

# Biomedical Sciences (BIOMED)

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**BIOMED 1010: Biomedical Career Explorations**

(same as VET\_TCH 1010). An introduction to the variety of career possibilities within the growing field of biomedical sciences. Graded on A-F basis only.

**Credit Hour:** 1

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**BIOMED 2110: Biomedical Terminology**

Life science etymology (Greek for "true meaning", means the study of word derivation) taught by classroom presentation and discussion. The course organization is based primarily on common themes of Greek and Latin terms along with historical reasons for current usage. The application of these terms is for all biomedical sciences and life sciences. Graded on A-F basis only.

**Credit Hours:** 3

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**BIOMED 2111: Veterinary Medical Terminology**

Veterinary Medical Terminology is an extension of Biomedical Sciences 2110, Biomedical Terminology. The course organization is lecture, based primarily on domestic species and common themes of Greek and Latin terms. In addition, major veterinary medical eponyms, acronyms, and medical and surgical instruments are included. Graded on A-F basis only.

**Credit Hour:** 1

**Prerequisites:** BIOMED 2110 or instructor's consent

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**BIOMED 2120: Essentials of Animal Handling and Physical Restraint**

Fundamentals of handling and physical restraint of domestic large and small animals, laboratory animals, and common non-domestic pets. Graded on A-F basis only.

**Credit Hours:** 2

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**BIOMED 2130: Introduction to Veterinary Anatomy and Physiology**

This introductory anatomy and physiology course describes the body and its functions from a systemic approach. Suitable for a student with no previous coursework in anatomy and physiology. Graded on A-F only.

**Credit Hours:** 3

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**BIOMED 2140: Companion Animals**

(same as AN\_SCI 2140). Companion animals form an important part of our society. They serve us, provide companionship and many become members of our families. This class focuses primarily on dogs,

cats, and horses. Topics covered include: the pet industry, breeds, wellness, management, care, training, zoonotic diseases, evolution and domestication, toxicology, nutrition, reproduction, genetics, human animal interactions, companion animal enterprise, and biomedical research. Students may enroll in one of two sections: service learning section or traditional course section.

**Credit Hours:** 3

**Recommended:** sophomore standing

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**BIOMED 2230: Farm Animal Sanitation and Disease Prevention**

(same as VET\_TCH 2230). Preventative measures for diseases and parasites of farm animals.

**Credit Hours:** 3

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**BIOMED 2940: Internship in Biomedical Sciences**

Supervised work experience to develop technical skills and enhance student knowledge in an area of biomedical science. Not intended for more than 50% independent research. Graded on S/U basis only.

**Credit Hour:** 1-6

**Prerequisites:** sophomore standing and instructor's consent

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**BIOMED 3000: Specialty Careers for Veterinary Technicians**

(same as VET\_TCH 3000). Specialty careers for veterinary technicians are jobs which required knowledge and skills beyond those needed in primary care clinical veterinary practice. This course will explore veterinary technician specialties, the education required, and the advantages of advanced academic training. Course graded on A-F basis only.

**Credit Hour:** 1

**Prerequisites:** AAS degree in veterinary technology or instructor's consent required

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**BIOMED 3001: Topics in Biomedical Sciences**

Topics in Biomedical Sciences.

**Credit Hour:** 1-99

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**BIOMED 3100: Biomedical Pathophysiology**

Pathophysiology is the study of changes in the body resulting from disease. This course requires knowledge of normal anatomy and physiology. A comparative approach is used involving both domestic animal and human examples. Course graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** AN\_SCI 3254 or BIO\_SC 3700 or equivalent, AAS or equivalent degree from AVMA-accredited program or instructor's consent

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**BIOMED 3219: Elements of Comparative Anatomy**

(same as VET\_TCH 3219). This course is designed to give students an introduction to and appreciation for comparative anatomy of various species encountered in animal science, veterinary technology and veterinary medicine. Detailed and labeled photos of dissected specimens are used to aid instruction. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** five hours of biological science or zoology or equivalent or instructor's consent or an AAS degree in veterinary technology

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**BIOMED 3250: Parasitology**

(same as VET\_TCH 3250). Parasitism is considered as a fundamental type of interspecies interaction. Identifying characteristics, life cycle, and resulting disease caused by the common parasites of domestic animals, common laboratory animals, selected wildlife, and humans are described. Special emphasis is given to parasites that can be transmitted from animals to man. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** 8 hours of biology or instructor's consent

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**BIOMED 3300: Animal Welfare and Ethics**

(same as VET\_TCH 3300). An introductory examination of ethical issues related to animal welfare, including animal use for food, research, and companionship, plus contemporary issues affecting companion animals, farm animals, and horses. Topics related to animal pain and legal status will also be discussed. Graded on A-F basis only.

**Credit Hours:** 3

**Recommended:** junior standing

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**BIOMED 3326: Principles of Veterinary Pharmacology**

(same as VET\_TCH 3326). Review and clinical application of basic veterinary pharmacology. Topics to be covered include terminology, calculations, physiology, and pharmacokinetics and pharmacodynamics. Both small and large animal organ systems are discussed. Medicolegal aspects of veterinary pharmacology are also reviewed. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** an AAS degree in veterinary technology or AN\_SCI 3254 or BIO\_SC 3700, or equivalent, or instructor's consent

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**BIOMED 3400: Domestic Animal Behavior in Veterinary Practice**

(same as VET\_TCH 3400). Students will be introduced to the key characteristics of behavior among common domestic animals such as dogs, pigs, cats, horses, cattle, sheep and goats. Topics include communication, aggression, biological rhythms, reproductive behavior, learning and development, ingestive behavior and genetics. This course will enable students to gain a thorough understanding of assessing

animal behavior, as well as how to utilize the assessment to better the animal's health. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Junior standing

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**BIOMED 4001: Topics in Biomedical Sciences**

Topics in Biomedical Sciences.

**Credit Hour:** 1-99

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**BIOMED 4110: Veterinary Cytology**

(same as VET\_TCH 4110; cross-leveled with V\_PBIO 7110). This course of Veterinary Cytology is designed to hone the skills of the practicing veterinary technician, and assumes some basic knowledge of microscope usage and normal hematology. The review of normal cells will be minimal and emphasis will be placed on findings associated with inflammatory and neoplastic diseases. The graduate level course will include discussion of ancillary tests, special stains and treatment alternatives. The focus will be on canine and feline diseases but some common equine and bovine disease. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** An AAS or equivalent degree in veterinary technology from an American Veterinary Medical Association-accredited program, or instructor's consent

**Recommended:** BIOMED 3200 and BIOMED 2110

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**BIOMED 4120: Principles of Toxicology**

(same as VET\_TCH 4120; cross-leveled with V\_PBIO 7120; V\_BSCI 7120). This course will provide an introduction to the general principles of toxicology, including the history and scope of the field; risk assessment and management; mechanisms of toxicity; the disposition of toxicants, non-target organ-directed toxicity; toxic responses of specific target organs/systems; an overview of a number of specific classes of toxic agents, including pesticides and metals; and various toxicological applications, such as environmental, forensic, and occupational toxicology. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** one year of college chemistry and biology, each or instructor's consent

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**BIOMED 4210: Animal Issues in Disasters**

(cross-leveled with V\_PBIO 7210). This course describes the various aspects of responding to disasters that involve animals. Government involvement, legal requirements, effects on the human-animal bond, preparation for disasters of different kinds, and impacts on animal-related businesses will be discussed.

**Credit Hour:** 1

**Prerequisites:** an AAS in veterinary technology from an American Veterinary Medical Association accredited program, or equivalent training, or instructor's consent

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**BIOMED 4250: Human-Animal Bond in Veterinary Practice**  
(same as VET\_TCH 4250; cross-leveled with BIOMED 7250). Exploration of historical & theoretical bases of human-companion animal interaction (HAI), the nature, issues, & clinical applications of HAI in a veterinary practice. Graded on A-F basis only.

**Credit Hours:** 3

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**BIOMED 4300: Clinical Veterinary Neurology**  
(same as VET\_TCH 4300). Clinical veterinary neurology will review the neurologic examination, common neurologic diseases and techniques to properly care for the neurologic patient. The course organization is based primarily on neuroanatomic localization of disease. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** AAS in Veterinary Technology or BIOMED 3219 and 3100 or instructor's consent; junior or senior standing

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**BIOMED 4320: Fundamentals of Small Animal Emergency and Critical Care**  
(same as VET\_TCH 4320; cross-leveled with V\_M\_S 7320). This course will provide students with the knowledge and skills to assist in small animal medical emergency and critical care facilities.

**Credit Hours:** 3

**Prerequisites:** An AAS in veterinary technology from an American Veterinary Medical Association accredited program, or equivalent training, or instructor's consent

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**BIOMED 4333: Veterinary Cell Biology**  
(same as VET\_TCH 4333; cross-leveled with V\_BSCI 7333). Course material stresses cell biology as related to animal health and medical issues. A comprehensive course overviewing molecular and biochemical issues of cell function especially as related to medicine and the underlying molecular causes of disease. Graded on A-F basis only.

**Credit Hours:** 4

**Prerequisites:** BIO\_SC 1500, or equivalent, 1 course in biochemistry or 4 credit hours in chemistry; or instructor's consent

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**BIOMED 4335: Comparative Physiology of Health and Disease**  
This course is intended to provide students with an overview of physiology of health and disease in mammals. The areas of cell and muscle physiology, neurophysiology, cardiovascular, renal, respiratory gastrointestinal and endocrine physiology will be presented and explained. Emphasis will be placed on core concepts that are central

to understanding the function of the body, relationship to disease pathogenesis, maintenance of homeostasis and normal function, and comparisons among species. The successful student will master these concepts as a basis for explaining physiological principles in general, for solving problems and for lifelong learning. Graded on A-F only.

**Credit Hours:** 3

**Prerequisites:** Instructor's consent required

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**BIOMED 4400: Veterinary Surgical Nursing**  
(same as VET\_TCH 4400). Veterinary Surgical Nursing will enable the student to properly identify, care for, and maintain surgical equipment. The course will also prepare the student to learn surgical anatomy as well as the potential complications of common clinical setting surgeries. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** BIOMED 2111, BIOMED 3219, and BIOMED 3100, or instructor's consent

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**BIOMED 4410: Small Animal Physical Rehabilitation**  
(same as VET\_TCH 4410). This course will review the science of veterinary rehabilitation, assessment of rehabilitation patients, and the techniques used to treat these patients. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** AAS degree in veterinary technology or BIOMED 2110 or equivalent, plus BIOMED 3219 or PTH\_AS 2201 or equivalent, or instructor's permission

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**BIOMED 4420: Canine and Feline Nutrition**  
(same as VET\_TCH 4420). This course begins with a brief review of nutrition basics. The following units include the nutrient requirements for dogs and cats; history, regulation and evaluation of pet foods; feeding management throughout the life cycle, and treatment of nutritionally responsive disorders. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** Instructor's permission; College level undergraduate courses in biology & chemistry - minimum 3 credit hours each

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**BIOMED 4500: Equine Critical Care and Nursing**  
(same as VET\_TCH 4500). This course provides advanced information for veterinary technicians, veterinary assistants, and pre-veterinary students wishing to enhance and focus their understanding of equine critical care and nursing concepts. Course graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** AN\_SCI 2095 and AN\_SCI 3254 or BIO\_SC 3700 or equivalents, AAS or equivalent degree from AVMA-accredited program or instructor's consent

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**BIOMED 4510: Equine Clinical Anatomy: Forelimbs**

(cross-leveled with V\_BSCI 7510). Basic foundation in selected aspects of equine clinical anatomy from veterinary technicians, pre-veterinary students, and other students wishing to enhance their understanding of anatomical structures of the horse's forelimbs.

**Credit Hour:** 1

**Prerequisites:** five hours of biologic science or zoology, or equivalent, or instructor's consent, or an AAS or equivalent degree in veterinary technology from an American Veterinary Medical Association accredited program

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**BIOMED 4520: Introduction to Equine Clinical Practice**

This course is an introduction to common medical conditions of the horse. Emphasis will be placed on the presenting complaint, identification of symptoms requiring assistance from a veterinary professional, and the approach to diagnosis, treatment, and prognosis.

**Credit Hours:** 2

**Recommended:** BIOMED 2110, BIOMED 2111 and AN\_SCI 4977 or their equivalents, an associate's degree in veterinary technology, or instructor's consent

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**BIOMED 7250: Human-Animal Bond in Veterinary Practice**

(cross-leveled with BIOMED 4250, VET\_TCH 4250). Exploration of historical and theoretical bases of human-companion animal interaction (HAI), the nature, issues, and clinical applications of HAI in a veterinary practice. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** Admission to program

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**BIOMED 8100: Veterinary Online Course Development and Teaching**

Best practices of online teaching in veterinary medicine are taught. Emphasis is placed on proper course objectives, productive instructor and student interactions, appropriate student assessments, and essentials of course alignment. Graded on A-F basis only.

**Credit Hours:** 3

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**BIOMED 8310: Advanced Topics in Stress Physiology**

An in-depth study of the causes and physiological responses to internal and external stress conditions that affect animals throughout life. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** Admission to the MS in Biomedical Sciences program

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**BIOMED 8311: Clinical Veterinary Physiology Review Series A: Cells, Circulation, Musculoskeletal, Renal, Immune**

This course will provide graduate level instruction to review cellular, circulation, musculoskeletal, renal, and immune physiology, and apply concepts to the veterinary patient. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** Acceptance into program

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**BIOMED 8312: Clinical Veterinary Physiology Review Series B: Respiration, Neurological, Gastrointestinal, Metabol**

This course will provide graduate level instruction to review respiratory, neurological, gastrointestinal, metabolic, and endocrine physiology, and apply concepts to the veterinary patient. Graded on A-F only.

**Credit Hours:** 3

**Prerequisites:** admission into program

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**BIOMED 8700: Principles of Veterinary Pain Management**

Pain pathophysiology, assessment, and management in veterinary patients. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Admission to the MS in Biomedical Sciences program

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**BIOMED 8710: Essentials of Radiation Biology**

Essentials of Radiation Biology begins with an overview of pertinent medical physics and cell biology, then continues with the biologic, cellular and systemic responses to ionizing radiation. This course also includes a presentation of the early and late somatic and genetic effects of ionizing radiation. Required radiation protection guidelines and regulations will be taught as well as methods and techniques to reduce whole body and organ occupational radiation exposure. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Successful completion of undergraduate Biology; admission into the program

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**BIOMED 8900: Small Animal Wound Management and Reconstructive Surgery**

This course addresses wound physiology, management and reconstructive surgery in small animal patients. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Admission to program

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