JEFFERSON COLLEGE
COURSE SYLLABUS

VAT 258
CLINICAL PATHOLOGICAL TECHNIQUES

Prepared by:
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VAT 258 CLINICAL PATHOLOGY TECHNIQUES

1. CATALOG DESCRIPTION

Prerequisite: Completion of the first year of the program.

Clinical Pathology Techniques is a continuation of clinical pathology principles and techniques taught earlier in the program. Emphasis is on hematology, clinical chemistry, urinalysis, and fecal analysis. Also taught are diagnostic procedures for body fluids, needle aspirates, scrapings, and excretory samples. Small animal parasitic life cycles are covered.

II. EXPECTED LEARNING OUTCOMES

To have students practice and understand the small animal laboratory procedures and critical thinking skills listed in the AVMA's Veterinary Technology Second Year Task List.

III. COURSE OUTLINE

Subjects covered in lecture and lab:

A. Introduction and Equipment Use
B. Leukocytes and Leukogram Interpretation
C. RBC Evaluation, Anemia, Blood Parasites, Blood Types, and Cross-Matching
D. Platelets and Coagulation Assays
E. Bone Marrow, Hematopoietic Neoplasia
F. Serum and Plasma Protein, Serum Electrolytes
G. Blood Gas, Blood pH
H. Serum Enzymes, Liver Function Tests, Blood Glucose
1. Renal Function
J. Calcium, Phosphorus Magnesium
K. Urinalysis
L. Pancreatic Function, Intestinal Function, Endocrine Function
M. Fecal Exam, Internal Parasites
N. Heartworm Tests
0. External Parasites
P. Immunology & Serology
Q. Fluid Analysis
R. Cytology
S. Semen Exam, Milk Exam
I. Necropsy

IV. UNIT OBJECTIVES

A. Introduction and Equipment Use

Understand how to use various hematology and blood chemistry analyzers.
B. Leukocytes and Leukogram Interpretation

1. Know the various types of leukocytes and their distribution in healthy and diseased animals.

2. Understand how to perform a complete blood count and differential (using both QBC system and Unopette).

RBC Evaluation, Anemia, Blood Types, and Cross-Match

1. Understand how RBC's are evaluated: RBC count, HCT, and Hemoglobin.

2. Understand how to calculate RBC indices.

3. Understand various types of anemia, including regenerative vs. Non regenerative anemia.

4. Be able to perform reticulocyte count.

5. Understand canine and feline blood types and how to perform major and minor cross matching.

D. Platelets and Coagulation Assays

1. Understand platelet function and platelet dynamics in disease states.

2. Be able to perform platelet count.

3. Understand major coagulation pathways, APTT, PT, ACT.

4. Be able to perform ACT.

E. Bone Marrow, Hematopoietic Neoplasia

1. Understand bone marrow analysis and how the bone marrow responds to various disease states.

2. Review common types of hematopoietic neoplasias.

F. Serum and Plasma Protein, Serum Electrolytes
1. Understand how to measure serum and plasma protein.
2. Understand how serum protein is affected by hydration and various disease states.
3. Understand how serum electrolytes are assayed and how they are affected by certain diseases.

Blood Gas, Blood pH
1. Understand how blood gas analysis is performed and what is measures.
   2. Understand how the body regulates acid/base status.

H. Serum Enzymes, Liver Function Tests, Blood Glucose
1. Understand common serum enzymes, where they originate, and what they measure.
2. Understand liver function tests.
3. Understand blood glucose dynamics, how it relates to diagnosis of diabetes mellitus.
4. Perform glucose tolerance test.

J. Calcium, Phosphorus, Magnesium
Understand how calcium, phosphorus, and magnesium are regulated by the body and affected by various disease states.

K. Urinalysis
Know how to perform complete urinalysis including physical and chemical assays as well as examination of urine sediment.

L. Pancreatic Function, Intestinal Function, Endocrine Function
1. Know how to perform direct fecal exams and fecal flotation.
2. Identify common intestinal parasites of domestic species.
3. Perform various heartworm tests, Difil, Knotts, Antigen, direct, HCT tube.
4. Understand Dirofilaria life cycle and identify Dirofilaria microfilaria.

M. External Parasites, Immunology and Serology

1. Perform skin scrapings for mites.
2. Perform Woods Lamp screening and DTM culture for dermatophytes.
3. Identify common external parasites of domestic species.
4. Understand principles of immunologic and serologic tests, including ELISA technology.

N. Fluid Analysis, Cytology

1. Understand how to collect specimens and analyze fluid from body cavities, joints, airways, and CSF.
2. Perform fine needle aspirate and impression smears.
3. Understand differences between cytologic vs. histologic exam.

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0. Vaginal Cytology, Semen Exam, Milk Exam, Necropsy

1. Perform vaginal cytology to stage estrus cycle in the bitch.
2. Understand semen collection and analysis.
3. Understand how to collect milk and perform mastitis tests.
4. Perform necropsies on canine and feline cadavers.

V. METHODS OF INSTRUCTION

A. Lecture: MWF, 10:00 - 1050 a.m.
B. Lab: Section 1 - MT, 2:00 - 4:00 p.m.
   Section 2 - WR 2:00 - 4:00 p.m.

Students perform laboratory procedures discussed in lecture units.

1. Perform complete blood counts.
2. Perform reticulocyte counts and platelet counts.
3. Perform blood chemistries.
4. Perform coagulation tests.
5. Perform cystocentesis.
6. Perform complete urinalysis.
7. Perform fecal exam for parasites.
8. Perform coprologic tests.
9. Perform skin scrapings.
11. Perform heartworm tests.
12. Perform ELISA tests.
13. Perform needle aspirate and impression smear.
15. Perform necropsy and bone marrow collection.
16. Perform glucose tolerance test.
17. Perform blood glucose measurements.
18. Perform fat absorption test.
19. Observe centesis and tracheal wash.
21. Students are required to perform at least 10 CBCs, 10 Urinalyses, and 10 fecal analyses as the lab analyses portion of the grade.
22. Differential slide test

V1. REQUIRED TEXTBOOKS


II METHOD OF EVALUATION

A. Distribution of Final Grade (320 point total)

1. 70 points - lab performance
2. 30 points - lab analyses
3. 100 points - 4 unit tests
4. 50 points - comprehensive final
5. 50 points – lab practical exam
6. 20 points differential slide test

B. Assignment of Final Letter Grades

1. A = 90-100%
2. B = 80-89%
3. C = 70-79%
4. D = 60-69%
5. F = below 60%

Program Attendance policy – There are no excused absences. Students may miss 2 times with no point deductions, after that point deductions will accumulate. Students will lose 1 point for each lecture missed, and 5 points per lab. If a student has more than 10 absences including the first two, he or she will be advised to drop from the course to avoid receiving a grade of F for the course.

Students who are more than 10 minutes tardy for class will be counted as absent for that day.

Students may miss one exam with no penalty; for each subsequent exam missed the student is penalized 10% of the total value of the exam
academic honesty: Students must comply with campus policies as stated in the Student handbook. Students proven to be in violation of academic honesty policy and procedure as outlined in the Student Handbook will receive an F for the course as part of the course evaluation, regardless of prior academic standing.

Students requiring accommodations for disabilities should notify the instructor. The ADA student contact is Sundaye Harrison, ext. 169.

Students need to behave in a respectful manner towards other students and the instructor. Cell phones, iPods, and similar devices are not to be used in class.

The instructor reserves the right to change this syllabus at any time.