UNIVERSITY of NICOSIA

# Year 3

| | | | | | |
|---|---|---|---|---|---|
| Course Title | **Veterinary Pharmacology and Toxicology** | | | | |
| Course Code | **VET-304** | | | | |
| Course Type | Required | | | | |
| Level | Undergraduate | | | | |
| Year / Semester | Year 3/ Semester 1 (Fall) | | | | |
| Teacher's Name | | | | | |
| ECTS | 6 | Lectures / week | 3 | Tutorials / week | 2 |
| Course Purpose and Objectives | The main objectives of the course are:<br>• The course provides basic understanding of the principles of drug administration, pharmacokinetics, biotransformation, pharmacodynamics, and drug receptor interaction. The course emphasizes drugs belonging to the main pharmacological and chemotherapeutic classes. The pharmacological bases of veterinary therapy are also provided.<br>• Knowledge in veterinary toxicology is also provided with information on sources of intoxications, acute and chronic toxicity, toxicokinetic, metabolism and mechanism of actions of toxic substances, considering species-specific differences | | | | |
| Learning Outcomes | The following list provides the learning objectives that will be covered in the lectures, lab practical sessions and tutorials of each week:<br>Week 1<br>**LOBs covered during lectures:**<br>1. Principles of pharmacology<br>2. Absorption<br>3. Distribution<br>4. Metabolism and elimination<br>5. Pharmacokinetics<br>6. Mechanism of drug action<br>7. Principles of Pharmaceutics and Veterinary Dosage Forms<br>Week 2<br>**LOBs covered during lectures:**<br>8. Introduction to the Autonomic Nervous System and Autonomic Pharmacology<br>9. Adrenergic Receptor Agonists and Antagonists<br>10. Cholinergic Pharmacology: Autonomic Drugs<br>11. Introduction to Drugs Acting on the Central Nervous System and Principles of Anesthesiology | | | | |

12. Neuromuscular Blocking Agents
13. Inhalation Anesthetics
14. Injectable Anesthetic Agents
15. Opioid Analgesic Drugs
16. Sedatives and Tranquilizers
17. Local Anesthetics
18. Euthanizing Agents
19. Anticonvulsant Drugs
20. Drugs Affecting Animal Behavior

Week 3

**LOBs covered during lectures:**

21. Autacoids and Antiinflammatory Drugs
22. Histamine, Serotonin, and their Antagonists
23. Analgesic, Antiinflammatory, Antipyretic Drugs
24. Drugs Acting on the Cardiovascular System
25. Digitalis, Positive Inotropes, and Vasodilators
26. Antiarrhythmic Agents

Week 4

**LOBs covered during lectures:**

27. Drugs Affecting Renal Function and Fluid–Electrolyte Balance
28. Principles of Acid–Base Balance: Fluid and Electrolyte Therapy
29. Blood Substitutes
30. Diuretics and Renal Pharmacology
31. Drugs Acting on Blood and Blood Elements
32. Anticoagulant, Antiplatelet, and Hemostatic Drugs

Week 5

**LOBs covered during lectures:**

33. Endocrine Pharmacology
34. Hypothalamic and Pituitary Hormones
35. Hormones Affecting Reproduction
36. Thyroid Hormone and Antithyroid Drugs
37. Glucocorticoids, Mineralocorticoids, and Adrenolytic Drugs
38. Drugs Influencing Glucose Metabolism

Week 6

**LOBs covered during lectures:**

39. Chemotherapy of Microbial Diseases
40. Antiseptics and Disinfectants
41. Sulfonamides and Potentiated Sulfonamides
42. β-Lactam Antibiotics: Penicillins, Cephalosporins, and Related Drugs
43. Tetracycline Antibiotics
44. Aminoglycoside Antibiotics
45. Chloramphenicol and Derivatives, Macrolides, Lincosamides, and Miscellaneous Antimicrobials
46. Fluoroquinolone Antimicrobial Drugs
47. Antifungal and Antiviral Drugs

Week 7

**LOBs covered during lectures:**

48. Chemotherapy of Parasitic Diseases
49. Antinematodal Drugs
50. Anticestodal and Antitrematodal Drugs
51. Macrocyclic Lactones: Endectocide Compounds
52. Antiprotozoan Drugs
53. Ectoparasiticides

Week 8

**LOBs covered during lectures:**

54. Chemotherapy of Neoplastic Diseases
55. Immunosuppressive Drugs
56. Drugs for Treating Gastrointestinal Diseases
57. Dermatopharmacology: Drugs Acting Locally on the Skin
58. Drugs that Affect the Respiratory System
59. Ophthalmic Pharmacology

Week 9

**LOBs covered during lectures:**

60. Pharmacogenomics
61. Considerations for Treating Minor Food-Producing Animals with Veterinary Pharmaceuticals
62. Unique Considerations Pertaining to the Use of Drugs in Food Animals
63. Pharmacology in Aquatic Animals
64. Zoological Pharmacology

Week 10

**LOBs covered during lectures:**

65. The Regulation of Animal Drugs
66. Veterinary Pharmacy
67. Medication Control Programs in Performance Animals
68. Pharmacovigilance
69. Dosage Forms and Veterinary Feed Directives
70. Evidence-Based Pharmacotherapy
71. Chemical Residues in Tissues of Food Animals

Week 11

**LOBs covered during lectures:**

72. Concepts in veterinary toxicology
73. Toxicokinetics
74. Factors affecting chemical toxicity
75. Toxicological testing: in vivo and in vitro model
76. Epidemiology of animal poisonings in Europe
77. Regulatory considerations in veterinary toxicology
78. Computational modeling in veterinary toxicology

Week 12

| | | | |
|---|---|---|---|
| | **LOBs covered during lectures:**<br>79. Nervous system toxicity<br>80. Respiratory toxicity<br>81. Cardiovascular toxicity<br>82. Liver toxicity<br>83. Renal toxicity<br>84. Reproductive toxicity and endocrine disruption<br>85. Placental toxicity<br>86. Dermal toxicity<br>87. Blood and bone marrow toxicity<br>88. Immunotoxicity | | |
| Prerequisites | None | Required | None |
| Course Content | • Veterinary legislation and drug development<br>• Drug metabolism<br>• Pharmacokinetics (2nd year)<br>• An introduction to drug receptor interactions<br>• Introduction to the pharmacology of the autonomic nervous system (ANS)<br>• Pharmacology of the sympathetic nervous system<br>• Pharmacology of the parasympathetic nervous system<br>• Skeletal neuromuscular junction (NMJ)<br>• Inhibitory neurotransmission in the CNS, anxiolytic agents, anticonvulsant drugs<br>• Monoamines and affective disorders<br>• Glutamate as a neurotransmitter and its receptors<br>• Excitotoxicity – mechanisms and neuroprotection<br>• General anaesthetics<br>• Sedative drugs<br>• Opioid analgesics and neuroleptoanalgesia<br>• Local anaesthetics<br>• Anti-inflammatory agents<br>• Non-steroidal antinflammatory agents (NSAIDs)<br>• A painless review of NSAIDs in veterinary medicine<br>• Corticosteroids<br>• Haematinics and anticoagulants<br>• Insecticides and anthelmintics<br>• Antibacterials<br>• Veterinary toxicology (small and large animal)<br>• Treatment of poisoning<br>• Anti-arrhythmic drugs<br>• Congestive heart failure<br>• Autonomic pharmacology of smooth muscle (respiratory, uterus and bladder)<br>• Pharmacology of gastrointestinal system<br>• Diabetes mellitus<br>• The thyroid gland<br>• Immunopharmacology<br>• Cancer chemotherapy | | |

| | |
|---|---|
| | • Diuretics<br>• Antiviral drugs<br>• Antiprotozoals<br>• Antimycotics |
| Teaching Methodology | Lecture based learning and small group teaching |
| Bibliography | 1. Plumbs veterinary drug hand book<br>2. Veterinary Pharmacology and Therapeutics RIVIERE<br>3. Concepts and Applications in Veterinary Toxicology<br>4. Veterinary toxicology 3rd,Gupta<br>5. Pharmacology. Rang and Dale.The veterinary formulary.<br>6. Saunders equine formulary. Knottenbelt. Small animal clinical pharmacology. Maddison, Page and Church.<br>7. Veterinary psychopharmacology. Dantas, Davis and Murray. |
| Assessment | Final written exam 100% |
| Language | English |