JEFFERSON COLLEGE

COURSE SYLLABUS

VAT258

CLINICAL PATHOLOGICAL TECHNIQUES

5 Credit Hours

Revised by:
Dana Nevois, MBA, BS, RVT
January 7, 2015

Chris DeGeare, M.Ed., Division Chair, Business and Technical Education
Dena McCaffrey, Ed.D., Dean, Career & Technical Education
VAT258 Clinical Pathological Techniques

I. CATALOGUE DESCRIPTION

A. Pre-requisite: VAT101 Introduction to Veterinary Technology, VAT106 Applied Pharmacology, VAT113 Principles of Clinical Medicine I, VAT114 Principles of Clinical Medicine II (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)

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

<table>
<thead>
<tr>
<th>Expected Learning Outcomes</th>
<th>Corresponding Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate use of and explain the purpose of various types of laboratory equipment; and</td>
<td>In-class test, instructor observation during laboratory sessions, homework, laboratory practical</td>
</tr>
<tr>
<td>explain the importance of proper quality control procedures and how they are essential to the production of diagnostic quality laboratory results</td>
<td>examination, and comprehensive final exam</td>
</tr>
<tr>
<td>Demonstrate proper blood sample collection and handling techniques; explain the importance</td>
<td>In-class test, instructor observation during laboratory sessions, homework, laboratory practical</td>
</tr>
<tr>
<td>of proper sample volume for specific tests; perform and explain all aspects of a complete</td>
<td>examination, and comprehensive final exam</td>
</tr>
<tr>
<td>blood count (CBC); describe bone marrow evaluation techniques and different types of</td>
<td></td>
</tr>
<tr>
<td>hematopoietic neoplasias; explain platelet function and dynamics in disease states; and</td>
<td></td>
</tr>
<tr>
<td>define major coagulation pathways</td>
<td></td>
</tr>
<tr>
<td>Describe common serum enzymes, explain where they originate, and explain what they measure;</td>
<td>In-class test, instructor observation during laboratory sessions, homework, and comprehensive final</td>
</tr>
<tr>
<td>describe and explain chemistry tests that assess the function of the liver, kidney,</td>
<td>exam</td>
</tr>
<tr>
<td>pancreas, and endocrine system; and explain how electrolytes are regulated by the body and</td>
<td></td>
</tr>
<tr>
<td>how they are affected by various disease states</td>
<td></td>
</tr>
<tr>
<td>Describe proper urine collection techniques and handling of urine samples; list and describe</td>
<td>In-class test, instructor observation during laboratory sessions, homework, and comprehensive final</td>
</tr>
<tr>
<td>for the physical and</td>
<td>exam</td>
</tr>
<tr>
<td>methods for the physical and</td>
<td></td>
</tr>
<tr>
<td>Biochemical evaluation of urine; describe the preparation of urine for microscopic evaluation; list the cellular elements that can be found in urine sediment; identify common urine crystals; and perform a complete urinalysis</td>
<td>In-class test, instructor observation during laboratory sessions, homework, and comprehensive final exam</td>
</tr>
<tr>
<td>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</td>
<td>In-class test, instructor observation during laboratory sessions, homework, and comprehensive final exam</td>
</tr>
<tr>
<td>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</td>
<td>In-class test, instructor observation during laboratory sessions, homework, and comprehensive final exam</td>
</tr>
<tr>
<td>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</td>
<td>In-class test, instructor observation during laboratory sessions, homework, and comprehensive final exam</td>
</tr>
</tbody>
</table>

### 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
   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  
10. Toxicology

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  
1. Common types of parasites  
2. Common Endoparasites of domestic animals  
3. Diagnosis of alimentary parasitism  
4. Diagnosis of blood parasitism

F. External Parasites  
1. Collection of samples  
2. Terminology  
3. Classification system  
4. Arthropods  
5. Nematodes  
6. Segmented worms

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. Hendrix, C. and 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, 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. **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 (Library; 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.