A POLYTECHNIC INSTITUTION

School of Health Sciences
Program: Medical Radiography
Option:

Course Outline

MRAD 2216
Radiographic Procedures 2

Start Date:	September, 2003					**End Date:**	December, 2003		
Total Hours:	72	**Total Weeks:**	8			**Term/Level:**	2	**Course Credits:**	4
Hours/Week:	9	**Lecture:**	4	**Lab:**	5	**Shop:**		**Seminar:**	**Other:**

Prerequisites
Successful completion of Level 1

MRAD 2216 is a Prerequisite for:
Entry into Level 3

■ Course Description (required)

Positioning for radiographic procedures related to the urinary and digestive systems as well as vertebral column, hip and shoulder girdle radiography will be covered. Skills to evaluate the diagnostic and technical acceptability of the radiographs for the respective areas will also be examined. Methods for formulating technique changes for various exams and for the variations of the normal patient will be developed. Renal tomography will be discussed. Labs will reinforce theoretical components of the course.

■ Detailed Course Description (optional)

The goals of this course are to provide students with the skills required to:

1. position patients for the views/projections being studied.
2. understand renal tomographic applications.
3. evaluate the diagnostic and technical acceptability of radiographs of areas being studied.
4. calculate technique changes and recognize variables of techniques for various exams and the variations of the normal patient.
5. produce specified radiographs using radiographic phantoms.

■ Evaluation

Final Examination	40%	Comments: All labs and projects must be satisfactorily completed before a course mark will be given.
Midterm	30%	
Rad Eval Quizzes	10%	
Applied Lab	10%	
Positioning Lab Assignment	5%	
Positioning Lab	5%	
TOTAL	100%	(60% is required for a pass.)

■ Course Learning Outcomes/Competencies

Upon successful completion, the student will be able to:

1. Define, describe and demonstrate beam directions, centring points and patient positioning relating to the radiography of the:
   - colon
   - vertebral column
   - shoulder girdle
   - hip girdle
   - urinary system
2. Describe required projections relating to radiographic examinations of the colon and urinary system.
3. Describe tomographic considerations for renal structures.
4. Demonstrate radiographic judgement, organizational and communication skills and radiographic competence while positioning a patient.
5. Evaluate radiographs for the studied areas for diagnostic acceptability based on:
   a. inclusion of all required structures
   b. demonstration of correct positioning
   c. appropriate level of density demonstrated
6. Assess main contributing factors to the overall radiographic image quality based on the:
   a. type of patient involved (body habitus, pathology, and limitation of movement)
   b. appropriate technique factors required
   c. acceptable processing methods used
7. Propose possible solutions to poor radiographic quality.
8. Calculate radiographic technique factors using the DuPont Bit System.
9. Outline technique chart adjustments to be made with respect to:
   a. patient body habitus
   b. patient pathology
   c. patient age
   d. specific equipment used (generators, imaging system, grids, etc.)

■ Verification

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

Pat McLaughl — Authoring Instructor
Sept 2003 — Date

I verify that this course outline has been reviewed.

M. Filippelli — Program Head/Chief Instructor
Aug 2003 — Date

I verify that this course outline complies with BCIT policy.

John H Ennes — Dean/Associate Dean
August 28 2003 — Date

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

■ Instructor(s)

Rita McLaughlin, ACR, MA | Office Location: SW3-4084 | Office Phone: 604-456-8181
Office Hrs.: 8:30-16:30 and by appointment | E-mail Address: rita_mclaughlin@bcit.ca

■ Learning Resources

Required:

1. MRAD 2216 Radiographic Procedures 2 Manual.
2. "Merrill's Atlas of Radiographic Positions and Radiologic Procedures," Phillip W. Ballinger (10th Edition). Vol. 1 and 2.
3. "Radiographic Critique" Kathy McQuillen-Martensen (1996).

Recommended:

1. "Skeletal Anatomy" — Byron.
2. "Joy of Sectioning" — Dowdell.
3. "Textbook of Radiographic Positioning and Related Anatomy" — Bontrager.

■ Information for Students

(*Information below can be adapted and supplemented as necessary.*)

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.

Attempts: Students must successfully complete a course within a maximum of three attempts at the course. Students with two attempts in a single course will be allowed to repeat the course only upon special written permission from the Associate Dean. Students who have not successfully completed a course within three attempts will not be eligible to graduate from the appropriate program.

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.

■ Information for Students (cont'd.)

Radiographic Evaluation Quizzes

There will be a Rad Eval quiz each week in the film critique labs (Room 4060). In addition to ensuring comprehension of material, the objective of these quizzes is to encourage peer coaching and to promote confidence in your abilities. These are desirable skills in the workplace.

Persons participating in the Rad Eval quiz will be randomly selected each week. The topic will be from the area studied the previous week. Persons not selected for the weekly quiz may be asked to prepare an oral presentation.

In Term 2, the quizzes will be done with partners. The procedure will be as follows:

- During the lab, you will be given 5 minutes to critique a radiograph using the 10 point radiographic evaluation technique and form.
- When you have finished critiquing your radiograph, a partner will be assigned to review the critique.
- Discuss the critique with your partner. You may choose to change the critique after the discussion, prior to handing in the Rad Eval form.
- The final decision on what is presented on the radiographic evaluation form rests with the originating partner.

Applied Lab

The lab will be done with an assigned partner. Partners and room assignments will be randomly selected on a weekly basis.

Assume that you are relieving another technologist for coffee. He/she has just developed the last film for a radiographic series on the patient on the table.

The following set-up will be used:

- machine/equipment will be on
- view/projection will be indicated on the radiographic evaluation form
- phantom will be on the table in the position that it was when the radiograph was taken
- technique that was used for the radiograph will be set on the control panel
- exposed cassette will be in position as it was exposed

You will evaluate the radiograph with your partner using the 10 point radiographic system.

Repeat the radiograph if not all criteria are met. Clinical notebooks may be used. **Only one repeat may be made.** While one person is developing the radiograph, the other person should shut the room down. Complete the 10 point radiographic evaluation for your repeat radiograph.

Students are responsible for ensuring rooms are left neat and tidy.

Radiographs and corresponding rad eval sheets are to be handed in at the end of the lab.

This lab is worth 10% of the final grade.

■ Lab Radiograph Assignment Details

Each group will produce the specified radiograph(s) for the weekly positioning lab.

- Submit the film(s) and blue instruction sheet(s) on which you have printed your lab room number and the names of the group of students.
- The radiographs will be graded and returned to one of the students.
- Each student in the group will receive the same grade.
- Marks will be assigned for:

1. positioning (phantom limitations noted)
2. structures included
3. density/contrast
4. collimation
5. markers and ID
6. lack of artifacts
7. filtration use
8. correct film size
9. timely submission
10. thoroughness and professionalism of submission

Schedule for Radiographic Procedures 2 — Fall 2003

Week of/ Number	Dates	# of Lectures and Topics	Lab Contents/Format	Notes
1, 2	Sept. 2–5 Sets CD Sept. 8–12 Sets AB	**CD** Tues. Course Outline Enema Intro. Wed. R/S and Obls. Wed. Lat Dec. & Rectum **AB** Mon. Course Outline Enema Intro Tues R/S & Obls. Wed. Lat. Dec. & Rectum Wed. L-spine AP/Lat./Spot	**Positioning Lab** • Position – R/S – Recumbent lateral rectum – One lat. dec. – One obl. • Assignments – Scavenger hunt – Large intestine radiography **Applied Lab** • Lecture (4076) – Enema critique **Rad Eval Lab** – Enema films – No quiz	**CR Imaging** • Enema quiz at start of positioning lab • New lab partners and rooms • Computer program demo to sensitometry group • Ensure logical sequencing when positioning views • Use decubitus filter • Additional practice sheets to be completed prior to next lab

Week of/ Number	Dates	# of Lectures and Topics	Lab Contents/Format	Notes
3, 4	Sept. 15–19 Sets AB Sept. 22–26 Sets CD	**AB** Mon Obls. L. Spine Tues T. Spine C/T Spine Wed. Shinerama **CD** Mon. AP, Lat., Spot L. Spine Tues. Obls L. Spine Wed. T Spine Wed. C/T Spine and Critique	**Positioning Lab** • Position – AP, lat. T. & L. spine – Spot L. spine – One Obl. L. Spine • Assignment – AP T. spine – Obl. L. spine **Applied Lab** – Enema views **Rad Eval Lab** – T & L spine films inc. C/T lat. – Quiz — enema films	**Darkroom Use** • T & L. spine quiz • Computer demo to sensitometry group • Last week's sensitometry group to complete sensitometry • Use filter, tight collimation and A-Heel for AP T. spine • Use ingot filter for lat. L. spine • Set a breathing technique for a lateral T. spine • Additional practice to be completed prior to next lab

Week of/ Number	Dates	# of Lectures and Topics	Lab Contents/Format	Notes
5, 6	Sept. 29 – Oct. 3 Sets CD Oct. 6 – Oct. 10 Sets AB	**CD** Mon. AP, Obl. Shoulder Tues. AP/Lat. Scapula Wed. Axial Shoulders Wed. Clavicle and Critique **AB** Mon. AP, Obl. Shoulder Tues. AP/Lat. Scapula Wed. Axial Shoulders Wed. Clavicle and Critique	**Positioning Lab** • Position – AP shoulder (3 hand positions) – Obl. shoulder – AP scapula – Scapular Y – Axial shoulder (I/S or S/I) – Axial clavicle • Assignment – Dry bone humerus (I/E/N) – Axial shoulder – AP/axial clavicle **Applied Lab** – T. & L. spine **Rad Eval Lab** – Shouler girdle views – Quiz T. & L. spine	**Daylight Processing** • Shoulder girdle quiz • Use boomerang filter • Split cassette (24x30) for clavicle radiography • Computer demo for next sensitometry group. Prior two groups to complete sensitometry. • Complete additional practice prior to next lab.

Week of/ Number	Dates	# of Lectures and Topics	Lab Contents/Format	Notes
7, 8	Oct. 13–17 Sets AB Oct. 20–24 Sets CD	**AB** Mon. Thanksgiving Tues. Hip Intro, AP Hip Wed. Frog Leg, Mediolateral Wed. Transfemoral and Critique **CD** Mon. Hip Intro, AP Hip Tues. Frogleg, Mediolateral Wed. Midterms Wed. Transfemoral and Critique	**Positioning Lab** • Position – AP – frogleg – Mediolateral – Transfemoral • Assignment – Hip organization – Transfemoral **Applied Lab** – Shoulder girdle **Rad Eval Lab** – Hip views – Quiz shoulder girdle	**CR Imaging** • New partners and rooms • Hip quiz • Position views in a logical sequence • Use filter on transfemoral • Computer demo of next sensitometry group. All prior groups to complete sensitometry — seek help if you missed demonstration • Complete additional practice prior to next lab.

Week of/ Number	Dates	# of Lectures and Topics	Lab Contents/Format	Notes
9, 11	Oct. 27–31 Set AB Nov. 10–14 Set CD	**AB** Mon. AP and Dens C-spine Tues. Obl. C-spine Wed. Midterms Wed. Lat. C-spine and Critique **CD** Mon. AP, Dens C-spine Tues. Remembrance Day Wed. Obl. C-spine Wed. Lat. C-spine and Critique	**Positioning Lab** • Position – AP, dens, oblique – Lateral C-spine – Lateral swimmers • Assignment – AP and lat. C-spine **Applied Lab** – Hip views **Rad Eval Lab** – C-spine veins – Quiz hip films	**Darkroom Use** • C-spine quiz • Use filter for lat. C-spine • Demo shoulder depression methods • All groups to do sensitometry • Complete additional practice prior to next lab.

Week of/ Number	Dates	# of Lectures and Topics	Lab Contents/Format	Notes
10, 12	Nov. 3–7 Set AB Nov. 17-21 Set CD	**ABCD** Mon. Intro to IVPs Tues. Kidneys Wed. Renal Tomos Wed. Bladder and Critique	**Positioning Lab** • Position – Kidneys AP (bilateral and uni.) – Obl. kidney (bilateral and uni.) – AP bladder – Obl. bladder • Assignment – Renal tomos (3) **Applied Lab** – C-spine views **Rad Eval Lab** – IVP and tomo review – Quiz C-spine	**Daylight Processing** • IVP quiz • Leave pixie phantoms on Rm. 2 and Rm. 6 tables. • All groups rotate thru rooms 2 and 6, 45 min. max. allowed for tomos. • Demo ureteric compression application and release. • Additional practice to be completed prior to next lab. • All groups to complete sensitometry
13, 14	Nov. 24–28 Sets AB Dec. 1–5 Sets CD	**ABCD** Mon. IVP Contrast Media Tues. Contraindications Checklists Wed. Adverse Reactions Wed. Review Topics	**Positioning Lab** • Position – Six pre-identified views **Applied Lab** – IVP films **Rad Eval Lab** – Requested films – Quiz IVP films	• Students will be paired with partner choosing similar views as much as possible. • No assignment in positioning lab. • Additional practice sheets to be submitted.