MICROBIOLOGY (MICR)

MICR*2420 Introduction to Microbiology Summer, Fall, and Winter (LEC: 3, LAB: 3) [0.50]
This course will introduce students to the diversity of microorganisms, including, bacteria, viruses, and fungi, and the impact of microbes on everyday life. The interactions of microorganisms with the biotic and abiotic worlds will be discussed. Topics will include the roles of microorganisms in host-pathogen interactions in disease, the beneficial aspects of microorganisms in bioremediation and food production, and their application in biotechnology.
Prerequisite(s): 4.00 credits including (1 of BIOL*1070, BIOL*1080, BIOL*1090, CHEM*1040)
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*2430 Methods in Microbial Culture and Physiology Fall and Winter (LEC: 1.5, LAB: 3) [0.50]
This course uses a hands-on approach to investigate microbial growth and factors that impact growth and the interactions of microbes with biotic and abiotic environments. This course will explore the ecological diversity of microorganisms of selected environments. Students will develop a wide range of microbiology-related laboratory skills.
Prerequisite(s): MICR*2420
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*3090 Mycology Fall Only (LEC: 3) [0.50]
This course provides an introduction to the fungal lifestyle and to classification and evolution of the major groups of fungi, including microfungi, yeasts and other eukaryotic microbes. The characteristics of fungal cell structure, genetics and metabolism will be presented, and fungal reproduction and sporulation processes discussed with reference to the life cycles of representative forms. The ecological and economic importance of fungi will be demonstrated by considering fungal ecology, symbiotic relationships, mycotoxins and pathogenic fungi and industrial applications of fungi and yeasts.
Prerequisite(s): BOT*2100 or MICR*2430
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*3220 Plant Microbiology Fall Only (LEC: 3) [0.50]
In this course the interaction between plants and microorganisms will be studied. Topics include molecular plant-microbe interactions, plant defenses, bacterial ice nucleation, interaction among plant microbes, root nodulation, mycorrhizae, wood decay, and decomposition of plant litter.
Prerequisite(s): BIOL*1070, BIOL*1090
Department(s): School of Environmental Sciences
Location(s): Guelph

MICR*3230 Immunology Fall Only (LEC: 3) [0.50]
This course provides an introduction to the immune response of the vertebrate host, the cells and tissues of the lymphoid system, humoral and cell-mediated immunity, the concept of immunity to diseases and current techniques in immunology.
Prerequisite(s): BIOL*1090, BIOC*2580
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*3240 Microbial Physiology and Genetics Fall Only (LEC: 3) [0.50]
In this course students examine the genetic and physiological responses of microorganisms to their diverse and changing environments. Topics covered include gene regulation, bacterial quorum sensing and bacterial phage immunity.
Prerequisite(s): BIOC*3560, MBG*2040, MICR*2420
Restriction(s): MBG*3080, MICR*3260
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*3280 Microbial Cell Biology Fall Only (LEC: 3) [0.50]
This course explores the structure-function relationships of macromolecular complexes and cellular ultrastructures involved in fundamental microbial processes. The structures of macromolecular machines will be considered from the perspective of the cellular requirements for survival in different environments and will be discussed in the context of their integration into building the basic elements of the microbial cell, as well as their exploitation as targets for antibiotics and other therapeutic approaches.
Prerequisite(s): BIOC*3560, MBG*2040, MICR*2420
Restriction(s): MBG*3080, MICR*4520
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*3330 World of Viruses Fall Only (LEC: 3) [0.50]
Viruses infecting many organisms will be covered in the context of their global impact on disease and history, beneficial uses of viruses, and their role in advances of molecular theory. A fundamental virology background will be achieved by understanding the diversity of viruses, their replication strategies and their interactions with the host in disease. The relevance of viruses in society will be highlighted by discussion of historical accounts and contemporary news articles.
Prerequisite(s): MCB*2050
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*3420 Microbial Diversity and Ecology Fall Only (LEC: 3) [0.50]
The cycling of elements (carbon, nitrogen, sulphur) within ecosystems involves the contributions of diverse microorganisms. This course will study the diversity of predominantly Bacteria and Archaea in selected ecosystems at an organismal level, investigate the metabolic and enzymatic diversity in microbes that contribute to and thrive within these environments, and examine the methodologies used to study the relationships and evolution of microorganisms within an ecosystem.
Prerequisite(s): BIOC*3560, MBG*2040, MICR*2430
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*3430 Advanced Methods in Microbiology Winter Only (LEC: 1, LAB: 6) [0.75]
This course will use a hands-on approach to investigate concepts and develop skills needed for the isolation, identification and classification of microorganisms. Classical, molecular, and bioinformatic techniques will be used to isolate and identify bacteria and viruses from natural environments.
Prerequisite(s): MICR*2430, (MBG*3080 or MICR*3240)
Co-requisite(s): MBG*3350
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*4010 Pathogenic Microbiology Fall Only (LEC: 3) [0.50]
This course focuses on the interactions between microbial pathogens and host animals, including immune and inflammatory responses of the host's defense mechanisms. The structural and physiological characteristics of a number of important microbes causing human and animal diseases are considered.
Prerequisite(s): MCB*2050, (MBG*3080 or MICR*3240)
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*4330 Molecular Virology Winter Only (LEC: 2, LAB: 3) [0.50]
This course will focus on molecular aspects of virus replication cycles and the diverse strategies used for replication of select RNA and DNA viruses. Virus-host interactions including tumour virology and host antiviral responses such as interferon and apoptosis will be discussed. Viral anti host-defence responses as well as recent advances in molecular virology and evolution will be also be covered.
Prerequisite(s): MICR*3330, (MICR*2430 is recommended)
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph

MICR*4430 Medical Virology Winter Only (LEC: 3) [0.50]
This course is designed to present an overview of the major viruses causing important diseases in humans. The course focuses on the molecular mechanisms of viral pathogenesis, determinants of viral virulence and the host response to infections. Diagnosis of viral infections, vaccines and controls of viral infections are also discussed. The first part of the course will cover the basic principles and concepts used in the study of viral diseases, modern diagnostic methods and recent advances in the application of molecular virology to the development of recombinant vaccines and other means to combat viral diseases. The second half of the course will include material on the individual diseases and causative viruses.
Prerequisite(s): MICR*3330
Department(s): Department of Pathobiology
Location(s): Guelph

MICR*4530 Immunology II Winter Only (LEC: 3) [0.50]
This course will focus on advanced aspects of the structure and function of the vertebrate immune system in health and disease. Various topics including inflammation, hypersensitivity reactions, immune-mediated diseases such as allergy and autoimmunity, immune response to infection, vaccine development, experimental systems, immunoinformatics and antibody engineering will be discussed.
Prerequisite(s): MICR*3230
Department(s): Department of Molecular and Cellular Biology
Location(s): Guelph