

MASTER COURSE OUTLINE

A. RADT 1260 Radiographic Equipment and Exposure I

B. COURSE DESCRIPTION:

This course provides the student with the knowledge of factors that govern and influence image quality. Topics include history of radiography, basic physics concepts, electromagnetic radiation, radiographic equipment, properties of x-rays, exposure factors, digital radiography, radiographic devices, and Automatic Exposure Control (AEC). The application of radiographic calculations is applied during presentation of the course material. Prerequisites: RADT 1210, RADT 1231, RADT 1281. This course is part of the Radiography program which is accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT).

(3 Cr – 3 lect, 0 lab)

C. *Core Theme: Critical Thinking

D. RIVERLAND INSTITUTIONAL LEARNING OUTCOMES:

This course addresses the following Riverland Institutional Learning Outcome(s):

- ILO 1: critical thinking (*Core Theme Goal 2*)
- ILO 2: awareness of the larger global community (*Core Theme Goal 7 or Goal 8*)
- ILO 3: ethical, engaged citizenship (*Core Theme Goal 9 or Goal 10*)
- ILO 4: communication and collaboration (*Discipline Goal 1 and by any learning outcome(s) involving communication or collaboration*)

E. MAJOR CONTENT AREAS:

- History of radiography
- X-ray properties and production
- X-ray tube, circuitry, and beam
- Basic radiation protection
- Image formation and radiographic quality
- Automatic exposure control
- Beam restriction
- Filtration
- Grids
- Brightness, contrast, recorded detail
- Math and terminology for radiography
- Fundamentals of physics
- Electromagnetic radiation

F. GOAL TYPE, OBJECTIVES, AND OUTCOMES:

<u>GOAL TYPE</u>	<u>OBJECTIVES</u> Students will be able to	<u>OUTCOMES</u> The student will successfully
<u>*Critical Thinking</u>	analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.	1. alter radiographic techniques to change the brightness, contrast, or detail of an image according to the knowledge of each technical factor's contribution to image quality.
<u>CS</u>	describe the discovery of x-rays.	1. recognize the individuals who played an important role in the discovery and utilization of x-rays.
<u>CS</u>	describe the x-ray tube and its functions.	1. identify the parts of an x-ray tube and list the functions of each part.
<u>CS</u>	explain the importance of radiation protection for both the patient and the radiographer.	1. demonstrate the use of radiation protection including but not limited to time, distance, and shielding.
<u>CS</u>	discuss technical factors used in radiography and the differences in setting a technique manually or by AEC.	1. demonstrate the use of manual technique and AEC on an x-ray generator.
<u>CS</u>	identify and describe the different grids and image receptors used in radiography.	1. employ the use of grids and multiple image receptors.

G. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents and the use of a course management software program. Students who have a disability and need accommodations should contact Accessibility Services at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request.

H. COURSE CODING INFORMATION:

Course Code X/Class Maximum 20; Letter Grade

Revision date: 12/15/10; 11/29/17; 03/27/22; 10/01/24

AASC Approval date: 12/12/17; 05/03/22; 11/19/24

*These five MnTC Goals have been identified as Riverland Community College Core Themes. Every course in the Riverland Community College curriculum shall meet outcomes from one of these themes.

**These five MnTC Goals have been identified as Riverland Community College Disciplines. Riverland's MnTC courses also shall meet outcomes from a Discipline Area.

NOTE: The Minnesota Transfer Curriculum "10 Goal Areas of Emphasis" are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.

*Riverland Community College Core Themes	MnTC Goal Number
Critical Thinking (CT)	2
Human Diversity (HD)	7
Global Perspective (GP)	8
Ethical and Civic Responsibility (EC)	9
People and the Environment (PE)	10

**Riverland Community College Discipline Areas	MnTC Goal Number
Communication (CM)	1
Natural Sciences (NS)	3
Mathematics/Logical Reasoning (MA)	4
History and the Social & Behavioral Sciences (SS)	5
Humanities and Fine Arts (HU)	6

Riverland