

**STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK**

COURSE OUTLINE

**Research Animal Techniques
VSCT 212**

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**SCHOOL OF SCIENCE, HEALTH, AND CRIMINAL JUSTICE
Veterinary Science Technology
May 2015
Research Animal Techniques VSCT 212**

- A. **TITLE:** Research Animal Techniques
- B. **COURSE NUMBER:** VSCT 212
- C. **CREDIT HOURS:** 1
- D. **WRITING INTENSIVE COURSE:** No
- E. **COURSE LENGTH:** 15 weeks
- F. **SEMESTER(S) OFFERED:** Spring
- G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
2 hours per week of laboratory
- H. **CATALOG DESCRIPTION:**

Research Animal Techniques is a foundation course in developing skills necessary for employment in an animal research facility. Husbandry and clinical techniques specific to laboratory animals will be discussed. Emphasis will be on providing quality animal care, monitoring the health and well-being of laboratory animals, and understanding ethical issues surrounding animal research. Enrollment is limited to Veterinary Science Technology students.

- I. **PRE-REQUISITES:** VSCT 101
- J. **STUDENT LEARNING OUTCOMES:**

Course Objective	Institutional SLO
1. Perform species-specific restraint procedures.	3. Professional Competence
2. Demonstrate knowledge of species-specific husbandry, management practices and signs of health and disease in laboratory animals	2. Critical Thinking 3. Professional Competence
3. Discuss ethical and scientific issues surrounding the use of animals in research.	1. Communication 2. Critical Thinking
4. Understand federal, state and local rules and regulations surrounding the use of animals in research	2. Critical Thinking
5. Perform specific nursing care procedures and demonstrate proficiency in specific clinical techniques and procedures	3. Professional Competence

- K. **TEXTS:** Lab Manual available in the Textbook Center
Classroom Handouts
- L. **REFERENCES:**

- Sirois, Margi, Laboratory Animal Medicine: Principles and Procedures , 2005, Elsevier/Mosby, St. Louis, MO
- Tully, Jr., Thomas & Mitchell, Mark A., A Veterinary Technicians Guide to Exotic Animal Care, 2012, AAHA Press, Lakewood, CA
- Lawson, Timothy P., ALAT Training Manual , 2005, American Association for Laboratory Animal Science, Memphis, TN
- National Research Council, Guide for the Care and Use of Laboratory Animals, 8th edition, 2011, National Academy Press, Washington, DC
- Internet sites too numerous to mention

M. EQUIPMENT:

- Appropriate laboratory materials
- Live Animals housed in kennel facility: Rabbits, Hamsters, Rats, Mice

N. GRADING METHOD: A - F

O. MEASUREMENT CRITERIA/METHODS: Evaluation is based on successful compliance with learning outcomes as reflected by performance on:

- Quizzes
- Laboratory/homework assignments
- Midterm
- Competency Examination
- Group Project
- Reflective Papers
- Hourly

P. LABORATORY TOPIC OUTLINE:

1. Biomedical research, AALAS & Ethical Issues
 - a. History of animal use in research
 - b. Role of Animal Care Panel
 - c. Role of American Association of Laboratory Animal Science
 - d. Job Market
 - e. The 3 R's in research
 - f. Types of animals used in research
 - g. Research team and research design
 - h. Ethical considerations
2. Regulatory Agencies and Regulations
 - a. History
 - b. Guide for Care and Use of Laboratory Animals
 - c. Association for Assessment and Accreditation of Laboratory Animal Care
 - d. Animal Welfare Act
 - e. Animal and Plant Health Inspection Service
 - f. Institutional Animal Care and Use Committee- make up and responsibilities
 - g. Perform an IACUC inspection of the kennel facility, and surgery suite
3. Facilities and Housing Units
 - a. Lab Animal Facilities
 - i. Conventional

- ii. Barrier
 - b. Animal room construction
 - c. Procedure rooms
 - d. Quarantine & Conditioning rooms
 - e. Isolation Rooms
 - f. Storage and Cage washing rooms
 - g. Facility Security
 - h. Laboratory Environment
 - i. Macroenvironment
 - ii. Microenvironment
 - i. Temperature & Humidity
 - j. Ventilation & Lighting
 - k. Noise
 - l. Environmental enrichment
 - m. Caging
 - i. Materials
 - ii. Types
 - iii. Sizes
 - n. Feeding and watering
 - o. Perform the calculations required to determine housing appropriateness for species in kennels
- 4. Disease Transmission and Control
 - a. Procurement of Healthy Animals
 - b. Quarantine and conditioning
 - c. Monitoring for disease
 - d. Microbiological status of procured Animals
 - i. Conventional
 - ii. Axenic
 - iii. Gnotobiotic
 - iv. Specific pathogen free
 - v. Cesarean derived
 - vi. Barrier sustained
 - vii. Transgenic
 - viii. Knockout
 - e. Personal Safety & Health
 - f. Personal Protective Equipment
 - g. OSHA requirements
 - h. Hazards
- 5. Rats
 - a. General Facts
 - b. *Rattus rattus*
 - c. *Rattus norvegicus*
 - d. Use as animal models in research
 - e. Anatomy & Physiology
 - f. Sexing, Breeding & Reproduction
 - g. Genetic categories
 - h. Husbandry
 - i. Diseases & Health conditions
 - j. Behavior
 - k. Restraint & Handling

- l. Therapeutics
 - m. Venipuncture
 - n. Euthanasia
 - o. Gavage on the Koken model,
 - p. Venipuncture of the lateral tail vein on the model
6. Mice
- a. General Facts
 - b. *Mus musculus*
 - c. Use as animal models in research
 - d. Anatomy & Physiology
 - e. Sexing, Breeding & Reproduction
 - f. Genetic categories
 - g. Husbandry
 - h. Behavior
 - i. Diseases & Health conditions
 - j. Restraint & Handling
 - k. Therapeutic
 - l. Venipuncture
 - m. Euthanasia
 - n. IP injection according to IACUC protocol.
7. Hamsters & Gerbils
- a. General Facts
 - b. *Mesocricetus auratus*
 - c. *Cricetus griseus*
 - d. *Meriones unguiculatus*
 - e. Use as animal models in research
 - f. Anatomy & Physiology
 - g. Sexing
 - h. Breeding & Reproduction
 - i. Husbandry
 - j. Behavior
 - k. Diseases & Health conditions
 - l. Restraint & Handling
 - m. Therapeutic
 - n. Venipuncture
 - o. Euthanasia
8. Rabbits
- a. General Facts
 - b. *Oryctolagus cuniculus*
 - c. *Sylvilagus*
 - d. Use as animal models in research
 - e. Anatomy & Physiology
 - f. Sexing, Breeding & Reproduction
 - g. Genetic categories
 - h. Husbandry
 - i. Diseases & Health conditions
 - j. Behavior
 - k. Restraint & Handling
 - l. Therapeutics
 - m. Venipuncture

- n. Euthanasia
- 9. Ferrets and Guinea Pigs
 - a. General Facts
 - b. *Cavia porcellus*
 - c. *Mustela putorius furo*
 - d. *Mustela putorius*
 - e. *Mustela nigripes*
 - f. Use as animal models in research
 - g. Anatomy & Physiology
 - h. Sexing, Breeding & Reproduction
 - i. Genetic categories
 - j. Husbandry
 - k. Diseases & Health conditions
 - l. Behavior
 - m. Restraint & Handling
 - n. Therapeutics
 - o. Venipuncture
 - p. Euthanasia
- 10. Enrichment
 - a. Species specific
 - b. Importance
 - c. Mini-project
- 11. Wildlife
 - a. North American Porcupine - *Erethizon dorsatum*
 - b. General Facts
 - c. Behavior
 - d. Predators
 - e. Breeding & Reproduction
 - f. Diet
 - g. Road Ecology
 - h. Direct methods of working with wildlife
 - i. Indirect methods of working with wildlife
 - j. Hare snares
 - k. Camera traps
 - l. Mark-Capture-Recapture
- 12. Primates
 - a. General Facts
 - b. Prosimians
 - c. Old world monkeys
 - d. New world monkeys
 - e. Apes
 - f. Use as animal models in research
 - g. Husbandry
 - h. Diseases & Health conditions
 - i. Zoonotic diseases & transmission
 - j. Behavior
 - k. Restraint & Handling
 - l. Therapeutics
 - m. Venipuncture

- n. Euthanasia
13. Non-traditional animals used in research
- a. General Facts
 - b. *Canines*
 - c. *Felines*
 - d. *Equine*
 - e. *Bovine*
 - f. Swine - *Sus scrofa*
 - g. Mini Pigs
 - h. Sheep - *Ovis aires*
 - i. Goats - *Capra hircus*
 - j. Chinchilla - *Chincilla laniger*
 - k. Woodchuck - *Marmota monax*
 - l. Armadillo - *Dasypus novemcinctus*
 - m. Birds - *Galliformes, Columbiformes, Passeriformes, Psittaciformes*
 - n. Reptiles
 - o. Amphibians
 - p. Fish - Zebra fish
 - q. Insects - Fruit flies
 - r. Use as animal models in research
 - s. Anatomy & Physiology
 - t. Sexing, Breeding & Reproduction
 - u. Genetic categories
 - v. Husbandry
 - w. Diseases & Health conditions
 - x. Behavior
 - y. Restraint & Handling
 - z. Therapeutics
 - aa. Venipuncture
 - bb. Euthanasia
14. Practical
- a. General Facts
 - b. Knowledge of the supplies needed to perform selected techniques
 - c. Successful completion of the steps listed for each
 - d. Questions regarding laboratory animal care
 - e. Accurately sex all species
 - f. Know the genus and species of each animal
 - g. Students working in pairs are required to handle all lab animal species housed in our kennel facility