Montgomery County Community College
RAD 102
Radiographic Exposure and Technique
3-2-2

COURSE DESCRIPTION:
This course is designed to provide the student with the entry-level knowledge base to formulate the applicable factors that influence the production of radiographic images. An introduction to digital imaging with related accessories will be discussed. Demonstrations and student experimentation will be included in the application of the theory. This course is subject to a course fee. Refer to http://mc3.edu/adm-fin-aid/paying/tuition/course-fees for current rates.

REQUISITES:
Previous Course Requirements
- BIO 131 Human Anatomy and Physiology I with a "C" or better within 2 attempts and within 5 years.
- BIO 132 Human Anatomy and Physiology II with a "C" or better within 2 attempts and within 5 years.
- MATH 100 Intermediate Algebra or higher with a "C" or better within 2 attempts and within 5 years.

Previous or Concurrent Course Requirements
- RAD 100 Introduction to Radiography and Patient Care
- RAD 104 Clinical Education I
- RAD 111 Radiographic Procedures I

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Discuss practical considerations in setting standards for acceptable image quality.	Discussion Student Presentation Computer Activities Technology Experimentation Lecture Written Experiences Oral Presentations Small Group Projects	Oral Presentation Rubric Graded Assignments Examination Quizzes
2. Calculate basic mathematical formulas as they relate to calculating changes in exposure factors.	Computer Activities Lecture Written Experiences	Questions and Discussions Examination

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
3. Analyze the relationships of factors that control and affect image quality.	Discussion Case Study Student Presentation Computer Activities Technology Experimentation Lecture Written Experiences Small Group Projects	Image Evaluation Rubrics Examination Technique Labs
4. Select beam limiting devices, compare and summarize grid types.	Discussion Demonstration/Practice Student Presentation Technology Experimentation Lecture Written Experiences Small Group Projects	Image Evaluation Rubrics Examination Technique Labs
5. Describe mobile units in terms of purpose, components, and applications.	Discussion Demonstration/Practice Technology Experimentation Lecture Written Experiences Small Group Projects	Mobile Unit Assignment Oral Questions and Discussions Examination
6. Discuss the advantages and disadvantages of using a fixed and variable kVp and mAs exposure chart.	Discussion Case Study Computer Activities Lecture Written Experiences	Questions and Discussions Examination Technique Lab
7. Explain the parts of an image intensifier used in Fluoroscopy.	Discussion Computer Activities Lecture Lab	Questions and Discussions Examination Technique Lab
8. Explain the parts of an image intensifier used in Fluoroscopy.	Discussion Student Presentation Computer Activities Lecture Written Experiences	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. Image Quality Standards
2. Calculating basic algebraic equations as they relate to image exposure qualities
2. Radiographic Brightness and Contrast
3. Radiographic Detail and Distortion
4. Technique Formulation and Exposure Calculations
5. Beam Filtration and Grids
6. Fixed and Variable kVp Systems
7. Image Receptors
8. Mobile Radiography
9. Fluoroscopy Equipment

LEARNING MATERIALS:

Texts:

Carlton, R., Adler A. (2012). *Principles of Radiographic Imaging in Art and Science* (5th ed.). Albany, NY: Delmar Publishers.

Bushong, S.C. (2013). *Radiologic Science for Technologists: Physics, Biology and Protection* (10th ed.). St. Louis, MO: C.V. Mosby.

Bushong, S.C. (2013). *Radiologic Science Workbook and Laboratory* Manual (10th ed.). St. Louis, MO: C.V. Mosby.

Poelhuis, D., Kowalyck, N. (2013). *Principles of Radiographic Imaging Workbook* (5th ed.). Albany, NY: Delmar Publishers.

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:	Cheryl L. Weiss, M.S., R.T. and Dr. Victoria Bastecki-Perez	Date:	12/2002
Revised by:	Debra Poelhuis, M.S., R.T.	Date:	11/2008
Board of Trustees Presentation		Date:	12/2008
VPAA/Provost Compliance Verification:	Dr. John C. Flynn, Jr.	Date:	12/16/2008
Revised by:	Debra Poelhuis, R.T., M.S.	Date:	10/26/2012
VPAA/Provost or designee Compliance Verification:	Victoria L. Bastecki-Perez, Ed.D.	Date:	10/26/2012
Revised by:	Cheryl L. DiLanzo, M.S., R.T.	Date:	10/31/2016
VPAA/Provost or designee Compliance Verification:	Victoria L. Bastecki-Perez, Ed.D.	Date:	11/17/2016

Revised by: Debbie Dalrymple and Cheryl L. DiLanzo, M.S., R.T Date: 1/9/2018
VPAA/Provost or designee Compliance Verification:
Victoria L. Bastecki-Perez, Ed.D. Date: 1/9/2018

Revised by: Cheryl L. DiLanzo, M.S., R.T Date: 4/2/2020
Provost or designee Compliance Verification: Date: 4/2/2020

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.