

MISSION TRAILS REGIONAL OCCUPATIONAL PROGRAM

1. COURSE TITLE: Dental X-ray
ID# 07-009-86
2. CBEDS TITLE: Dental X-ray
3. CBEDS NUMBER: 4235
4. JOB TITLES: Job Title: Dental Assistant
DOT Codes: #079-361-018
5. COURSE DESCRIPTION: This course encompasses the didactic and clinical instruction in radiation safety, bisecting and paralleling technique of exposing intra-oral radiographs, film processing, mounting, evaluating and film storage, necessary to receive a California Dental X-ray License. The initial focus is on State legal requirements and specific rules and regulations of safety radiation in preparation for the written State examination. After passing the written examination, the student will then proceed with the clinical portion of class which includes exposing (2) sets of bitewings, (2) full mouth sets of radiographs on a Dexter mannequin, (4) full mouth sets of radiographs on patients, film processing, mounting and evaluation of all radiographs. The student must pass both written and clinical examinations @ 75 % to receive their California Dental X-ray License.
6. HOURS: 75 hours
7. PREREQUISITES: Students must be currently employed in a dental office, have A minimum of six months experience, a graduate from Dental Careers or Dental Assisting Program, or currently enrolled in the Dental Careers Program.
8. REVISION DATE: October 2003

9 COURSE OUTLINE:

a) CONTENT AREA SKILLS

i) EXPECTED STUDENT OUTCOMES

ii) HOURS OF INSTRUCTION

COURSE OUTLINE

CONTENT AREA SKILLS	EXPECTED STUDENT OUTCOMES	HOURS CL = Classroom CC = Comm. Class. CP = Co-op Ed.		
Instruction will include:	Student will be able to:	CL	C C	CP
<p>1. Examination and Treatment Procedures</p> <ul style="list-style-type: none"> a) Historical background b) Types of radiation c) X-ray production principles d) Operation of x-ray equipment e) Properties of radiation f) X-radiation units, detection and measurement devices g) Interaction of ionizing radiation on cells, tissues and matter h) Factors influencing the biological response of cells and tissues to ionizing radiation i) Somatic and genetic effects of radiation exposure 	<ul style="list-style-type: none"> 1. Understand the history of dental x-ray and it's progress along with conforming to the standards of radiation safety expected in a dental office. 2. List the properties and types of radiation and explain the biological effect of radiation exposure. 3. Identify the components of a dental x-ray unit and explain the function of each component. 4. Know the uses of dental radiographs. 5. Know the difference between somatic and genetic effects of radiation exposure. 6. Pass written examination on types of radiation and their biological effects to cells and tissues. 	5		
<p>2. Radiation Health, Safety, and Protection</p> <ul style="list-style-type: none"> a) State and federal regulations b) Legal aspects c) General principles of radiological health d) Radiation protection methods e) Monitoring devices f) Medical history (x-ray records) 	<ul style="list-style-type: none"> 1. List standardized procedures and state policies that dental offices follow to ensure quality radiographs. 2. Describe the safety precautions to be utilized when utilizing radiographs. 3. Know and demonstrate radiation protection methods for both the patient and the operator. 4. Know and explain use of monitoring devices. 5. Obtain medical history and establish x-ray records for each clinical patient. 6. Have knowledge on radiation health, safety, and protection and pass a written test. 	6		

<p>3. Film Exposure</p> <ul style="list-style-type: none"> a) X-radiation production and scatter b) X-ray beam quality and quantity c) Factors influencing density, contrast, definition, and distortion d) Factors influencing imagery and geometry e) X-ray film characteristics f) Film speed and related dose g) Types of film h) Film identification i) Duplication of radiographs 	<ol style="list-style-type: none"> 1. Explain how an x-ray is produced. 2. Describe the composition, sizes, types, and storage of dental x-ray film. 3. Identify means of producing quality radiographs on a variety of patients. 4. List and identify common production errors. 5. Demonstrate proper exposure technique on a mannequin. 6. Demonstrate proper exposure technique on four patients. 7. Explain the process of duplicating radiographs. 	40		12*
<p>4. Processing Factors</p> <ul style="list-style-type: none"> a) Solution chemistry and quality maintenance procedures b) Darkroom construction, equipment and safe lighting c) OSHA standards in processing films d) Film processing techniques e) Problems caused by processing faults 	<ol style="list-style-type: none"> 1. Describe the processing techniques, the composition of the solutions, and the storage of final radiographs. 2. Demonstrate OSHA standards in proper processing of dental film. 3. Recognize and describe the methods of prevention of processing errors. 4. Demonstrate manual and automatic processing techniques. 5. Pass a written examination on film processing. 	2		1*
<p>5. Intraoral Techniques and Holding Devices</p> <ul style="list-style-type: none"> a) Paralleling b) Bisecting c) Occlusal d) Digital imaging 	<ol style="list-style-type: none"> 1. Demonstrate the assembly of film holders for a complete mouth survey, using the paralleling technique and bisecting technique. 2. Identify the types of intra-oral radiographs. 3. Discuss digital imaging. 	3		½ hr*
<p>6. Extraoral Techniques</p> <ul style="list-style-type: none"> a) Panoramic b) Other 	<ol style="list-style-type: none"> 1. Identify extra-oral films. 	½ hr		
<p>7. Film Mounting</p> <ul style="list-style-type: none"> a) Anatomical landmarks b) Mounting procedures c) Diagnostic quality of radiographs d) Miscellaneous aids in mounting e) Use of viewbox 	<ol style="list-style-type: none"> 1. Properly mount and pass a three-minute timed mounting test. 2. Critique and evaluate each full mouth radiograph exposed. 	2 hr		½ hr*

8. Evaluation Standards and Procedures a) Retake policy b) Student self-evaluation c) Instructor evaluation	1. Student will pass a State written examination.	1 ½ hr s		1 hr*
TOTAL CLASSROOM HOURS		60		
TOTAL COOPERATIVE EDUCATION (CO-OP)				15 *
TOTAL HOURS FOR CLASSROOM AND CO-OP	1. Community classroom and/or CO-Op provided student has clearance to complete four patients at their clinical (employer) site.	75		

* Clinical Lab

Prepared by: Debbie M. Reynon, CDA RDA 10/2003

9 COURSE OUTLINE:

b) CAREER PERFORMANCE STANDARDS

- i) EXPECTED STUDENT OUTCOMES
- ii) HOURS OF INSTRUCTION

COURSE OUTLINE

CAREER PERFORMANCE STANDARDS	EXPECTED STUDENT OUTCOMES	HOURS
Instruction will include:	Student will be able to:	
<p>1. Personal Skills</p> <ul style="list-style-type: none"> ▪ Classroom policies & procedures ▪ Ethics <ul style="list-style-type: none"> → Work → Business ▪ Sexual harassment laws ▪ Personal skills, including positive attitude, self-confident, honesty, perseverance & self-discipline ▪ Professional appearance ▪ Time management ▪ Lifelong learning 	<p>1. Understand how personal skill development, including positive attitude, honesty, self-confidence, time management, & other positive traits affect employability.</p> <ul style="list-style-type: none"> ▪ Demonstrate and understand classroom policies & procedures ▪ Define work and business ethics & demonstrate the importance of ethical standards & social responsibilities in the business environment. ▪ Discuss the laws applicable to sexual harassment & discuss tactics for handling harassment situations. ▪ Demonstrate personal skills in class and/or business environment: <ul style="list-style-type: none"> → Positive attitude → Self-confidence → Honesty → Perseverance → Self-discipline ▪ Demonstrate and model personal hygiene and acceptable professional attire ▪ Prioritize tasks and meet deadlines ▪ Explain the importance of lifelong learning 	<p>Integrated in content area skills</p>

CAREER PERFORMANCE STANDARDS	EXPECTED STUDENT OUTCOMES	HOURS
Instruction will include:	Student will be able to:	
<p>2. Interpersonal Skills</p> <ul style="list-style-type: none"> ▪ Group dynamics ▪ Conflict resolution and negotiation ▪ Team work ▪ Etiquette across gender and cultural groups 	<p>2. Understand principles of effective interpersonal skills, including group dynamics, conflict resolution, and negotiation.</p> <ul style="list-style-type: none"> ▪ Identify and explain the key concepts of group dynamics ▪ Discuss and demonstrate the dynamics of conflict resolution and negotiation, and their importance within the business environment ▪ Demonstrate effective teamwork, share responsibilities, accept supervision and assume leadership roles ▪ Demonstrate cooperative working relationships and proper etiquette across gender and cultural groups 	<p>Integrated in content area skills</p>
<p>3. Thinking and Problem-Solving Skills</p> <ul style="list-style-type: none"> ▪ Critical and creative thinking skills ▪ Logical reasoning and problem-solving skills ▪ Numerical estimation, measurement, and calculation ▪ Identify, locate, and organize needed information and propose, evaluate, and select alternative solutions 	<p>3. Understand the importance of critical thinking and problem-solving skills in the workplace.</p> <ul style="list-style-type: none"> ▪ Apply critical and creative thinking skills in a work environment and implement a plan of improvement as needed ▪ Demonstrate logical reasoning and problem solving skills in a work environment ▪ Apply numerical estimation, measurement and calculation skills to business applications including the following: <ul style="list-style-type: none"> → Whole number math → Decimals & fractions → Counting & monetary functions → Use of tables & graphs ▪ Recognize problem situations; identify, locate and organize needed information, and propose, evaluate and select from alternate solutions 	<p>Integrated in content area skills</p>

CAREER PERFORMANCE STANDARDS	EXPECTED STUDENT OUTCOMES	HOURS
Instruction will include:	Student will be able to:	
<p>4. Communication Skills</p> <ul style="list-style-type: none"> ▪ Written communications ▪ Verbal and Nonverbal communications ▪ Active and effective listening ▪ Proper etiquette in business communications ▪ Writing and editing skills ▪ Use of reference material and handbooks ▪ Oral presentations 	<p>4. Understand principles of effective communication.</p> <ul style="list-style-type: none"> ▪ Read and implement written instructions, technical manuals, written communication, and reference books ▪ Present a positive image of verbal and nonverbal communication through use of appropriate methods ▪ Demonstrate active and effective listening skills through verbal, nonverbal and written feedback ▪ Demonstrate proper etiquette in business communications, including an awareness of requisite for international communications (languages, customs, and time zones) ▪ Demonstrate the following writing and editing skills: <ul style="list-style-type: none"> → Use correct grammar, punctuation, capitalization, vocabulary and spelling → Write, proofread and edit → Select and use appropriate forms of communication ▪ Exhibit a proficiency in the use of reference materials such as dictionary, thesaurus, telephone directory, almanac, zip code directory, and office handbooks 	<p>Integrated in content area skills</p>
<p>5. Occupational Safety</p> <ul style="list-style-type: none"> ▪ Good safety practices 	<p>5. Understand occupational safety issues, including avoidance of physical hazards</p> <ul style="list-style-type: none"> ▪ Model and implement good safety practices including: <ul style="list-style-type: none"> → Avoidance and reporting of physical hazards in the work environment → Safe operation of equipment → Proper handling of hazardous materials 	<p>Integrated in content area skills</p>

CAREER PERFORMANCE STANDARDS	EXPECTED STUDENT OUTCOMES	HOURS
Instruction will include:	Student will be able to:	
6. Employment Literacy <ul style="list-style-type: none"> ▪ Expand awareness of career opportunities ▪ Set employment goals and objectives ▪ Aptitudes, personal characteristics and interests ▪ Develop portfolio to C-TAP standards ▪ Develop interviewing techniques 	6. Understand career paths and strategies for obtaining employment. <ul style="list-style-type: none"> ▪ Explore career opportunities and develop a career plan ▪ Identify steps for setting goals and writing personal goals and objectives ▪ Examine aptitudes related to career options; relate personal characteristics and interests to educational and occupational opportunities ▪ Develop a portfolio to include the following: <ul style="list-style-type: none"> → Letter of Introduction → Cover letter → Resume → Thank you letter → Job application → Licenses, Certificates and Awards → Transcripts → Letters of Recommendation → Work Samples 	Integrated in content area skills
7. Technology Literacy <ul style="list-style-type: none"> ▪ Apply Industry specific technology ▪ Use Industry specific software ▪ Demonstrate Keyboarding ▪ Accessing information ▪ Lifelong enhancement of technology skills 	7. Understand and adapt to changing technology. <ul style="list-style-type: none"> ▪ Identify and demonstrate use of appropriate technology ▪ Identify and use industry specific software ▪ Demonstrate proficiency in alphanumeric keyboarding ▪ Input and retrieve information ▪ Understand the importance of lifelong learning in adapting to changing technology 	Integrated in content area skills

11. ADDITIONAL RECOMMENDED /OPTIONAL ITEMS

a. ARTICULATION:

High Schools
Alisal High School
Everett High School
North Salinas High School
Salinas High School

Hartnell College
Hartnell College

College Course Articulated
Beginning Word Processing
Office Procedures
Intermediate Office Skills
Machine Calculations
Beginning Keyboarding and

Formatting

Professional Development and
Career Management

b. VOCATIONAL CREDIT:

5 – 10 units

c. ACADEMIC CREDIT:

d. INSTRUCTIONAL STRATEGIES:

Cooperative team work
Individualized instruction
Individual practice
Lab practical experience
Community Classroom
SDAIE techniques
Drill and practice

e. INSTRUCTIONAL MATERIALS:

Computers (word-processing and tutorial software)
IBM compatible computers, memory typewriters,
calculators, transcription machines
Simulations: Pediatric Associates
Reference materials
Textbooks: Century 21 Keyboarding, Solving
Business Problems on the Electronic
Calculator, Office Skills, Alphabetic Indexing,
Rules, Basic Math, Keeping Financial Records
Reference Manuals
Speakers from the Community and Advisory Board
Classroom Posters
Newspapers
Videos

f. CERTIFICATES:

Course Certificate
Successful completion of established
proficiencies leading to certificate competency
levels

Achievement Certificate

Minimum of one proficiency completed leading
to certificate competency levels