GPRC

DEPARTMENT OF ANIMAL HEALTH TECHNOLOGY

COURSE OUTLINE – AH 343

DIAGNOSTIC IMAGING

INSTRUCTOR:	Dr. C. Mizzi	**PHONE:**	780-835-6617
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	Rhonda Shaw, RAHT		780-835-6702
OFFICE:	AS 133	**EMAIL:**	kmergaert@gprc.ab.ca
	AS 150a		rshaw@gprc.ab.ca
	AS 137		cmizzi@gprc.ab.ca
OFFICE HOURS:	See posted schedule		

PREREQUISITE(S)/COREQUISITE: Students must complete and pass AH 141 and 241 04/11

REQUIRED TEXT/RESOURCE MATERIALS:

1: Lavin, L., *Radiography for Veterinary Technicians*, W.B. Saunders Elsevier, 2014, 5th Edition

2: Diagnostic Imaging Lab Manual Course Pack

CALENDAR DESCRIPTION: Students will learn the principles of radiography, fluoroscopy, ultrasonography and endoscopy. Identification, use, care and maintenance of equipment and supplies is covered with emphasis on safety. Students will learn to position

patients, operate equipment and develop images that produce diagnostic quality results.

CREDIT/CONTACT HOURS:

Credits 2.5
Contact Hours = 88 Fall 2014

DELIVERY MODE(S): Lectures and Labs

Lectures and labs: Dr. Mizzi will instruct the theory lectures. Rhonda Shaw and Kristy Mergaert will instruct the lab portion.

OBJECTIVES:

A. Principles of Radiology

B. Principles of fluoroscopy, MRI, xerography, scintigraphy, infrared thermography, and computed tomography

C. Principles of Ultrasonography

D. Principles of Endoscopy

E. Safety Procedures

F. Accessory Equipment for Radiology

G. Detail, Density and Contrast

H. Contrast Techniques

I. Processing of Radiographic Film

J. Technical Errors in Radiology and their Prevention

K. Diagnostic Imaging Lab Module

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	**4-point Equivalent**	**Percentage Guidelines**	**Designation**
A^{+}	**4.0**	**90 – 100**	**EXCELLENT**
A	**4.0**	**85 – 89**	
A^{-}	**3.7**	**80 – 84**	**FIRST CLASS STANDING**
B^{+}	**3.3**	**77 – 79**	
B	**3.0**	**73 – 76**	**GOOD**
B^{-}	**2.7**	**70 – 72**	
C^{+}	**2.3**	**67 – 69**	**SATISFACTORY**
C	**2.0**	**63 – 66**	
C^{-}	**1.7**	**60 – 62**	**MINIMAL PASS***
F	**1.3**	**55 – 59**	**FAIL**
	1.0	**50 – 54**	
	0.0	**0 – 49**	
WF	**0.0**	**0**	**FAIL, withdrawal after the deadline**

*overall grade average has to be 2.0 or higher to be successful in the program.

STUDENT EVALUATION:

There is a supplemental examination available only for the final written exam. Please review the GPRC Examination Policy.

Students must achieve a minimum passing grade of 60% in this course.

Missing a lab session without either a written valid excuse and/or notifying the instructor prior to the lab session will result in an automatic 5% deduction from the final lab grade for each occurrence. Additional deductions may occur at the discretion of the instructors in the Lab Management portion of the evaluation scheme. ½ mark will be deducted for any spelling mistakes on assignments and examinations. Medical corrections are required on all assignments and examinations, ½ mark will be deducted for any non-medical corrections. For further clarification on the attendance policy, see the AHT Program guidelines in the orientation booklet and the GPRC Policies and Procedures.

	Mark Distribution
A. Quizzes	20%
B. Assignments (Worksheets)	5%
C. Midterm Exam	10%
D. Equine Practical Positioning Evaluation	7%
E. Small Animal Practical Positioning Evaluations	28%
F. Final Exam	25%
G. Lab Management	5%
	100%

STUDENT RESPONSIBILITIES:

Students are expected to wear dosimeters at all times while conducting laboratory assignments.

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to the College Policies and Procedures regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

ADDITIONAL INFORMATION

Disruptive behavior in the class will result in the student being excused from the class – this includes use of cell phones or any hand held equipment that has not been approved by the instructor.
Any student wishing to see a marked quiz or midterm must make an appointment with the instructor to view or go over. Final exams are not available to be viewed by a student.

*COURSE SCHEDULE/TENTATIVE TIMELINE:

Principles of Radiology

Upon successful completion of this unit, you will be able to discuss the generation of x-rays, the behavior of x-rays and the basic requirements of an x-ray tube.

Principles of fluoroscopy, MRI, xerography, scintigraphy, infrared thermography, and computed tomography

Upon successful completion of this unit, you will be able to discuss and compare alternative forms of diagnostic imaging including fluoroscopy, magnetic resonance imaging, xerography, infrared thermography and scintigraphy.

1. define and explain fluoroscopy and it's principles
2. list the advantages and disadvantages of fluoroscopy
3. define and explain xerography and it's principles
4. list the advantages and disadvantages of xerography
5. define cat/CT scan
6. discuss two veterinary applications of; infrared thermography, MRI and scintigraphy

Principles of Ultrasonography

Upon successful completion of this unit, you will be able to discuss the use of ultrasonography as a diagnostic and therapeutic aid in veterinary medicine

1. discuss the principles of operation and construction of ultrasound transducers
2. outline various display modes and their applications
3. contrast the relationship between frequency and wavelength; wave length and resolution; frequency and attenuation; attenuation and resolution

4. outline patient preparation prior to ultrasonography
5. discuss the care and cleaning of ultrasound probes

Principles of Endoscopy

Upon successful completion of this unit, you will be able to discuss the use of endoscopy as a diagnostic and therapeutic aid in veterinary medicine.

1. list and discuss the 2 main types of endoscopes
2. list 10 different cautions in the handling of endoscopes
3. list 5 different considerations in the cleaning, disinfection and sterilization of endoscopes
4. list 5 different considerations for storing endoscopes

Safety Procedures

Upon successful completion of this unit, you will be able to identify health hazards and precautions to minimize the radiation exposure to personnel, the patient and the public.

1. list 5 areas of the body which are most sensitive to ionizing radiation
2. list 2 areas of the body which are most resistant to ionizing radiation
3. list 6 possible effects of chronic exposure to low levels of radiation
4. define absorbed dose and dose equivalent and state the maximum permissible dose for individuals using x-ray technology
5. define a TLD (thermoluminescent dosimeter) badge and give

5 precautions for its use

6. list and explain the 3 basic rules of protection from radiation
7. list 11 other safety practices which will reduce radiation exposure

Accessory Equipment for Radiology

Upon successful completion of this unit, you will be able to discuss accessory equipment for radiology which enhances safety and image quality

1. define the following: fast, medium and slow screens; rare earth screens, high medium and slow speed film; and exposure latitude.
2. describe and discuss care of intensifying screens, cassettes and x-ray film
3. explain grids, grid use, grid ratio and the types of grids used in radiology
4. explain what is a filter, the types of filters and their use
5. explain and discuss a collimator and it's 3 advantages
6. explain and discuss the use of a Potter-Bucky, calipers and positioning aids
7. explain the principle of an intensifying screen and it's operation
8. compare the construction of radiographic film and a cassette

Diagnostic Imaging Lab Module

Upon successful completion of this module, you will be able to demonstrate the ability to take and develop diagnostic radiographs of large and small animals in a manner which is safe for you, the patient, clinic personnel and the public.

1. Demonstrate and explain patient preparation and recovery procedures for diagnostic imaging labs
2. Identify and apply common radiology equipment and appropriate usage
3. Demonstrate and follow safety procedures optimum for patient, clinic personnel and the public
4. Demonstrate manual and automatic processing of radiographic film
5. Critique radiographs to identify areas for improvement
6. Discuss and apply troubleshooting techniques for exposure and developing to obtain diagnostic radiographs
7. Demonstrate positioning, restraint, and setting the machine for equine, canine, and feline patients necessary for routine diagnostic radiographs
8. Demonstrate use of digital radiography
9. Quality control and quality assurance