

**Bergen Community College
Veterinary Technology Program
Course Syllabus**

Course Title: **Research Animal Technology**

Course Number: **VET-104**

Credits: **2**

Lecture Hours: **2**

Laboratory Hours: **2**

Prerequisites: **VET-102, VET-103, VET-115 and Admission into the Veterinary
Technology Program**

Course Description:

Research Animal Technology is an introduction to the handling, husbandry, and medical care of common laboratory animals. Lectures will cover the principles and ethics of animal research, as well as the laws that regulate the use of animals to ensure that they are treated humanely. Laboratory sessions will provide hands-on training in restraint, drug administration, sample collection, anesthesia, and research techniques.

Student Learning Outcomes:

Upon completion of this course, the student will be able to:

- Describe the caging and nutritional requirements of commonly used laboratory animals, including the different methods of feeding and watering, citing the advantages and disadvantages of each.
- Explain the basic anatomical and physiological idiosyncrasies of the individual species of laboratory animals.
- Identify the major diseases affecting different species of laboratory animals and discuss their etiologies, symptoms, diagnosis, and control.
- Demonstrate the principles of cleaning, sanitation, and sterilization and how they relate to conventional and barrier-maintained research animal facilities.
- Differentiate between gnotobiotic, SPF and barrier-maintained animals, and describe methods for their derivation and maintenance.
- Identify the phases of the estrous cycle, mating, pseudopregnancy, gestation, parturition, lactation, and weaning in rodents and rabbits.
- Articulate the principles of restraint used for non-human primates.
- Discuss state and federal laws governing the use of animals in research and the professional obligations of the veterinary technician to the animals under his/her care.

- Analyze the arguments for and against the use of animals in research and testing.

Means of Assessment:

The student learning outcomes will be assessed using a variety of assessment instruments including written exams, demonstration of laboratory skills, quizzes, laboratory reports, written reports, oral presentations, projects, etc.

Course Content:

- Provide complete care for rodents and rabbits kept in conventional laboratory facilities, including the various methods of feeding and watering.
- Familiarize with the environmental and cage requirements for the different species and the designs and materials available for that purpose.
- Introduce the concepts of sanitation and sterilization.
- Provide an understanding of the animal body's defense mechanisms with an emphasis on immune responses.
- Familiarize with the pathophysiology, diagnosis, and control of common diseases and parasites that frequently afflict laboratory animals.
- Demonstrate safe handling and restraint of common laboratory animals.
- Appreciate the potential hazards involved in working with animals and the appropriate steps necessary to avoid injury and contracting zoonotic diseases.
- Acquire skill in the proper handling of syringes and needles, the calculation of drug dosages, and the administration of medications by both oral and parenteral routes to rodents and rabbits.
- Provide knowledge in order to safely induce anesthesia, monitor and recover rats using dexdomitor and ketamine.
- Introduce various blood collection techniques and proper handling necessary to provide samples of whole blood or serum.
- Reinforce knowledge of reproductive anatomy and physiology, with an emphasis on the estrous cycle and mating procedures, and pregnancy in common laboratory species.
- Provide the knowledge to humanely euthanize animals, perform necropsy prosections, and collect specimens for histopathologic examination.
- Familiarize with the various methods used for individual animal identification.
- Introduce administrative and animal records that are kept in most research facilities.
- Provide knowledge of the legal, ethical, and moral constraints under which research animals are handled.

Course Materials:

Sirois, Margi. *Laboratory Animal and Exotic Pet Medicine: Principles and Procedures*. St. Louis, MO: Mosby; National Research Council. *Guide for the Care and Use of Laboratory Animals*. Washington, DC: National Academy Press; 2010 (preferred) or 1996.

*Please note that this document can be accessed online with links provided within the Moodle shell.

There is no textbook for the lab portion of the course. Handouts may be issued periodically or students will be required to print out material from the Moodle shell to bring to lab.

Lecture Testing and Grading Criteria:

50% Lecture

- 2 Exams, administered through Moodle

Midterm Exam (10%)

Final Exam (10%)

- Research paper (10%)
- 2 Discussion Posts (5% each)
- Quizzes, administered through Moodle (10% total)

*Note: Student must achieve a final lecture grade average of 76% to successfully complete this course, independent of laboratory grade.

50% Lab

- Husbandry (10%)
- Lab participation (5%)
Safety data sheet assignment (5%)
- Syringe handling and dosing practicum (10%)
- Drug calculations (5%)
- Rat practicum with anesthesia (10%)
- Rabbit practicum (5%)

*Note: Student must achieve a final laboratory grade average of 78% to successfully complete this course, independent of lecture grade.

Attendance:

Lecture: Course material will be available online, through Moodle. Students are required to log into Moodle at least once per week.

Laboratory: Mandatory; Missing more than (2) lab sessions will result in an automatic failure. Labs cannot be made up.

Tardiness:

Lateness (> 15 minutes) will count as 1/2 absence and will result in lowering the laboratory portion of the final course grade

Class Cancellation:

Prior to EVERY lab, students are urged to check their email accounts as well as BCC's home page.

Office Hours: By appointment only.

Lecture Contact Information: E-mail is preferred. Important class information will be posted in the News/Announcements section of the class Moodle.

Lab Contact Information: Should you have any lab-related questions, please contact your lab instructor via email, which they will provide in class. If there is an animal related question during husbandry on the weekends, please call the instructor on call for that weekend. A list will be made available to you upon arrival of the animals.

LAB

Your lab grade will be based on your performance on homework assignments, animal handling techniques, husbandry skills, and practical examinations. Specific instructions will be discussed during your laboratory session.

Animal Husbandry: A portion of your lab grade will be based on your ability to effectively perform animal husbandry duties, where you will come to the vivarium and take care of the rodents or rabbits. These are daily duties and they are MANDATORY. Each student will choose approximately 3-4 shifts, which includes weekends and vivarium breakdown. If for any reason you are unable to make your shift, you must email Professor Lisa Picht IMMEDIATELY.

Responsibilities include the daily maintenance of their living environment, providing feed and clean water, and performing physical examinations, as well as ensuring that environmental conditions in the vivarium are suitable for the proper health and wellbeing of the animals. A "Husbandry Chat" forum has been provided in the course Moodle to facilitate shift swaps, meeting times, etc. amongst all of the class sections. If you do not show up for your assigned shift, you will fail the class.

Essential Tasks:

All students are required to perform the following tasks, which will be signed off on once each task is completed. All techniques must be performed properly and proficiently in order to pass the lab portion of this course. Some tasks will be assigned as a group.

- Recognize and restrain/handle rodents and rabbits.
- Determine the sex of rodents and rabbits; understand reproduction in same species.
- Understand the nutritional needs for rodents, rabbits, and various species.
- Provide basic husbandry tasks for rodents and rabbits, including feed and water.
- Understand and utilize appropriate methods of identification for rodents and rabbits.
- Perform subcutaneous injection, rodents and rabbits.
- Perform intramuscular injection, rodents and rabbits.
- Perform intraperitoneal injection, rodents.
- Perform intravenous injection, rabbits.

- Collect blood samples (IV) rodents and rabbits.
- Perform oral dosing (gavage), rodents.
- Clean and medicate ears, rabbits.
- Trim nails, rabbits.
- Anesthetize rats, monitor vital signs (HR, RR), and perform recovery procedures.
- Explain common disease signs, rodents and rabbits.
- Understand vectors, fomites.
- Understand disinfectants, antiseptics, and sterilization.

Laboratory Conduct:

Students are required to wear scrubs or lab coats to lab. NO Exceptions. Students are responsible to clean up their work areas after their work is completed. All supplies and materials should be put in their place, and your workstations should be cleaned and disinfected.

If a student is bit, scratched, or sustains a needle stick injury, this must be reported to the instructor immediately, and first aid will be provided, followed by a visit to the school nurse.

You will be required to fill out an injury report. Cell phone usage is not permitted in lab. Photos are not permitted to be taken under any circumstances. Tardiness is not acceptable. If you are late, it may be considered as half of an absence.

Student Accommodations:

Students who require accommodations by the Americans with Disabilities Act (ADA) can request support services from the Office of Specialized Services of Bergen Community College, Room L-115, Pitkin Education Center, 201-612-5269 or e-mail www.oss@bergen.edu or link directly to [Disability Services](#). Suggested deadline for accommodations is posted at this site.

Rules and Regulations Governing Conduct:

Each student is expected to obtain a copy of the Bergen Community Student Handbook and is responsible for knowing the information included in the Handbook. Copies are available in the Office of Student Life, the Welcome Center, evening office, and on the Bergen Web site. You may link directly to [Student Life and Judicial Affairs](#) to locate the Student Handbook. I have also provided a Bergen Link on the left hand side of the Moodle course: click on Student Life and Judicial Affairs; then click on Student Handbook to access.

In addition, each student accepted in the Veterinary Technology Program is expected to obtain a copy of the Veterinary Technology Student Handbook and is responsible for knowing the information included in this Handbook. Copies are available at orientation or through the program director.

All student and faculty are governed by college rules and regulations. Please refer to the Student Handbook for information regarding codes of conduct.

Academic Integrity:

Bergen Community College is committed to academic integrity. All of the work you will complete in this course will be an individual effort. Exams are administered online and are “closed book” which means you should not be using any resources during the exam. You may use a basic function calculator on exams. All other assignments and quizzes are designed for you to use resources provided in the course. Please refer to the current Student Handbooks for details related to academic integrity/discipline.

Other Student Support Services:

Distance Learning Office	Room C-334	201-612-5581 psimms@bergen.edu
Smarthinking Tutorial Service	On-line	www.bergen.edu/library/learning/tutor/smart/index.asp
Student Support Center	1 st floor (near Public Safety)	201-447-7109 option #3
Moodle Help Desk		1-877-612-5381
Tutoring Center	Room L-125	201-447-7908
Writing Center	Room L-125	201-447-7908
Office of Specialized Services	Room L-115	201-612-5269 ossinfo@bergen.edu
Sidney Silverman Library	Room L-226	201-447-7436 (Reference Desk) 201-447-7970 (Service Desk)
Student Support Services— Academic Advising	A-118	201-612-5480 aacenter@bergen.edu
International Student Center	C-102	201-689-7601
Center for Health, Wellness & Personal Counseling	HS-100	201-447-9257
Veterans Center	L-113	201-447-7997
Office of Financial Aid	1 st floor	201-447-7148 financialaid@bergen.edu
Office of Public Safety	L-154	201-447-9200 publicsafety@bergen.edu

Lecture and Laboratory Schedule

	Lecture	Lab
Week One	Introduction to Research	SOP's, Vivarium introduction
Week Two	Organizations in Research	SDS assignment, Syringe Handling and injection technique
Week Three	Caging and sanitation in research facilities	Clean and set up vivarium, injection techniques
Week Four	Animal identification and restraint devices	Introduction to Rat handling and injections, syringe practical
Week Five	Rodents in research	Rat handling and injections
Week Six	Rodents in research	Rat handling and injections/math calculations
Week Seven	Anesthesia in research animals	Rat anesthesia/rat practical
Week Eight	Midterm exam	Vivarium breakdown
Week Nine	Rabbits in research	Necropsy and euthanasia videos
Week Ten	Rabbits in research	Introduction to rabbit restraint and handling, SOP for rabbit and rabbit cage set up
Week Eleven		Rabbit handling and restraint
Week Twelve	Non-human primates	Rabbit handling, restraint, injections and venipuncture
Week Thirteen	Non-human primates	Rabbit handling, restraint, injections and venipuncture
Week Fourteen	Review	Rabbit handling, restraint, injections and venipuncture
Week Fifteen	Final Exam	Vivarium breakdown

