

Montgomery County Community College  
DHG 155  
Dental Radiology  
3-2-3

**COURSE DESCRIPTION:**

This course enables the dental hygiene student to acquire the knowledge, skills and attitudes necessary to produce dental radiographs of diagnostic quality with minimum patient exposure to radiation. Topics of study include the principles of radiation physics, radiation biology, radiation safety, radiographic technique, patient management, quality assurance, patient selection criteria, mounting and evaluation, recognition of anatomic landmarks and common radiographic findings and alternate imaging modalities. A laboratory component provides the student with the opportunity to learn and practice radiology skills on simulation manikins in preparation for operating competently in the clinic environment. This course is subject to a course fee. Refer to <http://mc3.edu/adm-fin-aid/paying/tuition/course-fees> for current rates.

**PREREQUISITE(S):**

MAT 080 – Fundamentals of Mathematics, or MAT 011 – Beginning Algebra, or MAT 011B - Beginning Algebra with Review of Arithmetic with a minimum grade of “C.” Placement score information can be found on the ACT335 document linked to the online course description.

Official Final High School Transcript or GED Transcript.

High School Chemistry or CHE 121 – General Chemistry – Inorganic (or higher) within 5 years with a minimum grade of “C.”

BIO 131 – Human Anatomy & Physiology I, BIO 132 - Human Anatomy & Physiology II, and BIO 140 – Microbiology and Immunology within 5 years with a minimum grade of “B” in one course, with a minimum grade of “C” in the 2<sup>nd</sup> and 3<sup>rd</sup> courses. Must be completed within two attempts.

ENG 101 – English Composition I with a minimum grade of “C.”

ESW 206 – Basic Nutrition with a minimum grade of “C.”

TEAS®. Comprehensive Score of 50 or higher and TEAS®. Reading Comprehensive Score of 75 (or higher) within 3 years. Must be completed within 2 attempts. See the TEAS® Information Packet. Please note there is a fee for the TEAS®.

## CO-REQUISITE(S):

DHG 100 – Theory and Practice of Dental Hygiene I

DHG 111 – Dental Anatomy

DHG 113 – Dental Histology and Embryology

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
1. Discuss the imaging principles that are required to produce dental radiographs of diagnostic quality for a variety of patient types and needs.	Lecture Classroom Discussion Written Assignments Self-Directed Modules Assigned Reading	Discussion Questions Online Discussion Questions Exams
2. Determine the need for dental radiographs as outlined by the FDA.	Lecture Classroom Discussion Class Activities Written Assignments Self-Directed Modules	Discussion Questions Online Discussion Questions Exams
3. Examine the principles of radiation physics, biology and safety.	Lecture Classroom Discussion Class Activities Written Assignments Self-Directed Modules Research Paper	Discussion Questions Online Discussion Questions Exams Evaluation of Research Paper
4. Compare and contrast traditional and digital radiographic imaging techniques.	Lecture Classroom Discussion Class Activities Written Assignments	Discussion Questions Online Discussion Questions Exams
5. Demonstrate exposure, mounting techniques and quality assurance procedures used to assure diagnostic quality dental radiographs.	Lecture Classroom Discussion Class Activities Written Assignments Self-Directed Modules Laboratory Practice	Weekly Clinical Evaluation Self-Reflection Essay CMS Exam Process Evaluations
6. Discuss the legal and ethical considerations related to dental radiography.	Lecture Classroom Discussion Written Assignments Self-Directed Modules	Discussion Questions Online Discussion Questions Exam
7. Demonstrate the fundamental knowledge and attitudes necessary to understand and safely use x-radiation.	Lecture Classroom Discussion Written Assignments Self-Directed Modules Laboratory Practice Research Paper	Weekly Clinical Evaluation Self-Reflection Essay CMS Exam Process Evaluation Evaluation of Research Paper

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria.*

#### SEQUENCE OF TOPICS:

1. Introduction to Dental Imaging Examinations
2. Dental X-Ray Equipment
3. Infection Control and the Dental Radiographer
4. Bite-Wing Technique
5. Paralleling Technique
6. Dental Images and the Dental Radiographer
7. Film Mounting and Viewing
8. Quality Assurance
9. Radiation Characteristics
10. Dental X-Ray Image Characteristics
11. Radiation Characteristics
12. Dental X-Ray Image Characteristics
13. Exposure and Technique Errors
14. Digital Imaging
15. Radiation History
16. Radiation Physics
17. Radiation Biology
18. Radiation Protection
19. Normal Anatomy: Intraoral Images
20. Panoramic Imaging
21. Normal Anatomy: Panoramic Images
22. Introduction to Image Interpretation
23. Descriptive Terminology
24. Patient Relations and the Dental Radiographer
25. Patient Education and the Dental Radiographer
26. Identification of Restorations, Dental Materials, and Foreign Objects
27. Identification of Dental Caries
28. Interpretation of Periodontal Disease
29. Interpretation of Trauma, Pulpal Lesions, and Periapical Lesions
30. Bisecting Technique
31. Extraoral Imaging
32. Dental X-Ray Film
33. Film Processing
34. Legal Issues and the Dental Radiographer
35. Imaging of Patients with Special Needs
36. Three-Dimensional Digital Imaging

## LEARNING MATERIALS:

## Required Texts:

- Iannucci, Joen and Howerton, L. J. *Dental Radiography: Principles and Techniques* (6<sup>th</sup> ed.). Elsevier. 2022.
- Iannucci, Joen and Howerton, L. J. *Dental Radiography: Principles and Techniques. Workbook and Laboratory Manual* (6<sup>th</sup> ed.). Elsevier. 2022.

## Required Materials:

- 1<sup>st</sup> year instrument kit (purchased through Specialized Course Materials Form)
- 1<sup>st</sup> year supply kit (purchased through Specialized Course Materials Form)
- Clinic uniform (including scrub pants, scrub top, lab jacket, scrub cap in wine/burgundy; solid black leather shoes purchased through vendor of choice)

## Other:

- Course enhancement through the use of Canvas; an online course management platform.
- Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

## COURSE APPROVAL:

Prepared by: Jenny K. Sheaffer, RDH, M.S.	Date: 4/15/1998
Revised by: Susan Doebling, RDH, M.S.	Date: 9/11/2004
Revised by: Brenda Sue Martin, RDH, M.S.	Date: 1/2009
VPAA/Provost Compliance Verification: Dr. John C. Flynn, Jr.	Date: 9/11/2009
Revised by: Jenny Sheaffer	Date: 10/16/2012
VPAA/Provost or designee Compliance Verification: Victoria L. Bastecki-Perez, Ed.D.	Date: 11/1/2012
Revised by: Deborah Gnutti, RDH, MA	Date: 12/18/2017
VPAA/Provost or designee Compliance Verification: Victoria L. Bastecki-Perez, Ed.D.	Date: 1/8/2018
Revised by: Deborah Gnutti, RDH, MA	Date: 3/21/2024
VPAA/Provost or designee Compliance Verification: Chae Sweet, Ed.D.	Date: 3/2024
Revised by: Deborah Gnutti, RDH, MA	Date: 3/6/2025
VPAA or designee Compliance Verification:	Date: 3/20/2025



*This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.*