

Veterinary Toxicology and Forensic Medicine

VM 441 Fall 2106

Lectures: Tuesday at 9:15 p.m.
Room: A2122
Office Hours: M 11:00 – 1:00 pm
W 11:00 – 1:00 pm

Ehab Abu-Basha, DVM, MS, PhD
Faculty of Veterinary Medicine
Department of Veterinary Basic Sciences

VM 554. Cr.2. Veterinary Toxicology and Forensic Medicine. This course deals with pharmacological and pathological features of diseases caused by common toxic chemicals, plants and poisons of animal origin with emphasis on mechanisms of action, clinical manifestations, diagnosis, prevention and treatment. In addition to, dealing professionally and legally with crimes against animals.

OBJECTIVES

Having successfully completed this course, the student will be able to:

1. Identify the major toxic agents affecting species of veterinary importance.
2. Understand how toxic substances act in the body.
3. Develop a plan for diagnosis and treatment of toxicoses.
4. Apply principles of diagnosis and treatment to ensure proper curative action has been taken.

I. General Toxicology

- Toxicology Concept and Terminology.
- Toxicokinetics: Absorption, Distribution, and Excretion of the Toxicant.
- Calculation in Toxicology (to be given in the Lab).
- Factor Influencing Toxicity.
 - Introduction.
 - Factors in the Toxicant.
 - Factors in the Host Animal.
 - Environmental (External) Factors.
- Diagnostic Toxicology (to be given in the Lab).
 - Diagnosis.
 - Gathering Important Information.
 - Specimen Collection to Support Chemical Analysis.
 - Selecting a Laboratory.
- Therapy and Management of Toxicosis.
 - Exposure to the Toxicant: Reduction or Elimination.
 - Emergency Intervention.
 - Antidotes.
 - Monitoring the Clinical Status.
 - Supportive Measures During Therapy.
 - Owner education.

II. Classes of Toxicant

A) Metals and Minerals.

- Introduction.
- Arsenic, Copper, Iron, Lead, Mercury, Molybdenum, Selenium, Zinc, and Fluoride Toxicosis.

B) Insecticides.

- Organophosphates and Carbamates, Organochlorine (Chlorinated Hydrocarbone).
- Pyrethroids and Pyrethroids.
- Rotenone, Amitraz, Nicotine, and others.

C) Herbicides.

- Introduction.
- Phenoxy herbicides, and Dipyridyl herbicides.

D) Fungicides and Avicides.

E) Rodenticides.

- Anticoagulant Rodenticides, Cholecalciferol (Vitamin D₃)
- Phosphide of Zinc, Calcium, or Aluminum.
- Strychnine, Bromethalin, and Other Rodenticides.

F) Household and Commercial Products: Ethylene glycol (antifreeze).

G) Feed Related Toxicoses.

- Overview of Feed Problems.
- Antibiotics, Antiparasitic Drugs.
- Growth and Performance Enhancer.
- Nonprotein Nitrogen (NPN) Products.
- Raw Soybeans.
- Gossypol.

H) Water Related Toxicoses.

- Water Quality.
- Nitrates, and Sodium-water imbalance.

I) Plant-Related Toxicoses.

J) Over-the Counter Drug and Drug of Abuse.

K) Mycotoxins: Aflatoxin, Zearalenone, Fumonisin, Ergot, and Slaframine.

GRADES:

First Hour Exam:	30%
Second Hour Exam:	30%
Final Exam:	40%

Text Book: Toxicology. (The National Veterinary Medical Series) by Osweiler. Williams & Wilkins. 1996.

Other References:

- A Field Guide to Common Animal Poisons. Murphy. Iowa State Univ Press. 1996.
- Handbook of Small Animal Toxicology. Gfeller and Messonnier. Mosby. 1998.
- Clinical and Diagnostic Veterinary Toxicology, 3rd edition by Osweiler, Carson, Buck, and Van Gelder. Kendall/Hunt, Dubuque, IA 1985.
- Veterinary Toxicology, 3rd Ed, Humphrey's Bailliere Tindall, 1988.
- Veterinary Pharmacology and Therapeutics 7th Ed. by Adams. Iowa State Press. 1995.