
4. Identify the film requirements for the pediatric survey.
5. Demonstrate bitewing and periapical procedures for exposing radiographs on children.

AA. Unit 27: Managing Patients with Special Needs
1. List all areas of the oral cavity that are most likely to initiate the gag reflex.
2. List the two (2) stimuli that commonly initiate the gag reflex.
3. Demonstrate procedures for film placement in patients with maxillary and mandibular tori.
4. Demonstrate procedures for film placement in patients with low palatal vaults.

BB. Unit 28: Supplemental Radiographic Technique
1. Demonstrate the ability to adapt standard techniques when necessary.
2. Identify the film requirements for an edentulous survey.
4. Demonstrate appropriate adaptions in image receptor placement to avoid overlap.
3. Demonstrate how to change the vertical angulation in the presence of a shallow palatal vault.
4. Demonstrate the procedure for image receptor placement in patients with edentulous areas.
5. Discuss the procedure for image receptor placement during endodontic procedures.
6. Utilize the buccal-object rule to identify the location of a foreign object.

7. Describe the difference between a standard molar perioapical radiograph and a disto-oblique periapical radiograph.
8. Explain the importance of making a radiographic survey of edentulous areas.
9. Identify the film requirements for an edentulous survey.

Part IX: Extraoral Techniques

CC. Unit 29: Extraoral Radiograph and Alternate Imaging Modalities
1. Describe the purpose and use of extraoral radiographs.
2. Identify the types of film used in extraoral radiography.

DD. Unit 21: Panoramic Radiography
1. Differentiate between a conventional and a panoramic x-ray machine.
2. Demonstrate the planes used to position the head correctly.
3. Demonstrate the basic steps in operating a panoramic x-ray unit.
4. Discuss and compare the advantages and disadvantages of panoramic versus intraoral radiographic surveys.
5. Identify five major head-positioning errors that result in faulty panoramic radiographs.
6. Identify the anatomic landmarks of the maxilla and surrounding tissues as viewed on a panoramic radiograph.
7. Identify the anatomic landmarks of the mandible and surrounding tissues as viewed on a panoramic radiograph.
8. Identify four soft tissue images as viewed on a panoramic radiograph.
9. Identify three air space images as viewed on a panoramic radiograph.

## III. THECB Learning Outcomes (WECM)

Upon successful completion of this course, students will:

1. Describe the theory of radiation physics.
2. Comply with radiation health and safety principles.
3. Apply radiographic techniques.
4. Expose, process, and mount radiographs.
5. Demonstrate quality assurance practices.

## IV. Evaluation

**Progress Assessment**

Unit examinations, skills competencies, assignments, and a comprehensive final will be announced on the course calendar. Quizzes may be administered at the instructor's discretion and will not appear on the course calendar. Course work will include the production of radiographic surveys.

**Grade Distribution**

| | |
|---|---|
| Final Exam | 40% |
| Unit Exams | 10% |
| Quizzes | 05% |
| Assignments | 05% |
| X-ray Surveys | 40% |
| | 100% |

**Grading Scale**

| | |
|---|---|
| 93 – 100 | A |
| 83 – 92 | B |
| 75 – 82 | C |
| 74 or below | F |

**Remediation**

Graded assignments will be returned to the student in a timely manner for the student's use in estimating his/her progress in the course. Additionally, the instructor will conduct periodic progress discussions with each student. However, it is the student's responsibility to schedule an individual conference with the instructor should either party feel that the student is not meeting at least the minimum passing standard for the course. The instructor may provide remediation opportunities which may include but are not limited to: supplemental assignments, reexamination, presentations, community projects, etc.

## V. Disability Statement (Americans with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

## VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

## VII. Title IX and Sex Discrimination

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.