I. **TITLE:**
   Advanced Veterinary Hematology

II. **CATALOG DESCRIPTION:**
   Concepts of hematopoiesis and the effect of disease on blood cells will be covered. Cell counting, identifications of normal and abnormal blood cells, bone marrow examination, cytology, coagulation, and special hematology skills will be taught. Lecture – 2 hours, laboratory – 4 hours. (Fall and Spring)

   Prerequisites: AGR 332, BIO 300, and 5 hours of chemistry.

III. **PURPOSE:**
   This course is intended to acquaint the student with the techniques commonly used to evaluate a blood sample for determination of health or disease. This knowledge will enable the student to evaluate or monitor an animal in their care.

IV. **COURSE OBJECTIVES:**
   The successful student will exit the course with an in-depth knowledge of the hemopoietic system of the body. Within limits, the reason for any deviations from normal (high or low) should be able to be arrived at. If given a complete blood count, the student should be able to evaluate it and make a valid assessment of the animal’s hematologic status. Students should be able to perform manual and automated blood counts, prepare blood and cytology slides for examination, perform differentials on normal and abnormal patients, perform reticulocyte counts, recognize anemia and blood parasites, and perform other hematology tests.

V. **CONTENT OUTLINE:**
   A. Lecture Outline
      1. Erythrocytes
      2. Leukocytes
      3. Hematopoietic Neoplasms
      4. Hemostasis
      5. Cytology & Fluid Analysis
   B. Laboratory Outline
      1. Slide Preparation and Stains
      2. Cell Counts (mammalian and nonmammalian)
3. Miscellaneous Hematology (Fibrinogen, Cross-match, blood typing, etc.)
4. Erythrocytes
5. Leukocytes
6. Abnormal Cells in Peripheral Blood
7. Cytology and Fluid Analysis

VI. INSTRUCTIONAL ACTIVITIES:
A. Lecture – Problem Solving
B. Laboratory

VII. FIELD AND CLINICAL EXPERIENCES:
Four hours of laboratory per week.

VIII. RESOURCES:
A. Laboratory equipment (microscope, prepared slides)
B. Notes, laboratory manual, reports, and other learning aides are available on Blackboard
C. Essential skills booklet: Students will turn in $5 for the printing and binding of the booklet (one booklet will be used for all BVC courses). The essential skills must be successfully completed for the student to receive credit for the course. Otherwise the student will receive an “I” for the semester.
D. High quality images of cells on PowerPoint and Blackboard
E. Materials students should purchase and bring to class in addition to textbooks and laboratory material
   i. Simple nonprogrammable calculator
   ii. White laboratory coat
   iii. Scrubs or professional attire (can be any color as long as it matches)

   Students not dressed appropriately for laboratory will be asked to leave and change and will be docked professional points

IX. GRADING PROCEDURES:
Grading Scale:
90 – 100 = A
80 – 89  = B
70 – 79  = C
60 – 69  = D
Below 60 = E

There will be up to four exams during the semester as outlined in the schedule covering material from both laboratory and lecture. The schedule will be posted on blackboard. It is the student’s responsibility to keep track of scheduled assignments and exams. Pop quizzes may be given at any time during the semester per the instructor’s discretion. A time limit will be imposed on all practical work for laboratory. Practical work not turned in on
time will result in an automatic 10-point reduction for each hour the work is late for exams and 1 point per hour for reports. Extra credit may be available at various times during the semester as approved by the instructor. All assignments and exams will be given points that will be added together for the final percentage grade during the course.

Use of cell phones is prohibited during class time. Points may be deducted for cell phones that ring during exams. There will also be points deducted for unprofessional conduct during the laboratory period per the instructor's discretion. Programmable calculators and cell phones are prohibited for use during tests. Students will be required to purchase and bring to class, a simple, non-graphing calculator for use during laboratory and exams. Should a student fail to bring a calculator to an exam, the student will not be allowed use of a fellow classmate’s calculator.

X. **ATTENDANCE POLICY:**
Attendance is mandatory. Students who leave class early or arrive late without making prior arrangements with the instructor will be docked points for professionalism. There will be absolutely no make-ups for pop quizzes, assignments or reports missed during the absences. If an absence is excused, the student will not be penalized for work they miss, but will be responsible for obtaining any material covered for exam purposes. Exams must be taken within the week of absence or the student will receive a zero. Written proof of excuse is required; otherwise, professional points will be docked for that day and all assignments given a zero. It is the student's sole responsibility to obtain any information they missed during an absence and submit written proof of an excused absence to the instructor.

Please refer to *Murray State University’s Undergraduate Bulletin and Graduate Bulletin.*

XI. **ACADEMIC HONESTY POLICY:**
Any act of academic dishonesty will not be tolerated in this course and will result in a zero for the assignment or test in question. A letter regarding the incident will also be sent to the head of the department and the dean to be included in the student’s permanent record.

(Adopted by the MSU Board of Regents)
Cheating, plagiarism (submitting another person’s material as one’s own), or doing work for another person which will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, term papers, or the presentation on unacknowledged material as if it were the student’s own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.
NOTE: The School of Agriculture Faculty have adopted and implemented an Academic Honesty Policy in addition to the University Honesty Policy, which can be found in the current Undergraduate Bulletin and Graduate Bulletin. The policy sets guidelines regarding acts of dishonesty and the procedure to follow should an event occur. It is each Agriculture student’s responsibility to obtain and read a copy of this document. The School’s Academic Honesty Policy can be obtained by asking for a copy from any Agriculture Faculty member or the Secretary.

XII. TEXT AND REFERENCES:
Veterinary Hematology & Clinical Chemistry, Thrall, 1st edition, 2004 (Required)

XIII. PREREQUISITES:
AGR 332, BIO 300, and 5 hours of chemistry

XIV. STATEMENT OF AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY:
Murray State University does not discriminate on grounds of race, color, gender, sexual orientation, religion, national origin, age, disability, or veteran's status in providing any educational or other benefits services of Murray State University to students or those applying for admission at Murray State University. Murray State University attempts to provide equal opportunity in all areas of student admissions, financial aid, employment, and placement and provides upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities an equal opportunity to participate in all programs and activities. For information regarding nondiscrimination policies contact the Office of Equal Opportunity, 270-809-3155.

XV. MSU SCHOOL OF AGRICULTURE CELL PHONE POLICY
The School of Agriculture recognizes that in today’s world cell phones are a familiar and often necessary form of communication for students. It shall be the policy of the School that no cell phone usage shall be allowed in class and/or labs without the prior consent of the course instructor. This shall include verbal calling, incoming calls, email, text messaging, and use of cell phone calculators on tests and quizzes. Cell phones must be kept off and out of sight (i.e. secured to a person’s belt or kept in a bag or purse away from desks and lab counters).

Should a student’s cell phone be visible, ring, or other form of unauthorized usage that is interruptive to the class or lab, the student may be asked to leave class and not return for that class/lab period. Upon prior consent of the instructor, a student may obtain permission to have their phone on in case of an emergency or in critical family situations. This policy also includes pagers and other electronic equipment such as blackberries and/or computers/laptops.
Instructor’s Note: Only simple, non-graphing calculators will be allowed for exam purposes. No cell phones, laptops, or graphing calculators will be allowed during an exam.