NORTHWESTERN POLYTECHNIC

DEPARTMENT OF ANIMAL SCIENCE

COURSE OUTLINE – Fall 2024

AH343: DIAGNOSTIC IMAGING – 2.5 (2-0-3.5) 88 Hours for 16 Weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR:
Chris Mizzi
Rhonda Shaw
Kyla Dahms

PHONE:
780-835-6617
780-835-6702
780-835-6707

OFFICE:
AS-133
AS-137
AS-141

E-MAIL:
cmizzi@nwpolytech.ca
rshaw@nwpolytech.ca
kdahms@nwpolytech.ca

OFFICE HOURS:
See posted on office doors.

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.

PREREQUISITE(S)/COREQUISITE:

- Must be registered in the NWP Veterinary Technology Program
- AH141
- AH240
- AH246

NORTHWESTERN POLYTECHNIC

REQUIRED TEXT/RESOURCE MATERIALS:

Lavin, L., Radiography for Veterinary Technicians, W.B. Saunders Elsevier, 2014, 6th or 7th Edition.

Bassert, McCurnin's Clinical Textbook for Veterinary Technicians, Elsevier 9th or 10th edition

Diagnostic Imaging Lab Manual Course Pack

-Students must have internet access as components of the lecture part of the course may be online

DELIVERY MODE(S):

Lab (Kyla Dahms and Rhonda Shaw)
Lecture (Dr. Mizzi)

LEARNING OUTCOMES:

Unit 1 Principles of Diagnostic imaging. At the end of this unit the student will be able to Discuss and Define:

A) Principles of Radiography
B) How an x-ray machine works
C) Principles of fluoroscopy
D) Principles of Ultrasonography
E) Principles of MRI
F) Principles of CAT
G) Principles of Nuclear Scintigraphy
H) Principles of Infrared Thermography
I) Principles of Endoscopy

Unit 2 Radiation Safety. At the end of this unit the student will be able to Discuss and Define:

A) The use and purpose of thermo luminescent dosimeters (TLD).
B) Effects of radiation exposure
C) Safe radiation practices

Unit 3 Accessory Equipment for Radiology. At the end of this unit the student will be able to Define and Discuss:

A) The characteristics of radiology grids
B) The characteristics of intensifying screens
C) The characteristic of Collimators and Filtration
D) The uses and benefits of positioning aids

Unit 4 Contrast Techniques. By the end of this unit the student will be able to Define and Discuss:

A) Types of contrast material
B) How and why to perform different types of contrast techniques

Unit 5 Detail, Density and Contrast. At the end of this unit the student will be able to:

A) Produce quality x-rays
B) Be able to Rectify problems with detail density and contrast of x-rays

Unit 6 Radiographic film processing and Digital Imaging. At the end of this unit the student will be able to Define and Describe:

A) The characteristics of radiographic film
B) Techniques of film storage and identification
c) Steps of the development procedure for x-ray film

Unit 7 Technical Errors in Radiology and their prevention. At the end of this unit the student will be able to define and describe the common errors and problems with taking and developing x-rays and how to rectify them or prevent them.

Diagnostic Imaging Labs

Diagnostic Imaging Prep Lab
-See course pack, worksheets to be completed prior to lab.

Lab A Part 1:

- Introduction to Diagnostic Imaging Lab & Introduction to Automatic Processing
- Safety, prep, Introduction to automatic processing and review of Anatomy

Lab A Part 2: Introduction to digital Imaging & positioning

Lab B: Quality Assurance

Lab C: Positioning- Learn positioning techniques for thorax, abdomen, spine

Lab D: Radiographs of a Canine

- Thorax
- Abdomen
- Skull
- Cervical spine
- Thoracic spine
- Lumbar spine

Lab E: Positioning- Learn positioning techniques for front extremities, hind extremities, and pelvis

Lab F: Radiographs of a Feline

- Metacarpals/phalanges
- Radius/ulna
- Elbow
- Humerus
- Shoulder

Lab G: Radiographs of a Canine

- Stifle
- Femur
- Tibia/fibula
- Pelvis
- Metatarsus-Phalanges

Lab H: Radiographs of a Feline & Ultrasound basics

- Basics of ultrasonography and care of the equipment
- Abdomen
- Thorax
- Pelvis frog leg
- Cat-o-gram
- Skull

Lab I: Introduction to Dental Radiology

- Bisecting Angle Technique
- Parallel Technique

Lab J: Positioning Review & Cystography

- Cystogram study in the canine

Lab K: Student Evaluations

- Practical Lab Evaluations

Lab L: Contrast Media and Exotics

- Gastrointestinal Barium Series
- Discuss various other contrast media studies
- Exotics

Equine Labs:

Lab # 1: Intro to Mobile Equine Radiographs: Upon completion of this lab the student will be able to:

- Identify common reasons for equine radiographs
- Identify the parts of and know how to use the mobile machine
- Identify and discuss some of the complications with equine patients
- List and demonstrate steps to follow when taking a radiograph of:
    - Fetlock
    - Metacarpus and Metatarsus
    - Carpus and Tarsus
    - Sesamoids
- Preparations
- Log use
- Technique chart use and adaptations to the numbers
- Machine and patient set up using a skeleton model
- Safety issues
- Critique radiograph to improve upon them

Lab # 2: Equine Radiology Handling: Upon completion of this lab the student will be able to:

- Safely position an equine patient to obtain radiographs of:
    - Navicular
    - Coffin
    - Review views from Lab # 1
- Demonstrate safe and efficient work habits to achieve co-operation of the equine patient
- Critique radiographs in a constructive way
- Practice placing foot on blocks / positioning

Lab # 3: Equine Radiology: Upon completion of this lab the student will be able to:

- Safely position an equine patient to obtain radiographs of:
  - Pastern and Fetlock
  - Carpus
  - Metatarsus
  - Tarsus
  - Review views from Lab # 1 and Lab #2
- Demonstrate safe and efficient work habits to achieve co-operation of the equine patient
- Critique radiographs in a constructive way

Lab #4: Equine Radiology Review: Upon completion of this lab the student will have a good understanding of all that is involved in making standard radiographs of the horse extremities

Lab #5: Equine Radiology Evaluations: Upon completion of this lab, students will be evaluated on skills learned within a designated time limit:

- Practical Equine Lab Evaluations

TRANSFERABILITY:

Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page http://www.transferalberta.alberta.ca.

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.**

NORTHWESTERN POLYTECHNIC

EVALUATIONS:

GRADING CRITERIA:

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.
OVERALL GRADE POINT AVERAGE HAS TO BE 2.0 OR HIGHER TO BE SUCCESSFUL IN THE VETERINARY TECHNOLOGY PROGRAM.

Alpha Grade	4-point Equivalent	Percentage Guidelines	Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100	C+	2.3	67-69
A	4.0	85-94	C	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
B	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

EXAMINATIONS: MARK DISTRIBUTION

A. Quizzes	20%
B. Midterm Exam	15%
C. Final Exam	25%
D. Equine Practical Positioning Evaluation	7%
E. Small Animal Practical Positioning Evaluations	28%
F. Lab Management/Lab Worksheets	5%
	100%

*A minimum of 60% must be obtained in order to successfully pass AH 343. Attendance is mandatory for all labs. A 5% deduction will occur if a student has an unexcused absence from a lab. Deductions for AH 343 are based on the below deduction guideline, any deductions that accumulate throughout this course will be taken off the final grade achieved in AH 343.

See Clinic Handbook for other mark deductions

COURSE SCHEDULE/TENTATIVE TIMELINE:

See posted lab schedule.

STUDENT RESPONSIBILITIES:

Enrolment at NWP assumes that the student will become a responsible citizen of the College. As such, each student will display a positive work ethic, take pride in and assist in the maintenance and preservation of Institute property, and assume responsibility for his/her education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting instructor expectations concerning attendance, assignments, deadlines, and appointments.

STATEMENT ON ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at https://www.nwpolytech.ca/about/administration/policies/index.html.

**Note: all Academic and Administrative policies are available on the same page.

Additional Information:

- Disruptive behaviour in the class will result in the student being excused from the class or lab – this includes use of cell phones or any handheld equipment that has not been approved by the instructor.
- Any student wishing to see a marked quiz or exam must make an appointment with the instructor to view or go over.
- Attendance is mandatory at all laboratory sessions; valid reason for absence is required. For your safety, the safety of others and the safety of the animals there will be zero tolerance of anyone showing up for the laboratory sessions under the influence of alcohol or other medications which may cause physical impairment or disruptive behaviour. If you are on a standard or prescribed medication, please consult with your instructor prior to the lab. Labs or animal care sessions missed for the above reasons will also be considered as missed

without a valid excuse and result in up to 5% deduction of final mark for every instance.

- If a student wishes to reschedule attendance to a lab (i.e. join another group), they must seek permission from the instructor prior to the event. Having a valid reason does not change the student's responsibility to acquire the information dispensed during the lab or lecture, nor their obligation to finish required assignments or achieve competencies practiced.
- Students are expected to show up prepared for lab. This includes, but is not limited to appropriate clothing, equipment and knowledge (assigned readings). Failure to do so will result in student dismissal from lab to acquire what is necessary and a deduction in the lab prep portion.