A POLYTECHNIC INSTITUTION

School of Computing and Academic Studies
Program: Medical Radiography
Option:

Course Outline

Phys 3385
Physics: Medical Radiography 3

Start Date:	Jan 4, 2005				**End Date:**	April 30, 2005		
Total Hours:	30	**Total Weeks:**	15		**Term/Level:**	1	**Course Credits:**	2
Hours/Week:	2	**Lecture:**	1	**Lab:** 1	**Shop:**		**Seminar:**	**Other:**

Prerequisites

Course No.	Course Name
Phys 2285	Physics: Medical Radiography 2

Phys 3385 is a Prerequisite for:

Course No.	Course Name

v Course Description (required)

Physics of Medical Radiography 3 emphasizes the application of physical phenomena in medical radiography. Topics include anode heat loading, quantum noise, computed radiography and digital radiography. The physics of such devices as CCD cameras, photostimulable phosphor plates and other x-ray detectors will be discussed.

v Evaluation

Term Test	35%	Comments: A mark of 60% is required to pass the course.
Laboratory Reports	25%	
Final Exam	40%	
TOTAL	100%	

v Course Learning Outcomes/Competencies

Upon successful completion, the student will be able to:

- define relevant physics terms with units,
- explain or discuss relevant physics concepts with defined terminology,
- draw and label diagrams for relevant applied physics topics,
- demonstrate conceptual understanding of physics by solving numerical, subjective and objective problems,
- explain the radiographic image formation process to a patient

Competency profile

This course provides a foundation of applied science for the Radiography program, and in the process, covers a portion of the following competencies:

- A2.6, A4.2, A4.10, A5.4, A5.6, A5.7, A5.8, A7.5, A7.7
- B1.5, B1.6, B1.7, B1.8, B2.1, B2.2, B2.3, B2.5, B3.2, B3.3, B4.1, B4.2, B5.1, B5.2, B5.3
- C2.4,C2.7
- D1.13, D1.14, D2.2, D3.1, D3.2

v Verification

I verify that the content of this course outline is current.

Authoring Instructor _____ Date _____

I verify that this course outline has been reviewed.

Program Head/Chief Instructor _____ Date _____

I verify that this course outline complies with BCIT policy.

Dean/Associate Dean _____ Date _____

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

v Instructor(s)

Kevin Dunphy, PhD.

Office Location: SW3-4079
Office Hrs.: TBA
Office Phone: 451-7136
E-mail Address: KDUNPHY@BCIT.CA

v Learning Resources

Required:

Bushong, Stewart C., *Radiologic Science for Technologists: Physics, Biology and Protection*, sixth edition, Mosby, (1997).

A Manual of Experiments in Medical Radiography Technology

Recommended:

Scientific calculator

v Information for Students

Passing Grade: The passing grade in this course is 60%

Assignments: Late assignments, lab reports or projects will **not** be accepted for marking. Assignments must be done on an individual basis unless otherwise specified by the instructor.

Makeup Tests, Exams or Quizzes: There will be **no** makeup tests, exams or quizzes. If you miss a test, exam or quiz, you will receive zero marks. Exceptions may be made for **documented** medical reasons or extenuating circumstances. In such a case, it is the responsibility of the student to inform the instructor **immediately**.

Ethics: BCIT assumes that all students attending the Institute will follow a high standard of ethics. Incidents of cheating or plagiarism may, therefore, result in a grade of zero for the assignment, quiz, test, exam, or project for all parties involved and/or expulsion from the course.

Attendance: The attendance policy as outlined in the current BCIT Calendar will be enforced. Attendance will be taken at the beginning of each session. Students not present at that time will be recorded as absent.

Illness: A doctor's note is required for any illness causing you to miss assignments, quizzes, tests, projects, or exam. At the discretion of the instructor, you may complete the work missed or have the work prorated.

Course Outline Changes: The material or schedule specified in this course outline may be changed by the instructor. If changes are required, they will be announced in class.

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

Program: Medical Radiogrphy
Course Delivered by: Physics Department
School of Computing and Academic Studies

Schedule For:
PHYS 3385
Physics: Medical Radiography 3

Dates (approx)	Topics	Reference /Reading
Jan 4, 11,18	**Anode Heat Loading** • Conduction, Convection and Radiation • Maximum heat load • Heat loss; fixed anode and rotating anode • Maximum power input curve • Anode heating and cooling curves	Phys 2275 notes (Chap. 6) Bushong (Chap. 10)
Jan 21, Feb 1	**Image Noise** • quantum noise • electronic noise	
Feb 8, 15, 22 **Midterm: Mar 1**	**Digital Concepts** • Terminology • Bits and bytes • Binary numbers and number of grey levels • Memory organization and size • Data acquisition • Analog to digital conversion • PACS, DICOM, and JPEG	Bushong (Chap. 28)
Mar 8, 22,29	**Computed Radiography** • Photostimulable phosphor plate • Latent image • Characteristic Curve • Resolution • Advantages and disadvantages	Bushong (Chap. 28)
Apr 5, 12 Review: Apr 19	**Digital Radiography** • Direct and Indirect • Direct to digital • Scanned Projection Radiography • Amorphous silicon flat panel detector • CCD camera	Bushong (Chap. 28)