

MICROBIOLOGY & IMMUNOLOGY (MBIO)

Subject-area course lists indicate courses currently active for offering at the University of Louisville. Not all courses are scheduled in any given academic term. For class offerings in a specific semester, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>).

500-level courses generally are included in both the undergraduate- and graduate-level course listings; however, specific course/section offerings may vary between semesters. Students are responsible for ensuring that they enroll in courses that are applicable to their particular academic programs.

Course Fees

Some courses may carry fees beyond the standard tuition costs to cover additional support or materials. Program-, subject- and course-specific fee information can be found on the Office of the Bursar website (<http://louisville.edu/bursar/tuitionfee/>).

MBIO 600. Lab Rotations 1-2 Units

Grading Basis: Pass/Fail

Description: Research experience in different faculty members' laboratories in areas of interest to the student. The purpose is to help the student select a Research Advisor. Acceptance by the faculty members is required. The course consists of one or two laboratory rotations (one rotation per quarter) with one credit hour per rotation. This course may be taken more than once if deemed necessary. Fall and spring semesters only. Pass/fail grading.

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MBIO 601. Molecular Microbiology 2 Units

Term Typically Offered: Fall Only

Description: This is an advanced graduate course in Microbiology and material will be presented at a first year graduate level, assuming that the students have a background in microbiology from previous undergraduate coursework, or have a high interest and sufficient motivation to learn at the state of the art level in this field. The course is primarily intended as a required class for all students seeking a PhD degree in Microbiology and Immunology, and will therefore provide the basic foundation of knowledge needed to build on to become an expert in the field, or in closely related fields in Biology and Oral Biology.

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MBIO 602. Immunology 3 Units

Prerequisite(s): Permission of course directors.

Description: This course provides an advanced introduction to innate and adaptive immunity at cellular and molecular levels including: identification of the cells of the immune system and their roles in various immune responses, the role and mechanisms of intercellular communication in induction and regulation of immune responses, gene rearrangement in formation of antigen receptors, regulation of antibody responses in response to infection, cytotoxic T cell responses against tumors and infectious agents, hypersensitivity reactions and autoimmunity.

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MBIO 604. General Virology 1 Unit

Term Typically Offered: Fall Only

Description: This is an introductory course that focuses on building basic virology concepts including the basic replication steps common to viruses, entry, replication and egress, interaction of virus with host cellular proteins during the replication cycle, general virus replication cycle, how and why some viruses cause disease (viral pathogenesis), and how viral diseases spread (mode of transmission), and current approaches of vaccines and antivirals. Format: lectures, student presentations. Graded.

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MBIO 606. Seminar 1 Unit

Grading Basis: Pass/Fail

Prerequisite(s): Consent of instructor.

Description: Pass/Fail grading.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

MBIO 610. Methods and Analysis in the Biomedical Sciences 2 Units

Description: The primary goal of the course is to provide first-year graduate students with the conceptual framework to become familiar with key tools and techniques used in biomedical science research. We will examine the kind of information the methodology can provide, the strengths and weaknesses of the approach, and how data obtained can be judged and used to address scientific problems.

Note: Cross-listed with ASNB 610, BIOC 610, PHTX 610, PHZB 610.

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MBIO 611. Learning Theories & Instructional Strategies in Science Education 2 Units

Term Typically Offered: Summer Only

Description: This course covers how to actively engage all students in the classroom and prepares students to teach in graduate courses at the School of Medicine or other schools of higher education. Students will create a lesson plan, PowerPoint presentation and activities to engage the students; an assessment plan to measure student's performance; and a teaching philosophy statement.

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<p>MBIO 618. Topics in Advanced Microbiology 1-3 Units Prerequisite(s): Consent of instructor. Description: An in-depth examination of one or more topics not included in regularly offered courses in the curriculum. Topics vary. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>MBIO 623. Scientific Writing and Hypothesis Testing 1 Unit Grading Basis: Pass/Fail Term Typically Offered: Summer Only Prerequisite(s): Permission of instructor. Description: This course will teach students writing and presentation skills necessary to compete successfully for grant funding, and more generally to succeed as a scientist. Topics covered in this course include how to write Abstract, Specific aims, Significance and Approach sections, and how to prepare an effective biosketch. Didactic lectures on these topics will be combined with in class presentations by students. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>MBIO 619. Research 1-12 Units Grading Basis: Pass/Fail Prerequisite(s): Consent of instructor. Description: Pass/Fail grading. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>MBIO 624. Immunity to Pathogenic and Commensal Microbes 1 Unit Term Typically Offered: Fall Only Prerequisite(s): MBIO 601 and MBIO 602 or consent of instructor; Completion of all first year graduate courses & an average of 3.0 GPA in required. Description: The course focuses on the cellular and molecular components of the immune response that perpetuate or protect against pathogenic and commensal microbes. Short lectures will be followed by student analysis of pertinent high profile papers. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>MBIO 620. Tumor Immunity and Inflammation 1 Unit Term Typically Offered: Fall Only Prerequisite(s): MBIO 602 or consent of instructor; Completion of all first year graduate courses & an average of 3.0 GPA is required. Description: The course focuses on the cellular molecular components of the immune response that perpetuate or protect against cancer and inflammatory diseases. Short lectures will be followed by student analysis of pertinent high profile papers. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>MBIO 624. Immunity to Pathogenic and Commensal Microbes 1 Unit Term Typically Offered: Fall Only Prerequisite(s): MBIO 601 and MBIO 602 or consent of instructor; Completion of all first year graduate courses & an average of 3.0 GPA in required. Description: The course focuses on the cellular and molecular components of the immune response that perpetuate or protect against pathogenic and commensal microbes. Short lectures will be followed by student analysis of pertinent high profile papers. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>MBIO 621. Advanced Immunology: Innate and Adaptive Immunity 2 Units Prerequisite(s): MBIO 602 or consent of instructor. Description: This is an advanced interdisciplinary graduate level course focused on acquiring deeper knowledge about cells and associated concepts involved in innate and acquired immunity. The cells include dendritic cells, macrophages, neutrophils, innate lymphoid cells, NK cells and T cells. Concepts such as cell differentiation, development, activation and function, antigen presentation, thymic selection, and cell cross-talk will be discussed. Format: short lectures, analysis of pertinent high-profile papers. Graded. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>MBIO 631. Basic Microbiology, Immunology, and Virology 2 Units Term Typically Offered: Summer Only Prerequisite(s): Consent of instructor. Description: A general course in infectious diseases and immunology. Special emphases are placed on oral infections, immune phenomena, and natural resistance mechanisms. Specific topics include the human immune response, pathogenesis of microbial infections, molecular and microbiological basis of periodontal diseases, pulp and periapical infections and cariogenesis. Graded. Summer semester only. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>MBIO 622. Immunity to Microbes and Tumor 2 Units Term Typically Offered: Fall Only Prerequisite(s): MBIO 601 and MBIO 602 or consent of instructor; Completion of all first year graduate courses & an average of 3.0 GPA is required. Description: The course focuses on the cellular and molecular components of the immune response that perpetuate or protect against pathogenic and commensal microbes, tumor cells and autoimmunity. Short lectures will be followed by student analysis of pertinent high profile papers. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>MBIO 687. Microbial Pathogenesis 2 Units Term Typically Offered: Spring Only Prerequisite(s): MBIO 601, BIOC 645, or consent of instructor. Description: A detailed discussion of host-parasite interactions, focusing on the characteristics (i.e., virulence factors) of bacteria that enable them to cause disease. Exotoxins, capsules, adherence mechanisms, intracellular replication, and iron metabolism will be described in detail. Specific bacterial diseases will be examined to illustrate how each virulence factor is required in the infectious process. The use of animals and other model systems will be discussed. Graded. Spring. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>

MBIO 689. Microbiota in Health and Disease 2 Units

Description: This is an advanced interdisciplinary graduate level class focused on composition of the microbiota and its role in health and various diseases from birth through death. These diseases include allergies, irritable bowel disease, metabolic diseases and cancer. Factors that influence composition of the microbiota, such as breast vs formula feeding infants, antibiotic treatment, diet in adulthood, hygiene, and the consequences on various diseases, such as obesity and metabolic diseases, will be discussed. The role of fecal transplants, probiotics and prebiotics in alleviating the harmful effects of imbalance of the microbiota will be discussed. Format: short lectures, analysis of pertinent high-profile papers. Graded.

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MBIO 690. Research Methods in Microbiology and Immunology 2 Units

Grading Basis: Pass/Fail

Term Typically Offered: Fall Only

Description: A series of lectures and laboratory demonstrations emphasizing current research techniques used in areas of immunology, virology, microbiology, biochemistry and molecular biology. A limited amount of hands-on experience may be utilized in some areas. Fall semester only. Pass/fail grading.

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MBIO 818. Special Topic-Advanced Microbiology 1-16 Units

Description: A special course to provide study in specific areas of Microbiology and Immunology, possibly including instruction in laboratory techniques. Exact course content to be defined by an agreement with student and faculty mentor.

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