

**JEFFERSON COLLEGE**

**COURSE SYLLABUS**

**VAT106**

**Applied Pharmacology**

3 Credit Hours

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Date: August 16, 2018

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## VAT106 Applied Pharmacology

### I. CATALOGUE DESCRIPTION

- A. Pre-requisite: VAT101 Introduction to Veterinary Technology and VAT113 Principles of Clinical Medicine I (both courses must be completed with a grade of “C” or better) and reading proficiency
- B. 3 Semester Credit Hours
- C. Applied Pharmacology provides the principles of pharmacy management, record keeping, and classification of drugs. This course also covers pharmacological concepts applicable to veterinary medicine, prescriptions, preparation of medication for dispensing, administration of medication, and interaction of drugs within various animal species. (S)
- D. Fulfills degree requirement for the Associate of Applied Science degree in Veterinary Technology

### II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

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| Describe why a veterinary technician needs to know information about drugs; explain what the different types of drug names are; recognize the characteristics of different solid and liquid dosage formulations; identify several different sources of drug information; explain the significance of the terminology used in drug references to describe drugs; list and describe the criteria for acceptable extra-label use of drugs; and describe how to report adverse drug reactions                       | In-class quiz and comprehensive final exam |
| Describe the differences between over-the-counter and prescription drugs; describe the requirements for prescriptions and drug labels; accurately read and write abbreviations commonly used in drug orders; describe regulations and warnings regarding dispensing containers; describe reasons and procedures for handling and storing drugs; describe special storage and handling requirements for dispensing and storing controlled substances and cytotoxic and hazardous drugs; and calculate drug doses | In-class quiz and comprehensive final exam |
| Describe the factors that affect movement of drug molecules throughout the body; explain the characteristics of each route of drug administration;  | In-class quiz and comprehensive final exam |

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| <p>explain the physiologic factors that change the way drugs move through the body; explain the factors that alter the way drugs are absorbed, distributed, metabolized, and excreted; and explain the interaction between drugs and receptors and how that produces cellular effects</p>  |   |
| <p>Describe the basic anatomy and physiology of the gastrointestinal system, cardiovascular system, endocrine system, respiratory system, and nervous system; and identify common drugs and explain the pharmacokinetics of drugs that affect the gastrointestinal system, cardiovascular system, endocrine system, respiratory system, and nervous system</p>   | <p>In-class quiz and comprehensive final exam</p> |
| <p>Describe the different mechanisms by which antimicrobials kill or inhibit bacteria or other pathogens; explain clinically significant adverse drug reactions of common antimicrobials and what can be done to limit their occurrence; explain the role of bacterial resistance, drug absorption, distribution, location of bacteria; and drug elimination play in selection of antimicrobials; and identify the drugs used to kill fungal agents and describe their advantages, disadvantages, and side effects</p> | <p>In-class quiz and comprehensive final exam</p> |
| <p>Define the terminology used to describe the characteristics of disinfection agents; define the different mechanisms by which disinfectants and antiseptics kill or inhibit pathogens; describe adverse reactions of commonly used disinfectants and antiseptics and how to keep them from occurring; explain the roles of bacterial resistance, presence of organic material, and other factors involved in the selection of disinfecting agents</p>  | <p>In-class quiz and comprehensive final exam</p> |
| <p>Define the terminology used to describe antiparasitics; explain the mechanisms by which commonly used antiparasitics work; and describe precautions that apply to specific antiparasitics</p>   | <p>In-class quiz and comprehensive final exam</p> |
| <p>Define the terminology used to describe anti-inflammatory drugs; explain the inflammation pathway; describe the mechanisms by which glucocorticoids and NSAIDS work; explain how glucocorticoids and NSAIDS differ in their effects and side effects; and describe precautions that apply to glucocorticoids, NSAIDS, and cyclooxygenase-2 inhibitor drugs</p>  | <p>In-class quiz and comprehensive final exam</p> |

### III. OUTLINE OF TOPICS

- A. General Pharmacology
  - 1. Terminology used in describing therapeutic agents
  - 2. Sources of drug information
  - 3. Information listed in drug references
  - 4. Principles of pharmacotherapeutics
  - 5. Difference between prescription and OTC drugs
  - 6. Routes of drug administration
  - 7. Biotransformation
  - 8. Drug excretion
  
- B. Routes and Techniques of Drug Administration
  - 1. Available drug forms
  - 2. Six rights of medication administration
  - 3. Types of syringes and needles
  - 4. Read doses in syringe
  - 5. Medication administration and documentation
  - 6. Prescription preparation and record keeping
  - 7. Labeling of dispensed medications
  - 8. DEA regulations for controlled substances
  
- C. Practical Calculations
  - 1. Systems of measurement
  - 2. Metric conversions
  - 3. Dosage calculations
  - 4. Percent concentrations
  
- D. Drugs Used in Nervous System Disorders
  - 1. Nervous system terminology
  - 2. Anatomy and physiology
  - 3. ANS function and neurotransmitters
  - 4. Classes of ANS drugs
  - 5. Drugs affecting the ANS
  - 6. Barbiturates
  - 7. Dissociative anesthetic agents
  - 8. Opiate receptors
  - 9. Narcotics
  - 10. Neuroleptanalgesia
  - 11. Anticonvulsants
  - 12. Inhalant anesthetics
  - 13. CNS stimulants
  - 14. Behavior modification agents
  - 15. Euthanasia agents

- E. Drugs Used in Respiratory Disorders
  - 1. Anatomy and physiology
  - 2. Protective mechanisms
  - 3. Principles of treatment of respiratory disease
  - 4. Expectorants, antitussives, mucolytics
  - 5. Bronchodilators
  - 6. Antihistamines and decongestants
  - 7. Respiratory stimulants
  - 8. Inhalant therapy
  
- F. Drugs Used in Renal and Urinary Tract Disorders
  - 1. Anatomy
  - 2. Physiology of urine formation
  - 3. Drug indications
  - 4. Effect of renal dysfunction on metabolism and excretion
  
- G. Drugs Used in Cardiovascular System Disorders
  - 1. Anatomy and physiology
  - 2. Cardiovascular compensatory mechanisms
  - 3. Treatment objectives
  - 4. Inotropic vs. chronotropic drugs
  - 5. Types of antiarrhythmic drugs
  - 6. Side effects of antiarrhythmic drugs
  - 7. Vasodilator drugs
  - 8. ACE inhibitors
  
- H. Drugs Used in Gastrointestinal System Disorders
  - 1. Anatomy and physiology
  - 2. Mechanisms of control
  - 3. Emetics and antiemetics
  - 4. Antiulcer medications
  - 5. Pathophysiology of diarrhea
  - 6. Laxatives
  - 7. Prokinetics and stimulants
  - 8. Digestive enzymes
  - 9. Antibiotics and anti-inflammatories
  - 10. Dental products
  
- I. Drugs Used in Hormonal, Endocrine, and Reproductive Disorders
  - 1. Physiology
  - 2. Endocrine glands
  - 3. Clinical use of hormones; difference between endogenous and exogenous hormones
  - 4. Location and function of the pituitary gland
  - 5. Positive and negative feedback control mechanisms
  - 6. Gonadotropins, gonadal hormones, progestins, prostaglandins

7. Drugs that affect uterine contractility
8. Pheromones
9. Thyroid gland; hypothyroidism and hyperthyroidism
10. Cushing's syndrome and treatment
11. Diabetes and insulin
12. Growth promoters and anabolic steroids

J. Drugs Used in Ophthalmic Disorders

1. Anatomy
2. Diagnostics
3. Selection of agents
4. Adverse reactions and contraindications

K. Drugs Used in Skin Disorders

1. Anatomy and physiology
2. Antiseborrheics
3. Antipruritics
4. Fatty acid supplements
5. Astringents
6. Antiseptics
7. Wound healing

L. Antiinfective Drugs

1. Classes of antiinfective drugs
2. Adverse effects
3. Clinical uses of antiinfectives
4. Antifungals
5. Antivirals
6. Disinfectants and antiseptics

M. Antiparasitic Drugs

1. Ingredients found in common dewormers and insecticides
2. Delivery systems of insecticides
3. Client education understanding product labels
4. Identify different classes of parasiticides and contraindications for each

N. Drugs Used to Relieve Pain and Inflammation

1. Terminology
2. Anatomy and physiology
3. Four steps of pain sensation
4. Physiologic vs. pathologic pain
5. Preemptive and multimodal analgesia
6. Physical signs of pain
7. NSAIDs; mechanism of action, indications, and side effects
8. Antihistamines; mechanism of action, H1 vs. H2 receptors
9. Muscle relaxants

10. Corticosteroid classification
11. Hypothalamic-pituitary-adrenal axis
12. Corticosteroids; indications and side effects

#### IV. METHOD(S) OF INSTRUCTION

- A. Lectures
- B. Textbooks
- C. Audio-Visual Aids

#### V. REQUIRED TEXTBOOK(S)

Wanamaker, Boyce and Massey, Kathy., *Applied Pharmacology for Veterinary Technicians*, (current edition), St. Louis: Mosby Elsevier

#### VI. REQUIRED MATERIALS

None

#### VII. SUPPLEMENTAL REFERENCES

None

#### VIII. METHOD OF EVALUATION

- A. Distribution of Final Grade

There are written quizzes and a comprehensive final which comprise the final lecture grade.

- B. Assignment of Final Letter Grades

A = 93-100

B = 84-92

C = 75-83

D = 60-74

F = below 60

- C. Attendance Policy

Student attendance is mandatory. There are no excused absences. Students will lose 1 point for each missed class period. If a student has more than 10 absences, he or she will be advised to drop from the course to avoid receiving a grade of "F" for the course. **Tardiness beyond 10 minutes is considered an absence.**

Students are not permitted to make up quizzes. If a student is absent on a quiz day, that quiz will count as a dropped quiz. The instructor will drop the 2 lowest quiz scores when calculating the final course grade.

The instructor may make exceptions to this policy in certain cases, i.e., illness requiring hospitalization, death in the family, etc.

#### IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Technology Center 101; phone 636-481-3169).

#### X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website <http://www.jeffco.edu>).

#### XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

#### XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically-related activities such as reading, studying, and completing assignments. Specifically, time spent on academically-related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.

Since this class is a face-to-face, 16-week, 3 credit hour class, the expectation is that 112.5 hours be spent on academically-related activities over the 16-week period. The class meets face-to-face for 37.5 hours over the 16 weeks, so it is expected that 75 hours be spent on outside-of-class activities. This means you should spend about 4.5 hours each week reading the textbook, completing assignments, studying for exams, etc.