

VET 245S Veterinary Clinical Laboratory

Course Goals:

1. Identify the various procedures for evaluating urine, blood, and cytological samples.
2. Analyze various patient samples using a variety of clinical laboratory procedures to produce results that aid in diagnosis.
3. Identify common laboratory tests used to evaluate kidney, pancreatic, and liver functions, as well as other miscellaneous tests in small and large animals.
4. Explain the significance of abnormal results in various tests and procedures.
5. Explain bacterial and fungal identification procedures to aid in diagnosis.
6. Develop proper techniques, handling, submitting, and testing samples for diagnostic analysis to ensure the accuracy of results.



Instructor's Name:	Instructor's Office Hours:	Meeting Days/Times
Elizabeth Bingham BS, RVT ebingham@edisonohio.edu 937. 381.1544 <u>Qualifications</u> AAS in Veterinary Technology Columbus State Community College Completed 2008 BS in Zoology The Ohio State University Completed 2004	Appointment recommended: Tuesdays 12-3 pm Thursdays 12-3 pm Office: RM 340 Virtual Link: Fall 2026-27 Virtual Office Hours Meeting-Join Microsoft Teams	<u>Fall Semester 2026/27</u> August 24th – December 12th • Mondays: 12-3 pm RM 314 • Tuesdays: 9:30-11:30 am RM 406 <u>Required Course Materials</u> • ISBN: 9780443117169 Laboratory Procedures for Veterinary Technicians, 8th edition (2025) Holtgrew-Bohling • ISBN: 9780443117114 Laboratory Manual for Laboratory Procedures for Veterinary Technicians, 8th edition (2025) Holtgrew-Bohling • ISBN: 9780323936514 McCurnin's Clinical Textbook for Veterinary Technicians and Nurses, 11th edition (2026) Samples • ISBN: 9780443117091 Workbook for McCurnin's Clinical Textbook for Veterinary Technicians and Nurses, 11th edition (2026) Samples

Dates	In-Class	Before Class	Homework Assigned
		*Readings are expected to be completed BEFORE the class date in which they are listed	All work is due at the beginning of the next class date, unless otherwise noted.
Monday 8/24 LAB	Course Introduction / Syllabus Review Safety Concerns and OSHA Standards Quality Control and Record Keeping Microscope Setup and Review - Exercise 1.14 in Lab Manual	Read Ch. 1 and 5 Bring Lab Manual for Laboratory Procedures	<u>Assignments</u> - Ch. 1 and 5 Review Questions (13 points) - Lab Manual Selected Questions (62 points)

Tuesday 8/25 Lecture	Lecture: Hematology - Sample Collection - Red Blood Cells	Read Ch. 6 and 7 Read Ch. 8 pg. 53 Read Ch. 10 pgs. 69-77 Additional Reference: McCurnin Ch. 11: Hematology	<u>Assignments</u> - Ch. 6, 7, 8, and 10 Review Questions (34 points) - Lab Manual Select Questions (50 points) <u>Examinations</u> - Ch. 1 and 5 Quiz (14 points)
Monday 8/31	Review Red Blood Cell Identification		<u>Assignments</u> - Hematology Assignment (18 points) - RBC Identification Assignment (50 points)
Tuesday 9/01 Lecture	Review • Preparing Diagnostic Specimens for Shipment • Blood Smear	Read Sirois Ch. 10 pgs. 53-55	<u>Examinations</u> - Shipping Specimens Quiz (13 points)
Monday 9/07	No Class – Labor Day		
Tuesday 9/08 Lecture	Lecture: Hematology • Platelets • White Blood Cells	Read Sirois Ch. 9 Read Sirois Ch. 10 pgs. 66-69 Read Ch. 13 pgs. 93-95 Read Chapter 16 Additional Reference: McCurnin Ch. 11: Hematology	<u>Assignments</u> - Ch. 9, 10, and 16 Review Questions (20 points) - Lab Manual Select Questions (36 points)
Monday 9/14 LAB	Lab • Creating and staining a Blood Smear • Reticulocyte counts • Evaluate RBC morphology • Correcting WBC counts for nRBCs • Platelet Estimate	Bring Lab Manual	
Tuesday 9/15 Lecture	Review: • White Blood Cell Identification • Manual Read of a Blood Smear		<u>Examinations</u> - Exam #1 - Hematology (60 points)

Monday 9/21	Lab • Creating and staining a Blood Smear • Leukocyte Differential • WBC Estimate • Calculating absolute values vs. relative values	Bring Lab Manual	
Tuesday 09/22	Lecture: Clinical Chemistry	Read Ch. 8 pgs. 48-53 Read Ch. 13 pgs. 91-93 Read Ch. 17 Read Unit 4 Additional References: McCurnin Ch. 11: Hematology and 12: Clinical Chemistry	<u>Assignments</u> - Ch. 8, 13, and 17 Review Questions (23 points) - Unit 4 Review Questions (42 points) - Lab Manual Select Questions (37 points)
Monday 09/28	Lab • Perform PCV/TP • Perform CBC • Implement quality control measures • Perform blood chemistry tests • Coagulation Test	Bring Lab Manual	
Tuesday 09/29	Lecture: Immunology	Read Unit 9 Additional Reference: McCurnin Ch. 12: Serology	<u>Assignments</u> - Unit 9 Review Questions (37 points) - Lab Manual Select Questions (44 points) <u>Examinations</u> - Exam #2 – Clinical Chemistry (46 points)
Monday 10/5	Lab • Blood Smear Labs continued • Clinical Chemistry Labs continued • Blood Typing • Crossmatching		
Tuesday 10/6	Lecture: Diagnostic Microbiology		<u>Examinations</u> - Exam #3 – Immunology (27 points)
Monday 10/12	Lab • Blood Smear Labs continued • Clinical Chemistry Labs continued • Immunology Lab continued		

Tuesday 10/13	Lecture: Diagnostic Microbiology	Read Unit 8 Read McCurnin Ch. 14	<u>Assignments</u> - Susceptibility Assignment (12 points) - Microbiology Lab Sheet (15 points)
Monday 10/19	Lab • Blood Smear Labs continued • Clinical Chemistry Labs continued • Immunology Lab continued		
Tuesday 10/20	Lecture: Diagnostic Microbiology		<u>Assignments</u> - Unit 8 Review Questions (30 points) - Dermatophyte Testing Assignment (16 points)
Monday 10/26	Lab • Collect representative samples • Culture bacteria • California Mastitis Test • Culture and identify common dermatophytes	DTMs started	<u>Assignments</u> - Lab Manual Select Questions (30 points)
Tuesday 10/27	Lab • Identify common animal pathogens using commercially available media and reagents • Perform staining procedures	Bring Microbiology Lab Sheets	<u>Examinations</u> - Exam #4 – Microbiology I (43 points)
Monday 11/02	Lab • Culture bacteria • When handling laboratory specimens, ensure safety of patients, clients and staff. • Perform sensitivity tests		<u>Assignments</u> - Susceptibility Testing Worksheets (32 points)
Tuesday 11/03	Lab • Identify common animal pathogens using commercially available media and reagents • Perform staining procedures • Perform sensitivity tests	Bring Microbiology Lab Sheets	<u>Assignments</u> - McCurnin Workbook Ch. 14 (32 points) <u>Examinations</u> - Exam #5 – Microbiology II (33 points)
Monday 11/09	Lecture: Urinalysis	Read Unit 5 Additional Reference: McCurnin Ch. 12: Urinalysis	<u>Assignments</u> - Unit 5 Review Questions (28 points)

Tuesday 11/10	Lab • Complete Urinalysis (4 steps)		<u>Assignments</u> - Urinalysis Assignment (27 points) - Lab Manual Select Questions (112 points) - Research Project: Topic (16 points)
Monday 11/16	Lab • Complete Urinalysis (4 steps) • DTMs Final Due		<u>Assignments</u> - McCurnin Workbook Ch. 12 (35 points) <u>Examinations</u> - Exam #6 – Urinalysis (74 points)
Tuesday 11/17	Lab • Complete Urinalysis (4 steps)		<u>Assignments</u> - Research Project: PowerPoint (20 points)
Monday 11/23	Cytology	Read Unit 7 Additional Reference: McCurnin Ch. 11: Cytology	<u>Assignments</u> - Unit 7 Review Questions (30 points) - Ear Disease in Dogs and Cats Assignment (10 points)
Tuesday 11/24	Lab • Perform cytologic evaluation: collect, prepare, and evaluate ear cytology		<u>Assignments</u> - Lab Manual Select Questions (59 points)
Monday 11/30	Lab • Perform cytologic evaluation: collect, prepare, and evaluate ear cytology • Perform vaginal cytology evaluation and collect representative samples (group). • Lab Practical Review		<u>Assignments</u> - McCurnin Workbook Ch. 11 (35 points) <u>Examinations</u> - Exam #7 – Cytology (38 points)
Tuesday 12/01	Lab • Perform cytologic evaluation: collect, prepare, and evaluate ear cytology • Lab Practical Review		
Monday 12/07	Lab • Lab Practical (72 points) • Final Exam Review		<u>Assignments</u> - Research Project: Presentation and Visual Aid (100 points)

12/08	Project Presentations		<u>Examinations</u> - Final Exam (150 points; due Saturday, 12/12)
-------	-----------------------	--	--

EVALUATION METHODS

Grade Weight:

- ✓ Assignments – 35%
- ✓ Examinations – 65%

Assignments: All assignments and projects are due by the start of the next class time. There are no discussion board assignments currently scheduled in VET-255S. The instructor reserves the right to add or amend assignments to the above course outline.

Examinations: Examinations will be given throughout the class. Exams are listed above in the course outline. The instructor reserves the right to administer unannounced “pop quizzes.” Final exams are comprehensive, and the majority of the final exam will be multiple choice. All exams are timed to mimic the timed nature of the VTNE. Most examinations will be completed in Blackboard. This is done through Respondus with a lockdown browser and will be monitored through a webcam. **All Veterinary Technology students are required to achieve an average of 75% or higher score in the “Examinations” category in each VET course in order to receive a C or higher in the class.**

Late Submission Policy: In rare cases, a required absence with documentation can be excused by the Program Director. If an absence is excused, work can be completed, and exams can be taken, if this is accomplished the first day the student returns to class. All student work made up with an excused absence is subject to a 20% deduction in score. The instructor may require the student to make an appointment to accomplish the missed assignments. Failure to keep this appointment results in an immediate failing grade on all missed assignments.

POLICY STATEMENTS

Students in the Veterinary Technology program must obtain a “C” or higher in all veterinary technology courses.

Students must maintain a cumulative GPA of 2.0 or higher through the entirety of the program.

Students must achieve an exam average of 75% or higher in each VET course to remain in the program.

AVMA CVTEA Essential Skills: The majority of courses in the Veterinary Technology Program have either knowledge-based and/or hands-on skills in which each student must be deemed competent. All knowledge-based skills are covered under our Assessments policy (occasionally found in the Projects category), stated above. Hands-on skills scheduled in this class are listed below. If a skill is scheduled during the course, **attendance is mandatory**. Missing even just one hands-on AVMA CVTEA Essential Skill can result in an overall failing course grade and/or taking a class that has this course as a prerequisite. A comprehensive list is available at:

<https://www.avma.org/ProfessionalDevelopment/Education/Accreditation/Programs/Pages/cvtea-pp-appendix-i.aspx>

- ✓ Maintain appropriate disposal protocols for hazardous materials*
- ✓ *collect and crossmatch blood for transfusion**[GROUP]
- ✓ *Implement quality control measures**[GROUP]
- ✓ *Perform urinalysis:*
 - *determine physical properties (e.g., color, clarity, specific gravity)**
 - *test chemical properties**
 - *examine and identify sediment**
- ✓ *Perform CBC to include:*
 - *hemoglobin**
 - *packed cell volume**
 - *total protein**
 - *white cell count**

- red cell count*
- ✓ Perform microscopic exam of blood film:
 - prepare film and stain using a variety of techniques*
 - perform leukocyte differential – normal vs abnormal*
 - evaluate erythrocyte morphology – normal vs abnormal*
 - estimate platelet numbers*
 - calculate absolute values*
 - correct white blood cell counts for nucleated cells*
- ✓ Coagulation tests – perform one of the following*:[GROUP]
 - buccal mucosal bleeding time
 - activated clotting time (ACT)
 - prothrombin time (PT)
 - partial thromboplastin time (PTT)
 - fibrinogen assay
- ✓ Perform blood chemistry tests (BUN, glucose, common enzymes)*
- ✓ Perform microbiologic procedures/evaluations:
 - collect representative samples*
 - culture bacteria and perform sensitivity tests*
 - identify common animal pathogens using commercially available media and reagents*:[GROUP]
 - collect milk samples and conduct mastitis testing (e.g., CMT, bacterial culture)*:[GROUP]
 - perform common biochemical tests*:[GROUP]
 - perform staining procedures*
 - culture and identify common dermatophytes*
- ✓ Perform cytologic evaluation
 - collect, prepare, and evaluate ear cytology*
 - collect, prepare, and evaluate canine vaginal smears*:[GROUP]

Dress Code: Scheduled labs (includes any classroom time working with any animals or biological specimens), field trips where the student will be working with animals, and during clinic rotations and internships, VET students are required to meet a strict dress code. If the dress code below is not met, the student may be asked to leave until they are able to return in the proper attire. This could result in missing essential skills. See the above policy regarding missed essential skills.

- ✓ Closed-toed and closed-heeled shoes (sneakers or orthopedic clogs recommended or weatherproof boots recommended for large animal sites)
- ✓ Scrubs
 - Clean and neatly pressed, not faded, discolored or ripped, nor “see through”
 - Scrub pants must be of a length to cover the ankle but must not touch the floor to prevent contamination and promote infection control.
 - A long-sleeved scrub jacket must be worn when working with animals or lab specimens.
- ✓ Long hair will need to be pulled back and secured
- ✓ Fingernails
 - Should be kept as short as possible for personal safety, hygiene, and dexterity
 - No acrylic nails permitted
 - If painted, freshly painted with no chips required. Clear or neutral colors recommended.
 - Exception: when assisting in surgery, no nail lacquer is permitted
- ✓ Minimal jewelry. Loose jewelry, such as hooped or dangling earrings, necklaces, and bracelets are prohibited. NOTE: Prior to participating in a surgical procedure, you may be asked to remove all jewelry.
- ✓ Avoid wearing strong perfume/cologne
- ✓ Avoid chewing gum
- ✓ Watch, with a second hand (may need to be removed depending on the procedure), a functional pen and a stethoscope should be readily available
- ✓ Clinic rotations and internships may have additional dress code requirements.

AI Restrictive Policy: Students cannot use AI tools such as ChatGPT on assignments in this course. All assignments should be prepared entirely by the student. Developing strong competencies in this area will prepare you for a competitive workplace. Therefore, AI-generated submissions are prohibited and will be treated as academic misconduct.

Cell Phones: Cell phone use is not permitted in class. A cell phone is not permitted to be carried on oneself during field trips, clinic rotations, or internships.

Communication: Announcements and emails are available through the Blackboard system. Periodically check your ESCC email for class announcements. If there is an urgent message, announcements will be sent to all students via e-mail. Instructors usually check e-mail daily, Monday through Friday. This is the easiest way to contact them with questions or problems. The instructor will get back to you within 24-48 hours. If they have not responded within 48 hours, please email them again.

GRADING:

The following grading scale will be utilized in all VET courses.

Grade	Percentage	GPA Points
A	93-100	4.0
B	85-92	3.0
C	78-84	2.0
D	70-77	1.0
F	69 or less	0.00

DELIVERY METHOD:

This course uses the lecture/lab delivery method.

Class Format	Class Time per Week	Study Time per Week	Total Time per Week	Length of Class	Total Time to Complete Course
Lecture/Lab	5	5.5	10.5 hours x	16 weeks =	168 hours

EDISON STATE COMMUNITY COLLEGE ACADEMIC HONESTY:

Cheating and plagiarism will not be tolerated in this course. Students who cheat or allow others to copy from their papers will receive a zero on the assignment in question. The ECC Academic Honesty Policy will be adhered to in this course. See the Student Handbook at <https://www.edisonohio.edu/Student-Resources/>

ACCOMMODATIONS /ACCESSIBILITY AND DISABILITY SUPPORT SERVICES POLICY

Edison State Community College will make reasonable accommodations for students with documented disabilities. If you believe you may need an accommodation based on the impact of a disability, contact the instructor privately with your self-identification letter. If you do not have a self-identification letter, contact Accessibility and Disability Support Services by emailing disabilities@edisonohio.edu or by calling 937.778.7850. Accessibility and Disability Support Services is located on the Piqua Campus in Room 160.

ADVISING SERVICES

Edison State's career pathway advisors are your partners in success. A career pathway advisor is the first advisor that you will meet with once you have made the decision to further your education. Together, you and your career pathway advisor will:

- Identify the right academic major to set you on your desired career path.
- Identify the courses you'll need to accomplish your academic goals.
- Help you develop a student plan tailored to your lifestyle and work schedule.
- Prepare you to navigate your first semester at Edison State.

You can find your career pathway advisor and faculty advisor information, including their email address, by logging into MyESCC and clicking on Student Planning. Go to Plan and Schedule and click on the Advising tab. You may also call 937-778-7850 to connect via phone call.

BOOKSTORE SERVICES

The Edison State Bookstore is here for all your educational supplies including textbooks, access codes, technology, and more! Online at <https://edisonohio.ecampus.com>

CAREER AND JOB SERVICES

Our Career and Job Services advisors are dedicated to helping students and alumni advance their professional development as they make career decisions, develop job search strategies, pursue experiential opportunities and secure employment. Career and Job Services also provides career assessments, career information, resume and cover letter help, job postings and resources, tips for interviewing and more. Visit <https://www.edisonohio.edu/Career-and-Job-Services/> for more information.

COMPUTERS

If you are working on campus, computers with internet access are available in the internet café. The Library and Tutoring Center has computers and printers available for your use.

STUDENT WELLNESS CENTER

College is stressful! Feeling burnt out, anxious, frustrated? When challenges arise, it's helpful to have someone to talk to. We have partnerships established with many local mental health providers and can connect you with area resources.

The Student Wellness Center helps students navigate obstacles which might cause issues or create a sense of distress during your school year. Edison State has built a network of health professionals to support students. With these partnerships, the Student Wellness Center can assist students who need support in areas such as:

- Recovery and Counseling referral
- Housing
- Food
- Physical well-being

Information and education are also provided on the topics of:

- Alcohol and drug abuse and prevention
- Sexual assault prevention and awareness
- Building healthy relationships
- Inclusion and belonging
- Survivor support
- Self-care
- Anti-Hazing

If you are struggling and need to speak with someone in person, please reach out to Velina Bogart, Coordinator of Student Wellness, at vbogart@edisonohio.edu, 937-778-7854, Room 193 (next door to the Security Office).

Walk in hours on campus are Tuesday, Wednesday, Thursday, 8am-5pm. Hours may vary according to the college schedule or events. You may schedule an appointment by clicking [here](#).

If this is a medical emergency, please call 911. If this is a mental health emergency, please call 988. Please note that the Charger Station Food Pantry has been relocated to Room 060 (next to the cafeteria).

LIBRARY SERVICES

The Edison State library is not only a comfortable place to study, we have an expansive collection of online resources available to help you with your research. Check out the library webpage here: <https://www.edisonohio.edu/Library/>. Libguides and short instructional videos are available to help you use these resources and can be found at: <https://libguides.edisonohio.edu/>. Please contact the library staff with any library questions you may have at library@edisonohio.edu, 937-778-7950 or stop in!

STUDENT RESOURCE CENTER AND CHARGER STATION FOOD PANTRIES

Edison State Community College is proud to assist students needing help to obtain basic necessities. The Student Resource Center and Food Pantry is stocked with all kinds of grab-and-go snacks, meal supplies, toiletries, household needs, and community resources. Stop by and check out our Charger Stations in Room 060 at Piqua, in the student

lounge at Troy, in the Brooke-Gould Learning Resource Center at Eaton, and in Room 121 (for personal care items) and pantry items in the student lounge at Greenville.

TECHNICAL SUPPORT SERVICES

For Blackboard Assignment issues, the instructor should be the first point of contact.

For Log-in or other technology issues: There are several steps you can follow if you have issues logging in to Blackboard or Office.

During business hours:

- Password reset: Log onto office.com with your Edison email and follow the “forgot password” prompts.
- Reach out for help during regular business hours (9-5 Monday-Thursday, 9-4 Friday)
 - email to support@edisonohio.edu
 - call 937-778-8600 and ask for IT Help Desk

After hours:

- Password reset: Log onto office.com with your Edison email and follow the “forgot password” prompts
- Go to www.edisonohio.edu into the Resources tab and click "IT Help Desk" then click "Chat".
- Call 937-778-7957 and talk to the off-campus Blackboard company to get help

TITLE IX STATEMENT - Anti-Discrimination, Harassment and Bullying

It is the policy of the College to maintain a learning environment free from bullying, discrimination, sexual harassment or sexual violence. Title IX federal law protects students, employees and third parties with a relationship to the college.

All Edison State Community College employees are required to report all knowledge of incidents that violate the Title IX policy to the Title IX Coordinator or Deputy Title IX Coordinator immediately. Student and employee confidential consultation is available through the Coordinator of Health and Wellness Services.

Title IX Policy and procedure language as well as contact information for the Coordinator of Health and Wellness, Title IX Coordinator and Deputy Title IX Coordinator can be found at www.edisonohio.edu/TitleIX/.

TESTING YOUR FAITH ACT POLICY

Edison State Community College is committed to providing an environment respectful of students' beliefs. Students are permitted to be absent for up to 3 days each semester based on their faith, religion, or spiritual belief system with no academic penalty. Students must complete the Testing Your Faith Act Accommodations

Form, <https://www.edisonohio.edu/services-support/registration-records>, located in “Forms” and provide a copy to their individual faculty within 14 days from the start of the course. The entire policy can be found in the student handbook at <https://www.edisonohio.edu/services-support/student-resources>.

TUTORING SERVICES

All Edison State students are eligible to receive free tutoring and learning support services through our Tutoring Center. Available services include Edison State tutors, both online and in-person, covering a wide variety of courses including various levels of math and paper reviews, online tutoring through OhioLINK eTutoring, distraction-reduced study rooms, and the use of Tutoring Center resources including subject-specific and general study guides. For more information on tutoring services, visit the Tutoring Center in the Library, email us at tutoringcenter@edisonohio.edu, call 937-778-7959, or visit our webpage at <https://www.edisonohio.edu/tutoring-center/>

ADDITIONAL SUPPORT SERVICES

For additional help, please click the ASSIST tab on Blackboard or the Edison State Student Resources folder within your course.