

## DEPARTMENT OF ANIMAL SCIENCE

### COURSE OUTLINE – Fall 2025

#### 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

**Ed. Lab. Tech.:**

Jori Grimm

Tara Cholach

Braelynn Walker

**OFFICE:**

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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

## REQUIRED TEXT/RESOURCE MATERIALS:

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

Bassert, McCurnin's Clinical Textbook for Veterinary Technicians, Elsevier 10<sup>th</sup> or 11<sup>th</sup> 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 (brief history) and digital imaging.
- B) Techniques of film and digital storage and identification.
- c) Steps of the development procedure for x-ray film (brief)

**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
  - Carpus and Tarsus
- Log use
- Technique chart use and adaptations
- Machine and patient set up using a skeleton model
- Safety
- Critique radiographs

**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
  - Metacarpus
- Carpus
  - 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
  - Fetlock
  - Metacarpus
  - 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

**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 Evaluation

#### **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.**

## 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%
	<b>100%</b>

\*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 Polytechnic Institute. 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.

### **Veterinary Technology Program Attendance & Conduct Summary**

- **Zero Tolerance for Impairment:** Attending labs, exams/quizzes, lectures, animal care duties, or guest speaker events under the influence of alcohol or impairing substances (including certain medications) is strictly prohibited. Violations result in unexcused absences and a mark of zero.
- **Lab Preparation:** Students must arrive at labs properly dressed, equipped, and prepared (including assigned readings). Unprepared students may be dismissed, and a 5% deduction will occur off the final grade.
- **Mandatory Attendance:** Attendance is required for all labs, exams, guest speakers, and animal care duties. Arriving late to labs, lectures, quizzes/exams will be considered an unexcused absence. Unexcused absences (at the instructor's discretion) result in:
  - **5% deduction** from the final course grade (labs/guest speakers, animal care duties)
  - **3 or more unexcused absences** in animal care will lead to automatic failure of the course.
- **Absence Approval:** Absences must be approved in advance or as soon as possible afterward with valid written documentation (e.g., doctor's note). Employment conflicts are not considered valid excuses.
- **Make-Up Policy:** Labs, lectures, guest speakers, and animal care duties cannot be made up. Missed assessments due to unexcused absences receive a grade of zero. Excused absences do not exempt students from required work or deadlines.
- **Exam Conduct:** No electronic devices (phones, smartwatches, headphones, tablets) are permitted during exams or evaluations. Having one present will result in immediate dismissal and a grade of 0%.
- **Animal Care Duties:** Animal care related duties refer to the provision of essential care for program housed animals including but not limited to: cats, dogs, horses, cattle, rabbits, mice (walking, behaviour modification / observation and

documentation). Students are required to participate based on a rotation schedule which will include weekends and holidays. Not doing so according to set guidelines will result in deductions. Schedule changes are limited and must be approved by the instructor prior to the scheduled time. See K9 Socialization / Walking Rotation Contract and information sheet for specific guidelines and deductions.

- **Further Guidelines:**
  - Spelling errors in exams/quizzes, assignments and medical records will result in a 0.5% deduction for each occurrence.
  - All handwritten materials that are submitted to the instructor must be using blue or black pen, no white out and using appropriate medical corrections.
- Refer to the **NWP Veterinary Technology Student Competency Checklist**

## **INFORMATION TECHNOLOGY**

NWP servers may be monitored. Student accounts are visible via ABTutor and student activity on NWP networks may be monitored during supervised exams and/or anytime students are on NWP networks. The collection of and access to the personal information listed above as permitted by the *Freedom of Information and Protection of Privacy Act*.

## **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/polytechnic-leadership/policies-directory>

\*\*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.