

# VTMI - VETERINARY MICROBIOLOGY

## VTMI 610/VIBS 610 Epidemiologic Methods II and Data Analysis

**Credits 4. 3 Lecture Hours. 3 Lab Hours.** Principles and methods for the analysis of data from epidemiologic studies including the purpose of data analysis and role of statistics, sampling distributions, probability distributions, analysis of crude, stratified and matched data, and the use of linear and logistic regression methods. **Prerequisites:** VIBS 608 and STAT 651 or approval of instructor. **Cross Listing:** VIBS 610/VTMI 610.

## VTMI 614 Fermentation and Gastrointestinal Microbiology

**Credits 3. 3 Lecture Hours.** Fermentation and gastrointestinal ecosystems in terms of microorganisms present, their activities and requirements and their interactions in a dynamic system. **Prerequisite:** Beginning microbiology and/or biochemistry or approval of instructor. **Cross Listing:** POSC 614 and NUTR 614.

## VTMI 615 Immunogenetics and Comparative Immunology

**Credits 3. 3 Lecture Hours.** Genetic mechanisms used to diversify immune receptors; immunoglobulins, T cell receptors, major histocompatibility complex, natural killer cell receptors, toll-like receptors and many others; selected comparative and veterinary examples of different immune recognition systems; evolution of the immune system; theoretical immune surveillance and vaccine development. **Prerequisite:** Graduate classification; GENE 320/BIMS 320 and VTPB 409, or equivalent, or approval of instructor.

## VTMI 619 Molecular Methods for Microbial Characterization

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Underlying principles of molecular methods for microbial detection and characterization in natural and man-made ecosystems; emphasis on method application and data interpretation; emphasis on microbial pathogens and indicator organisms in foods and environment; laboratory covers select protocols. **Prerequisite:** FSTC 326/ANSC 326; SCSC 405; POSC 429; approval of instructor. **Cross Listing:** SCSC 619, FSTC 619 and POSC 619.

## VTMI 621 Advanced Human Genetics

**Credits 3. 3 Lecture Hours.** Rigorous, analytical approach to genetic analysis of humans; diagnosis and management of genetic disease in humans; transmission of genes in human populations; human cytogenetics; the structure of human genes; human gene mapping; molecular analysis of genetic disease; genetics screening and counseling. **Prerequisite:** GENE 603, VTMI 613, or equivalent.

## VTMI 626 Disease Detection, Surveillance and Risk Assessment

**Credits 4. 3 Lecture Hours. 2 Lab Hours.** Animal health and food safety diagnostic test evaluation, disease surveillance design and analysis and quantitative risk assessment. **Prerequisites:** STAT 651 or equivalent, or approval of instructor.

## VTMI 629/SCSC 629 Laboratory Quality Systems

**Credits 3. 3 Lecture Hours.** Quality systems and method development used within a laboratory; ensuring the integrity of procedures used in lab processes, chain of custody, information management, and international laboratory standards; regulatory requirements for laboratory operation; bio-security precautions; laboratory management. **Cross Listing:** SCSC 629/VTMI 629.

## VTMI 631/RWFM 609 Wildlife Diseases

**Credits 3. 3 Lecture Hours.** Overview of diseases that affect populations of wild mammals, birds, amphibians and reptiles; emphasis on diseases that are transmissible to humans or domestic animals and those found in Texas. **Cross Listing:** RWFM 609/VTMI 631.

## VTMI 632 Wildlife Capture, Immobilization and Handling

**Credits 2. 2 Lecture Hours.** Chemical immobilization of using drugs and drug combinations not used elsewhere in veterinary (nor human) practice and under a variety of field conditions; topics include how to safely capture, immobilize, handle, and collect samples from a variety of non-domestic animals. **Prerequisites:** Graduate classification and approval of instructor.

## VTMI 636 Bacteria in Health and Disease

**Credits 3. 3 Lecture Hours.** Discussion of the mechanisms utilized by important commensal and pathogenic bacteria in humans and animals, in their respective roles; focus on innate and adaptive immune mechanisms and antimicrobial chemotherapy against bacterial pathogens. **Prerequisite:** VTPB 405 or equivalent.

## VTMI 638 Biomedical Virology

**Credits 3. 3 Lecture Hours.** Fundamental study of nature and characteristics of human and animal viruses; classification, morphology, chemical structure, ability to cause disease, and nature of the resulting disease. **Prerequisites:** VTPB 405 or equivalent, or approval of the instructor.

## VTMI 645/MPIM 601 Microbial Pathogenesis of Human Disease

**Credits 3. 3 Lecture Hours.** Principles of microbe-host interactions at the molecular level; selected medically important infectious diseases serve as paradigms for understanding how multiple pathogenic mechanisms contribute to disease. **Prerequisite:** Approval of instructor. **Cross Listing:** MPIM 601/VTMI 645.

## VTMI 647 Virology

**Credits 3. 3 Lecture Hours.** Virus infections of animals and humans; introductory material includes virus replication cycle, taxonomy and methods to study viruses. **Prerequisite:** VTPB 438 or equivalent; or approval of instructor.

## VTMI 649/POSC 649 Immunology

**Credits 3. 3 Lecture Hours.** Cellular basis of the immune response; relationships between inflammation and acquired immunity, MHC and cell activation; the role of cytokines in immunoregulation and hypersensitivity, vaccines, and the mechanism of immunity to viruses, bacteria and parasites. **Prerequisite:** VTPB 409 or equivalent. **Cross Listing:** POSC 649/VTMI 649.

## **VTMI 650/POSC 660 Experimental Immunology**

**Credits 4. 3 Lecture Hours. 3 Lab Hours.** Familiarization, development and integration of techniques into experimental design of immunologic investigation; antibody production, protein purification, immunofluorescence, agar-gel diffusion, immunoelectrophoresis and specialized serologic tests. **Cross Listing:** POSC 660/VTMI 650.

## **VTMI 662 Advanced Immunologic Concepts**

**Credits 1 to 5. 1 to 5 Lecture Hours.** Modular course with detailed discussions, workshops and assigned reading/problem solving on advanced topics; structural organization of molecules; genetic regulation; cytokine cascades; pathophysiology of autoimmunity. May be repeated for credit. **Prerequisites:** VTMI 649/POSC 649; BICH 603 or equivalent; approval of instructor.

## **VTMI 663/MPIM 663 Molecular Biology of Viruses**

**Credits 3. 3 Lecture Hours.** In-depth studies of the biochemistry and the replication strategies of viruses and molecular mechanisms of pathogenesis for selected viral systems. **Prerequisite:** Graduate classification in pathology, molecular biology, biochemistry, or approval of instructor. **Cross Listing:** MPIM 663/VTMI 663.

## **VTMI 670 Current Molecular Approaches in Biomedical Sciences**

**Credits 3. 3 Lecture Hours.** Critical analyses of a broad range of current approaches and techniques used in modern biomedical science research in the context of primary research articles; in-depth analysis of some commonly used kits and the underlying biological principles; familiarization with modern molecular methods and the biological questions that can be addressed by a given method; focus on skills needed to critically read a scientific paper. **Prerequisites:** Graduate classification or approval of instructor.

## **VTMI 681 Seminar**

**Credit 1. 1 Lecture Hour.** Review and discussion of current scientific work and research in field of microbiology and related subjects. **Prerequisite:** Approval of instructor.

## **VTMI 685 Directed Studies**

**Credits 1 to 4. 1 to 4 Other Hours.** Problems course in microbiology. **Prerequisite:** Approval of instructor.

## **VTMI 689 Special Topics in...**

**Credits 1 to 4. 1 to 4 Other Hours.** Selected topics in an identified area of veterinary microbiology. May be repeated for credit. **Prerequisite:** Approval of instructor.

## **VTMI 691 Research**

**Credits 1 to 23. 1 to 23 Other Hours.** Research for thesis or dissertation.