

JEFFERSON COLLEGE

COURSE SYLLABUS

VAT258

CLINICAL PATHOLOGICAL TECHNIQUES

5 Credit Hours

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Date: August 16, 2018

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VAT258 Clinical Pathological Techniques

I. CATALOGUE DESCRIPTION

- A. Prerequisites: VAT101 Introduction to Veterinary Technology, VAT106 Applied Pharmacology, VAT113 Principles of Clinical Medicine I, VAT114 Principles of Clinical Medicine II, VAT199 Veterinary Technology Internship, BIO208 Vertebrate Physiology or BIO212 Anatomy and Physiology II, and BIO113 Microbiology for Health Sciences or BIO215 General Microbiology (all courses must be completed with a grade of “C” or better) and reading proficiency
- B. 5 Semester Credit Hours
- C. Clinical Pathological Techniques is a lecture/laboratory course and continues those techniques taught previously with emphasis on hematology, clinical chemistry, and diagnostic procedures for body fluids, scrapings, and excretory samples. Parasite life cycles are also covered. (F)
- D. Fulfills degree requirement for the Associate of Applied Science degree in Veterinary Technology

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

Demonstrate use of and explain the purpose of various types of laboratory equipment; and explain the importance of proper quality control procedures and how they are essential to the production of diagnostic quality laboratory results	In-class test, instructor observation during laboratory sessions, homework, laboratory practical examination, and comprehensive final exam
Demonstrate proper blood sample collection and handling techniques; explain the importance of proper sample volume for specific tests; perform and explain all aspects of a complete blood count (CBC); recognize normal mammalian and avian blood cells; describe bone marrow evaluation techniques and different types of hematopoietic neoplasias; explain platelet function and dynamics in disease states; and define major coagulation pathways	In-class test, instructor observation during laboratory sessions, homework, laboratory practical examination, laboratory PowerPoint examination, and comprehensive final exam
Describe common serum enzymes, explain where they originate, and explain what they measure; describe and explain chemistry tests that assess the function of the liver, kidney, pancreas, and endocrine system; and explain	In-class test, instructor observation during laboratory sessions, homework, and comprehensive final exam

how electrolytes are regulated by the body and how they are affected by various disease states	
Describe proper urine collection techniques and handling of urine samples; list and describe methods for the physical and biochemical evaluation of urine; describe the preparation of urine for microscopic evaluation; recognize the cellular elements that can be found in urine sediment; identify common urine crystals; and perform a complete urinalysis	In-class test, instructor observation during laboratory sessions, homework, laboratory practical examination, laboratory PowerPoint examination, and comprehensive final exam
Describe and recognize common types of alimentary, external, and blood parasites seen in domestic animals; explain the life cycles of alimentary, external, and blood parasites; and perform diagnostic tests used to diagnose endoparasites and exoparasites	In-class test, instructor observation during laboratory sessions, homework, laboratory practical examination, laboratory PowerPoint examination, and comprehensive final exam
Describe the body's immune response; define common disorders of the immune system; explain blood types and perform major and minor cross-matching; explain and perform various serologic tests	In-class test, instructor observation during laboratory sessions, homework, and comprehensive final exam
Describe and perform collection techniques for various cytologic tests; describe and perform varying smear preparations; describe and demonstrate various fixing and staining techniques for cytology samples; and describe and perform cytologies of various sites	In-class test, instructor observation during laboratory sessions, homework, and comprehensive final exam

III. OUTLINE OF TOPICS

- A. The Veterinary Practice Laboratory
 - 1. Binocular microscope
 - 2. Clinical centrifuge
 - 3. Refractometer
 - 4. Chemistry analyzers
 - 5. Hematology analyzers
 - 6. Miscellaneous equipment and supplies
 - 7. Quality control

- B. Hematology and Hemostasis
 - 1. Hematopoiesis
 - 2. Collection and handling of blood samples
 - 3. Sample volume
 - 4. Total red blood cell (RBC) count and evaluation

5. Packed cell volume (PCV)
6. Serum and plasma protein concentration
7. Total white blood cell (WBC) count and evaluation
8. Blood film examination: differential WBC count, erythrocyte, and leukocyte morphology, platelet estimation
9. Reticulocyte count
10. Hemoglobin concentration
11. Erythrocyte indices
12. Bone marrow evaluation and hematopoietic neoplasia
13. Evaluation of platelets and coagulation
14. Hemostatic defects

C. Clinical Chemistry

1. Sample collection
2. Reference ranges
3. Protein assays
4. Hepatobiliary assays
5. Kidney assays
6. Pancreas assays
7. Other endocrine assays
8. Electrolyte assays
9. Miscellaneous chemistry assays

D. Urinalysis

1. Specimen collection
2. Quality assurance
3. Specimen storage and handling
4. Physical properties
5. Chemical properties
6. Microscopic examination of urine sediment
7. Constituents of urine sediment
8. Microorganisms
9. Miscellaneous components of urine

E. Internal Parasites of Small Animals

1. Common types of parasites
2. Common endoparasites of small animals
3. Diagnosis of alimentary parasitism
4. Diagnosis of blood parasitism
5. Arthropods
6. Nematodes
7. Segmented worms

F. External Parasites of Small Animals

1. Collection of samples
2. Terminology

3. Classification system
- G. Immunology, Serology, and Molecular Diagnostics
1. The immune response
 2. Disorders of the immune system
 3. Tests of humoral immunity
 4. Blood groups and immunity
 5. Tests of cell-mediated immunity
 6. Collecting samples for serologic testing
- H. Cytology
1. Necropsy and sample collection
 2. Concentration techniques
 3. Smear preparation
 4. Fixing and staining the cytology sample
 5. Submission of cytologic preparations and samples for interpretation
 6. Initial microscopic evaluation
 7. Cytology of specific sites
 8. Aqueous and vitreous humor
 9. Semen evaluation
 10. Evaluation of prostatic secretions
 11. Examination of milk

IV. METHOD(S) OF INSTRUCTION

- A. Lecture
- B. Laboratory Session
- C. Textbooks
- D. Audio-Visual Aids
- E. Live Animal Models for Laboratory Instruction

V. REQUIRED TEXTBOOK(S)

- A. Sirois, M., *Laboratory Procedures for Veterinary Technicians*, (current edition), St. Louis: Mosby Elsevier
- B. McCurnin, D., *Clinical Textbook for Veterinary Technicians*, (current edition), St. Louis: Saunders Publishing
- C. Hendrix, C. and Robinson, E., *Diagnostic Parasitology for Veterinary Technicians*, (current edition), St. Louis: Mosby Elsevier

VI. REQUIRED MATERIALS

Appropriate Laboratory Attire (Scrubs)

VII. SUPPLEMENTAL REFERENCES

None

VIII. METHOD OF EVALUATION

A. Distribution of Final Grade

There are written exams/quizzes, homework assignments, and a comprehensive final, all of which comprise the final lecture grade.

Laboratory participation, laboratory assignments, laboratory PowerPoint examination, and a laboratory practical examination comprise the final laboratory grade.

A student must independently pass both the lecture portion and the laboratory portion of each class to advance in the program.

Class participation and attendance are expected of the students and the instructor reserves the right to award or detract percentage points based on these attributes.

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. If a student misses more than 15% of the total time that the class meets in a semester, the instructor may prohibit the student from attending the class. In such cases, the student must officially withdraw from the course, by the designated withdrawal date, in order to reduce the possibility of receiving an "F" for the course.

Tardiness beyond 10 minutes is considered an absence.

Students are permitted to miss one exam date with no penalty. Make up exams are taken in the Testing Center within 3 days of the original exam.

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, 5 credit hour class, the expectation is that 187.5 hours be spent on academically-related activities over the 16-week period. The class meets face-to-face for 92.5 hours over the 16 weeks, so it is expected that 95 hours be spent on outside-of-class activities. This means you should spend about 6 hours each week reading the textbook, completing assignments, studying for exams, etc.