BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

School: Health Sciences
Program: Medical Radiography
Option:

Course Outline

MRAD 1102
Image Recording and Equipment

Start Date: January, 2001 **End Date:** April, 2001

Course Credits: 3.0 **Term/Level:** 1

Total Hours: 42
Total Weeks: 15

Hours/Week: 3 **Lecture:** 2 **Lab:** 1 **Shop:** **Seminar:** **Other:**

Prerequisites

Course No.	Course Name
None	

MRAD 1102 is a Prerequisite for:

Course No.	Course Name
MRAD 2212	

Course Calendar Description

This course will explore the fundamentals of radiographic image recording and processing, as well as introduce the basic concepts of processor quality control. Specifically, the following topics will be covered: accessory equipment, the photographic process, recording material, processing, silver recovery, sensitometry, presentation of the image, duplication and subtraction of images, processing artifacts.

Course Goals

To provide students with the knowledge needed to operate radiographic processing equipment and use accessory radiographic equipment to process and record radiographic images. To help students understand technical and physical principles affecting the radiographic image.

Evaluation

Final Examination	40%	A grade of 60% is required to pass the course.
Quiz #1	25%	
Quiz #2	25%	
Lab Reports	10%	
TOTAL	100%	

Course Learning Outcomes/Competencies

Upon successful completion of this course, the student will be able to:

1. identify the elements of radiographic processing and describe the major components of automatic film processors and silver recovery equipment.

2. describe common faults, causes and corrective measures of processing artifacts.

3. recognize chemical hazards and apply corrective measures when appropriate.

4. identify the major components of radiographic, fluoroscopic and tomographic equipment.

5. describe the essential features of image recording materials such as x-ray film, intensifying screens, cassettes.

6. explain how factors in each of the following categories influence the radiographic image:
   a. technical; b. geometric; c. processing; d. patient.

7. explain the basic principles of the photographic process.

8. identify and explain accessory equipment for:
   a. patients, e.g., immobilization devices,
   b. radiographic, fluoroscopic and tomographic procedures, e.g., grids, filters, cones, etc.

9. explain the conditions of operation for:
   a. darkroom, e.g., film storage, lighting,
   b. daylight equipment, e.g., loader and unloader.

10. explain the principles of sensitometry.

11. describe briefly each of the following: duplication and subtraction of radiographic images, image viewing equipment (construction and conditions).

Course Content Verification

I verify that the content of this course outline is current, accurate, and complies with BCIT Policy.

M. Filippelli — Program Head/Chief Instructor

Dec 2000 — Date

Note: Should changes be required to the content of this course outline, students will be given reasonable notice.

Instructor(s)

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Learning Resources

Required:

- Bushong, S. 1997. *Radiologic Science for Technologists*, 6th Edition, Harcourt: Canada

Recommended:

- Carlton, R. & A. (1996). *Principles of Radiographic Imaging, an Art and a Science*, 2nd Edition, Delmar.
- Cullinan, A. & J. (1994). *Producing Quality Radiographs, 2nd Edition*, J.B. Lippincott Co.
- Currey, T. et al. (1990). *Chistensen's Introduction to the Physics of Diagnostic Radiology*, 4th Edition.
- Gray, J., et al. (1983). *Quality Control in Diagnostic Imaging*, Aspen Publishers Inc.
- Tortorici, M. (1992). *Medical Radiographic Imaging: Circuitry, Exposure and Quality Control.* W.B. Saunders.
- Fuch's *Radiographic Exposure, Processing and Quality Control.* (1998). 6th ed. Q.B. Carroll.

BCIT Policy Information for Students

Assignment Details

There is a lab assignment for each lab. The completed lab report form is to be submitted prior to the following lab.

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

School: Health Sciences
Program: Medical Radiology
Option:

Schedule

MRAD 1102
Image Recording and Equipment

Week #	Week of	Lecture	Lab
1	Jan. 5	1. Course Introduction/Introduction to Processors	Orientation to Automatic Processor
2	Jan. 8 Jan. 12	1. Basic Radiographic Components 2. Recording Materials	Automatic Processor
3	Jan. 15 Jan. 19	1. Intensifying Screens 2. Intensifying Screens	Screen Comparison
4	Jan. 22 Jan. 26	1. Collimators 2. Density – mAs, Distance	Collimator Tests
5	Jan. 29 Feb. 2	1. Density – mAs, Distance 2. Density – kV	Density – mAs, & Distance,
6	Feb. 5 Feb. 9	1. Photographic Effect 2. Filtration – Tube & Compensating	Density kV
7	Feb. 12 Feb. 16	1. Film Artifacts 2. Contrast	**Quiz #1**
8	Feb. 19 Feb. 23	1. Grids 2. Grid Errors	Contrast – kV
9	Feb. 26 Mar. 2	1. Automatic Processing. 2. Processing Area	Grids
10	Mar. 5 Mar. 9	1. Illumination 2. Duplication	**Quiz 2**
	Mar. 12–16	**Spring Break**	
11	Mar. 19 Mar. 23	1. Radiographic Quality 2. Sensitometry	Grid Errors
12	Mar. 26 Mar. 30	1. Sensitometry 2. Autotimers and APR	Sensitometry
13	Apr. 2 Apr. 6	1. Introduction to Fluoroscopy 2. Introduction to Tomography	Photography
14	Apr. 9 Apr. 15	1. Screen and View Box Cleaning 2. **(Good Friday)**	Screen and Viewbox Cleaning
15	Apr. 17–20	**Exam Week**	