

MICROBIOLOGY AND IMMUNOLOGY (MICR)

MICR 121 Microbiology for Nursing Students Units: 3.00

This course provides the student with a foundation in the subdisciplines of bacteriology, virology, parasitology, and immunology. The course is designed to examine common infectious diseases through a body-systems approach. Laboratory and tutorial sessions emphasize diagnostic microbiology.

Requirements: BCHM010 OR BCHM102

Offering Faculty: Faculty of Health Sciences

MICR 221 Fundamental Microbiology Units: 3.00

A fundamental study of the structure, genetics, and growth of microorganisms, focusing on bacteria and viruses. The roles of microbes in the environments in which they exist will be considered.

LEARNING HOURS 120 (36L;18Lb;66P).

Requirements: PREREQUISITE (A GPA of 1.90 (obtained in any term) or a `Pass` (obtained in Winter 2020) in BIOL 102/3.0 and BIOL 103/3.0) and CHEM 112/6.0.

EXCLUSIONS MICR 271/3.0

Course Equivalencies: MICR221, MICR229

Offering Faculty: Faculty of Health Sciences

MICR 270 Infection, Immunity and Inflammation Units: 3.00

This course focuses on 1) the overall organization of the immune system, 2) the role of the immune system in combating diseases caused by common pathogens as well as adverse reactions of the immune system and 3) application of the basic knowledge of immunology to the field of infectious disease prevention and control by vaccines and treatment of cancer. The unique features of this course lie in its overall structure and delivery that will prepare the student for further in-depth learning in the field of immunology.

NOTE This online course in infection and immunity is designed for students from various biological sciences and allied health backgrounds at all levels of post-secondary education and is recommended as a foundation course for students pursuing a life sciences career.

NOTE Also offered online. Consult the Bachelor of Health Sciences program office.

NOTE May not be taken for credit towards the Plan requirements of the LISC Specialization or Major Plans.

LEARNING HOURS may vary 114 (36O;78P)

Requirements: Minimum 2nd year (Level 2) standing and one of (BIOL 102/3.0; MICR 121/3.0; PHGY 170/3.0). One-way Exclusion May not be taken with or after MICR 360/3.0; MICR 386/3.0; BMED 386.

Offering Faculty: Faculty of Health Sciences

MICR 271 Introduction to Microbiology Units: 3.00

An introduction to the biology of microbes, including both pathogenic & beneficial bacteria, viruses, fungi, & protozoa. This overview of the biological features of these microorganisms will highlight these organisms' roles in the environment & in human health contributing to infectious diseases vs. maintaining healthy microbiomes.

NOTE Only offered online. Consult the Bachelor of Health Sciences Program office.

LEARNING HOURS 120 (60O;60P)

Requirements: Minimum 2nd year (Level 2) standing and one of (PHGY 170/3.0; BIOL 102/3.0). Exclusion MICR 221/3.0

Offering Faculty: Faculty of Health Sciences

MICR 290 Antibiotic Resistance Lab Units: 3.00

This immersive laboratory course is designed to give students the opportunity to apply important microbiological and biochemical research techniques to the study of antibiotic resistance. Students work in small groups on a semester-long project, developing valuable lab skills that will support them with future research opportunities.

LEARNING HOURS 120(36Lb;48O;36P)

Requirements: Minimum 2nd year (Level 2) standing, registration in a BHSc, LISC, or BCHM degree plan, and one of (MICR 270/3.0; MICR 271/3.0) Exclusion MICR 221/3.0

Offering Faculty: Faculty of Health Sciences

MICR 320 Microbes in Health and Disease Units: 3.00

This course will focus on the roles of microbes in health (human microbiome) and disease (pathogens). The molecular mechanisms of bacterial/viral virulence and the host response will be examined in order to develop an in depth understanding of the etiology of infectious diseases and the benefits derived from the human microbiome. Consult the Bachelor of Health Sciences program office

NOTE Also offered online. Learning Hours may vary.

Requirements: Minimum 3rd year (Level 3) standing and one of (MICR 221/3.0; MICR 271/3.0; MICR 229/3.0) and one of (MICR 360/3.0; MICR 386/3.0; BMED 386/3.0). Exclusion MICR 382/3.0

Offering Faculty: Faculty of Health Sciences

MICR 360 Immunology Units: 3.00

The general principles and mechanism of immune reaction. Immunochemical and immunobiological aspects of antibody formation and cell-mediated immunity in health and disease will be considered.

LEARNING HOURS 144 (36L;36O;72P).

Requirements: Prerequisite MICR 221 or MICR 271. Exclusion MICR 386.

Offering Faculty: Faculty of Health Sciences



MICR 386 Fundamentals of Immunology in Health and Disease Units: 3.00

Integrates the key principles of immunology to facilitate learning of immunology as it relates to human health and disease. This course offers real-life case studies, problems encountered and solutions applied, immunology virtual laboratory simulation, and extensive coverage of the basic science underlying each topic in the module.

Also offered online.

LEARNING HOURS may vary:120(480;72P)

Requirements: Minimum 3rd year (Level 3) standing and one of (BCHM 218/3.0; BCHM 270/3.0), and one of (MICR 270/3.0; MICR 271/3.0; MICR 221/3.0). Exclusion MICR 360/BMED 877

Offering Faculty: Faculty of Health Sciences

MICR 435 Advanced Prokaryotic Structure and Function Units: 3.00

An in-depth analysis of the genetics, biochemistry, assembly and function of the major structures of the prokaryotic cell. Emphasis on the experimental approaches in the current literature.

Requirements: PREREQUISITES BIOL 205/3.0 and (MICR 221/3.0 or MICR271 or MICR 229/3.0 with a minimum grade of B-) and reg in the LISC Major or Spec. Plan) and (a GPA of 2.5). COREQUISITE BCHM 310/6.0 or BCHM 315/3.0 or BIOL 334/3.0.

Offering Faculty: Faculty of Health Sciences

MICR 436 Microbial Genetics Units: 3.00

A detailed description of the processes of heredity in bacteria including a discussion of gene structure and evolution, gene expression and its control, the exchange of genetic material in the microbial world and genetic engineering and its applications. The laboratory component will emphasize modern approaches to genetic engineering.

NOTE Offered in alternate years to MICR 435/3.0.

Requirements: PREREQUISITES BIOL 205/3.0 and (MICR 221/3.0 or MICR227 or MICR 229/3.0 with a minimum grade of B) and (reg in the LISC Major or Spec. Plan) and (a GPA of 2.5). COREQUISITE BCHM 310/3.0 or BCHM 315/3.0 or BIOL 334/3.0.

Offering Faculty: Faculty of Health Sciences

MICR 450 Principles of Molecular Virology Units: 3.00

Further study of contemporary virology, using the textbook as a guide to particles, genomes, replication, expression, infection and pathogenesis. Emphasizing reading and writing to develop skills in observation and critical thinking, important attributes in understanding the scientific method.

NOTE Offered in alternate years to MICR 451/3.0.

Requirements: PREREQUISITES BIOL 205/3.0 and (MICR 221/3.0 or MICR271 with a minimum grade of B-) and (Level 4 and registration in the LISC Major or Spec. Plan) and (a GPA of 2.5). COREQUISITE BCHM 310/6.0 or BCHM 315/3.0.

Offering Faculty: Faculty of Health Sciences

MICR 451 Selected Topics in Viral Pathogen Units: 3.00

The nature of selected animal virus groups and their interactions with the host in disease production. Special emphasis on the pathogenesis of tumour and human immunodeficiency viruses.

NOTE Offered in alternate years to MICR 450/3.0.

LEARNING HOURS 120 (24L;12T;84P)

Requirements: Prerequisite Minimum 3rd year (Level 3) standing, registration in a LISC/BHSc/BIOL Major or SSP, a GPA of 2.5, a minimum grade of B- in one of (BCHM 218/3.0; BIOL 330/3.0; BIOL 331/3.0).

Offering Faculty: Faculty of Health Sciences

MICR 452 Viral Infection and Immunity Units: 3.00

Course material will focus on the molecular basis for virus pathogenesis including host immune responses to virus infection, and viral countermeasures. Emphasis will be on viral infections that result in gastrointestinal, haematological, neurological, and respiratory diseases. Tutorials will focus on discussion of current and seminal literature.

Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of (MICR 221; MICR 271), and one of (MICR 360; MICR 386).

Offering Faculty: Faculty of Health Sciences

MICR 461 Advanced Immunology Units: 3.00

Advanced immunology course focused on current topics in immunology and immunology-related scientific research.

Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and a minimum grade of A- in one of (MICR 360; MICR 386).

Offering Faculty: Faculty of Health Sciences

MICR 499 Research Project in Microbiology and Immunology Units: 12.00

A research project supervised by and closely related to the research program of a faculty member. The research project involves experimental design, data collection and analysis, written report and oral presentation. Students will be required to attend seminars and tutorials on topics related to research. Limited enrolment.

NOTE Acceptance by a supervisor required prior to registration.

NOTE Students whose research requires the care and/or handling of animals must also complete the Introductory Animal Care Course and if required the appropriate Animal Use workshops through the Office of the University Veterinarian.

LEARNING HOURS 480 (288Lb;24G;24I;144P).

Requirements: Prerequisite Level 4 and registration in a LISC or ELSC Specialization Plan and cumulative GPA of 2.50 or higher and MICR 221. Exclusion ANAT 499; CANC 499; EPID 499; LISC 499; MICR 455; NSCI 499; PATH 499; PHAR 499; PHGY 499; REPD 499.

Offering Faculty: Faculty of Health Sciences