VTPP - VET PHYSIOLOGY & PHARM

VTPP 605 Systemic Physiology I

Credits 3. 3 Lecture Hours. Aspects of cellular physiology, physiology of excitable membranes, physiology of body fluids, neurophysiology, and the physiology of smooth, cardiac and skeletal muscle; provides a basic understanding of mammalian physiology essential as a framework for advanced graduate studies. **Prerequisite:** Graduate classification.

VTPP 606 Systemic Physiology II

Credits 3. 3 Lecture Hours. In-depth study covering electrolyte metabolism, endocrine physiology, reproduction and gastrointestinal physiology; basic understanding of mammalian physiology essential as a framework for advanced graduate studies. **Prerequisites:** VTPP 605; graduate classification.

VTPP 610 Physiology I

Credit 1. 1 Lecture Hour. Basic cellular physiology for continued exploration into human and animal physiology; excitatory membranes, regulation of homeostasis, body fluid maintenance. May be repeated four times for credit. **Prerequisites:** Graduate classification in the life sciences; approval of instructor.

VTPP 612 Physiology II

Credit 1. 1 Lecture Hour. Physiology of the mammalian endocrine systems required for continued exploration into human and animal endocrine physiology; molecular, cellular, and hormonal regulation, and their integration leading to diabetes and obesity. May be repeated four times for credit. **Prerequisites:** VTPP 610; graduate classification in the life sciences; approval of instructor.

VTPP 619 Food Toxicology II

Credits 3. 3 Lecture Hours. Public health implications of toxic factors in foods, their source, nature, occurrence and distributions; emphasis on mycotoxins including their isolation, detection, identification and toxicology; study of state-of-the-art food safety research techniques. **Prerequisite:** Graduate classification.

VTPP 623 Biomedical Physiology I

Credits 4. 3 Lecture Hours. 2 Lab Hours. Human physiological principles, review of cellular physiology, and development of an understanding of the nervous system and muscle, cardiovascular, and renal physiology; clinical applications related to organ systems. **Prerequisites:** Graduate classification; BICH 410 and VIBS 305 recommended.

VTPP 624/VIBS 624 Endocrinology

Credits 4. 3 Lecture Hours. 3 Lab Hours. Neuroendocrine control of puberty menstruation, ovulation, pregnancy, labor, lactation, female reproductive cycles, male reproductive functions, thyroid and parathyroid, adrenal and kidney, diabetes, obesity, sleep, memory, learning and aging, and their endocrine disorders; overview on biosynthesis, transport and signaling of peptide and neuropeptide hormones, steroids and prostaglandins. **Prerequisite:** Graduate classification. **Cross Listing:** VIBS 624/VTPP 624.

VTPP 625 Pharmacology

Credits 3. 3 Lecture Hours. Introduction to pharmacokinetics and pharmacodynamics; survey of major pharmaceutical classes; uses, mechanisms of action and adverse reactions of selected agents. **Prerequisites:** Graduate classification; VTPP 423 or approval of instructor.

VTPP 626 Systemic Physiology and Disease

Credits 4. 3 Lecture Hours. 2 Lab Hours. Investigation of functional changes during disease process and basic concepts related to the abnormal function and change in various organ systems in the face of disease; application of the knowledge of basic anatomy and physiology in understanding a loss or a change in normal structure and function of the body using common diseases and disorders centering on functional changes to etiology, clinical manifestations, diagnostic tests, treatment and complications. **Prerequisite:** Graduate classification.

VTPP 627 Applied Biomedical Physiology

Credits 4. 3 Lecture Hours. 2 Lab Hours. Human physiology focused on fluid balance and acid-base balance; development of an understanding of physiology as it applies to the cardiovascular, autonomic, renal, respiratory, gastrointestinal, endocrine, reproductive system; clinical applications related to organ systems. **Prerequisite:** Graduate classification.

VTPP 628 Pharmacology I

Credits 5. 4 Lecture Hours. 2 Lab Hours. Pharmacokinetics, pharmacodynamics, CNS pharmacology, autonomic pharmacology, antineoplastic agents, immunopharmacology, recombinant products, fluid and electrolyte therapy, diuretics, pharmacology of the integument. **Prerequisite:** Approval of instructor.

VTPP 630 Pharmacology/Toxicology

Credits 3. 2 Lecture Hours. 2 Lab Hours. Management and treatment of toxicosis, antidotal pharmacology, toxic plants, mycotoxins, chemical toxicants, metals, euthanasia. **Prerequisite:** Approval of instructor.

VTPP 638 Analysis of Genomic Signals

Credits 3. 2 Lecture Hours. 2 Lab Hours. Overview of current high throughput technology for data acquisition and analysis of genomic signals (e.g., mRNA or proteins); emphasis on microarray technology, methods for analyzing microarray data, and approaches to model the underlying phenomena from the systems biology perspective. **Prerequisites:** BIOL 451 or GENE 320/BIMS 320/BIMS 320/GENE 320 or equivalent; STAT 651 or equivalent; or approval of instructor.

VTPP 641 Principles of Human Health Risk Assessment of Chemicals

Credits 3. 3 Lecture Hours. Principles of toxicology and environmental health with the basic concepts and approaches for conducting human health risk assessment of chemicals; use of different types of data and analysis approaches to conduct both qualitative and quantitative assessments of exposure, human health hazard, dose-response, and risk from chemicals in the environment; introduction to how risk assessment informs risk management decisions such as pollution regulations or hazardous waste cleanups. **Prerequisites:** Graduate classification.

VTPP 645 Practice of Evaluating Human Health Risks of Chemicals

Credits 2. 2 Lecture Hours. Basic principles of toxicology and environmental health with real-life examples of how diverse types of information are integrated for the purpose of judging what chemical exposures may pose a risk to human health. **Prerequisites:** BICH 601, BICH 602, VTPP 625, or similar; VTPP 673, VTPP 670 or similar; and VIBS 641 or approval of instructor.

VTPP 652 Fetal and Embryo Physiology

Credits 3. 3 Lecture Hours. Introduction to the physiologic processes driving embryonic development and pregnancy; focus on embryo implantation, establishment of the placenta, development of the fetal circulatory systems and the molecular processes governing embryo differentiation and development; special emphasis on the major organ systems affected by pediatric disease and on the actions of teratogens. **Prerequisites:** Graduate classification.

VTPP 654 Molecular Endocrinology

Credits 3. 3 Lecture Hours. Structure-function relationships of hormones, their receptors and biologic activities. **Prerequisites:** VTPP 653 or BIOL 649 and BICH 410 or equivalent or approval of instructor.

VTPP 655 Vascular Physiology

Credits 4. 4 Lecture Hours. Structure and function of blood vessels and vascular beds; molecular and cell biology of endothelium and vascular smooth muscle; microcirculation; capillary exchange; regulation of blood flow by local, neural and humoral signals. **Prerequisite:** MPHY 901 or approval of department head.

VTPP 657 Cardiovascular Physiology

Credits 4. 3 Lecture Hours. 3 Lab Hours. Physiological considerations of the circulatory system including general and integrative aspects of the heart and blood vessels. **Prerequisites:** Approval of instructor.

VTPP 659 Gamete and Embryo Physiology

Credits 3. 2 Lecture Hours. 2 Lab Hours. Physiology of gametes and preimplantation embryos in livestock and laboratory animals; oocyte growth and maturation in-vivo and in-vitro, fertilization in-vivo and in-vitro, embryo transfer, cryopreservation, nuclear transfer, chimera formation, gene transfer.

VTPP 670 Advanced Toxicology

Credits 3. 3 Lecture Hours. Detailed overview of organ-specific effects of toxic substances, organ/tissue-oriented modules that will review basic anatomy and physiology, site-specific metabolism of xenobiotics, mechanisms of toxicity and experimental systems that are used to study toxic effects. **Prerequisites:** BICH 601, BICH 602, VTPP 625, or equivalent; VTPP 673 or equivalent; or approval of instructor.

VTPP 673 Metabolic and Detoxication Mechanisms

Credits 3. 3 Lecture Hours. Fate of foreign compounds; their inhibitory and antagonistic action toward normal metabolic processes of the animal body. **Prerequisites:** BICH 603; approval of instructor and department head.

VTPP 676 Genetic and Molecular Toxicology

Credits 3. 3 Lecture Hours. Mechanisms of toxicant-induced target organ toxicity with emphasis on molecular control of mammalian and cell growth differentiation. **Prerequisite:** Graduate course in cell biology and biochemistry.

VTPP 681 Seminar

Credit 1. 1 Lecture Hour. Review and discussion of current scientific work in physiology and related subjects. **Prerequisite:** Approval of department head.

VTPP 685 Directed Studies

Credits 1 to 4. 1 to 4 Other Hours. Problems in physiology, pharmacology or toxicology. **Prerequisite:** Approval of instructor.

VTPP 689 Special Topics in...

Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours. Selected topics in an identified area of veterinary physiology and pharmacology. May be repeated for credit. **Prerequisite:** Approval of instructor.

VTPP 690 Theory of Research

Credits 3. 3 Lecture Hours. Theory and design of research related to current biomedical problems especially those involving study of animal disease; philosophical perspectives underlying historical advances in research pertaining to the study, prevention and treatment of disease. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisite:** Graduate classification. **Cross Listing:** NRSC 690 and VIBS 690.

VTPP 691 Research

Credits 1 to 23. 1 to 23 Other Hours. Original investigations in veterinary physiology, pharmacology or toxicology to be submitted by writing of thesis or dissertation as partial fulfillment for MS or PhD degree. **Prerequisite:** Approval of department head.

VTPP 910 Physiology I

Credits 6. 5 Lecture Hours. 2 Lab Hours. Introduction to physiology: cell physiology, cell signaling, cell cycle, body fluids, translocation of materials, membrane potentials, neurophysiology, autonomic nervous system, thermoregulation, cardiovascular, and muscle physiology. **Prerequisite:** Enrollment in first year of professional curriculum.

VTPP 912 Physiology II

Credits 5. 4 Lecture Hours. 2 Lab Hours. Respiration, renal physiology, acid-base physiology, reproductive physiology, molecular biology and gastrointestinal physiology. **Prerequisite:** Enrollment in the first year of professional DVM curriculum.

VTPP 914 Professional & Clinical Skills I

Credits 3. 1 Lecture Hour. 6 Lab Hours. Professional & Clinical Skills I. Integration and reinforcement of foundational knowledge offered in concurrent courses through critical thinking exercises, professional skills application activities (ethics/contextual decision-making, leadership, skills for well-being, personal/practice financial literacy, core communication skills) and application of technical skills; opportunities for learning include didactic, hands-on and case-based interactions utilizing simulation, models, animals, actors and case scenarios; part I of a VI part series. **Prerequisite:** Enrollment in the first year of professional DVM curriculum.

VTPP 924 Pharmacology

Credits 3 to 5. 3 to 4 Lecture Hours. 0 to 2 Lab Hours. Drug disposition, pharmacodynamics, drug regulations, critical appraisal of evidence about use of drugs, drugs that affect respiratory, reproductive, gastrointestinal, endocrine, immune, urinary, integumentary, cardiovascular, musculoskeletal, and nervous systems, and drugs for pain, anti-inflammatories, antineoplastics, antibiotics, and other antiinfectives in animals. **Prerequisite:** Enrollment in the second year of professional DVM curriculum.

VTPP 925 Pharmacology/Toxicology II

Credits 3. 5 Lecture Hours. 2 Lab Hours. Antimicrobials, endocrine pharmacology, eicosanoids, antiinflammatory agents, respiratory pharmacology, anticoagulants and hematinics, GI pharmacology, cardiovascular pharmacology. **Prerequisite:** Enrollment in the second year of professional curriculum.

VTPP 926 Pharmacology/Toxicology III

Credits 3. 2 Lecture Hours. 2 Lab Hours. Management and treatment of toxicoses, antidotal pharmacology, toxic plants, mycotoxins and mycotoxicoses, chemical toxicants, metals, euthanasia. **Prerequisite:** Enrollment in the second year of professional curriculum.

VTPP 948 Didactic Elective in Veterinary Physiology and Pharmacology

Credits 1 to 12. 1 to 12 Lecture Hours. Elective course in physiology and pharmacology for professional students who wish to supplement required curriculum. May be repeated for credit. **Prerequisite:** Enrollment in the fourth year of professional curriculum.

VTPP 985 Directed Studies

Credits 1 to 4. 1 to 4 Other Hours. Directed, individual study of selected problems in physiology, pharmacology or toxicology. May be repeated for credit. **Prerequisite:** Approval of instructor and department head.

VTPP 989 Special Topics In...

Credits 1 to 4. 1 to 4 Other Hours. Selected topics in an identified area of veterinary physiology and pharmacology. May be repeated for credit.